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- for members Dfl. 10,-

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NEXT ISSUE

Contributions for the next issue of the INA Newsletter should be received before October 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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REPORT ON THE I N A QUESTIONNAIRES 1981

compiled by Katharina Perch-Nielsen

The answers to questionnaire I," who does what and where" are tabulated below.Now it is up to YOU to contact your colleague and/or competitor and to direct your reprints to the persons probably most interested in them (and,of course,to Shirley E.van Heck !).The table is self-explanatory but,for your convenienc:more than 1/3 of the members who answered are working full time with calcareous nannoplankton/nannofossils.About 1/4 spend only 30% or less of their time with our little "flowers".

II

Compilation of "Bibliography and Taxa"	Yes	No
1972 - 1981 in the form of a book ?	75	5
1967 - 1971 in the form of a book ?	70	10

III

Newsletter to continue ?	82	2
One issue per year ?	21	
Two issues per year ?	52	
? issues per year	8	
With siliceous nannofossils ?	50	26
Take over Shirley's work ?	(3)	70
Compile siliceous nannofossils ?	(1)	75
Other suggestions	see below	

COMMENTS : The vast majority of the members would like to see the NEWSLETTER continued,and most of them seem to prefer the present 2 issues per year to just one issue per year.Some dont mind either way,as long as the NEWSLETTER continues,and there was one suggestion to send one out when we felt there was enough to fill one.

Surprisingly many members would like to see the siliceous nannofossils included in the NEWSLETTER,considering the fact that the questionnaire was sent to specialists of calcareous rather than siliceous nannoplankton.

I N A

QUESTIONNAIRE I 1981

compiled by
K.Perch-Nielsen
feb.1982

		Biology,Calcification	Recent and Pleistocene	Neogene	Paleogene	Late Cretaceous	Early Cretaceous	Jurassic	Pre-Jurassic	Calcareous dinoflagellates	Calcareous nannofossils/-plankton	Siliceous " (D = diatoms)	Biostratigraphy	(Paleo) ecology	Taxonomy	Biogeography	Evolution	Stable isotopes	Trace elements	Diagenesis	Sedimentology (N = nannofoacies)	Worldwide	N.America	S. & M. America	Europe	Asia,Australia,New Zealand	Africa	Atlantic	Pacific	Indian Ocean	Gulf of Mexico	Mediterranean	Full time calc.nannofossils	% time calc.nannofossils/-plankton
M.P.AUBRY	F			●	●						●		●	●	●	●	Sphenol.					●											●	
J.BACKMAN	S/GB		●	●	●						●		●	●	●	●	Reticul. Coccol.								●			●	●	●			●	
M.BALDI-BEKE	H			●	●		●				●		●	●										●	●								●	
M.BIOLZI	I/CH			●	●						●		●	●				●							●			●						30
J.E.BOUDREAUX	USA		●	●	●	●	●	●			●		●									●											●	
J.L.BOWDLER	USA		●	●				●			●		●		●	●	Catinas.											●			●		●	
J.BREHERET	F						●				●			●						●	N				●			●						20
F.CATI	I		●								●		●		●										●							●		20
J.CHAROLLAIS	CH																																	
M.-P.CHEN	TAIW.		●	●							●			●	●						●					●							●	
W.-R.CHI	TAIW.		●	●	●	●	●				●		●	●												●							●	
R.E.CONSTANS	USA		●	●	●	●	●	●	●		●		●									●	●										●	
M.K.E.COOPER	GB	●					●	●			●		●	●	●	●						●			●								●	
J.A.CRUX	GB					●	●	●			●		●	●	●	●	●					●											●	
B.DRIEVER	NL		●	●							●		●	●	●	●	●				●				●			●				●		80
A.EHRLICH	ISRAEL			●	●			●			●	D	●									●										●		50
M.ELBRAECHTER	D	●									●	●			●	●						●												5
R.W.EVERETT	USA		●	●	●	●	●	●			●		●	●									●				●						●	
A.J.FARHAN	GB					●					●		●		●								●										●	
M.V.FILEWICZ	USA		●	●	●	●	●	●			●		●	●	●					●		●	●					●						75
E.M.FINCH	GB	●	●	●	●	●	●	●			●		●	●	●	●						●											●	
R.FUCHS	A			●							●		●												●									10
K.FURUYA	JAPAN	●	●											●		●											●		●					70
D.FUTTERER	D		●	●	●	●				●	●									●	●							●						
N.GHETA	R			●	●						●		●		●										●									
M.GIRGIS	GB				●	●					●		●	●	●		Toweius								●		●						●	
W.GRUN	A							●			●		●		●										●									1
M.V.S.GUPTHA	INDIA		●	●							●		●	●		●		●												●				75
J.C.HANNA	USA				●	●	●	●			●		●										●	●				●					●	
W.W.HAY	USA		●	●	●	●	●	●			●		●		●							●												10
B.R.HEIMDAL	N		●								●																							?
H.HEKEL	AUSTRAL.		●	●	●	●	●				●		●	●		●					●						●		●	●			●	
M.E.HILL	USA		●	●	●	●					●		●		●		***			●		●	●		●		●						●	
M.HOJJATZADEH	GB			●		●					●		●												●		●							?
T.-C.HUANG	TAIW.		●	●	●	●	●				●		●	●							●						●							60
S.A.JAFAR	INDIA			●	●	●	●	●	●		●		●	●	●		Crucirh.								●		●							70
L.JERKOVIĆ	YOUG.		●	●							●	●	●		●										●									
R.JORDAN	D																																	
C.KAPELLOS	GB				●	●	●	●			●		●	●							●				●									30
H.KEUPP	D						●	●		●	●		●	●	●					●					●									20
S.A.KLING	USA		●	●	●	●	●	●			●	●	●	●	●							●												50
P.E.KOEPPEL	USA		●	●	●	●	●	●			●		●									●	●										●	
J.KRHOVSKY	ČS			●	●		●				●		●	●	●					●	●				●			●						50
O.LESHNER	USA						●				●		●		●		**						●										●	
A.LORD	GB		●	●	●	●	●	●	●		●	●	●			●																		20
M.MARCUCCI	I						●	●			●		●	●											●									70
E.MARKS	SINGAP.		●	●	●	●					●	●	●	●	●	●				●	●	●	●	●	●	●								15
C.L.McNULTY	USA					●	●				●		●										●											
N.MIKKELSEN	DK		●	●	●						●	D	●	●		●		●										●	●	●				10
P.L.MILLER	USA			●	●	●					●		●										●						●					50
E.D.MILOW	USA		●	●	●	●	●	●			●	●	●	●								●											●	
M.MOHAMED	EGYPT				●	●					●		●														●							80
S.MONECHI	I/USA				●	●	●	●			●		●	●		●	community	●	●	●	●				●									
S.MOSHKOVITZ	ISRAEL			●	●	●	●	●	●		●		●	●		●						●										●	●	
S.NISHIDA	JAPAN		●	●	●						●		●	●	●	●	Reticul.										●		●					
H.NOBUYUKI	JAPAN		●	●							●		●	●	●												●		●				●	
R.E.NORRIS	S.AFR.		●								●	●			●	●	Rhabdos.					●					●	●	●	●			●	
H.OKADA	JAPAN	●	●	●	●	●	●	●			●		●	●	●	●											●		●				●	
G.PALMIERI	I		●	●	●	●	●	●			●		●		●	●									●	●	●					●	●	
J.PAVŠIČ	YOUG.			●	●	●					●		●												●									50
K.PERCH-NIELSEN	CH/NL		●	●	●	●	●	●			●	●	●	●	●	●	*	●				●	●	●	●		●							40

* = Chiasmolithus,Cruciplacolithus,Ceratolithus,Sphenolithus,Helicosphaera a.o.
** = Quadrum,Micula,Lucianorhabdus,Lithastrinus
*** = Calcidiscus,Cretarhabdus,Helicopontosphaera,Coccolithus,Discoaster,Sphenolithus

I N A

QUESTIONNAIRE I 1981
cont.

compiled by
K.Perch-Nielsen
feb.1982

		Biology,Calcification Recent and Pleistocene	Neogene	Paleogene	Late Cretaceous	Early Cretaceous	Jurassic	Pre-Jurassic	Calcareous dinoflagellates	Calcareous nannofossils/-plankton	Siliceous " (D = diatoms)	Biostratigraphy	(Paleo) ecology	Taxonomy	Biogeography Evolution	Stable isotopes	Trace elements	Diagenesis Sedimentology (N = nannofacies)	Worldwide	N.America	S.& M. America	Europe	Asia,Australia,New Zealand	Africa	Atlantic	Pacific	Indian Ocean	Gulf of Mexico	Mediterranean	Full time calc.nannofossils	% time calc.nannofossils/-plankton
W.PINXIAN	D	●	●						●				●										●									30
M.PONS	F				●				●		●		●									●		●								10
A.PUJOS-LAMY	F	● ●	● ●						●		●		● ●		●			●							● ●		●					80
I.RAFFI	I		●	●					●		●				Gephyroc.							●							●	●		
D.RIO	I	●	●	●	● ●				●		●				Gephyroc.							●		●	●				●			60
A.J.T.ROMEIN	NL			●	●				●		●		● ●			● ●						●								●		
P.H.ROTH	USA	●			● ●		●		●		●		●		●			● ●	●													50
E.E.RUSSEL	USA				●				●		●									●												30
A.R.SAAVEDRA	MEX.	●							●		●		● ●								●										●	
T.SATO	JAPAN		●	●					●														●									40
W.G.SIESSER	USA	●	●	●	●				●		●									●				●								
P.SINGH	INDIA		●	●	●		●		●		● ●		● ●										●									10
C.C.SMITH	USA				● ●				●		●		● ●						● ●												●	
J.C.STEINMETZ	USA	●	●						●		●		● ●						●												●	
S.THEODORIDIS	NL	●	●	●					●		●		● ●		*							●			●		●				●	
H.R.THIERSTEIN	USA	●			● ●		●		●		●		●		community	● ●		● ●	●													
J.W.VERBEEK	NL	●		●	● ●		●		●		●											●			●						●	
J.G.VERDENIUS	N			●	● ●				●		●		●								● ●											50
A.D.WARREN	USA	●	●	●					●		● ●								●													10
K.-Y.WEI	USA	●	●						●		●		●							●			●				●					40
C.R.YOUNG	USA	●	●	●	● ●		●		●		●		●		●				●												●	
L.ZANINETTI	CH		●						●		●											●				●						20
" late arrivals "																																
F.Vinas Gomez	MEX.	●	●	●					●		●		●					●			●										●	

* = Discoaster,Helicosphaera

While only 10 indicated to be working with silicoflagellates and similar fossils,some 50 felt they would like to have their bibliography included in the NEWSLETTER.I wonder why. Will they all work with silicoflagellates,too, once they can keep informed about the current literature trhough the NEWSLETTER ?

Sadly,but not really surprisingly,most members are not willing to take over Shirley's work or to compile the silicoflagellates.We all are SO busy with other things,have no time,are not payed to compile a bibliography

(neither is Shirley !),want to do research,want or have to teach,dont have a secretary (neither has Shirley !) -- short,we are " children of our time": CONSUMERS.But,of course,somebody also has to write all those papers that Shirley can include in the bibliography....We will get into contact with the 3 persons who volounteered their services,two without any comments and one offering to spend some 10% of his time.

SUGGESTIONS :

- to publish and sell a yearly "Bibliography and Taxa" instead of the NEWSLETTER (H.R.Thierstein)
- to establish a "Journal of nannoplankton research" (M.V.S.Guptha). Personally I think there are enough journals to publish nannoplankton research in.Also,the number of active nannoplankton workers is probably not big enough to assure enough subscribers.AND WHY NOT USE THE NEWSLETTER ?
- to divide the NEWSLETTER into two parts,one with the "discoasters,coccoliths and/or other groups" and one with "the rest" (A.R.Saavedra)
- R.W.Everett Jr.sees a "need to look at nannofossils in deltaic sections"
- to publish the NEWSLETTER when there is enough to publish.This may be once in two years sometimes and sometimes this will be twice a year (J.W.Verbeek)
- E.Marks is "interested in up-to-date stratigraphic ranges of Nanno's.Perhaps a computerbank may help in organizing data.There would be much less spade and shovel work needed".We agree.WHO takes the initiative?
- McNulty would find the compilation of taxa and bibliography more usable in the form of filing cards.Shirley had initially thought peoples would use the bibliographical entries and taxa as a base for a filing card system by glueing them onto filing cards,and therefore had not given them in an alphabethical order.Several members "complained" about this and it was changed.But you can still copy the NEWSLETTER and cut it up for this purpose. McNulty also suggested "some provision for retired scientists" on reduced earnings.I would rather see retiring scientists persuading their department before their retirement to subscribe to INA - they can then go and copy the NEWSLETTER

IF YOU HAVE NOT YET FILLED IN YOUR QUESTIONNAIRE , PLEASE COPY THE SECOND PAGE OF THE TABLE AND FILL IN WHAT YOU DO UNDER "LATE ARRIVALS".

THANK YOU

BIBLIOGRAPHY AND TAXA OF CALCAREOUS NANNOPLANKTON

Compiled by Shirley E. van Heck*

New data of the DSDP volumes:
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vol.66: printing date: Febr. 1982

The English translation of publication nr.A44-2 (Shumenko & Kaplan, 1978), has appeared in: Doklady Earth Sci. Sect., vol.240 (1980), pp.226-227.

* Please send your reprints and correspondence to:
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In: Warme,J.E., Douglas,R.G. & Winterer,E.L.: The Deep Sea Drilling Project: a decade of progress; SEPM Spec. Publ. no.32, pp.489-504, 9 figs.

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B85 Alisphaera HEIMDAL 1973; p.74. Type species: Acanthoica ordinata KAMPTNER 1941. A124-5

Alisphaera ordinata (KAMPTNER 1941) HEIMDAL 1973; pp.74,75 (ex Acanthoica). Type species of Alisphaera. A124-5

Apertiaceae GOY 1981 (family); p.34. A123-1

Arkhangelskielleae LOCKER 1973 (tribe); p.769. A127-4

Assipetra ROTH 1973; p.729. Type species: Micula infracretacea THIERSTEIN 1973. A135-1

Assipetra infracretacea (THIERSTEIN 1973) ROTH 1973; p.729 (ex Micula). Type species of Assipetra. A135-1

Biscutum patella RISATTI 1973; p.26, pl.3, figs.11,12; U.S.A. (Mississippi), Maastrichtian. A134-3

Biscutum? ponticulatum PERCH-NIELSEN 1981; p.834, pl.1, fig.10; Tunisia, U.Maastrichtian. A131-7

Biscutum? romeinii PERCH-NIELSEN 1981; pp.834,835, pl.2, fig.7; Tunisia, Danian (NP 1). A131-7

Bomolithus ROTH 1973; p.734. Type species: Bomolithus elegans ROTH 1973. A135-1

Bomolithus elegans ROTH 1973; p.734, pl.15, fig.1; C.Pacific (DSDP Site 167), Paleocene (D. mohleri Zone) Type species of Bomolithus. A135-1

Broinsonia parca (STRADNER 1963) BUKRY 1969 ssp. constricta HATTNER, WIND & WISE 1980; p.23, pl.2, figs.1,2; N. America, Campanian. A123-7

Bussoniaceae GOY 1981 (family); p.32. A123-1

Bussonius prinsii (NOEL 1973) GOY 1979 ex GOY 1981; p.32 (ex Staurorhabdus). Type species of Bussonius. A123-1

Catillus serrai GOY 1981; p.63, pl.27, fig.5; France, L.Toarcian. A123-1

Ceratolithus perch-nielsenae GUPTHA 1979; pp.115,116, pl.1, fig.1; Arabian Sea, U. Pleistocene. A123-2

Chiasmolitheae LOCKER 1973 (tribe); p.764. A127-4

Chiasmolithus delus (BRAMLETTE & SULLIVAN 1961) LOCKER 1973; p.764 (ex Coccolithites). A127-4

Chiasmolithus eminens (BRAMLETTE & SULLIVAN 1961) LOCKER 1973; pp.764,765 (ex Coccolithus). A127-4

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Chiasmolithus oulchyensis (BOUCHE 1962) LOCKER 1973;p.765. (ex Coccolithus). A127-4

Chiasmolithus tenuis (STRADNER 1961) LOCKER 1973; p.766 (ex Heliorthus). A127-4

Chiastozygus mediaquadratus RISATTI 1973; p.22, pl.6, figs. 10,11; U.S.A. (Mississippi), Campanian-Maastrichtian. A134-3

Chiastozygus rotatorius RISATTI 1973; p.23, pl.8, figs.22, 23; U.S.A. (Mississippi), Campanian-Maastrichtian. A134-3

Chiastozygus trabeculatus (GORKA 1957) RISATTI 1973; p.23 (ex Discolithus). A134-3

Chiastozygus ultimus PERCH-NIELSEN 1981; pp.835,836, pl.5, fig.8; Denmark, Danian (NP 3). A131-7

Coccolithus formosus (KAMPTNER 1962) WISE 1973; p.593 (ex Cyclococcolithus). A140-2

Coccolithus pliopelagicus WISE 1973; pp.593,594, pl.8, figs.1-3; N.Pacific (DSDP Site 176), Pleistocene. A140-2

Coccolithus productus (KAMPTNER 1963) SACHS & SKINNER 1973; p.138 (ex Ellipsoplacolithus). A137-7
Invalid: basionym invalid.

Conococcolithus panis EDWARDS 1973; pp.73,74,76, figs.2-5; New Zealand, Danian. A120-3

Corollithion kennedyi CRUX 1981; p.634, fig.2(4); England, Cenomanian. A118-10

Crenalithus ROTH 1973; p.731. Type species: Coccolithus doronicoides BLACK & BARNES 1961. A135-1

Crenalithus doronicoides (BLACK & BARNES 1961) ROTH 1973; p.731 (ex Coccolithus). Type species of Crenalithus. A135-1

Crenalithus taganus (FONSECA 1976) BUKRY 1981; p.461 (ex Coccolithus). A116-1

Crepidolithus spiralis (PIENAAR 1968) PRIEWALDER 1973; p.17 (ex Discolithus). A132-8

Crepidolithus thiersteinii ROTH 1973; p.725, pl.22, fig.6; Pacific.C. (DSDP Site 167), Campanian. A135-1

Cretarhabdeae LOCKER 1973 (tribe); p.770. A127-4

Cretarhabdus actinosus (STOVER 1966) RISATTI 1973; p.24 (ex Coccolithus). A134-3

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Cribrosphaera circula RISATTI 1973; p.24, pl.8, figs.20-21; U.S.A. (Mississippi), Maastrichtian.	A134-3
Cribrosphaera linea (GARTNER 1968) RISATTI 1973; p.24 (ex Cribrosphaerella)	A134-3
Cribrosphaerella laughtoni (BLACK 1964) PRIEWALDER 1973; p.18 (ex Favocentrum). Invalid ICBN Art.33,2.	A132-8
Cricolithus granulatus RISATTI 1973; pp.26,27, pl.2, figs. 6,7; U.S.A. (Mississippi), Maastrichtian.	A134-3
Cricolithus scutulatus RISATTI 1973; p.27, pl.6, figs.24,25; U.S.A. (Mississippi), Campanian-Maastrichtian.	A134-3
Cristallolithus macroporus (DEFLANDRE 1954) SACHS & SKINNER 1973; pp.154,155 (ex Discolithus).	A135-7
Cyathosphaera perforata KAPELLOS 1973; pp.105,106, pl.26, fig.4; Switzerland, Cuisian (Eocene).	A126-2
Cyclagelosphaera deflandrei (MANIVIT 1966) ROTH 1973; p.723 (ex Coccolithus).	A135-1
Cyclicargolithus abisectus (MULLER 1970) WISE 1973; p.594 (ex Coccolithus).	A140-2
Cyclicargolithus bukryi WISE 1973; p.594, pl.9, figs.1-3; N.Pacific (DSDP Site 178), Miocene.	A140-2
Cyclicargolithus doronicoides (BLACK & BARNES 1961) WISE 1973; p.594 (ex Coccolithus).	A140-2
Cyclococcolithina kingii (ROTH 1970) ROTH 1973; p.730 (ex Cyclococcolithus).	A135-1
Cyclococcolithus circumradiatus (STOVER 1966) LOCKER 1973; p.758 (ex Coccolithites). Invalid: basionym invalid.	A127-4
Cyclococcolithus kavaryi (HAQ 1971) HAQ & AUBRY 1981; p.303 (ex Cycloplacolithella).	A123-6
Cyclococcolithus robustus (BRAMLETTE & SULLIVAN 1961) LOCKER 1973; p.760 (ex Cyclolithus?)	A127-4
Cyclolithella aprica ROTH 1973; pp.730,731, pl.11, fig.4; C.Pacific (DSDP Site 171), M.Eocene.	A135-1 *C-4
Discoaster blackstockae BUKRY 1973; p.307, pl.1, fig.1; Pacific (DSDP Site 71), U. Miocene.	A115-8
Discoaster icarus STRADNER 1973; p.1138, pl.41, fig.10; Mediterranean (DSDP Site 134), U. Miocene.	A137-9

B88 Discoaster mahmoudii PERCH-NIELSEN 1981; p.836, pl.4, figs. 5,7; Egypt, U.Paleocene (NP 9). A131-7

Discoaster mendomobensis WISE 1973; p.594, pl.7, figs.1,2; N.Pacific (DSDP Site 173), U. Miocene. A140-2

Discoaster okadai BUKRY 1981; pp.461,462, pl.2, fig.6; NW Pacific (DSDP Site 47.2), Paleocene. A116-1

Discoaster quadramus BUKRY 1973; p.307, pl.1, figs.5,6; Indian Oc. (DSDP Site 219), L. Pliocene. A115-8

Discoaster sanmiguelensis BUKRY 1981; p.462, pl.3, figs.2,3; Pacific NE (DSDP Site 468), M. Miocene. A116-1

Discolithus enormis (LOCKER 1967) LOCKER 1973; p.748 (ex Discolithina). A127-4

Discolithus pygmaeus (LOCKER 1967) LOCKER 1973; p.748 (ex Discolithina). A127-4

Ericsonia sparsa PERCH-NIELSEN 1981; p.837, pl.4, fig.12; Denmark, Danian (NP 2) A131-7

Eurhabdus scotus RISATTI 1973; p.29, pl.7, figs.9-10; U.S.A. (Mississippi), Maastrichtian. A134-3

Fasciculithus aubertae HAQ & AUBRY 1981; p.301, pl.5, fig.1; Jordan, Paleocene (NP 9). A123-6

Fsciculithus pileatus BUKRY 1973; pp.307, 308, pl.2, figs. 2-5, C.Pacific (DSDP Site 199), U. Paleocene. A115-8

Fasciculithus stonehengei HAQ & AUBRY 1981; p.301, pl.1, figs.11,12; Tunisia, Paleocene (NP 5). A123-6

Florisphaera OKADA & HONJO 1973; p.373; Type species: Florisphaera profunda OKADA & HONJO 1973 (M). A130-5

Florisphaera profunda OKADA & HONJO 1973; pp.373,374, pl.2, fig.4; C.Pacific, Recent. Type species of Florisphaera. A130-5 *C-5

Gephyrocapsa ornata HEIMDAL 1973; pp.71,74, fig.1; CE Atlantic, Recent. A124-5

Gephyrocapsa parallela HAY & BEAUDRY 1973; p.672, pl.1, figs 10-12; C.Atlantic (DSDP Site 147), Holocene. A124-1

Gephyrocapsa sinuosa HAY & BEAUDRY 1973; p.672, pl.1, figs. 13,14; C.Atlantic (DSDP Site 149), Pleistocene. A124-1

Goniolitheae LOCKER 1973 (tribe); p.768. A127-4

Hayaster BUKRY 1973; p.308. Type species: Discoaster perplexus BRAMLETTE & RIEDEL 1954. A115-8

B89 Hayaster perplexus (BRAMLETTE & RIEDEL 1954) BUKRY 1973; p.308 (ex Discoaster). Type species of Hayaster. A115-8

Helicopontosphaera burkei (BLACK 1971) WISE 1973; p.594 (ex Helicosphaera). A140-2

Helicopontosphaera euphratis (HAQ 1966) BUKRY 1973; p.308 (ex Helicosphaera). A115-8

Helicopontosphaera hyalina (GAARDER 1970) HAQ 1973; pp.37, 38 (ex Helicosphaera). A123-3

Helicopontosphaera minima MARTINI 1974; In: Martini,E. & Moisescu,V., pp.32,33, fig.5(9-10); Rumania, L.Oligocene. A128-2

Helicopontosphaera obliqua (BRAMLETTE & WILCOXON 1967) HAQ 1973; p.40 (ex Helicosphaera). A123-3

Helicopontosphaera recta (HAQ 1966) BUKRY 1973; p.308 (ex Helicosphaera seminulum). A115-8

Helicopontosphaeraceae HAQ 1973 (family); p.35,36. A123-3

Helicosphaera californiana BUKRY 1981; p.462, pl.4, figs. 9-11; Pacific NE , M. Miocene. A116-1

Helicosphaera crouchii BUKRY 1981; p.462, pl.4, figs.13-14; Pacific NE, Miocene. A116-1

Helicosphaera gertae BUKRY 1981; p.463, pl.5, figs.5-7; Philippine Sea (DSDP Site 292), L. Miocene. A116-1

Helicosphaera kamptneri (HAY & MOHLER 1967) LOCKER 1973; p.767 (ex Helicopontosphaera). A127-4

Helicosphaera lophota (BRAMLETTE & SULLIVAN 1961) LOCKER 1973; p.767 (ex Helicosphaera seminulum). A127-4

Helicosphaera scissura MILLER 1981; p.433, pl.3, figs.10a-c; U.S.A. (california), L. Miocene. A129-1

Helicosphaera truempyi BIOLZI & PERCH-NIELSEN 1982; pp.171 172, pl.1, fig.2; C.Atlantic (DSDP Site 354), L.Miocene. A114-3

Helicosphaera vedderi BUKRY 1981; p.463, pl.6, figs.8-11; NE.Pacific, Miocene. A116-1

Heliolithus floris HAQ & AUBRY 1981; p.303, pl.6, fig.9; Jordan, Paleocene (NP 9). A123-6

Hornibrookina EDWARDS 1973; p.77. Type species: Hornibrookina teuriensis EDWARDS 1973. A120-3

Hornibrookina teuriensis EDWARDS 1973; pp.77,78, figs.22-25; New Zealand, Danian. Type species of Hornibrookina. A120-3

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Incerniculum derivatum GOY 1981; p.55, pl.21, fig.1; France, L. Toarcian.	A123-1
Incerniculum magnum GOY 1981; p.56, pl.21, fig.3; France, L. Toarcian.	A123-1
Isthmolithus recurvus DEFLANDRE 1954 ssp. triplus (LEVIN & JOERGER 1967) LOCKER 1973; p.754 (ex Isthmolithus triplus).	A127-4
Isthmolithus rhenanus MARTINI 1973; pp.9,10, pl.3, fig.31; W.Germany, L. Oligocene.	A127-8
Lithraphidites pseudoquadratus CRUX 1981; p.634, fig.1(3); England, Cenomanian.	A118-10
Micrantholithus tinus KAPELLOS & SCHAUB 1973; p.731, pl.5, fig.6; France (Pyrenees), Cuisian (Eocene).	A126-3
Multipartis RISATTI 1973; p.29; Type species: Multipartis ripliensis RISATTI 1973.	A134-3
Multipartis ripliensis RISATTI 1973; pp.29,30, pl.8, figs. 4,5; U.S.A. (Mississippi), Maastrichtian. Type species of Multipartis.	A134-3
Munarius RISATTI 1973; p.30. Type species: Munarius lesliae RISATTI 1973.	A134-3
Munarius keadyi RISATTI 1973; p.30, pl.8, figs.6,7; U.S.A. (Mississippi), Maastrichtian.	A134-3
Munarius lesliae RISATTI 1973; p.30, pl.5, figs.23-25; U.S.A. (Mississippi), Campanian-Maastrichtian. Type species of Munarius.	A134-3
Munarius marszaleki RISATTI 1973; p.30, pl.5, figs.15,16; U.S.A. (Mississippi), Maastrichtian.	A134-3
Nannoconus abundans STRADNER & GRÜN 1973; pp.268-269, pl.3, fig.2; Germany, L.Barremian (L.Cret.).	A138-2
Nannotetrina mexicana (STRADNER 1959) ROTH 1973; p.738 (ex Trochoaster).	A135-1
Neoangulolithina GUPTHA 1979; p.116. Type species: Neoangulolithina gasimii GUPTHA 1979.	A123-2
Neoangulolithina gasimii GUPTHA 1979; p.116, pl.1, fig.3; Arabian Sea, U.Pleistocene. Type species of Neoangulolithina.	A123-2
Neochiastozygus eosaepes PERCH-NIELSEN 1981; pp.837-838, pl.5, figs.10,13; Denmark, Danian (NP 3).	A131-7

B91 Neochiastozygus primitivus PERCH-NIELSEN 1981; p.838, pl.5, fig.5; Denmark, Danian (NP 3). A131-7

Neocrepidolithus biskayae PERCH-NIELSEN 1981; p.839, pl.6, fig.2; N. Atlantic (DSDP Site 119), U. Paleocene (NP 7). A131-7

Neocrepidolithus bukryi PERCH-NIELSEN 1981; pp.839,840, pl.6, fig.6; N.Atlantic (DSDP Site 119), U.Paleocene (NP 9) A131-7

Neocrepidolithus dirimosus (PERCH-NIELSEN 1979) PERCH-NIELSEN 1981; pp.860, 849 (ex Crepidolithus). A131-7

Nodosella? elegans PERCH-NIELSEN 1981; pp.840,841, pl.2, fig.3; S.Africa, Danian (NP 3). A131-7

Nodosella? franzii PERCH-NIELSEN 1981; p.840, pl.1, fig.8; Tunisia, Danian. A131-7

Ottavianus RISATTI 1973; p.30. Type species: Ottavianus giannus RISATTI 1973. A134-3

Ottavianus giannus RISATTI 1973; p.30, pl.8, figs.10-11; U.S.A. (Mississippi), Campanian-Maastrichtian. Type species of Ottavianus. A134-3

Ottavianus terrazetus RISATTI 1973; pp.30,31, pl.8, figs. 8,9; U.S.A. (Mississippi), Campanian-Maastrichtian. A134-3

Pervilithus CRUX 1981; pp.638,639. Type species: Pervilithus varius CRUX 1981. A118-10

Pervilithus varius CRUX 1981; p.639, fig.2(9); England, Santonian. Type species of Pervilithus. A118-10

Podorhabdus atavus (GRÜN, PRINS & ZWEILI 1974) GOY 1979 ex GOY 1981; pp.43,44. (ex Staurorhabdus?). A123-1

Podorhabdus? elkefensis PERCH-NIELSEN 1981; p.841,842, pl.1, figs.1,2; Tunisia, U.Maastrichtian. A131-7

Pontosphaera distincta (BRAMLETTE & SULLIVAN 1961) BURNS 1973; p.153 (ex Discolithus). A116-6

Pontosphaera indooceanica CEPEK 1973; pp.5,6, pl.1, fig.1; Indian Oc., Quaternary. A117-2

Pontosphaera japonica (TAKAYAMA 1967) BURNS 1973; pp.154, 157 (ex Discolithina). A116-6

Pontosphaera pacifica BURNS 1973; pp.150,151, pl.1, fig.4; SW.Pacific, Holocene. A116-6

Prediscosphaera cretacea (ARKHANGELSKY 1912) GARTNER 1968 ssp.rzehaki PRIEWALDER 1973; p.23, pl.18, fig.5; Austria, U.Maastrichtian. A132-8

B92 Prinsius africanus PERCH-NIELSEN 1981; pp.842,843, pl.3, fig.3; S.Africa, Danian (NP 3). A131-7

Ramsaya RISATTI 1973; p.31. Type species: Ramsaya swanseana RISATTI 1973 . A134-3

Ramsaya swanseana RISATTI 1973; p.31, pl.8, figs.12-14; U.S.A. (Mississippi), Maastrichtian. Type species of Ramsaya. A134-3

Reticulofenestra dictyoda (DEFLANDRE & FERT 1954) ACHUTAN & STRADNER 1969 ssp. scissura (HAY,MOHLER & WADE 1966) LOCKER 1973; p.761 (ex Reticulofenestra scissura). A127-4

Reticulofenestra hampdenensis EDWARDS 1973; pp.80,82,84,86, figs.50-53; New Zealand, Eocene. A120-3

Reticulofenestra pseudogammation (BOUCHE 1962) LOCKER 1973; p.763 (ex Coccolithus?). A127-4

Reticulofenestra scrippsae (BUKRY & PERCIVAL 1971) ROTH 1973; p.732 (ex Dictyococcites). A135-1

Rhabdothorax KAMPTNER 1958 ex GAARDER & HEIMDAL 1973; p.97. Type species: Rhabdosphaera erinacea KAMPTNER 1937. A121-8

Rhabdothorax regale (GAARDER 1954) GAARDER 1973; In: Gaarder,K.R. & Heimdal,B.R., p.89 (ex Discosphaera). A121-8

Russellia RISATTI 1973; p.31. Type species: Russellia bukryi RISATTI 1973. A134-3

Russellia bukryi RISATTI 1973; p.31, pl.5, figs.17,18; U.S.A. (Mississippi), Maastrichtian; Type species of Russellia. A134-3

Russellia laswelli RISATTI 1973; p.31, pl.8, figs.1-3; U.S.A. (Mississippi), Campanian-Maastrichtian. A134-3

Saeptella GOY 1979 ex GOY 1981; p.22. Type species: Saeptella conspicua GOY 1981. A123-1

Saeptella conspicua GOY 1979 ex GOY 1981; pp.22,23, pl.3, fig.5; France, L.Toarcian. Type species of Saeptella. A123-1

Saeptella vicina GOY 1979 ex GOY 1981; p.23, pl.4, fig.5; France, L.Toarcian. A123-1

Scampanella FORCHHEIMER & STRADNER 1973; p.285. Type species Scampanella cornuta FORCHHEIMER & STRADNER 1973. A121-3

Scampanella cornuta FORCHHEIMER & STRADNER 1973; pp.285, 286, pl.1, figs.1-5,7,8; Sweden, Hauterivian (L.Cret.). Type species of Scampanella. A121-3

B93 Staurolithites sagittus RISATTI 1973; pp.20,21, pl.6, figs. 14,15; U.S.A. (Mississippi), Campanian-Maastrichtian. A134-3

Stradnerlithus clatriatus (ROOD, HAY & BARNARD 1973) GOY 1979 ex GOY 1981; p.39 (ex Nodosella). A123-1

Syracosphaera clava HAY & BEAUDRY 1973; p.676, pl.2, figs. 15,16; C.Atlantic (DSDP Site 149), Pleistocene. A124-1

Syracosphaera decussata HAY & BEAUDRY 1973; pp.676,677, pl.2, figs.17-18; C.Atlantic (DSDP Site 149), Pleistocene. A124-1

Syracosphaera jonesii (COHEN 1965) BEAUDRY & HAY 1973; In: Hay,W.W. & Beaudry,F.M., p.676 (ex Cricolithus). A124-1

Tetralithus distortus RISATTI 1973; p.32, pl.5, figs.1,2; U.S.A. (Mississippi), Campanian-Maastrichtian. A134-3

Tetralithus mississippiensis RISATTI 1973; p.32, pl.5, figs.19-20, U.S.A. (Mississippi), Maastrichtian. A134-3

Tetralithus praemurus BUKRY 1973; p.308, pl.2, figs.7-9; C.Pacific (DSDP Site 199), U.Paleocene. A115-8

Tetralithus servator RISATTI 1973; pp.32,33, pl.5, figs. 13,14; U.S.A. (Mississippi), Maastrichtian. A134-3

Tetralithus tortus RISATTI 1973; p.33, pl.4, figs.10,11; U.S.A. (Mississippi), Campanian-Maastrichtian. A134-3

Tetrapodorhabdus coronadventis (REINHARDT 1966) ROTH 1981; p.486 (ex Cretarhabdus). A135-3
Invalid ICBN Art.33,2.

Toweius petalosus ELLIS & LOHMAN 1973; pp.107-108, pl.1, fig.1; U.S.A. (Alabama), Paleocene. A120-9

Tranolithus orionatus (REINHARDT 1966) LOCKER 1973; p.754 (ex Discolithus). A127-4

Transversopontis duocavus (BRAMLETTE & SULLIVAN 1961) LOCKER 1973; p.751 (ex Discolithus). A127-4

Transversopontis ocellatus (BRAMLETTE & SULLIVAN 1961) LOCKER 1973; p.752 (ex Discolithus). A127-4

Transversopontis pectinatus (BRAMLETTE & SULLIVAN 1961) LOCKER 1973; p.752 (ex Discolithus). A127-4

Transversopontis punctosus (BRAMLETTE & SULLIVAN 1961) MILLER 1981; pp.434,435 (ex Discolithus). A129-1

Triquetrorhabdulus auritus STRADNER & ALLRAM 1982; p.595, pl.7, figs.1,2; SE.Pacific (DSDP Site 489) L.Miocene (NN2). A138-1

B94 Tubodiscus jurapelagicus (WORSLEY 1971) ROTH 1973; p.724 (ex Watznaueria). A135-1

Vacherauvillius GOY 1979 ex GOY 1981; p. 24. Type species: Vacherauvillius implicatus GOY 1981. A123-1

Vacherauvillius implicatus GOY 1979 ex GOY 1981; pp.24,25, pl.4, fig.6; France, L.Toarcian. Type species of Vacherauvillius. A123-1

Vacherauvillius infrequens GOY 1979 ex GOY 1981; p.25, pl.5, fig.3; France, L.Toarcian. A123-1

Vacherauvillius mirus GOY 1981; p.26, pl.5, fig.4; France, L.Toarcian. A123-1

Vagalapilla angusta (STOVER 1966) ROTH 1981;p.486 (ex Zygolithus). A135-1
Invalid ICBN Art.33,2.

Vekshinella crux (DEFLANDRE & FERT 1954) RISATTI 1973; p.19 (ex Discolithus). A134-3
Invalid ICBN Art.33,2.

Vekshinella perforata PRIEWALDER 1973; p.26, pl.21, fig.6; Austria, U.Maastrichtian. A132-8

Vekshinella striata (STRADNER 1963) PRIEWALDER 1973;pp.26,27 (ex Arkhangelskiella). A132-8
Invalid ICBN Art.33,2.

Watznaueria gronosa (STOVER 1966) RISATTI 1973; p.26 (ex Cyclolithus). A134-3

Wiseorhabdus BUKRY 1981; p.463. Type species: Triquetrorhabdulus inversus BUKRY & BRAMLETTE 1969. A116-1
Illegitimate ICBN Art.63. *C-6

Wiseorhabdus inversus (BUKRY & BRAMLETTE 1969) BUKRY 1981; p.463 (ex Triquetrorhabdulus). Type species of Wiseorhabdus. A116-1
Illegitimate ICBN Art.63. *C-6

Zygodiscus bramlettei PERCH-NIELSEN 1981; pp.843,844, pl.7, fig.6; U.S.A. (California), U.Paleocene (NP 7). A131-7

Zygodiscus xenotus (STOVER 1966) RISATTI 1973; p.22 (ex Zygolithus). A134-3

Zygodiscus wynnhayi RISATTI 1973; p.22, pl.9, figs.21,22; U.S.A. (Mississippi), Maastrichtian. A134-3

Zygolithus? amphipons (BRAMLETTE & MARTINI 1964) LOCKER 1973; p.755 (ex Zygodiscus?). A127-4

B95 calcispheres

Alasphaera tuberculata (PFLAUMANN & KRASHENINNIKOV 1978) KEUPP 1981; pp.55,56,82 (ex Pithonella).	A141-6
Carinellum KEUPP 1981; pp.50,51. Type species: Carinellum monocarinatum KEUPP 1981.	A141-6
Carinellum monocarinatum KEUPP 1981; pp.51,52, pl.41, figs. 1-3; England (Speeton), U.Hauterivian. Type species of Carinellum.	A141-6
Carinellum conulus KEUPP 1981; pp.52,53, pl.42, figs.1-3; England (Speeton), L.Barremian.	A141-6
Echinodinella levata KEUPP 1981; pp.18,19, pl.8, fig.7; England (Speeton), U.Hauterivian.	A141-6
Nephrodinella KEUPP 1981; p.66. Type species: Nephrodinella reniformis KEUPP 1981.	A141-6
Nephrodinella reniformis KEUPP 1981; pp.66-68, pl.53, figs. 1-3; England (Speeton), L.Barremian. Type species of Nephrodinella.	A141-6
Pithonella spinosa (KEUPP 1979) KEUPP 1981; pp.65,66,81 (ex Thoracosphaera).	A141-6
Pithonella strobila (KEUPP 1979) KEUPP 1981; pp.64,65,81 (ex Thoracosphaera).	A141-6
Pithonella williambensonii (BOLLI 1978) KEUPP 1981; pp.65,79 (ex Bonetocardiella).	A141,6

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Species names in alphabethical order.

abisectus, Cyclicargolithus
abundans, Nannoconus
actinosus, Cretarhabdus
africanus, Prinsius
amphipons, Zygolithus?
angusta, Vagalapilla*
aprica, Cyclolithella
atavus, Podorhabdus
aubertae, Fasciculithus
auritus, Triquetrorhabdulus
biskayae, Neocrepidolithus
blackstockae, Discoaster
bramlettei, Zygodiscus
bukryi, Cyclicargolithus
bukryi, Neocrepidolithus
bukryi, Russellia
burkei, Helicopontosphaera
californiana, Helicosphaera
circula, Cribrosphaera
circumradiatus, Cyclococcolithus*
clatriatus, Stradnerlithus
clava, Syracosphaera
conspicua, Saeptella
conulus, Carinellum (C)
cornuta, Scampanella
coronadventis, Tetrapodorhabdus*
cretacea ssp.rzehaki, Prediscosphaera
crouchii, Helicosphaera
crux, Vekshinella*
decussata, Syracosphaera
deflandrei, Cyclagelosphaera
delus, Chiasmolithus
derivatum, Incerniculum
dictyoda ssp. scissura, Reticulofenestra
dirimosus, Neocrepidolithus
distincta, Pontosphaera

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distortus,Tetralithus
doronicoides, Crenalithus
doronicoides, Cyclicargolithus
duocavus, Transversopontis
elegans, Bomolithus
elegans, Nodosella?
elkefensis, Podorhabdus?
eminens, Chiasmolithus
enormis, Discolithus
eosaepes, Neochiastozygus
euphratis, Helicopontosphaera
floris, Heliolithus
formosus, Coccolithus
franzii, Nodosella?
gasimii, Neoangulolithina
gertae, Helicosphaera
giannus, Ottavianus
granulatus, Cricolithus
gronosa, Watznaueria
hampdenensis, Reticulofenestra
hyalina, Helicopontosphaera
icarus, Discoaster
implicatus, Vacherauvillius
indooceanica, Pontosphaera
infracretacea, Assipetra
infrequens, Vacherauvillius
inversus, Wiseorhabdus*
japonica, Pontosphaera
jonesi, Syracosphaera
jurapelagicus, Tubodiscus
kamptneri, Helicosphaera
kavaryi, Cyclococcolithus
keadyi, Munarius
kennedyi, Corollithion
kingii, Cyclococcolithina
laswelli, Russellia
laughtonii, Cribrosphaerella*
lesliae, Munarius
levata, Echinodinella (C)
linea, Cribrosphaera
lophota, Helicosphaera
macroporus, Cristallolithus
magnum, Incerniculum
mahmoudii, Discoaster
marszalekii, Munarius
mediaquadratus, Chiastozygus
mendomobensis, Discoaster
mexicana, Nannotetrina
minima, Helicopontosphaera
mirus, Vacherauvillius
mississippiensis, Tetralithus
monocarinatum, Carinellum (C)
obliqua, Helicopontosphaera
ocellatus, Transversopontis
okadai, Discoaster
ordinata, Alisphaera
orionatus, Tranolithus
ornata, Gephyrocapsa
oulchyensis, Chiasmolithus
pacifica, Pontosphaera
panis, Conococcolithus
parallela, Gephyrocapsa
parca ssp. constricta, Broinsonia
patella, Biscutum
pectinatus, Transversopontis
perch-nielsenae, Ceratolithus
perforata, Cyathosphaera
perforata, Vekshinella
perplexus, Hayaster
petalosus, Toweius
pileatus, Fasciculithus
pliopelagicus, Coccolithus
ponticulatum, Biscutum?
praemurus, Tetralithus
primitivus, Neochiastozygus
prinsii, Bussonius
productus, Coccolithus*
profunda, Florisphaera
pseudogammation, Reticulofenestra
pseudoquadratus, Lithraphidites
punctosus, Transversopontis
pygmaeus, Discolithus
quadramus, Discoaster
recta, Helicopontosphaera
recurvus ssp. triplus, Isthmolithus
regale, Rhabdothorax
reniformis, Nephrodinella (C)
rhenanus, Isthmolithus
ripliensis, Multipartis
robustus, Cyclococcolithus
romeinii, Biscutum?
rotatorius, Chiastozygus
sagittus, Staurolithites
sanmiguelensis, Discoaster
scissura, Helicosphaera
scotus, Eurhabdus
scrippsae, Reticulofenestra
scutulatus, Cricolithus
serrai, Catillus
servator, Tetralithus
sinuosa, Gephyrocapsa
sparsa, Ericsonia
spinosa, Pithonella (C)
spiralis, Crepidolithus
stonehengei, Fasciculithus
striata, Vekshinella*
strobila, Pithonella (C)
swanseana, Ramsaya
taganus, Crenalithus
tenuis, Chiasmolithus

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terrazetus, Ottavianus
teuriensis, Hornibrookina
thiersteinii, Crepidolithus
tinus, Micrantholithus
tortus, Tetralithus
trabeculatus, Chiastozygus
truempyi, Helicosphaera
tuberculata, Alasphaera (C)
ultimus, Chiastozygus
varius, Pervilithus
vedderi, Helicosphaera
vicina, Saeptella
williambensonii, Pithonella (C)
wynnhayi, Zygodiscus
xenotus, Zygodiscus

New genus names

Alisphaera
Assipetra
Bomolithus
Carinellum (C)
Crenalithus
Florisphaera
Hayaster
Hornibrookina
Multipartis
Munarius
Neoangulolithina
Nephrodinella (C)
Ottavianus
Pervilithus
Ramsaya
Rhabdothorax
Russellia
Saeptella
Scampanella
Vacherauvillius
Wiseorhabdus*

New super-generic names

Apertiaceae, Arkhangelskielleae, Bussoniaceae, Chiasmolitheae, Cretarhabdeae, Goniolitheae, Helicopontosphaeraceae.

* : invalid
(C): calcisphere

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COMMENTS

1 - This paper contains about 50 pages on nannoplankton, including a biometrical study on C. leptoporus - mcintyrei.

2 - Every stage is described by a different author. The amount of data varies from only the NP zones to species lists. See also the separate authors: Bignot, Blondeau, Cavelier, Curry, Floris, Laga, Perch-Nielsen & Hansen, Plaziat, Pomerol, Ritzkowski, Thomsen, Willems et al.

3 - For more information, see also

4 - Cited as 'Cyclococcolithella' on p.730, but under the genus Cyclolithella , which latter name was also used elsewhere.

5 - In the text, two varieties have been named in open nomenclature. These have later (1977) been named F. profunda var. profunda, and F. profunda var. elongata (A5-8,B18; A27-8,B41; A107-7, B74).

6 - The type species of the genus, Triquetrorhabdulus inversus, is also the type species of Pseudotriquetrorhabdulus. Although the combination Pseudotriquetrorhabdulus inversus is invalid (INA Newsletter vol.3(1)), p.4), this does not imply that the genus is invalid. Therefore, Wiseorhabdus is to be regarded as a junior synonym of Pseudotriquetrorhabdulus.

REVIEW

Keupp,H., 1981: Calcareous dinoflagellate cysts of the boreal Lower Cretaceous (Lower Hauterivian to Albian).
-Science, vol.5; 190 pp., 53 pls.; ISSN 0172-9179
Institut für Paläontologie, Universität Erlangen.

This is an excellent book on those calcareous objects that are known as calcispheres.
Subjects treated are: a historical overview, description of the method used and of the profile studied, taxonomy, stratigraphy, ecology, phenotypical reactions to ecology, morphology, paleogeography, biometry, and other quantitative data.
About 700 pictures on 53 plates give a good impression of the complex morphologies of the different groups. The taxonomic part is extensive. Four groups and eight genera are discussed, in total containing about 40 species.
Each chapter has an English summary (the book is written in German), and also the explanations of figures and plates are given in both English and German. The only thing that is wanting is a species index.

This book seems to be a must for everyone dealing with calcareous dinoflagellates.

S.v.H.

Validation of the names of some species of Zygosphaera KAMPTNER

by Berit Riddervold Heimdal

It has been brought to my attention by Dr. R. E. Norris that the genus name Laminolithus which was proposed in HEIMDAL & GAARDER (1980) is a synonym of Zygosphaera KAMPTNER and invalid under ICBN Art. 52. Therefore, the diagnosis of Zygosphaera is emended, and the genus name Calyptrolithina is proposed for Z. divergens HALLDAL & MARKALI which shows characters excluding it from the emended Zygosphaera.

Zygosphaera KAMPTNER emend. HEIMDAL

KAMPTNER 1936, p. 244.

Diagnosis

Coccolith case subspherical, dimorphic. Solidly constructed disc-shaped coccoliths (laminoliths) of regular calcite rhombohedrons placed in layers parallel to coccolith bottom, with or without perforations approximately normal to bottom, sides slightly tapering conically towards proximal end. Distal surface of ordinary coccoliths usually flat with central knob or thin ridge of microcrystals. Stomatal coccoliths (zygoform laminoliths) with high transverse, pointed ridge, with or without perforations.

Type: Zygosphaera hellenica KAMPTNER (SD: LOEBLICH & TAPPAN 1963, p. 194).

Testa coccolithica subsphaerica, dimorpha. Coccolithi (laminolithi) discoformes solide constructi rhombohedris calcitis regularibus laminis fundo coccolithico parallelis positis, cum vel sine perforationibus fere fundo normalibus, lateribus conice se ad finem proximalem modice minuentibus. Superficies distans coccolithorum ordinariorum fere plana cum bulla centrali vel microcrystallorum dorso tenui instructa. Coccolithi stomatales (laminolithi zygoformes) dorso transverso acuminato, cum vel sine perforatione instructi.

Typus: Zygosphaera hellenica KAMPTNER (SD: LOEBLICH & TAPPAN 1963, p. 194).

Zygosphaera bannockii (BORSETTI & CATI) HEIMDAL n. comb. Basionym: Sphaerocalyptra bannockii BORSETTI & CATI, 1976, p. 212, pl. 13, figs. 4-6. Synonym: Laminolithus bannockii (BORSETTI & CATI) HEIMDAL, HEIMDAL & GAARDER 1980, p. 8, pl. 2, fig. 18.

Zygosphaera hellenica KAMPTNER, 1937, p. 306, pl. 16, figs 27-29. Synonym: Laminolithus hellenicus (KAMPTNER) HEIMDAL, HEIMDAL & GAARDER 1980, p. 8, pl. 3, figs 19-21.

Zygosphaera marsilii (BORSETTI & CATI) HEIMDAL n. comb. Basionym: Sphaerocalyptra marsilii BORSETTI & CATI, 1976, p. 212, pl. 13, figs 7-10. Synonyms: Corisphaera gracilis KAMPTNER, BORSETTI & CATI 1976, p. 218, pl. 15, fig. 9; C. aff. gracilis KAMPTNER, BORSETTI & CATI 1976, p. 218, pl. 15, figs 10, 11; Laminolithus marsilii (BORSETTI & CATI) HEIMDAL, HEIMDAL & GAARDER 1980, p. 8, pl. 3, figs 22, 23; ?Zygosphaera amoena KAMPTNER, 1937, p. 305, pl. 16, figs 24-26.

Calyptrolithina HEIMDAL n. gen.
DERIVATION OF NAME: Greek kalyptra, cap-shaped covering; Greek lithos, stone; referring to the calyptroform ordinary coccoliths.

Diagnosis
Coccolith case subspherical, dimorphic, with distinct flagellar area. Ordinary coccoliths calyptroliths, proximal part consisting of a basal ring which bears a tube widening distally; central part highly vaulted, surrounded at base by the distal crystal rings of the tube. Proximal ring, tube and central part formed by a single layer of microcrystals arranged in the usual hexagonal pattern, second crystal ring from distal margin of tube with a regular row of holes, most easily seen in distal view. Stomatal coccoliths zygoliths with high, pointed bridge normal to long axis of coccolith.
Type: Calyptrolithina divergens (HALLDAL & MARKALI) HEIMDAL n. comb.

Testa coccolithica subsphaerica, dimorpha, area flagellari distincta. Coccolithi ordinarii calyptrolithi, parte proximali anulo fundi tubum se in exteriorem partem dilatantem ferente constante; pars centralis alte convexa, in basi anulis tubi crystallorum distantibus circumdata. Anulus proximalis, tubus parsque centralis una microcrystallorum lamina ordine hexagonali usitato formata consistunt, crystallorum anulo secundo a margine tubi distante cum foraminum serie regulari, facillime e distante visu. Coccolithi stomatales zygolithi cum ponte alto acuminato axi longo coccolithico directo.
Typus: Calyptrolithina divergens (HALLDAL & MARKALI) HEIMDAL n. comb.

Calyptrolithina divergens (HALLDAL & MARKALI) HEIMDAL n. comb.
Basionym: Zygosphaera divergens HALLDAL & MARKALI 1955, p. 8, pl. 2.

Calyptrolithina divergens f. tuberosa (HEIMDAL) HEIMDAL n. comb.
Basionym: Zygosphaera divergens HALLDAL & MARKALI f. tuberosa HEIMDAL, HEIMDAL & GAARDER 1980, p. 12, pl. 3, fig. 25.

Table 1. Coccolith type in the holococcolithophorid genera studied in HEIMDAL & GAARDER (1980).

Genus/ type species	Coccolith case	Coccolith type	Coccolith type	
			Ordinary coccoliths	Stomatal coccoliths
Crystallolithus C. hyalinus	Monomorphic	Crystallolith		
Syracolithus S. dalmaticus	Monomorphic	Laminolith		
Zygosphaera Z. hellenica	Dimorphic		Laminolith	Zygoform laminolith
Calyptrosphaera C. globosa	Monomorphic	Calyptrolith		
Sphaerocalyptra S. quadridentata	Dimorphic		Calyptrolith	Calyptrolith
Calyptrolithophora C. papillifera	Dimorphic		Calyptrolith	Calyptrolith
Calyptrolithina C. divergens	Dimorphic		Calyptrolith	Zygolith
Homozygosphaera H. spinosa	Monomorphic	Zygolith		
Corisphaera C. gracilis	Dimorphic		Zygolith	Zygolith
Helladosphaera H. cornifera	Dimorphic		Zygolith	Helladolith
Periphyllophora P. mirabilis	Monomorphic	Helladolith		

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