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CONTENTS

N O T E !!!!

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Applications for membership of the International Nannoplankton Association should be directed to the Secretary/Treasurer. Annual dues: Dfl. 20,-

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NEXT ISSUE

Contributions for the next issue of the INA Newsletter should be received before April 1982. Please send your contributions to: The editor of the INA Newsletter, c/o S.E. van Heck (address: see front page).

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QUESTIONNAIRES 1981

I. In order to obtain an overview of "WHO DOES WHAT AND WHERE" in the early eighties, we include a questionnaire in this newsletter. We hope to compile the answers in a handy way in the next INA-newsletter. You will then be able to find out who intends to work on the same subject as you and get in contact with each other - or not; you will know which areas of research are "overcrowded", or where there is a niche for some new activities.

II. Depending on available money we plan to compile the "Bibliography and Taxa" from 1972 - 1981 in the form of a BOOK (and probably also one for the period 1967 - 1971). We would like to know if our members are interested in such (an) edition(s).

III. After the next two issues of the newsletter we hope to have filled in the gap between the last "INDEX AND BIBLIOGRAPHY" of LOEBLICH and TAPPAN, and our NEWSLETTER. As the number of new articles on calcareous nannoplankton is limited, the number of pages of the bibliography will be reduced in the years after 1982. So the question arises "WHAT WILL BE THE FUTURE OF THE NEWSLETTER?".
We see the following possibillities:

1. to stop the newsletter. This possibillity cannot be excluded since Shirley van Heck might not be able after 1982 to continue her work for INA;
2. to continue the newsletter, but to include silicious nannofossils also. This would imply that we find a volunteer to take care of the silicoflagellates, ebridians, archaeomonads etc.;
3. to continue the newsletter, but only with a single issue a year;
4. to continue the newsletter with a reduced number of pages, twice a year. We would appreciate to know your opinion and therefore include a third questionaire; please fill it in also.

IV. A few months ago, several members of the INA had an informal meeting in Amsterdam. We discussed the "state of the art" and came to the

following conclusions:

a) In the past few decades we have seen an enormous flow of papers dealing with descriptions, taxonomy and biostratigraphy. This flow is gradually waning now, and one could get the impression that everything there is to know about calcareous nannoplankton, is already known. Calcareous nannofossils form a useful tool in biostratigraphy, and that's it. In our opinion however, the study of calcareous nannoplankton is coming in a new, be it difficult phase: (paleo)ecology. We know, for instance, that high and low latitude assemblages are often different - but just how different?? We know that some markers work in low and not in high latitudes and the other way round - how can we improve correlations between low and high latitudes? What does the dominance of a species mean??? Wich ecological parameters determine the frequency and the geographical distribution of Recent species, and can we apply the actualistic approach in nannofossil paleontology???

b) We are sure that many colleagues have similar and more questions; maybe even some answers already. We therefore concluded that an international meeting on (paleo)ecology of calcareous nannoplankton is badly needed. We also think that an exchange of views concerning approaches to and methods in (paleo)ecology between specialists in different microfossil groups could be very useful and might contribute to solve some of the problems, particularly so if such discussions were based on results obtained from studies on the same samples or sections.

The Regional Committee on Mediterranean Neogene Stratigraphy (RCMNS) is planning an "interim-colloquium" on the basics of marine paleoenvironmental reconstructions by means of paleoecological interpretations of various groups of microfossils and by incorporating non-paleontological, e.g. stable isotope data. One of the items of this meeting concerns paleoecology of calcareous nannoplankton and a comparison between Neogene and Recent distribution patterns.

Since the goals of the planned INA and RCMNS meetings are basically the same it was proposed that the two meetings be combined and that a joint INA - RCMNS symposium will be organized in Utrecht, Holland, probably in the early spring of 1983. The general theme of the symposium would be "Approaches to marine microfossil paleoenvironmental analyses". The key-words of the symposium will be (paleo)ecological methods, Neogene, Mediterranean, but we intend to have some additional round-table discussions or workshops on specific calcareous nannoplankton problems in a wider framework, before the joint meeting. We are very interested in your opinion on these ideas, and therefore inserted a fourth questionnary.

DUES 1982

As Shirley van Heck declared herself willing to continue her painstaking compilation work for the Newsletter we planned two issues for 1982. If you wish to continue your membership of the INA and to receive these issues, please pay your dues (Hfl.20,-) by cheque or money order before January 1st. to the Secretary/Treasurer.

Ton Romein

Dear INA members,

Have you sent your recent and not so recent papers to Shirley van Heck? If you are one of those who find it easier to use her "Bibliography and taxa of calcareous nannoplankton" than having to find all the literature yourself, you are one of many. If you have sent S. v. Heck your own reprints, you are one of not so many, since too many members seem to think that she has a "hot line" to all editors of all journals at all times. PLEASE check if all your papers back to 1973 have been listed sofar, and send missing references to her as soon as possible (why not with a Christmas Card? - address on front page).

Another problem is sometimes the absence of any indication where a given reprint was published, the name of the journal, the year (and, if possible, the date) of publication. So PLEASE check your reprints before you send them off and make sure, this information is included.

Finally, it would help most of us, if an English, French, Spanish or German title and abstract would accompany Turkish, Russian, Japanese, Chinese etc. papers. Figure captions in another language would often be very beneficial as well.

Katharina Perch-Nielsen

BIBLIOGRAPHY AND TAXA OF CALCAREOUS NANNOPLANKTON

Compiled by Shirley E. van Heck *

New data of the DSDP volumes:
vol. 54: mailing date: Dec. 1980
vol. 55: mailing date: Sept. 1980
vol. 56, 57 pt. 1: mailing date: Nov. 1980
vol. 56, 57 pt. 2: mailing date: Nov. 1980
vol. 59: mailing date: Jan. 1981
vol. 61:printing date: Aug. 1981

Corrections:
A96-2: replace vol. 2 by vol. 1.
A26-1, B37: The subfamily Ahmuellerelloideae which was introduced by MEDD, 1979, had already been introduced by REINHARDT, 1967 (p.165).
A25-8, B47; A60-1, B56: The combination Pontosphaera rimosa (BRAMLETTE & SULLIVAN, 1961) had already been introduced by ROTH & THIERSTEIN, 1972.
A79-2, B62; A42-5, B46: The publication of BYSTRICKA seems to be older, so that Pontosphaera bicaveata (PERCH-NIELSEN, 1967) BYSTRICKA 1979 is the correct citation.

*: Please send your reprints and correspondence to:
Miss S.E. van Heck, Dierenselaan 10, 2573 KH Den Haag, The Netherlands

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Athenagalea robusta HATTNER & WISE 1980; p.57, pl.3, fig.4; S.Carolina (U.S.A.), L.Campanian. Type species of Athenagalea. A104-1

Barringtonella BLACK 1973; p.108. Type species: Barringtonella bulmanii BLACK 1973. A99-7

Barringtonella bulmanii BLACK 1973; pp.108,109, pl.30, fig.6; England, L.Cenomanian. Type species of Barringtonella. A99-7

Barringtonella flabellosa (STRADNER 1968) BLACK 1973; pp.109,110; (ex Zygolithus). A99-7

Bidiscus ignotus (GORKA 1957) LAUER 1972 ssp. cruciatus (BUKRY 1969) HATTNER & WISE 1980; pp.57,58; (ex Bidiscus cruciatus). A104-1

Biscutum arrogans PERCH-NIELSEN 1973; pp.308,309, pl.1, fig.6; Madagascar, Maastrichtian. A108-5

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Blackites perlongus (DEFLANDRE 1954) SHAFIK 1981; p.109; (ex Rhabdolithus). A109-2

Blackites vitreus (DEFLANDRE 1954) SHAFIK 1981; p.109; (ex Rhabdolithus). A109-2

Braarudosphaera hockwoldensis BLACK 1973; pp.90,91, pl.28, fig.8; England, U.Aptian. A99-7

Braarudosphaera primula BLACK 1973; p.91, pl.28, fig.6; England, Albian (Gault). A99-7

Braarudosphaera regularis BLACK 1973; pp.91,92, pl.28, fig.10; England, Albian (Gault). A99-7

Bussonius GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.40; Type species: Staurorhabdus prinsii NOEL 1973 (M). A102-9

Bussonius prinsii (NOEL 1973) GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.40; (ex Staurorhabdus). Type species of Bussonius. A102-9
Invalid ICBN Art.33.2.

Calciopappus rigidus HEIMDAL 1981; In: Heimdal,B.R. & Gaarder,K.R., pp.42,44, pl.2, fig.5; C.Atlantic, Recent. A104-7

Calolithus elongatus BLACK 1973; p.73, pl.24, fig.14; England, M.Albian (L.Gault). A99-7

B67

Acaenolithus BLACK 1973; pp.56,57. Type species: Acaenolithus cenomanicus BLACK 1973. A99-7

Acaenolithus cenomanicus BLACK 1973; p.57, pl.21, fig.10; England, L.Cenomanian. Type species of Acaenolithus. A99-7

Acaenolithus galloisii BLACK 1973; pp.57,58, pl.21, fig.14; England, U.Aptian. A99-7

Acaenolithus undatus BLACK 1973; pp.58,59, pl.21, fig.2; England, M.Albian (L.Gault). A99-7

Acaenolithus vimineus BLACK 1973; p.59, pl.20, fig.12; England, U.Albian (U.Gault). A99-7

Acanthoica maxima HEIMDAL 1981; In: Heimdal,B.R. & Gaarder, K.R., p.39, pl.1, fig.2; C.Atlantic, Recent. A104-7

Alfordia BLACK 1975; p.125. Type species: Rhabdolithina ampla BLACK 1971. A99-8

Alfordia ampla (BLACK 1971) BLACK 1975; p.125; (ex Rhabdolithina). Type species of Alfordia. A99-8

Alfordia angusta (STRADNER 1963) BLACK 1975; pp.125,126; (ex Rhabdolithus). A99-8

Alfordia clavulus (BLACK 1971) BLACK 1975; pp.125,126; (ex Rhabdolithina). A99-8
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Alfordia excavata (BLACK 1971) BLACK 1975; pp.125,126; (ex Rhabdolithina). A99-8

Alfordiaceae BLACK 1975 (family); p.125. A99-8

Alisphaera capulata HEIMDAL 1981; In: Heimdal,B.R. & Gaarder,K.R., pp.39,40, pl.1, fig.4; C.Atlantic, Recent. A104-7

Amphizygus microminutus HATTNER & WISE 1980; pp.56,57, pl.2, fig.1; S.Carolina (U.S.A.), L.Campanian. A104-1

Angulolithina BUKRY 1973; p.675. Type species: Angulolithina arca BUKRY 1973. A100-2

Angulolithina arca BUKRY 1973;p.675, pl.1, fig.2-3; Pacific C. (DSDP Site 158), U.Miocene. Type species of Angulolithina. A100-2

Apertius GOY 1979; In: Goy,G., Noel,D.& Busson,G., p.40. Type species: Apertius dorei GOY 1979 (M). A102-9

Apertius dorei GOY 1979; In: Goy,G., Noel,D. & Busson,G, p.40, pl.2, fig.6; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Apertius. A102-9

B69 Calolithus formosus BLACK 1973; pp.73,74, pl.24, fig.9; England, M.Albian (L.Gault). A99-7

Calyculaceae NOEL 1973 (family); p.115 A107-6

Calyculus NOEL 1973; p.115. Type species: Calyculus cribrum NOEL 1973. A107-6

Calyculus adjunctus GOY 1979; In: Goy,G., Noel,D. & Busson, G., p.42, pl.5, fig.2; France (Paris Basin), L.Toarcian (L.Jurassic). A102-9

Calyculus cribrum NOEL 1973; p.116, pl.12, fig.1; France, L.Toarcian (L.Jurassic). Type species of Calyculus. A107-6

Calyptrolithophora HEIMDAL 1980; In: Heimdal,B.R. & Gaarder, K.R., p.2; Type species: Calyptrosphaera papillifera HALLDAL 1953. A104-6

Calyptrolithophora gracillima (KAMPTNER 1941) HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., p.2; (ex Calyptrosphaera). A104-6

Calyptrolithophora hasleana (GAARDER 1962) HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., p.2; (ex Corisphaera). A104-6

Calyptrolithophora papillifera (HALLDAL 1953) HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., pp.2,3. (ex Calyptrosphaera). Type species of Calyptrolithophora. A104-6

Caneosphaera halldalii (GAARDER 1971) GAARDER & HEIMDAL 1977 f. dilatata HEIMDAL 1981; In: Heimdal,B.R. & Gaarder, K.R., p.44, pl.2, fig.9; Atlantic C., Recent. A104-7

Catillus GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.43; Type species: Catillus hommerili GOY 1979 (M). A102-9

Catillus hommerili GOY 1979; In: Goy,G., Noel,D. & Busson, G., p.43, pl.5, fig.4; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Catillus. A102-9

Ceratolithus bizarrus BUKRY 1973; p.676, pl.1, figs.7-8; Atlantic C., L.Pliocene. A100-2

Ceratolithus dentatus BUKRY 1973; p.676, pl.2, figs.1-3; Pacific C (DSDP Site 158), U.Miocene. A100-2

Chiastozygaceae ROOD, HAY & BARNARD 1973 (family); p.370. A108-6

Chiastozygus primitus PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.370, pl.1, fig.8; England, Sinemurian (L.Jurassic). A108-6

Clavodiscoaster aulakos (GARTNER 1967) LOEBLICH & TAPPAN 1973; p.719; (ex Discoaster). Type species of Clavodiscoaster. A106-3

B70 Coccolithus obrutus (PERCH-NIELSEN 1971) BUKRY 1973; p.677; (ex Ericsonia). A100-2

Coptolithus BLACK 1973; p.75. Type species: Coptolithus virgatus BLACK 1973. A99-7

Coptolithus virgatus BLACK 1973; p.75, pl.25, fig.9; England, M.Albian (L.Gault). Type species of Coptolithus. A99-7

Corisphaera multipora GAARDER 1980; In: Heimdal,B.R. & Gaarder,K.R., pp.3,4, pl.1, fig.7; Gulf of Mexico, Recent. A104-6

Corisphaera wettsteinii (KAMPTNER 1937) GAARDER 1980; In: Heimdal,B.R. & Gaarder,K.R., pp.4,6; (ex Zygosphaera). A104-6

Corollithion? completum PERCH-NIELSEN 1973; p.310, pl.3, fig.8; Madagascar, Maastrichtian. A108-5

Corollithion fractum BLACK 1973; p.94, pl.29, fig.14; England, U.Albian (U.Gault). A99-7

Corollithion? madagaskarensis PERCH-NIELSEN 1973; p.311, pl.2, fig.9; Madagascar, Maastrichtian. A108-5

Crepidolithus cavus PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.375, pl.2, fig.5; England, L.Pliensbachian (L.Jurassic). A108-9

Crepidolithus crucifer PRINS 1969 ex ROOD,HAY & BARNARD 1973; pp.374,375, pl.2, fig.4; England, L.Pliensbachian (L.Jurassic). A108-9

Cretarhabdus angustiforatus (BLACK 1971) BUKRY 1973; p.677; (ex Retecapsa). A100-2

Cretarhabdus cantianus BLACK 1973; pp.51,52, pl.18, fig.14; England, M.Albian (L.Gault). A99-7

Cretarhabdus leporarii BLACK 1973; pp.52,53, pl.18, fig.2; England, L.Cenomanian. A99-7

Cretarhabdus striatus (STRADNER 1963) BLACK 1973; p.53; (ex Arkhangelskiella). A99-7

Cretarhabdus striatus (STRADNER 1963) BLACK 1973 ssp. bukryi BLACK 1973; p.55. holotype: Bukry 1969, pl.15, fig.3; Texas (U.S.A.), L.Campanian. A99-7

Cretarhabdus striatus (STRADNER 1963) BLACK 1973 ssp. magnus BLACK 1973; pp.54,55, pl.17, fig.5; England, M.Albian (L.Gault). A99-7

Cretarhabdus triforatus BLACK 1973; pp.55,56, pl.19, fig.1; England, M.Albian (L.Gault). A99-7

Cribricatillus BLACK 1973; pp.59,60; Type species: Cribricatillus textus BLACK 1973. A99-7

B71

Cribricatillus clathratus BLACK 1973; p.60, pl.20, fig.2; England, U.Albian (U.Gault). A99-7

Cribricatillus robustus BLACK 1973; p.60, pl.20, fig.14; England, U.Albian (U.Gault). A99-7

Cribricatillus textus BLACK 1973; pp.60,61, pl.20, fig. 4; England, U.Albian (U.Gault). Type species of Cribricatillus. A99-7

Cribrocorona PERCH-NIELSEN 1973; p.312; Type species: Coccolithus gallicus STRADNER 1963. A108-5

Cribrocorona gallica (STRADNER 1963) PERCH-NIELSEN 1973; pp.312,313; (ex Coccolithus). Type species of Cribrocorona. A108-5

Cribrosphaerella? daniae PERCH-NIELSEN 1973; pp.313,314, pl.1, fig.2; Denmark, Maastrichtian. A108-5

Cribrosphaerelloideae TAPPAN 1980 (subfamily); p.781. A109-9

Cricosphaera roscoffensis (DANGEARD 1934) GAYRAL & FRESNEL 1976; p.350 (ex Syracosphaera). A102-4

Crucicribrum BLACK 1973; pp.61,62. Type species: Crucicribrum anglicum BLACK 1973. A99-7

Crucicribrum anglicum BLACK 1973; p.62, pl.22, fig.15; England, M.Albian (L.Gault). Type species of Crucicribrum. A99-7

Crucicribrum cuniculatum BLACK 1973; pp.62,63, pl.22, fig.10; England, U.Albian (U.Gault). A99-7

Cruciplacolithus hayi BLACK 1973; pp.66,67, pl.23, fig.9; England, U.Albian (U.Gault). A99-7

Crucirhabdus PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.367. Type species: Crucirhabdus primulus PRINS 1969 ex ROOD, HAY & BARNARD 1973. A108-9

Crucirhabdus primulus PRINS 1969 ex ROOD,HAY & BARNARD 1973; pp.367,368, pl.1, fig.1; England, U.Sinemurian (L.Jurassic). Type species of Crucirhabdus. A108-9

Crucirhabdus prinsii ROOD, HAY & BARNARD 1973; p.368, pl.1, fig.3; England, L.Pliensbachian (L.Jurassic). A108-9

Crystallolithus rigidus GAARDER 1980; In: Heimdal,B.R. & Gaarder,K.R., pp.6,7, pl.2, fig.11; Atlantic C, Recent. A104-6

Cyclagelosphaera casarubrensis BLACK 1973; p.76, pl.25, fig.2; England, M.Albian (L.Gault). A99-7

Cyclagelosphaera puncta BLACK 1973; p.76, pl.25, fig.13; England, M.Albian (L.Gault). A99-7

B72

Cyclagelosphaera rotans BLACK 1973; p.77, pl.25, fig.11; England, M.Albian (L.Gault). A99-7

Cyclagelosphaera shenleyensis BLACK 1973; p.78, text-fig. 39; England, L.Albian. A99-7

Cyclicargolithus abisectus (MÜLLER 1970) BUKRY 1973; p.703. (ex Coccolithus?). A100-1
Combination had already been introduced by WISE 1973. *C-6

Cyclicargolithus pseudogammation (BOUCHÉ 1962) BUKRY 1973; p.677 (ex Coccolithus?). A100-2

Cyclolithella taiwanea CHEN 1980; p.139, pl.8, fig.2. Pacific N., Holocene. A100-6

Cycloperfolithus LEHOTAYOVA & PRIEWALDER 1978; pp.486,487. Type species: Cycloperfolithus carlae LEHOTAYOVA & PRIEWALDER 1978. A106-2

Cycloperfolithus carlae LEHOTAYOVA & PRIEWALDER 1978; pp.487,489, pl.10, fig.1; Czechoslowakia, M.Badenian (M.Miocene). Type species of Cycloperfolithus. A106-2

Cyclindralithus duplex PERCH-NIELSEN 1973; p.314, pl.5, fig.5; Madagascar, Maastrichtian. A108-5

Cylindralithus laffittei (NOEL 1957) BLACK 1973; pp.95,96; (ex Stephanolithion). A99-7

Cylindralithus oweinae PERCH-NIELSEN 1973; pp.314,315, pl.4, fig.8; Egypt, Maastrichtian. A108-5

Deflandrius avitus BLACK 1973; pp.84,85, pl.27, fig.11; England, M.Albian (L.Gault). A99-7

Deflandrius implumis BLACK 1973; pp.86,87, pl.27, fig.2; England, Albian (Gault). A99-7

Diadorhombus duedecostatus GOY 1979; In: Goy,G.,.Noel,D. & Busson,G., p.41, pl.3, fig.5; France (Paris Basin), L.Toarcian (L.Jurassic). A102-9

Dictyococcites parvidentatus (DEFLANDRE & FERT 1954) BLACK 1973; pp.67,68; (ex Discolithus). A99-7
*C-7

Diductius GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.40. Type species: Diductius constans GOY 1979 (M). A102-9

Diductius constans GOY 1979; In: Goy,G., Noel,D. & Busson,G, p.40, pl.2, fig.7; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Diductius. A102-9

Dilatatius GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.40; Type species: Dilatatius unus GOY 1979 (M). A102-9

B73

Dilatatius unus GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.40, pl.2, fig.8; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Dilatatius.	A102-9
Discoaster decorus (BUKRY 1971) BUKRY 1973; p.677; (ex Discoaster variabilis).	A100-2
Discoaster istanbulensis SADEK & ÖZER 1981; p.44, pl.1, fig.1; Turkey, Eocene.	A108-10
Discoaster nodifer (BRAMLETTE & RIEDEL 1954) BUKRY 1973; p.678 (ex Discoaster tani).	A100-2
Discoaster pansus (BUKRY & PERCIVAL 1971) BUKRY 1973; p.678 (ex Discoaster variabilis).	A100-2
Discoaster turkiensis SADEK & ÖZER 1981; pp.44,45, pl.1, fig.3; Turkey, Eocene.	A108-10
Discolithina syracusana (LOHMANN 1902) CHEN 1980; p.141 (ex Pontosphaera).	A100-6
Discorhabdaceae NOEL 1973 (family); p.116.	A107-6
Discorhabdus biperforatus ROOD, HAY & BARNARD 1973; p.381, pl.3, fig.7; France, Bathonian (M.Jurassic).	A108-9
Discorhabdus biradiatus (WORSLEY 1971) THIERSTEIN 1973; p.42 (ex Rucinolithus?).	A110-1
Discorhabdus rotatorius (BUKRY 1969) THIERSTEIN 1973; p.42 (ex Bidiscus).	A110-1
Eiffellithus parallelus PERCH-NIELSEN 1973; pp.315,316, pl.6 fig.4; Madagascar, Maastrichtian.	A108-5
Ellipsagelosphaera arata BLACK 1973; pp.69,70, pl.26, fig.2; England, M.Albian (L.Gault).	A99-7
Ellipsagelosphaera ovata (BUKRY 1969) BLACK 1973; pp.71,72 (ex Watznaueria).	A99-7
Ellipsagelosphaera reinhardtii (ROOD,HAY & BARNARD 1971) NOEL 1973; p.120 (ex Watznaueria).	A107-6
Emiliania ovata BUKRY 1973; p.678, pl.2, fig.10; C.Pacific (DSDP Site 62), Pleistocene.	A100-2
Eprolithaceae BLACK 1973 (family); p.99.	A99-7
Eprolithus apertior BLACK 1973; pp.100,101, pl.3, fig.10; England, M.Albian (L.Gault).	A99-7
Ethmorhabdus crucifer NOEL 1973; p.112, pl.7, fig.8; France, L.Toarcian (L.Jurassic).	A107-6

B74 Flabellites THIERSTEIN 1973; p.41. Type species: Flabellites biforaminis THIERSTEIN 1973. A110-1

Flabellites biforaminis THIERSTEIN 1973; p.41, pl.5, figs. 1-4; C.Atlantic (DSDP Site 137), U.Albian. Type species of Flabellites. A110-1

Florisphaera profunda OKADA & HONJO 1973 var. elongata OKADA & McINTYRE 1980; p.81. A107-7

Gaarderella BLACK 1973; p.65. Type species: Gaarderella granulifera BLACK 1973. A99-7

Gaarderella granulifera BLACK 1973; pp.65,66, pl.19, fig.11; England, M.Albian (L.Gault). Type species of Gaarderella. A99-7

Gephyrocapsa doronicoides (BLACK & BARNES 1961) BUKRY 1973; p.678 (ex Coccolithus). A100-2

Gephyrocapsa florencia LOHMAN & ELLIS 1981; p.391, pl.1, fig.1; Mediterranean (DSDP Site 376), L.Pleistocene. A106-4

Gephyrocapsa lumina BUKRY 1973; p.678, pl.3, figs.1,2; Pacific C. (DSDP Site 157), Pleistocene. A100-2

Gephyrocapsa omega BUKRY 1973; p.679, pl.3, figs.10,11; Atlantic C. (DSDP Site 147), Pleistocene. A100-2

Gephyrocapsa oceanica KAMPTNER 1943 ssp. lumina (BUKRY 1973) CHEN 1980; p.140 (ex Gephyrocapsa lumina). A100-6

Gephyrocapsa oceanica KAMPTNER 1943 ssp. omega (BUKRY 1973) CHEN 1980; p.140 (ex Gephyrocapsa omega). A100-6

Haslingfieldia BLACK 1973; p.110. Type species: Haslingfieldia stradneri BLACK 1973. A99-7

Haslingfieldia stradneri BLACK 1973; pp.110,111, pl.30, fig.14; England, L.Cenomanian. Type species of Haslingfieldia. A99-7

Helicosphaera mediterranea MÜLLER 1981; p.428, pl.1, fig.14; Corsica (France), L.Miocene. A106-8

Helicosphaera minuta MÜLLER 1981; pp.428,429, pl.1, fig.2; Philippines (Cebu), M.Miocene. A106-8

Helicosphaera philippensis MÜLLER 1981; p.429, pl.1, fig.8; Philippines (Cebu), M.Miocene. A106-8

Helladosphaera poritectum HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., p.7, pl.2, fig.15; Atlantic C., Recent. A104-6

Heterorhabdus primitivus PERCH-NIELSEN 1973; pp.316,317, pl.1, fig.8; Madagascar, Maastrichtian. A108-5

B75 Homozygosphaera halldalii GAARDER 1980; In: Heimdal,B.R. & Gaarder,K.R., p.7; Mediterranean, Recent. Invalid ICBN Arts. 32, 36-2. A104-6 *C-8

Hymenomonas globosa (MAGNE 1954) GAYRAL & FRESNEL 1976; p.354 (ex Pontosphaera). A102-4

Incerniculum GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.42. Type species: Incerniculum absolutum GOY 1979 (M). A102-9

Incerniculum absolutum GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.42, pl.4, fig.6.; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Incerniculum. A102-9

Laminolithus HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., p.8. Type species: Zygosphaera hellenica KAMPTNER 1937. A104-6

Laminolithus bannockii (BORSETTI & CATI 1976) HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., p.8 (ex Sphaerocalyptra). A104-6

Laminolithus hellenicus (KAMPTNER 1937) HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., p.8 (ex Zygosphaera). Type species of Laminolithus. A104-6

Laminolithus marsilii (BORSETTI & CATI 1976) HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., pp.8,10 (ex Sphaerocalyptra). A104-6

Lithastrinaceae THIERSTEIN 1973 (family); p.44. A110-1

Lithastrinus? stradneri PERCH-NIELSEN 1973; p.317, pl.5, fig.7; Madagascar, Maastrichtian. A108-5

Lithraphidites bollii (THIERSTEIN 1971) THIERSTEIN 1973; p.45 (ex Microrhabdulus). A110-1

Lotharingiaceae NOEL 1973 (family); pp.113,114. A107-6

Lotharingius NOEL 1973; p.114. Type species: Lotharingius barozii NOEL 1973. A107-6

Lotharingius barozii NOEL 1973; pp.114,115, pl.11, fig.3; France, L.Toarcian (L.Jurassic). Type species of Lotharingius. A107-6

Lucasella GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.41. Type species: Lucasella majorcentralis GOY 1979 (M). A102-9

Lucasella majorcentralis GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.42, pl.3, fig.8; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Lucasella. A102-9

Lucianorhabdus windii HATTNER & WISE 1980; p.65, pl.25, fig.4; S.Carolina (U.S.A.), L.Campanian. A104-1

B76 Manivitella gronosa (STOVER 1966) BLACK 1973; p.79 (ex Cyclolithus). A99-7

Manivitella pecten BLACK 1973; pp.79,80, pl.23, fig.7; England, M.Albian (L.Gault). A99-7

Margolatus bornholmensis (FORCHHEIMER 1970) BLACK 1973; pp.81,82 (ex Coccolithus). A99-7

Markalius perforatus PERCH-NIELSEN 1973; pp.317,318, pl.1, fig.9; Madagascar, Maastrichtian. A108-5

Microrhabdulus undosus PERCH-NIELSEN 1973; pp.318,319, pl.10, fig.1; Madagascar, Maastrichtian. A108-5

Micula infracretacea THIERSTEIN 1973; p.46, pl.1, figs.5-9; C.Atlantic (DSDP Site 4), Hauterivian (L.Cretaceous). A110-1

Micula murus (MARTINI 1961) BUKRY 1973; p.679 (ex Tetralithus). A100-2

Minylitha BUKRY 1973; p.679. Type species: Minylitha convallis BUKRY 1973. A100-2

Minylitha convallis BUKRY 1973; p.679, pl.3, figs.14,15; S.Atlantic (DSDP Site 15), U.Miocene. Type species of Minylitha. A100-2

Nannotetrina mexicana (STRADNER 1959) BUKRY 1973; p.703 (ex Trochoaster). A100-1
Combination had already been introduced by ROTH 1973. *C-9

Nannotetrina quadrata (BRAMLETTE & SULLIVAN 1961) BUKRY 1973; p.703 (ex Chiphragmalithus). A100-1

Nannotetrina spinosa (STRADNER 1960) BUKRY 1973; p.703 (ex Nannotetraster). A100-1

Neochiastozygus antiquus PERCH-NIELSEN 1973; p.319, pl.3, fig.1; Madagascar, Maastrichtian. A108-5

Nodosella PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.371. Type species: Nodosella clatriata PRINS 1969 ex ROOD, HAY & BARNARD 1973. A108-9

Nodosella clatriata PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.371, pl.1, fig.9; England, U.Toarcian (L.Jurassic). Type species of Nodosella. A108-9

Palaeopontosphaera nova GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.42, pl.4, fig.5; France (Paris Basin), L.Toarcian (L.Jurassic). A102-9

Palaeopontosphaera veterna PRINS 1969 ex ROOD, HAY & BARNARD 1973; pp.378,379, pl.3, fig.2; France, Bathonian (M.Jurassic). A108-9

B77 Pedinocyclus larvalis (BUKRY & BRAMLETTE 1969) LOEBLICH & TAPPAN 1973; p.738 (ex Leptodiscus). Type species of Pedinocyclus. A106-3

Percivaliaceae BLACK 1973 (family); p.105. A99-7

Percivalia hauxtonensis BLACK 1973; pp.105,106, pl.31, fig.12; England, L.Cenomanian. A99-7

Percivalia hintonensis BLACK 1973; p.106, pl.31, fig.6; England, L.Cenomanian. A99-7

Percivalia tessellata BLACK 1973; p.107, pl.31, fig.9; England, U.Albian (U.Gault). A99-7

Podorhabdus? altus PERCH-NIELSEN 1973; p.320, pl.3, fig.7; Madagascar, Maastrichtian. A108-5

Podorhabdus atavus (GRÜN, PRINS & ZWEILI 1974) GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.41 (ex Staurorhabdus?). Invalid ICBN Art.33.2. A102-9

Podorhabdus macrogranulatus PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.377, pl.2, fig.7; England, U.Toarcian (L.Jurassic). A108-9

Polypodorhabdus arctus NOEL 1973; pp.110,111, pl.8, fig.6; France, L.Toarcian (L.Jurassic). A107-6

Prediscosphaera bukryi PERCH-NIELSEN 1973; pp.320,321, pl.7, fig.6; Egypt, Maastrichtian. A108-5

Prediscosphaera lata (BUKRY 1969) BUKRY 1973; p.679 (ex Prediscosphaera cretacea). A100-2

Prediscosphaera majungae PERCH-NIELSEN 1973; pp.321,322 pl.8, fig.1; Madagascar, Maastrichtian. A108-5

Prediscosphaera microrhabdulus PERCH-NIELSEN 1973; pp.322, 323, pl.1, fig.2; Madagascar, Maastrichtian. A108-5

Radiodiscoaster gemmeus (STRADNER 1959) PRINS 1971 ssp. helianthus (BRAMLETTE & SULLIVAN 1961) LOEBLICH & TAPPAN 1973; p.740 (ex Discoaster helianthus) Invalid ICBN Art. 43. A106-3 *C-10

Radiodiscoaster (Curvidiscoaster) lodoensis (BRAMLETTE & RIEDEL 1954) LOEBLICH & TAPPAN 1973; p.723 (ex Discoaster). Type species of Curvidiscoaster. A106-3

Radiolithus brotzenii (FORCHHEIMER 1968) BLACK 1973; p.102 (ex Polycyclolithus). A99-7

Radiolithus munitus BLACK 1973; pp.102,103, pl.33, fig.8; England, U.Albian (U.Gault). A99-7

B78

Rectilius GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.41. Type species: Rectilius productus GOY 1979 (M).	A102-9
Rectilius productus GOY 1979; In: Goy,G., Noel,D & Busson,G., p.41, pl.3, fig.4; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Rectilius.	A102-9
Reticulofenestra pacifica NISHIDA 1979; p.106,pl.1, fig.4; Japan, U.Pliocene.	A107-3
Reticulofenestra scrippsae (BUKRY & PERCIVAL 1971) SHAFIK 1981; p.113 (ex Dictyococcites). Combination had already been introduced by ROTH 1973.	A109-2
Rhagodiscus reniformis PERCH-NIELSEN 1973; p.323, pl.3, fig.2; Madagascar, Maastrichtian.	A108-9
Rhombogyrus BLACK 1973; p.103. Type species: Rhombogyrus caliciformis BLACK 1973.	A99-7
Rhombogyrus caliciformis BLACK 1973; pp.103,104, pl.33, fig.2; England, M.Albian (L.Gault). Type species of Rhombogyrus.	A99-7
Rhombogyrus stellatus BLACK 1973; p.104, pl.32, fig.5; England, M.Albian (L.Gault).	A99-7
Rhombogyrus undosus BLACK 1973; pp.104,105, pl.32, fig.10; England, M.Albian (L.Gault).	A99-7
Rhombolithion BLACK 1973; p.97. Type species: Zygolithus rhombicus STRADNER & ADAMIKER 1966.	A99-7
Rhombolithion rhombicum (STRADNER & ADAMIKER 1966) BLACK 1973; p.97 (ex Zygolithus). Type species of Rhombolithion.	A99-7
Rhombozygus SHUMENKO 1975; p.129. Type species: Zygolithus egregius SHUMENKO 1969.	A109-4 *C-11
Rhombozygus egregius (SHUMENKO 1969) SHUMENKO 1975; p.130 (ex Zygolithus). Type species of Rhombozygus.	A109-4 *C-11
Rhombozygus elongatus (STOVER 1966) SHUMENKO 1975; p.130 (ex Parhabdolithus).	A109-4 *C-11
Rhombozygus macleodae (BUKRY 1969) SHUMENKO 1975; p.130 (ex Zygodiscus).	A109-4 *C-11
Rhombozygus parvus SHUMENKO 1975; p.130, pl.1, fig.5; U.S.S.R., Cenomanian?, Coniacian?.	A109-4 *C-11
Rhombozygus tarboulensis (SHAFIK & STRADNER 1971) SHUMENKO 1975; p.130 (ex Zygodiscus).	A109-4 *C-11
Rotelapillus NOEL 1973; p.107. Type species: Rotelapillus radians NOEL 1973.	A107-6

B79 Rotelapillus radians NOEL 1973; p.107, pl.4, fig.2; France, U.Kimmeridgian (U.Jurassic). Type species of Rotelapillus. A107-6

Saeptella GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.39; Type species: not indicated. Invalid ICBN Art.37. A102-9

Saeptella conspicua GOY 1979; In: Goy,G., Noel,D. & Busson, G., p.39, pl.1, fig.4; France (Paris Basin), L.Toarcian (L.Jurassic). Invalid ICBN Art.43. A102-9

Saeptella vicina GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.39, pl.1, fig.6; France (Paris Basin), L.Toarcian (L.Jurassic). Invalid ICBN Art.43. A102-9

Semihololithus bicornis PERCH-NIELSEN 1973; p.324, pl.9, fig.2; Madagascar, Maastrichtian. A108-5

Semihololithus priscus PERCH-NIELSEN 1973; pp.324,325, pl.9, fig.1; Madagascar, Maastrichtian. A108-5

Sollasites pristinus NOEL 1973; p.113, pl.10, fig.3; France, L.Toarcian (L.Jurassic). A107-6

Sphenolithus delphix BUKRY 1973; p.679, pl.3, figs.19-21; C.Pacific (DSDP Site 159), L.Miocene. A100-2

Staurolithites aachenus (BUKRY 1969) BLACK 1975; p.118 (ex Vagalapilla). Invalid ICBN Art.33.2. A99-8

Staurolithites dorfii (BUKRY 1969) BLACK 1975; p.118 (ex Vagalapilla). Invalid ICBN Art.33.2. A99-8

Staurolithites ellipticus (GARTNER 1968) BLACK 1975; p.118 (ex Vagalapilla). Invalid ICBN Art.33.2. A99-8

Staurolithites floralis PERCH-NIELSEN 1973; p.325, pl.2, fig.3; Madagascar, Maastrichtian. A108-5

Staurolithites imbricatus (GARTNER 1968) BLACK 1975; p.118 (ex Vekshinella). Invalid ICBN Art.33.2. A99-8

Staurorhabdus NOEL 1973; p.100; Type species: Discolithus quadriarcullus NOEL 1965. A107-6

Staurorhabdus prinsii NOEL 1973; pp.100,101, pl.2, fig.9; France, L.Toarcian (L.Jurassic). A107-6

Staurorhabdus quadriarcullus (NOEL 1965) NOEL 1973; pp.101, 102 (ex Discolithus). Type species of Staurorhabdus. A107-6

B80 Staurorhabdus socius GOY 1979; In: Goy,G., Noel,D. & Busson, G., p.39, pl.1, fig.3; France (Paris Basin), L.Toarcian (L.Jurassic). A102-9

Stephanolithion munitum PERCH-NIELSEN 1973; p.326, pl.2, fig.7; Madagascar, Maastrichtian. A108-5

Stradnerlithus bifurcatus NOEL 1973; p.105, pl.2, fig.8; France, U.Kimmeridgian (U.Jurassic). A107-6

Stradnerlithus clatriatus (ROOD, HAY & BARNARD 1973) GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.41 (ex Nodosella). Invalid ICBN Art.33.2. A102-9

Stradnerlithus humilis GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.41, pl.3, fig.1; France (Paris Basin), L.Toarcian (L.Jurassic). A102-9

Stradnerlithus pauciramosus BLACK 1973; pp.98,99, text-fig. 47; England, Hauterivian (L.Cretaceous). A99-7

Stradnerlithus rhombicus (STRADNER & ADAMIKER 1966) NOEL 1973; p.106 (ex Zygolithus). A107-6

Stradnerlithus tortuosus NOEL 1973; p.106, pl.3, fig.1; France, U.Kimmeridgian (U.Jurassic). A107-6

Striatomarginis PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.379. Type species: Striatomarginis primitivus ROOD, HAY & BARNARD 1973. A108-9

Striatomarginis primitivus ROOD,HAY & BARNARD 1973; pp.379, 380, pl.3, fig.4; England, U.Toarcian (L.Jurassic. Type species of Striatomarginis. A108-9

Syracolithus quadriperforatus (KAMPTNER 1937) GAARDER 1980; In: Heimdal,B.R. & Gaarder,K.R., pp.10,12 (ex Syracosphaera). A104-6

Tetralithus multiplus PERCH-NIELSEN 1973; pp.326,327, pl.9, fig.7; Madagascar, Maastrichtian. A108-5

Tetralithus trifidus (STRADNER 1961) BUKRY 1973; p.680 (ex Tetralithus gothicus). A100-2

Truncodiscoaster adamanteus (BRAMLETTE & WILCOXON 1967) LOEBLICH & TAPPAN 1973; p.744 (ex Discoaster). Type species of Truncodiscoaster. A106-3

Tubirhabdus PRINS 1969 ex ROOD, HAY & BARNARD 1973; p.373 Type species: Tubirhabdus patulus PRINS 1969 ex ROOD, HAY & BARNARD 1973. A108-9

Tubirhabdus patulus PRINS 1969 ex ROOD, HAY & BARNARD 1973; pp.373,374, pl.2, fig.3; England, L.Pliensbachian (L.Jurassic). Type species of Tubirhabdus. A108-9

B81 Tubodiscus THIERSTEIN 1973; p.42. Type species: Tubodiscus verenae THIERSTEIN 1973. A110-1

Tubodiscus verenae THIERSTEIN 1973; pp.42,43, pl.2, figs. 1,2,4-7; C.Atlantic (DSDP Site 5A), Valanginian (L.Cretaceous). Type species of Tubodiscus. A110-1

Turbodiscoaster tanii (BRAMLETTE & RIEDEL 1954) LOEBLICH & TAPPAN 1973; p.745 (ex Discoaster). Type species of Turbodiscoaster. A106-3

Umbellosphaera corolla (LECAL 1965) GAARDER 1981; In: Heimdal,B.R. & Gaarder,K.R., p.62. (ex Syracosphaera (Syracolithus)). A104-7

Umbilicosphaera laxa (KAMPTNER 1963) CHEN 1980; p.139 (ex Tiarolithus). A100-6

Uniplanarius HATTNER & WISE 1980; pp.67,68. Type species: Tetralithus gothicus DEFLANDRE 1959. A104-1

Uniplanarius gothicus (DEFLANDRE 1959) HATTNER & WISE 1980; p.68 (ex Tetralithus). Type species of Uniplanarius. Invalid ICBN Art.33.2. A104-1

Uniplanarius trifidus (STRADNER 1961) HATTNER & WISE 1980; p.68 (ex Tetralithus gothicus). A104-1

Vacherauvillius GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.39. Type species: not indicated. Invalid ICBN Art.37. A102-9

Vacherauvillius implicatus GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.39, pl.1, fig.7; France (Paris Basin), L.Toarcian (L.Jurassic). Invalid ICBN Art.43. A102-9

Vacherauvillius infrequens GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.39, pl.1, fig.8; France (Paris Basin), L.Toarcian (L.Jurassic). Invalid ICBN Art.43. A102-9

Vagalapilla matalosa (STOVER 1966) THIERSTEIN 1973; pp.37,38 (ex Coccolithus). A110-1

Vagalapilla stradneri (ROOD, HAY & BARNARD 1971) THIERSTEIN 1973; p.38 (ex Vekshinella). A110-1

Vekshinella dentata (BUKRY 1969) HATTNER & WISE 1980; p.68 (ex Vagalapilla). A104-1

Vekshinella minuta HATTNER & WISE 1980; p.68,pl.33, figs.3, 4; S.Carolina (U.S.A.), L.Campanian. A104-1

B82

Vikosphaera GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.42. Type species: Vikosphaera noeliae GOY 1979 (M).	A102-9
Vikosphaera noeliae GOY 1979; In: Goy,G., Noel,D. & Busson, G., p.42, pl.4, fig.7; France (Paris Basin), L.Toarcian (L.Jurassic). Type species of Vikosphaera.	A102-9
Vikosphaera noeliae GOY 1979 ssp. depressa GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.42, pl.4, fig.7, pl.5, fig.1 France (Paris Basin), L.Toarcian (L.Jurassic). Invalid ICBN Art.37.	A102-9 *C-12
Vikosphaera noeliae GOY 1979 ssp. recondita GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.42, pl.4, fig.7, pl.5, fig.1 France (Paris Basin), L.Toarcian (L.Jurassic). Invalid ICBN Art.37.	A102-9 *C-12
Viminites BLACK 1975; p.126. Type species: Rhabdolithina swinnertonii BLACK 1971.	A99-8
Viminites swinnertonii (BLACK 1971) BLACK 1975; p.126 (ex Rhabdolithina). Type species of Viminites.	A99-8
Zeugrhabdotus buroletti GOY 1979; In: Goy,G., Noel,D. & Busson,G., p.39, pl.1, fig.1; France (Paris Basin), L.Toarcian (L.Jurassic).	A102-9
Zeugrhabdotus choffati ROOD, HAY & BARNARD 1973; pp.369,370, pl.1, fig.7; France, Bathonian (M.Jurassic).	A108-9
Zeugrhabdotus reticulatus (BLACK 1971) BLACK 1973; p.112 (ex Zygodiscus).	A99-7
Zeugrhabdotus theta (BLACK 1959) BLACK 1973; p.112 (ex Discolithus).	A99-7
Zygodiscus abbottii HATTNER & WISE 1980; p.68, pl.35, fig.8; S.Carolina (U.S.A.), L.Campanian.	A104-1
Zygodiscus bicrescenticus (STOVER 1966) BUKRY 1973; p.680 (ex Discolithus).	A100-2 *C-12
Zygodiscus clubhousensis HATTNER & WISE 1980; p.69, pl.36, figs.3,9; S.Carolina (U.S.A.), L.Campanian.	A104-1
Zygodiscus orionatus (REINHARDT 1966) SMITH 1981; pp.83,84 (ex Discolithus).	A109-6
Zygodiscus pomeroliae PERCH-NIELSEN 1973; pp.327,328, pl.6, fig.1; Madagascar, Maastrichtian.	A108-5
Zygolithites acanthus (REINHARDT 1965) BLACK 1975; p.120 (ex Zeugrhabdotus). Invalid ICBN Art.33.2.	A99-8

B83 Zygolithites bussonii (NOEL 1957) BLACK 1975; p.120 (ex Zygolithus). Invalid ICBN Art.33.2. A99-8

Zygolithites embergeri (NOEL 1959) BLACK 1975; p.120 (ex Discolithus). Invalid ICBN Art.33.2. A99-8

Zygolithites? extenuatus (VEKSHINA 1959) BLACK 1975; p.120 (ex Zygolithus). Invalid ICBN Art.33.2. A99-8

Zygolithites lacunatus (GARTNER 1968) BLACK 1975; p.120 (ex Zygodiscus). Invalid ICBN Art.33.2. A99-8

Zygolithites laurus (GARTNER 1968) BLACK 1975; p.120 (ex Zygodiscus). Invalid ICBN Art.33.2. A99-8

Zygolithites nanus (GARTNER 1968) BLACK 1975; p.120 (ex Zygodiscus). Invalid ICBN Art.33.2. A99-8

Zygolithites ponticulus (DEFLANDRE 1954) BLACK 1975; p.120 (ex Discolithus). Invalid ICBN Art.33.2. A99-8

Zygolithites pseudanthophorus (BRAMLETTE & MARTINI 1964) BLACK 1975; p.120 (ex Zygodiscus). Invalid ICBN Art.33.2. A99-8

Zygolithites salillum (NOEL 1965) BLACK 1975; p.120 (ex Discolithus). Invalid ICBN Art.33.2. A99-8

Zygolithites siphonis (GARTNER 1968) BLACK 1975; p.120 (ex Zygodiscus). Invalid ICBN Art.33.2. A99-8

Zygolithites sisyphus (GARTNER 1968) BLACK 1975; p.120 (ex Zygodiscus). Invalid ICBN Art.33.2. A99-8

Zygolithites spiralis (BRAMLETTE & MARTINI 1964) BLACK 1975; p.120 (ex Zygodiscus). Invalid ICBN Art.33.2. A99-8

Zygolithites stenopous (STOVER 1966) BLACK 1975; p.120 (ex Zygolithus). Invalid ICBN Art.33.2. A99-8

Zygolithites tractus (STOVER 1966) BLACK 1975; p.120 (ex Zygolithus). Invalid ICBN Art.33.2. A99-8

B84	Zygolithites xenotus (STOVER 1966) BLACK 1975; p.120 (ex Zygolithus). Invalid ICBN Art.33.2.	A99-8
	Zygosphaera divergens HALLDAL & MARKALI 1955 f. tuberosa HEIMDAL 1980; In: Heimdal,B.R. & Gaarder,K.R., pp.12,13, pl.3, fig.25; Atlantic N., Recent.	A104-6

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Calcispheres

Calcigonellum polymorphum KEUPP 1980; pp.128,130,131, pl.15, figs.7,8; NW Germany, U.Aptian.	A111-1
Calcigonellum polymorphum KEUPP 1980 ssp. dentatum KEUPP 1980; p.131, pl.15, fig.13; NW Germany, M.Aptian.	A111-1
Calcigonellum polymorphum KEUPP 1980 ssp. tenue KEUPP 1980; pp.131,132, pl.16, figs.2-3; NW Germany, U.Aptian.	A111-1
Echinodinella KEUPP 1980; pp.132,133. Type species: Echinodinella erinacea KEUPP 1980.	A111-1
Echinodinella erinacea KEUPP 1980; pp.133,134, pl.16, fig.7; NW Germany, U.Aptian. Type species of Echinodinella.	A111-1
Echinodinella triangularis KEUPP 1980; pp.134,135, pl.17, figs.10-13; NW Germany, M.Aptian.	A111-1
Pithonella paratabulata KEUPP 1980; pp.242,243, pl.30, fig.1; NW Germany, U.Aptian.	A111-2

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Species names in alphabethical order.

aachenus, Staurolithites*
abbottii, Zygodiscus
abisectus, Cyclicargolithus
absolutum, Incerniculum
acanthus, Zygolithites*
adamanteus, Truncodiscoaster
adjunctus, Calyculus
altus, Podorhabdus?
ampla, Alfordia
anglicum, Crucicribrum
angusta, Alfordia
angustiforatus, Cretarhabdus
antiquus, Neochiastozygus
apertior, Eprolithus
arata, Ellipsagelosphaera
arca, Angulolithina
arctus, Polypodorhabdus
arrogans, Biscutum
atavus, Podorhabdus*
aulakos, Clavodiscoaster
avitus, Deflandrius
bannockii, Laminolithus
barozii,Lotharingius
bicornis, Semihololithus
bicrescenticus, Zygodiscus
biforaminis, Flabellites
bifurcatus, Stradnerlithus
biperforatus, Discorhabdus
biradiatus, Discorhabdus
bizzarus, Ceratolithus
bollii, Lithraphidites
bornholmensis, Margolatus
brotzenii, Radiolithus
bukryi, Prediscosphaera
bulmanii, Barringtonella
buroletti, Zeugrhabdotus
bussonii, Zygolithites*
caliciformis, Rhombogyrus

cantianus, Cretarhabdus
capulata, Alisphaera
carlae, Cycloperfolithus
casarubrensis, Cyclagelosphaera
cavus, Crepidolithus
cenomanicus, Acaenolithus
choffati, Zeugrhabdotus
clathratus, Cribricatillus
clatriata, Nodosella
clatriatus, Stradnerlithus*
clavulus, Alfordia*
clubhousensis, Zygodiscus
completum, Corollithion?
conspicua, Saeptella*
constans, Diductius
convallis, Minylitha
corolla, Umbellosphaera
cribrum, Calyculus
crucifer, Crepidolithus
crucifer, Ethmorhabdus
cuniculatum, Crucicribrum
daniae, Cribrosphaerella?
decorus, Discoaster
delphix, Sphenolithus
dentata, Vekshinella
dentatus, Ceratolithus
divergens f. tuberosa, Zygosphaera
dorei, Apertius
dorfii, Staurolithites*
doronicoides, Gephyrocapsa
duedecostatus, Diadorhombus
duplex, Cylindralithus
egregius, Rhombozygus
ellipticus, Staurolithites*
elongatus, Calolithus
elongatus, Rhombozygus
embergeri, Zygolithites*
erinacea, Echinodinella (C)
excavata, Alfordia
extenuatus, Zygolithites?*
flabellosa, Barringtonella
floralis, Staurolithites
florencia, Gephyrocapsa
formosus, Calolithus
fractum, Corollithion
gallica, Cribrocorona
galloisii, Acaenolithus
gemmeus ssp. helianthus, Radiodiscoaster*
globosa, Hymenomonas
gothicus, Uniplanarius*
gracillima, Calyptrolithophora
granulifera, Gaarderella
gronosa, Manivitella
halldalii f. dilatata, Caneosphaera
halldalii, Homozygosphaera*
hasleana, Calyptrolithophora
hauxtonensis, Percivalia
hayi, Cruciplacolithus
hellenicus, Laminolithus
hintonensis, Percivalia
hockwoldensis, Braarudosphaera
hommerili, Catillus
humilis, Stradnerlithus
ignotus ssp. cruciatus, Bidiscus
imbricatus, Staurolithites*
implicatus, Vacherauvillius*
implumis, Deflandrius
infracretacea, Micula
infrequens, Vacherauvillius*
istanbulensis, Discoaster
lacunatus, Zygolithites*
laffittei, Cylindralithus
larvalis, Pedinocyclus
lata, Prediscosphaera
laurus, Zygolithites*
laxa, Umbilicosphaera
leporarii, Cretarhabdus
lodoensis, Radiodiscoaster (Curvidiscoaster)
lumina, Gephyrocapsa
macleodae, Rhombozygus
macrogranulatus, Podorhabdus
madagaskarensis, Corollithion?
majorcentralis, Lucasella
majungae, Prediscosphaera
marsilii, Laminolithus
matalosa, Vagalapilla
maxima, Acanthoica
mediterranea, Helicosphaera
mexicana, Nannotetrina
microminutus, Amphizygus
microrhabdulina, Prediscosphaera
minuta, Helicosphaera
minuta, Vekshinella
multiplus, Tetralithus
multipora, Corisphaera
munitum, Stephanolithion
munitus, Radiolithus
murus, Micula
nanus, Zygolithites*
nodifer, Discoaster
noeliae, Vikosphaera
noeliae ssp. depressa, Vikosphaera*
noeliae ssp. recondita, Vikosphaera*
nova, Palaeopontosphaera
obrutus, Coccolithus
oceanica ssp. lumina, Gephyrocapsa
oceanica ssp. omega, Gephyrocapsa
omega, Gephyrocapsa
orionatus, Zygodiscus

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ornatum, Biscutum
ovata, Ellipsagelosphaera
ovata, Emiliania
oweinae, Cylindralithus
pacifica, Reticulofenestra
pansus, Discoaster
papillifera, Calyptrolithophora
parallelus, Eiffellithus
paratabulata, Pithonella (C)
parvidentatus, Dictyococcites
parvus, Rhombozygus
patulus, Tubirhabdus
pauciramosus, Stradnerlithus
pecten, Manivitella
perforatus, Markalius
perlongus, Blackites
philippinensis, Helicosphaera
polymorphum, Calcigonellum(C)
polymorphum ssp. dentatum, Calcigonellum (C)
polymorphum ssp.tenue, Calcigonellum (C)
pomeroliae, Zygodiscus
ponticulus, Zygolithites*
poritectum, Helladosphaera
primitivus, Chiastozygus
primitivus, Heterorhabdus
primitivus, Striatomarginis
primula, Braarudosphaera
primulus, Crucirhabdus
prinsii, Bussonius*
prinsii, Crucirhabdus
prinsii, Staurorhabdus
priscus, Semihololithus
pristinus, Sollasites
productus, Rectilius
profunda var. elongata, Florisphaera
pseudanthophorus, Zygolithites*
pseudogammation, Cyclicargolithus
puncta, Cyclagelosphaera
quadrata, Nannotetrina
quadriarcullus, Staurorhabdus
quadriperforatus, Syracolithus
radians, Rotelapillus
regularis, Braarudosphaera
reinhardtii, Ellipsagelosphaera
reniformis, Rhagodiscus
reticulatus, Zeugrhabdotus
rhombicum, Rhombolithion
rhombicus, Stradnerlithus
rigidus, Calciopappus
rigidus, Crystallolithus
robusta, Athenagalea
robustus, Cribricatillus
roscoffensis, Cricosphaera
rotans, Cyclagelosphaera
rotatorius, Discorhabdus
salillum, Zygolithites*
scrippsae, Reticulofenestra
shenleyensis, Cyclagelosphaera
siphonis, Zygolithites*
sisyphus, Zygolithites*
socius, Staurorhabdus
spinosa, Nannotetrina
spiralis, Zygolithites*
stellatus, Rhombogyrus
stenopous, Zygolithites*
stradneri, Haslingfieldia
stradneri, Lithastrinus?
stradneri, Vagalapilla
striatus, Cretarhabdus
striatus ssp. bukryi, Cretarhabdus
striatus ssp. magnus, Cretarhabdus
swinnertonii, Viminites
syracusana, Discolithina
taiwanea, Cyclolithella
tanii, Turbodiscoaster
tarboulensis, Rhombozygus
tessellata, Percivalia
textus, Cribricatillus
theta, Zeugrhabdotus
tortuosus, Stradnerlithus
tractus, Zygolithites*
triangularis, Echinodinella (C)
trifidus, Tetralithus
trifidus, Uniplanarius
triforatus, Cretarhabdus
turkiensis, Discoaster
undatus, Acaenolithus
undosus, Microrhabdulus
undosus, Rhombogyrus
unus, Dilatatius
verenae, Tubodiscus
veterna, Palaeopontosphaera
vicina, Saeptella*
vimineus, Acaenolithus
virgatus, Coptolithus
vitreus, Blackites
wettsteinii, Corisphaera
windii, Lucianorhabdus
xenotus, Zygolithites*

* : invalid
(C): calcisphere

New genus names

Acaenolithus
Alfordia
Angulolithina
Apertius
Athenagalea
Barringtonella
Bussonius
Calyculus
Calyptrolithophora
Catillus
Coptolithus
Cribrocorona
Cribricatillus
Crucicribrum
Crucirhabdus
Cycloperfolithus
Diductius
Dilatatius
Echinodinella (C)
Flabellites
Gaarderella
Haslingfieldia
Incerniculum
Laminolithus
Lotharingius
Lucasella
Minylitha
Nodosella
Rectilius
Rhombogyrus
Rhombolithion
Rhombozygus
Rotelapillus
Saeptella*
Staurorhabdus
Striatomarginis
Tubirhabdus
Tubodiscus
Uniplanarius
Vacherauvillius*
Vikosphaera
Viminites

New super-generic names

Alfordiaceae, Calyculaceae, Chiastozygaceae, Cribrosphaerelloideae, Discorhabdaceae, Eprolithaceae, Lithastrinaceae, Lotharingiacea, Percivaliaceae.

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COMMENTS

1 - A99-5: 'Baccini sedimentari' is a working group consisting of 22 people of five Italian institutes, and different disciplines.

2 - A102-1: Although the official reference of this volume gives as its date 1979, inside it reads 'finito di stampare nel dicembre 1980', which means that printing was ready in December 1980.

3 - A107-6: Although the official reference of this publication reads 1972, on the back of the reprint it is said to have been printed in May 1973.

4 - A107-8: In the printing of this publication, the explanations of the figures and plates have been omitted. These are therefore included in this Newsletter on p.87.

5 - A109-9: See the review on p.88 for more information.

6 - A100-1, B72: Both publications appeared in a DSDP Report in 1973, but Bukry's was in Vol.15, which was issued in December, whereas Wise's was in Vol.18, which was issued in June.

7 - A99-7, B72: This combination appeared in a previous issue (A8-2,B22) as introduced by BURNS, 1976, which is incorrect.

8 - A104-6, B75: *Zygosphaera wettsteinii* was split in two groups: one was called *Corisphaera wettsteinii*, for which a neotype was selected, and the other was called *Homozygosphaera halldalii* as a nom. nov. Since also for the latter a type was selected, a new species was introduced in this manner. However, this was done incorrectly as no Latin

diagnosis was given.

9 - A100-1, B76: Both publications appeared in a DSDP Report in 1973, but Bukry's was in Vol.15, which was issued in December, whereas Roth's was in Vol.17, which was issued in August.

10- A106-3, B77: The combination Radiodiscoaster gemmeus is invalid according to ICBN Art.33,2 (see Loeblich & Tappan 1973, p.740). The last part, subspecies helianthus, was validated by Loeblich & Tappan (op. cit.), but as they did not validate the species (combination) as well, the new combination with the subspecies is still invalid according to ICBN Art.43.

11- A109-4, B78: This genus and the species assigned to it were quoted as SHUMENKO 1976 in a previous issue (A44-1, B48), because they were quoted as nov. gen., nov. comb. and n. sp. in that combination. The present publication of 1975 however, shows that was wrong.

12- A102-9,B82: No type was indicated for these subspecies. More serious however, is the fact that both subspecies were indicated as belonging to the holotype of Vikosphaera noeliae, as two different scale types on the same cell were described. Obviously, one cell can only belong to one subspecies. Furthermore, if subspecies are distinguished, the subspecies containing the holotype of the species, repeats the name of the species.

13- A100-2, B82: This combination appeared in a previous issue (A1-1, B-7) as introduced by WIND & WISE 1976, which is incorrect.

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Haymana ve Kavak Formasyonlarindaki Planktonik Foraminifera ve Nannoplanktoniar.

(Planktonic foraminifera and nannoplankton of the Haymana and Kavak Formations, SW Ankara). - abstract

by V. Toker

The formations of Campanian - Maastrichtian age are exposed in the region of Haymana SW of Ankara (Central Turkey).

The Campanian aged unit consists of sandstone, sandy shale and conglomerate in this region. On the other hand, the Maastrichtian aged unit is composed of shale, sandy shale, sandstone and limestone. Globotruncana elevata, Globotruncana havanensis, Globotruncana gansseri, Globotruncana mayaroensis biozones have been distinguished by twenty-seven planktonic foraminifera species which are determined in the Haymana and Kavak Formations in a thickness of 1845 m.

Also thirty-four nannoplankton species have been determined from the same samples in the studied area, and the following nannoplankton biozones have been defined: Tetralithus gothicus, Tetralithus trifidus, Arkhangelskiella cymbiformis, Lithraphidites quadratus.

Nannoplankton from flysch in the Slovenian coastal region.

In this publication by PAVSIC, 1981 (A107-8), the explanations of figures and plates were omitted, by a mistake of the editors of the Proceedings. These are therefore given below.

Sl. 1 Lokaliteti profila
Fig.1 Sections localities

Sl. 2 Razprostranjenje nanoplanktona u profilu Seča.
Fig.2 Distribution of calcareous nannoplankton in the Seča section.

Sl. 3 Razprostranjenje vapnenog nanoplanktona u profilu Izola.
Fig.3 Distribution of calcareous nannoplankton in the Izola section.

Sl. 4 Razprostranjenje vapnenog nanoplanktona u profilu Strunjan.
Fig.4 Distribution of calcareous nannoplankton in the Strunjan section.

Tabla 1 / Plate 1

1,7 Reticulofenestra bisecta (Hay, Mohler et Wade)
2 Reticulofenestra sp. 1
3 Pontosphaera plana (Bramlette et Sullivan)
4-6 Reticulofenestra sp. 2
8 Helicopontosphaera intermedia Martini
9 Sphenolithus radians
10 Sphenolithus moriformis (Brönnimann et Stradner)
11 Zygrablithus bijugatus (Deflandre)
12,13 Reticulofenestra umbilica (Levin)
14 Nannotetrina sp.
15,16 Chiasmolithus bidens (Bramlette et Sullivan)

Sl.5,14,16 kod običnog svetla, sve ostale izpod unakrštenih nikola
Fig.5,14,16 under ordinay light, all others between crossed nicols
2000 X uvečano
2000 X enlarged

Tabla 2 / Plate 2

1 Tribrachiatus orthostylus Shamrai
2,3 Coccolithus cf. eopelagicus (Bramlette et Riedel)
4,5,7,13 Reticulofenestra bisecta (Hay, Mohler et Wade)
6 Pontosphaera plana (Bramlette et Sullivan)
8 Coccolithus sp.
9 Nannotetrina cristata Martini
10 Coccolithus sp.
11 Discoaster binodosus Martini
12 Reticulofenestra sp.
14,15 Fasciculithus tympaniformis Hay et Mohler
16 Sphenolithus radians Deflandre

Sl. 1,2,9,11,12,15 kod običnog svetla, sve ostale izpod unakrštenih nikola
Fig.1,2,9,11,12,15 under ordinary light, all others between crossed nicols
2000 X uvečano
2000 X enlarged

The paleobiology of plant protists

By H.Tappan, 1980
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Chapters:

1 : Procaryotes: Bacteria and Blue-Greens
2 : Rhodophyta
3 : Acritarcha or Hystrichophyta
4 : Dinoflagellates
5 : Ebridians
6 : Xanthophyta and Chrysophyta
7 : Silicoflagellates
8 : Diatoms
9 : Haptophyta, Coccolithophores, and other calcareous nannoplankton
10: Green algae: Prasinophyta, Chlorophyta, and Euglenophyta
11: Charophytes and Umbellinaceans
- : Glossary, Systematic index, subject index

Subjects treated in chapter 9:

I The living organism:

- Biology (nucleus, plastids, pigments, pyrenoids, other organelles, cytoplasmic inclusions, flagella, habtonema; cell movement, scales, coccoliths, organic matrix of coccoliths, relationship of coccolith formation and photosynthesis, cytology of coccolith formation, coccolith mineralogy, coccolith morphology and crystal structure).
- Morphology: different types of coccoliths are discussed like holococcoliths, heterococcoliths (discolith, placolith, lopadolith etc.)
- Reproduction and life cycle (different stages)
- Ecology and distribution (waterdepth, temperature, salinity etc.).

II Fossil calcareous nannoplankton:

- General information; descriptions of the different groups, organized per era: Paleozoic, Mesozoic (Nannoconids, Schizospheres, Stomiosphaeraceae, Coccoliths), Cenozoic (Braarudosphaeraceae, Thoracosphaeraceae, Ceratolithaceae, Discoasters, Coccoliths), with mention of the stratigraphic importance of many species.
- Coccolith oozes and chalks
- Paleoecology
- Evolution

III Classification: from division down to genera.

IV Extensive bibliography

TRIQUETRORHABDULUS - an Oligocene/Miocene calcareous nannofossil genus

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The genus Triquetrorhabdulus was erected by MARTINI, 1965, for "three--edged rods, with pointed, rounded or truncated ends". T.carinatus was designated as the type species for Triquetrorhabdulus. Since then, several other species have been assigned to Triquetrorhabdulus (Fig.1) and some have been removed again, as T.inversus BUKRY & BRAMLETTE, 1969, which was used to define a new genus, Pseudotriquetrorhabdulus in WISE & CONSTANS, 1976.

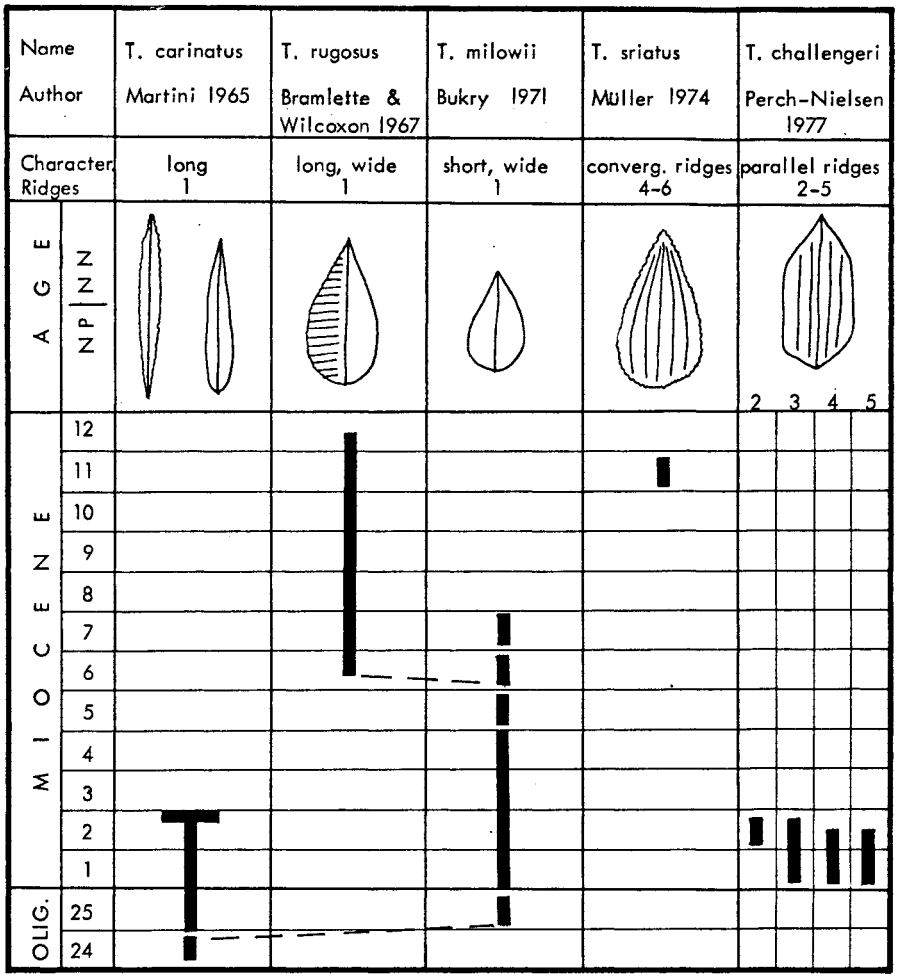

Fig. 1. The species of Triquetrorhabdulus and their ranges. T.martinii GARTNER, 1967, is not shown since it is considered to be a junior synonym of Rhabdothorax serratus (BRAMLETTE & WILCOXON) ROTH, 1970.

During the re-study of the Oligocene/Miocene interval of DSDP Site 356 on

Sao Paulo Plateau in the South-West Atlantic, counts of T.challengeri, which was described from this Site, were made. Fig.2 shows the results of this effort.

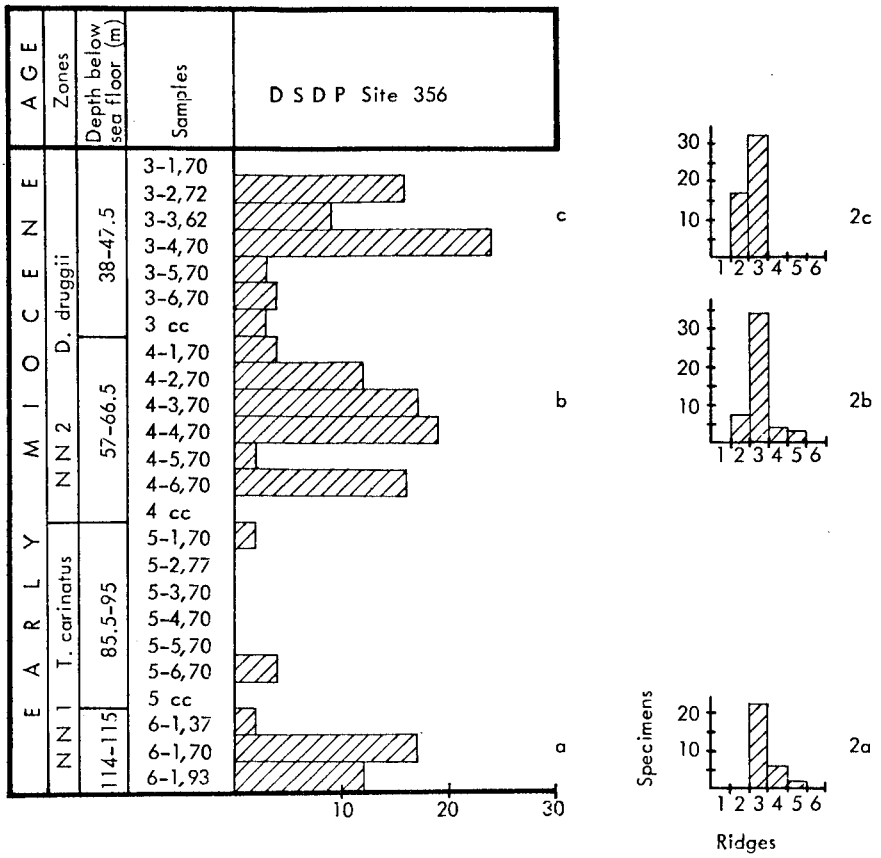

Fig.2 Abundance of T.challengeri and number of ridges at DSDP Site 356

The abundance of T.challengeri varies greatly in the samples (Fig.2), but no reason for this was evident in these samples with common to abundant, and reasonably well preserved coccoliths.

Counts of number of ridges (Figs 2a, 2b, 2c) show a maximum number of specimens with 3 ridges in all samples. Specimens with 4 and 5 ridges are found in Cores 6 through 4 (NN 1 & NN 2), they are absent in Core 3 (NN 2). Forms with two ridges are absent in Core 6, few in Core 4 and constitute about 1/3 of the specimens in Core 3. Thus the suspected trend from forms with many ridges in the lowermost Miocene to forms with fewer ridges higher in the sequence could be confirmed.

Measurements of the length and the width of T.carinatus in Cores 5 and 6, where T.carinatus is sometimes abundant and very well preserved, have not provided data to show any evolutionary trend from long to short, or slender

to wide forms (or the other way round).
Both the longest specimen (3μ x 36μ) and the widest specimen (6μ x 20μ) were found in sample 356 - 6-1, 93 cm. Thus extremely long and slender forms are found together with shorter and inflated ones. In either forms, the ends are pointed, as regarded to be characteristic of T.carinatus.

We can only speculate about the origin of Triquetrorhabdulus and the relations between the various species assigned to it. The earliest representative of the genus seems to be T.carinatus,which is already found in Oligocene sediments (NP 24), and has no obvious ancestor. T.milowii could have evolved from T.carinatus by widening during the Oligocene, its oldest specimens being of this age. We know of no intermediate forms between T.carinatus or T.milowii with one ridge, and the early form of T.challengeri with 3-5 ridges. Unfortunately, no search for an ancestor could be made, since upper Oligocene and lowermost Miocene sediments are missing at Site 356 (the only Site where T.challengeri has been found sofar) and T.challengeri is missing in complete O/M boundary sections. T.rugosus can be derived from T.milowii by the latters growth and developement of ribs perpendicular to the longitudinal main ridge during the Middle Miocene. T.striatus, with converging ridges, is found much higher in the Miocene and could have evolved from T.rugosus, no forms inbetween have been found, however. T.rugosus, on the other hand, may have been the ancestor of Amaurolithus, more precisely A.primus, thus also of Ceratolithus and thus to a Recent coccolithophorid (PERCH-NIELSEN, 1977:749).

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