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Fossil Dinoflagellates: Index to Genera and Species,
1977 Edition

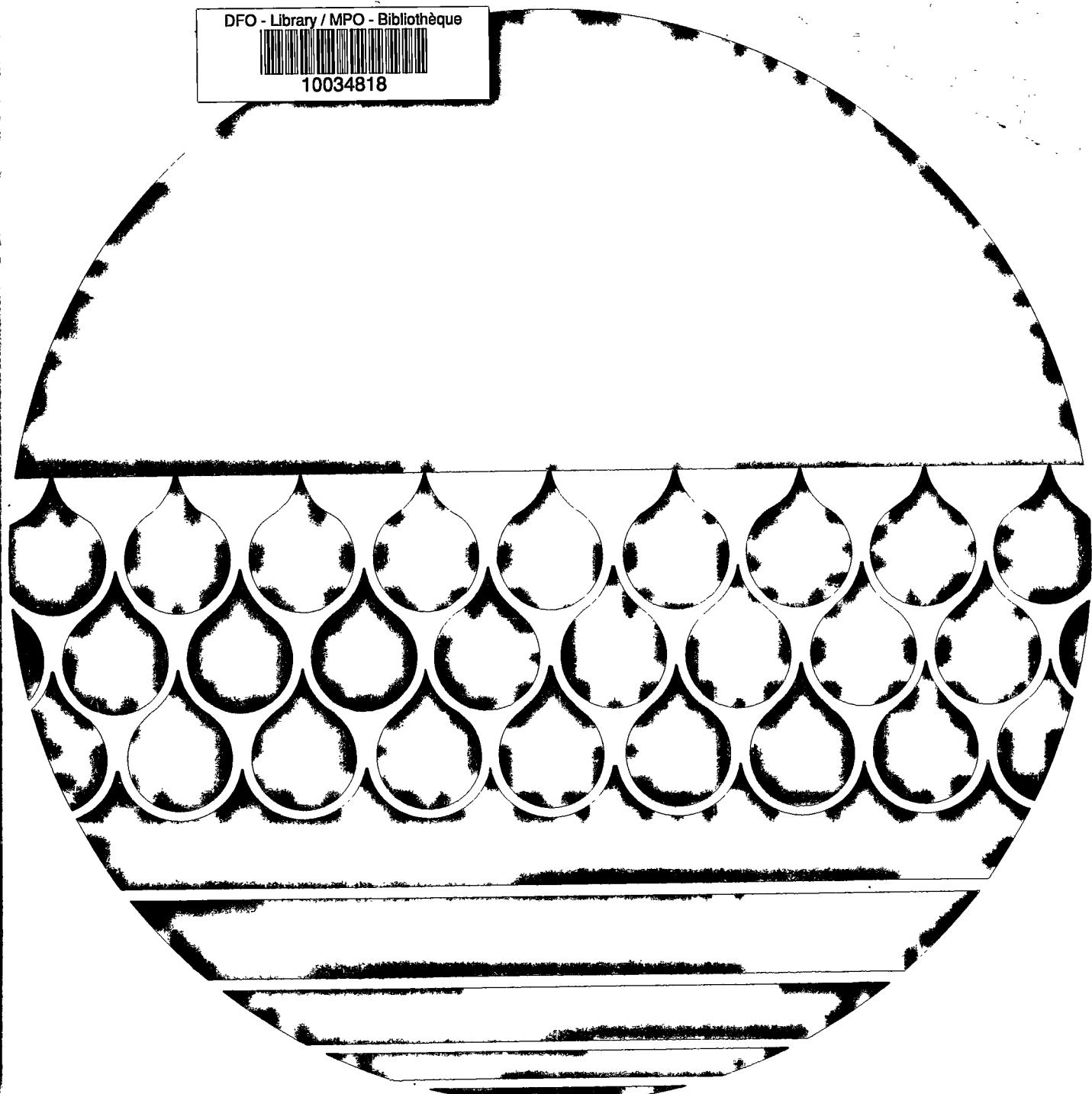
J. K. Lentin and G. L. Williams

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BEDFORD INSTITUTE OF OCEANOGRAPHY

Dartmouth, Nova Scotia
Canada

FOSSIL DINOFLAGELLATES: INDEX TO GENERA AND SPECIES,

1977 EDITION

by

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Atlantic Geoscience Centre
Geological Survey of Canada
Department of Energy, Mines and Resources

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ABSTRACT

The Index is a listing of fossil dinocyst taxa at and below the generic rank, published before April 1977, arranged alphabetically; it includes 342 genera, 1700 species, 136 subspecies, and 2 varietates. Also listed are 48 generic names no longer considered legitimate. Fifty-eight new combinations are proposed, as well as 2 new names for junior homonyms, and 14 changes of rank. New combinations are cross-referenced to the basionym and other combinations. A bibliography contains all works used in the text. The orthography of some 300 names has been corrected.

SOMMAIRE

Le répertoire est une liste des taxons dinokystes fossiles au rang générique et sous ce rang, publiée avant avril 1977 et disposée en ordre alphabétique; il comprend 342 genres, 1700 espèces, 136 sous-espèces, et 2 variétés. On y trouve aussi 48 noms génériques qui ne sont plus jugés valides. On propose 58 nouvelles combinaisons, 2 nouveaux noms pour les homonymes de rang inférieur, et 14 changements de rang. On renvoie les nouvelles combinaisons au "basonyme" et aux autres combinaisons. Une bibliographie renferme tous les travaux utilisés dans le texte. On a corrigé l'orthographe de quelque 300 noms.

INTRODUCTION

Increased interest in the study of fossil dinoflagellates over the past two decades has resulted in a sharp rise in the number of published taxa, which now exceeds two thousand. The present Index, an update of Lentin and Williams (1973), attempts to provide a current listing of all dinocyst genera and species. The term dinocyst, first proposed by Lentin and Williams (1973) denotes a presumed dinoflagellate cyst. The present work includes some Recent dinocysts.

The dinoflagellates have been described both as animals, necessitating their classification under the International Code of Zoological Nomenclature (I.C.Z.N.), or as plants which are subject to the International Code of Botanical Nomenclature (I.C.B.N.). Since a preponderance of species are autotrophic (synthesizing organic compounds from inorganic substances and containing chlorophyll like the green plants) dinoflagellates are regarded by botanists as plants, constituting the Class Dinophyceae within the Division Pyrrhophyta of the Algae. Throughout this Index they are regarded as plants and therefore the articles and recommendations of the I.C.B.N. have been applied to their nomenclature.

The format for this Index closely follows that used by Lentin and Williams (1973). The genera are arranged in alphabetical order and the species and subspecies are presented in similar fashion within the genera and species respectively. Taxa considered invalid, illegitimate or junior synonyms are denoted by quotation marks. For clarity and simplicity the abbreviated generic name is not repeated before each species, but the tabulated species names are indented so that no confusion will result from this omission. This practice is acceptable under Article 33, paragraphs 1-2 of the I.C.B.N. which allows, ". . . any typographical device which indicates that an epithet is associated with a particular generic or other name."

The species list includes the author, date, page number, plate and figure numbers for each species which remains within the original generic assignment. For species which have been assigned to the genus by later transfer the author, date and page number of the first valid transfer are listed and citation of the original description is included in parentheses.

In cases where a species has been assigned to more than two genera, the first generic name given is that of the original combination. If a species has been transferred out of the genus under which it is listed, the specific name is given in quotation marks and its current generic assignment is listed. The age appearing with each specific name is that of the type material. Every attempt has been made to cross reference all names for species and taxa of lower rank which have been included within two or more genera.

Occasional comments on taxonomic problems are included immediately after the generic or specific entry. One such example is the status of "*Meiourogonyaulax*" Sarjeant, 1966b, and its contained species. Gocht, 1975, p. 353, considered this genus to be a junior synonym of *Lithodinia* Eisenack emend Gocht. He did not, however, effect any formal transfer of species. Subsequently Gocht, 1976, p. 334, invalidly (Stafleu, personal communication) transferred several species of *Meiourogonyaulax* to *Lithodinia*. The present authors have been asked

by Hans Gocht (personal communication) to validly transfer the species of "*Meiourogonyaulax*" to *Lithodinia*. This has been effected in the Index, with the exception of *Meiourogonyaulax stoveri* Millioud, 1969, which was transferred to *Lithodinia* by Duxbury (1977).

Lentin and Williams (1973, p. 3-5) discussed the infraspecific classification currently used for fossil dinocysts, and recommended that the terms subspecies, variety and forma not be used indiscriminately. Their definitions for these infraspecific categories have been maintained in the present Index. This has necessitated the raising of infraspecific taxa previously described as variетates to the subspecies level, thus creating a "stat. nov." or *status novus*. Sarjeant (1976c, p. 10) states: "In my opinion, the name 'subspecies' carries evolutionary overtones that make its application inappropriate to the forms here treated with. I recognise that the definition of subspecies in the International Code of Botanical Nomenclature carries no such implications; but I prefer to apply the term 'subspecies' either to members of a population exhibiting a morphological feature whose development appears likely to link that species with another, or to geographically or stratigraphically isolated populations, all of whose members show a slight, but consistent, difference from typical forms." We cannot concur with Sarjeant's reasoning which was based upon the recognition of evolutionary overtones. Bestowing such a connotation upon the subspecies would, we feel, lead to several erroneous conclusions. We have therefore retained the variety only in the sense of Lentin and Williams (1973).

A major responsibility in compiling an index is the necessity to provide correct orthography. We are indebted to Jan Jansonius for the correction of over 300 such errors which appeared in our first draft. One such example is *Canningia ringnesii* Manum and Cookson, 1964, named in honour of the Ringnes brothers who helped finance the second 'Fram'-expedition. The correct orthographic representation of this species therefore is *Canningia ringnesiorum* Manum and Cookson, 1964. The species *Chatangiella bondarenkii* (Vozzhennikova, 1967) Lentin and Williams (1976) named after the palynologist N.M. Bondarenko, is now listed as *Chatangiella bondarenkoi* (Vozzhennikova, 1967) Lentin and Williams (1976).

The first valid publication of a genus is not always immediately apparent. Lentin and Williams (1973, p. 84) argued that *Kisselovia* Vozzhennikova, 1963, was a *nomen nudum*, the correct citation being *Kisselevia* Vozzhennikova, 1967. They based their conclusion on the failure of Vozzhennikova (1963) to designate a holotype for the type of the genus. F.A. Stafleu (personal communication) confirmed that the correct orthography is *Kisselovia* Vozzhennikova, 1963. He states: "A type cannot be validly published, only a name can be. Art. 37 says exactly what it means. In other words a type species indication of a genus may be to an invalidly published name, e.g. to a pre-starting point name of a species (see e.g. Code p. 243, under the rejected homonym *Martensia*)."

Arguments concerning the advantages and disadvantages of the "dual system" of classification for motile dinoflagellates and dinocysts are beyond the scope of this Index. The dual system has arisen from the independent study of dinoflagellate motile and cyst stages by neontologists and paleontologists respectively. Only recently has the relationship of the two stages in the life cycle become apparent, especially where morphologically dissimilar cysts and thecae represent the same species. Reid (1974, p. 583-584) presents several excellent arguments for retention of the dual system of classification. Within the Index we are not concerned with suprageneric classification, but only whether generic and specific dinocyst names should be retained, where they are congeneric or conspecific with

motile genera and species. We agree with Reid (*op cit*) that for the present retention of a dual system of classification is preferable. The ultimate retention or rejection of this can be decided only after joint consultation of neontologists and paleontologists working together.

Definition of the taxonomic terms and symbols used herein are as follows:

I.C.B.N.: International Code of Botanical Nomenclature

I.C.Z.N.: International Code of Zoological Nomenclature

comb. nov., *combinatio nova*: Latin, new combination; a combination validly published for the first time

emend., *emendatus*, *-a*, *-um*: Latin, altered (by); indicates a change in circumscription of a taxon

jr hom., junior homonym; the latter published of two homonyms

jr syn., junior synonym; the latter published of two synonyms

nom. nov., *nomen novum*: Latin, new name; a new name replacing a junior homonym

nom. nud., *nomen nudum*: Latin, naked name; a name published without such associated descriptive matter as is required by the I.C.B.N. to satisfy the criteria of valid publication

nomen subst., *nomen substitutum*: Latin, substitute name; a replacement name for a junior homonym

non: Latin, not

sp. nov., *species nova*: Latin, new species; a species validly published for the first time

stat. nov., *status novus*: Latin, new status; used to indicate that a taxon has been altered in rank but retains in its name the epithet from its name in the former rank. For purpose of author citation, *stat. nov.* is treated as *comb. nov.*

subsp., *subspecies*: Latin, subspecies

var., *varietas*: Latin, variety, variant

*: type species of the genus

"...": indicates epithet now correctly used in another combination or a taxon considered to be a *jr syn.*

O.C.: Orthographic change

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We would like to express our gratitude to Ann Pattison who so expertly typed the manuscript and Dome Petroleum for financial assistance.

ACANTHAULAX Sarjeant, 1968, p.227 (*nom. subst. pro Acanthogonyaulax* Sarjeant, 1966b, p.132).

"*acanthosphaera*" (Sarjeant, 1961a). NOW *Lithodinia*.

downiei (Sarjeant, 1960, p.138; holotype illustrated by Downie, 1957, pl.20, fig.10) Sarjeant, 1976c. p.6. Kimmeridgian; formerly *Baltisphaeridium*.

paliuros (Sarjeant, 1962a, p.260, pl.1, fig.7; text-fig.5) Sarjeant, 1968, p.228-229. Oxfordian; formerly *Gonyaulax*.

"*?spinossissima*" (Deflandre, 1938b). NOW *Pareodinia*.

**venusta* (Klement, 1960, p.44-45, pl.5, fig.10-13; text-fig.22) Sarjeant, 1968, p.227. Middle Oxfordian to Kimmeridgian; formerly *Gonyaulax*. Lentin and Williams, 1973, p.9 rejected the transfer of this species to *Gonyaulacysta* by Dodekova, 1971, p.11.

"*ACANTHOGONYAULAX*" Sarjeant, 1966b, p.132, non *Acanthogonyaulax* Kofoid, 1911. See *Acanthaulax* Sarjeant, 1968.

ACHILLEODINIUM Eaton, 1976, p.234.

**biformoides* (Eisenack, 1954, p.68, pl.11, fig.16-20) Eaton, 1976, p.234. Late Eocene-Early Oligocene; formerly *Hystrichosphaeridium*, *Baltisphaeridium* and *Hystrichokolpoma*.

ACHOMOSPHEERA Evitt, 1963, p.163.

alcicornu (Eisenack, 1954, p.65, pl.10, fig.1-2; text-fig.5) Davey and Williams, 1966a, p.50. Oligocene; formerly *Hystrichosphaeridium*.

bulla Cookson and Eisenack, 1974, p.55, pl.23, fig.13. Paleocene.

cabra Sah et al., 1970, p.144, pl.1, fig.3. Late Cretaceous.

convexa Sah et al., 1970, p.145-146, pl.1, fig.12-13. Late Cretaceous.

delicata Sah et al., 1970, p.144-145, pl.1, fig.4-5. Late Cretaceous.

globata Sah et al., 1970, p.145, pl.1, fig.10-11. Late Cretaceous.

grallaeformis (Brosius, 1963, p.42, pl.5, fig.3; text-fig.2) Davey and Williams, 1969, p.4. Oligocene; formerly *Hystrichosphaeridium*.

"*hirundo*" (Eisenack, 1958). NOW *Laternosphaeridium*.

"*hyperacantha*" (Deflandre and Cookson, 1955). NOW *Spiniferites*.

ACHOMOSPHAERA (cont'd)

membraniphora (Agelopoulos, 1964, p.674, text-fig.1-2) Eaton, 1976, p.237. Late Eocene; formerly *Hystrichostrogylon*.

neptuni (Eisenack, 1958, p.399, pl.26, fig.7-8; text-fig.8) Davey and Williams, 1966a, p.51-52, pl.3, fig.7; pl.9, fig.11. Early Cretaceous; formerly *Baltisphaeridium*.

operculata Sah et al., 1970, p.144, pl.1, fig.1-2. Late Cretaceous.

**ramulifera* (Deflandre, 1937b, p.74, pl.14, fig.5-6; pl.17, fig.10) Evitt, 1963, p.163. Late Cretaceous; formerly *Hystrichosphaeridium* and *Baltisphaeridium*. The transfer of this species to *Spiniferites* by Reid, 1974, p.608-609 is herein rejected, since according to Davey and Williams, 1966a, p.46, parasutural lines have not been observed on the holotype, although one of the paratypes possesses very faint lines. Also the generic diagnosis for *Spiniferites* would have to be emended to accommodate taxa lacking visible expression of parasutures.

subsp. *perforata* (Davey and Williams, 1966a, p.50, pl.5, fig.1,5) Lentin and Williams, 1973, p.10. Early Eocene; formerly *Achomosphaera ramulifera* var. *perforata*.

recurvatum Jain et al., 1975, p.8, pl.3, fig.36-37,39. Maastrichtian.

reginensis Corradini, 1973, p.171, pl.27, fig.2; text-fig.8. Senonian.

robusta Sah et al., 1970, p.145, pl.1, fig.6-7. Late Cretaceous.

sagena Davey and Williams, 1966a, p.51, pl.2, fig.1-2. Cenomanian.

triangulata (Gerlach, 1961, p.194-195, pl.29, fig.1) Davey and Williams, 1969, p.4. Miocene; formerly *Baltisphaeridium*.

"*tridactylites*" (Valensi, 1955a). NOW *Silicisphaera*.

valianta Sah et al., 1970, p.145, pl.1, fig.8-9. Late Cretaceous.

ACTINISCUS (Ehrenberg, 1840, as a subgenus of *Dictyoche*) Ehrenberg, 1843, p.103, raised to generic rank.

?*discus* Ehrenberg, 1854, pl.21, fig.49. Pliocene. (No description given.)

ACTINISCUS (cont'd)

elegans (Ehrenberg) Ehrenberg, 1854, pl.22, fig.31. Pliocene.

heptagonus (Ehrenberg) Ehrenberg, 1854, pl.20, fig.49. Pliocene.

**pentasterias* (Ehrenberg) Ehrenberg, 1854, pl.18, fig.61; pl.19, fig.45; pl.33 (XVII), fig.1 = *Dictyocha* (*Actiniscus*) *pentasterias*, Ehrenberg, 1840, p.111,149; fixed as type of the genus by Downie and Sarjeant, 1964 (1965), p.82. Pliocene.

?*rota* Ehrenberg, 1854, pl.21, fig.50. Pliocene. (No description given.)

sexfurcatus Ehrenberg, 1854, pl.35, fig.15. Recent. (No description given.)

sirius Ehrenberg, 1854, pl.33, fig.1. Miocene. (No description given.)

?*stella* (Ehrenberg) Ehrenberg, 1854, pl.22, fig.52. Pliocene.

talmadgei Parke, 1974, p.81-82, pl.1, fig.1-9. Late Miocene.

tetrasterias Ehrenberg, 1854, pl.28, fig.62. Miocene. (No description given.)

ACTINOTHECA Cookson and Eisenack, 1960a, p.9.

**aphroditae* Cookson and Eisenack, 1960a, p.9, pl.2, fig.19-20. Turonian.

ornata Cookson and Eisenack, 1970a, p.147, pl.13, fig.1-2. Senonian.

rara Corradini, 1973, p.183, pl.30, fig.1. Late Cretaceous-?Paleocene.

ADNATOSPHAERIDIUM Williams and Downie, 1966c. p.215.

aemulum (Deflandre, 1938b, p.187-189, pl.9, fig.12; pl.10, fig.5-8; pl.11, fig.1-7) Williams and Downie, 1969, p.17. Oxfordian; formerly *Hystrichosphaeridium* and *Carnosphaeropsis*.

subsp. *integrum* (Cookson and Eisenack, 1958, p.47, pl.7, fig.6-7) Eisenack and Kjellstrom, 1971a, p.45. Late Jurassic.

apenninicum Corradini, 1973, p. 163-164, pl. 25, fig. 4; pl. 36, fig. 1a-b. Late Cretaceous - Paleocene.

ADNATOSPHAERIDIUM (cont'd)

apiculatum (Cookson and Eisenack, 1960b, p.254, pl.39, fig.15)
Lentin and Williams, 1973, p.11. Probably Tithonian; formerly
Cannosphaeropsis.

"*capilatum*" De Coninck, 1969, p.39, pl.11, fig.9-14,21-24. Early
Eocene. Eaton, 1976, p.306 considered this species (although
excluding De Coninck, pl.11, fig.14) to be a *jr syn.* of
Impletosphaeridium implicatum Morgenroth.

caulleryi (Deflandre, 1938b, p.189, pl.11, fig.2-3)
Williams and Downie, 1969, p.17. Oxfordian; formerly
Hystrichosphaeridium and *Cannosphaeropsis*.

chonetum (Cookson & Eisenack, 1962b, p.493, pl.4, fig.8-10)
Davey, 1969a, p.171. Late Albian-Cenomanian; formerly
Cannosphaeropsis.

filamentosum (Cookson & Eisenack, 1958, p.47, pl.7, fig.8-9;
pl.8, fig.1-3) Williams and Downie, 1969, p.17. Middle-Late
Jurassic; formerly *Cannosphaeropsis*.

filiferum (Cookson & Eisenack, 1958, p.46, pl.7, fig.4)
Williams and Downie, 1969, p.17. Turonian-Early Maastrichtian;
formerly *Cannosphaeropsis*.

hunickenii Archangelsky, 1969b, p.201,203, pl.5, fig.5-7.
Eocene.

multispinosum Williams and Downie, 1966c, p.216, pl.24, fig.5;
text-fig.57. Early Eocene.

?*patulum* Williams and Downie, 1966c, p.217, pl.24, fig.2;
fig.58. Early Eocene.

paucispinum (Klement, 1960, p.72, pl.10, fig.9) Gitmez and
Sarjeant, 1972, p.234. Late Oxfordian; formerly *Cannosphaeropsis*.

perforatum (Alberti, 1961, p.37, pl.9, fig.14) Riley and Sarjeant,
1972, p.3. ?Callovian; formerly *Cannosphaeropsis*.

reticulense (Pastiels, 1948, p.49, pl.5, fig.7-10) De Coninck,
1969, p.40. Early Eocene; formerly *Cannosphaeropsis*.

robustum (Morgenroth, 1966a, p.19, pl.4, fig.1) De Coninck, 1975,
p.47-48. Early Eocene; formerly *Cannosphaeropsis*. The transfer
of this species from *Cannosphaeropsis* to *Adnatosphaeridium* is
not attributable to Eaton, 1976, p.239.

uncinatum Norvick, 1976, p.74-75, pl.8, fig.11-12. Cenomanian.

"*vetusculum*" (Davey, 1974). NOW *Systematophora*.

ADNATOSPHAERIDIUM (cont'd)

**vittatum* Williams and Downie, 1966c, p.215, pl.24, fig.3,7;
text-fig.56. Early Eocene.

?*williereae* De Coninck, 1975, p.49, pl.2, fig.9-11. Ypresian. O.C.

AIORA Cookson and Eisenack, 1960a, p.9.

**fenestrata* (Deflandre and Cookson, 1955, p.283, pl.3, fig.2;
text-fig.43) Cookson and Eisenack, 1960a, p.9. Turonian-
Santonian; formerly *Cannosphaeropsis*.

AIREIANA Cookson and Eisenack, 1965a, p.127.

**verrucosa* Cookson and Eisenack, 1965a, p.127, pl.14, fig.11-13
emend., Stover, 1975, p.43-44. Late Eocene.

"*ALBERTIA*" Vozzhennikova, 1967, p.151. Jr hom. of *Albertia*
Schimper, 1837. The species "*Albertia curvicornis*" and
"Albertia recticornis" are now included in *Alterbia*.

ALTERBIA Lentin and Williams, 1976, p.47 nom. subst. pro *Albertia*
Vozzhennikova, 1967 emend. (*non Albertia* Schimper, 1837). The
genus *Alterbia* was illegitimate at the time of erection since
the type species of two other genera, both senior synonyms of
Alterbia, were included within that genus. These two species
were *AndalusIELLA* *mauthei* Riegel, 1974 and *SenegaliniUM* *bicavatum*
Jain and Millepied, 1973. Subsequent observations by Lentin and
Williams indicate that the three genera *Alterbia*, *AndalusIELLA*
and *SenegaliniUM* are separate and distinctive genera. Consequently
all three genera are retained in this index.

acribes (Davey and Verdier, 1971, p.38-39, pl.2, fig.10,12)
Lentin and Williams, 1976, p.48. Early Albian; formerly
Deflandrea.

acuminata (Cookson and Eisenack, 1958, p.27, pl.4, fig.5-8)
Lentin and Williams, 1976, p.48. Cenomanian - Early Turonian;
formerly *Deflandrea*.

acutula (Wilson, 1967b, p.225-226, fig.11-12) Lentin and Williams,
1976, p.48. ?Paleocene; formerly *Deflandrea*.

asymmetrica (Wilson, 1967a, p.62-63, fig.17-21) Lentin and
Williams, 1976, p.48. Erratics, probably Eocene; formerly
Deflandrea.

balmei (Cookson and Eisenack, 1962b, p.486 nom. subst. pro
Deflandrea minor Cookson and Eisenack, 1960a, p.2, pl.1, fig.1-3)
Lentin and Williams, 1976, p.48. Turonian-Middle Senonian;
formerly *Deflandrea*.

"*bicavata*" (Jain and Millepied, 1973). NOW *SenegaliniUM*.

ALTERBIA (cont'd)

curvicornis (Vozzhennikova, 1967) comb. nov.

1967 *Albertia curvicorni* Vozzhennikova, p.151, pl.74, fig.1-3.
Campanian.

dilwynensis (Cookson and Eisenack, 1965c, p.141, pl.18, fig.6-9)

Lentin and Williams, 1976, p.49. Paleocene; formerly
Deflandrea.

distincta (Wilson, 1967a, p.63-64, fig.9-10) Lentin and Williams,
1976, p.49. Erratics, Early Tertiary; formerly *Deflandrea*.

ectorugosa (Archangelsky, 1969b, p.192, pl.1, fig.5-7) Lentin
and Williams, 1976, p.49. Late Eocene; formerly *Deflandrea*.

?*eyrensis* (Cookson and Eisenack, 1971, p.217-218, pl.7, fig.2-3)
Lentin and Williams, 1976, p.49. Albian-Cenomanian; formerly
Deflandrea.

foliacea (Eisenack and Cookson, 1960, p.2, pl.2, fig.3) Lentin
and Williams, 1976, p.49. Turonian - Middle Senonian; formerly
Deflandrea.

ingramii (Cookson and Eisenack, 1970a, p.143, pl.12, fig.7-9)
Lentin and Williams, 1976, p.49. Senonian; formerly
Deflandrea.

macrocysta (Cookson and Eisenack, 1960a, p.3, pl.1, fig.7-8)
Lentin and Williams, 1976, p.49. Campanian; formerly
Deflandrea.

microgranulata (Stanley, 1965, p.219, pl.19, fig.4-6) Lentin
and Williams, 1976, p.49. Paleocene; formerly *Deflandrea*.

minor (Alberti, 1959b, p.98, pl.9, fig.9-11) Lentin and Williams,
1976, p.49. Late Senonian; formerly *Deflandrea*.

obscura (Drugg, 1967, p.17, pl.2, fig.8-9; pl.9, fig.5)
Lentin and Williams, 1976, p.49. Maastrichtian-Danian;
formerly *Deflandrea*.

?*pentaradiata* (Cookson and Eisenack, 1965c, p.139-140, pl.18,
fig.1-2) Lentin and Williams, 1976, p.49. Paleocene; formerly
Deflandrea. Lentin and Williams, 1976, p.49 questionably include
this species in *Alterbia* because of its hexa 2a archeopyle, even
though the distinctive outline of the pericyst suggests it may be
better placed in the genus *Rhombodinium* Gocht. *Alterbia*
pentaradiata subsp. *preceda* conforms more closely to the generic
concept of *Alterbia*.

subsp. *preceda* (Cookson and Eisenack, 1974, p.49, pl.20, fig.1-2)
Lentin and Williams, 1976, p.50. Paleocene; formerly
Deflandrea pentaradiata subsp. *preceda*.

ALTERBIA (cont'd)

pilosa (Davey, 1969b, p.9, pl.3, fig.2-5) Lentin and Williams, 1976, p.50. Campanian - Maastrichtian; formerly *Deflandrea*.

"*polymorpha*" (Malloy, 1972). NOW *AndalusIELLA*.

raiiae (Kjellström, 1973, p.20-22, fig.16) Lentin and Williams, 1976, p.50. Middle-Late Maastrichtian; formerly *Deflandrea*.

**recticornis* (Vozzhennikova, 1967, p.151-152, pl.77, fig.1-4; pl.78, fig.1-3; pl.79, fig.1-2) Lentin and Williams, 1976, p.47; formerly *Albertia*.

rhombohedra (Benson, 1976) comb. nov.

1976 *Deflandrea rhombohedra* Benson, p. 195, pl. 9, fig. 10-12. Early Paleocene.

AMPHIDIADEMA Cookson and Eisenack, 1960a, p.4 emend. Lentin and Williams, 1976, p.60-61.

**denticulata* Cookson and Eisenack, 1960a, p.4, pl.1, fig.11. Senonian.

nucula (Cookson and Eisenack, 1962b, p.486, pl.1, fig.13) Lentin and Williams, 1976, p.61. Senonian; formerly *Deflandrea*.

rectangularis (Cookson and Eisenack, 1962b, p.486, pl.1, fig.14-15) Lentin and Williams, 1976, p.61. Late Turonian-Middle Senonian; formerly *Deflandrea*.

subsp. "*samuelsonii*" (Kjellström, 1973) Lentin and Williams, 1976, p.61; formerly *Deflandrea rectangularis* var. *samuelsonii*. Gocht, 1976, p.322 considered this taxon to be a jr syn. of *Hystrichosphaeropsis quasicibrata* (O. Wetzel) Gocht.

AMPHIDINIUM Claparède and Lachmann, 1859, p.276. Modern genus defined from the motile stage. Fossil cysts formerly included within this genus are listed below together with the present generic assignment.

"*mitratum*" (Vozzhennikova, 1967). NOW *Dinogymnum*.

"*sibiricum*" (Vozzhennikova, 1965) nom. nud. (no type figured).

AMPHOROSPHAERIDIUM Davey, 1969c, p.30.

**fenestratum* Davey, 1969c, p.30-32, pl.1, fig.6; pl.2, fig.2,4; pl.3, fig.1-3. Campanian-Maastrichtian.

subsp. *dividum* (Davey, 1969c, p.32-33, pl.2, fig.5-6; text-fig.2) Lentin and Williams, 1973, p.13. Campanian-Maastrichtian; formerly *Amphorosphaeridium fenestratum* var. *dividum*.

latitubulum Davey, 1969c, p.33-34, pl.4, fig.2,7; text-fig.1, no.4. Campanian-Maastrichtian.

AMPHOROSPHAERIDIUM (cont'd)

multibrevum Davey, 1969c, p.34-35, pl.3, fig.5-6; pl.4, fig.1;
text-fig.1, no.3. Campanian-Maastrichtian.

AMPHORULA Dodekova, 1969, p.19.

**metaelliptica* Dodekova, 1969, p.20, pl.4, fig.1-3. Tithonian.

ANDALUSIELLA Riegel, 1974, p.357.

Lentin and Williams, 1976, p.149 erroneously concluded that
AndalusIELLA and *Alterbia* were synonymous.

laevigata (Malloy, 1972) comb. nov.

1972 *Deflandrea laevigata* Malloy, p.64, pl.1, fig.1-7. Senonian.

**mauthei* Riegel, 1974, p.357-360, pl.2, fig.1-7; text-fig.5-6.

?Senonian. The transfer of this species (as a jr syn. of
AndalusIELLA polymorpha) to *Alterbia* by Lentin and Williams,
1976, p.149, is rejected because of the distinctive nature of
the antapical region.

polymorpha (Malloy, 1972) comb. nov.

1972 *Svalbardella polymorpha* Malloy, p.63-64, pl.1, fig.8-16,21.
Maastrichtian, formerly *Svalbardella* and *Albertia*.

"*ANHYSTRICOSPHEAERIDIUM*" Deflandre in West, 1961, p.452 nom. nud.

No diagnosis given.

ANTHOSPHAERIDIUM Cookson and Eisenack, 1968, p.115.

**convolvuloides* Cookson and Eisenack, 1968, p.115, fig.4A-D.
Santonian-Early Campanian.

APECTODINIUM (Costa and Downie, 1976) stat. nov.

1976 *WetzelIELLA* subgen. *Apectodinium* Costa and Downie, p.608.

**homomorphum* (Deflandre and Cookson, 1955) comb. nov.

1955 *WetzelIELLA homomorpha* Deflandre and Cookson, p.254, pl.5,
fig.7; text-fig.19. Early Eocene. Costa and Downie, 1976,
p.608 designated this species as the type of *WetzelIELLA*
subgen. *Apectodinium*.

subsp. *quinquelatum* (Williams and Downie, 1966b) comb. nov.

1966b *WetzelIELLA homomorpha* var. *quinquelata* Williams and
Downie, p.191-192, pl.18, fig.7. Early Eocene. This taxon
was raised to the subspecies level by Lentin and Williams,
1973, p.141.

hyperacanthum (Cookson and Eisenack, 1965b) comb. nov.

1965b *WetzelIELLA hyperacantha* Cookson and Eisenack, p.134-135,
pl.16, fig.3-6. Paleocene. Costa and Downie, 1976, p.609
transferred this species to *WetzelIELLA* subgen. *Apectodinium*.

APECTODINIUM (cont'd)

paniculatum (Costa and Downie, 1976) comb. nov.

1976 *WetzelIELLA* (*Apectodinium*) *paniculata* Costa and Downie,
p.608-609, pl.92, fig.1. Early Eocene.

parvum (Alberti, 1961) comb. nov.

1961 *WetzelIELLA* *parva* Alberti, p.8-9, pl.1, fig.14-18; pl.12,
fig.10-11. Eocene. Costa and Downie, 1976, p.609 transferred
this species to *WetzelIELLA* subgen. *Apectodinium*.

APROBOLOCYSTA Duxbury, 1977, p.52.

**eilema* Duxbury, 1977, p.52-53, pl.14, fig.4-5,8; text-fig.19.
Hauterivian.

varigranosa Duxbury, 1977, p.53-54, pl.14, fig.6-7; text-fig.20.
Valanginian-Early Hauterivian.

APTEA Eisenack, 1958, p.393, emend. Davey and Verdier, 1974, p.640-641.

attadalica (Cookson and Eisenack, 1962b, p.495, pl.5, fig.12-15)
Davey and Verdier, 1974, p.643. Aptian-Albian; formerly
Cyclonephelium.

"*eisenackii*" (Davey, 1969a, p.170, pl.8, fig.3-4; pl.9, fig.4; text-
fig.16a-b) Davey and Verdier, 1974, p.643. Albian; formerly
Cyclonephelium. Cookson and Eisenack, 1974, p.74 considered
this species to be a jr syn. of *Apnea polymorpha* Eisenack.

**polymorpha* Eisenack, 1958, p.394, pl.22, fig.5-12; pl.24, fig.5.
Early Cretaceous.

rugulosa Clarke and Verdier, 1967, p.57-58, pl.12, fig.5-6;
text-fig.23. Santonian.

securigera Davey and Verdier, 1974, p.642-643, pl.91, fig.2-3;
text-fig.5(vii). Early Aptian.

APTEODINIUM Eisenack, 1958, p.385.

"*ciliatum*" (Gocht, 1959, p.65, pl.8, fig.5-6). Clarke and Verdier,
1967, p.19 considered this species to be a jr syn. of *Trichodinium*
castaneum (Deflandre) Clarke and Verdier. "*Appteodinium ciliatum*"
was transferred to *Trichodinium* by Eisenack, 1964, p.811.

conjunction Eisenack and Cookson, 1960, p.5, pl.1, fig.7-8.
Aptian.

cornutum Cookson and Eisenack, 1974, p.51, pl.24, fig.9. Paleocene.

cribrosum Cookson and Eisenack, 1968, p.112, fig.1L.
Santonian-Early Campanian.

APTEODINIUM (cont'd)

grande Cookson and Hughes, 1964, p.52, pl.6, fig.8-9. Late Albian-Early Cenomanian.

**granulatum* Eisenack, 1958, p.386, pl.23, fig.8-14. Aptian.

maculatum Eisenack and Cookson, 1960, p.4, pl.2, fig.1. Albian.

micracanthum Cookson and Eisenack, 1974, p.51-52. Albian-Senonian.

reticulatum Singh, 1971, p.312, pl.47, fig.1-4. Late Albian.

spinosum Jain and Millepied, 1975, p.139-140, pl.2, fig.27. Aptian-Albian.

spiridooides Benedek, 1972, p.5, pl.2, fig.1; pl.15, fig.1-6. Middle Oligocene.

tamboviense Vozzhennikova, 1967, p.61, pl.41, fig.1. Barremian.

tuberculatum Cookson and Eisenack, 1970a, p.146-147, pl.12, fig.14. Senonian.

AQUADULCUM Harland and Sarjeant, 1970, p.220-221.

myalupense (Churchill and Sarjeant, 1963, p.38-40, fig.5,22-23) Harland and Sarjeant, 1970, p.221-222. Holocene; formerly *Palaeohystrichophora*.

pikeae (Churchill and Sarjeant, 1963, p.40-41, fig.6,24) Harland and Sarjeant, 1970, p.222. Holocene; formerly *Palaeohystrichophora*.

**serpens* Harland and Sarjeant, 1970, p.221, pl.21, fig.7-8; text-fig.5. Holocene.

?*yanchepense* Harland and Sarjeant, 1970, p.222-223, pl.22, fig.3. Holocene.

ARANEOSPHAERA Eaton, 1976, p.239-240.

**araneosa* Eaton, 1976, p.240,242, pl.2, fig.5-8; text-fig.6. Middle-Late Eocene.

ARCHEOTECTATUM Habib, 1972, p.375-376.

**sarjeantii* Habib, 1972, p.376, pl.5, fig.3-4. Oxfordian-Kimmeridgian.

AREOLIGERA Lejeune-Carpentier, 1938, p.164. emend. Williams and Downie, 1966c, p.227-228.

biramum Maier, 1959, p.304, pl.29, fig.2. Oligocene.

AREOLIGERA (cont'd)

campensis Caro, 1973, p.344, 347-348, pl.1, fig.2. Middle Paleocene.

?*cassicula* Drugg, 1970b, p.811, fig.2B, 3A-B. Early Eocene.

coronata (O. Wetzel, 1933b, p.41, pl.4, fig.17) Lejeune-Carpentier, 1938, p.168. Senonian; formerly *Hystrichosphaera penicillata* forma *coronata* and *Hystrichosphaeridium coronatum*.

"*danica*" (W. Wetzel, 1952). NOW *Cleistosphaeridium*.

delicata Horowitz, 1975, p.24, pl.1, fig.2. Late Triassic.

dermatica Maier, 1959, p.305, pl.29, fig.3. Oligocene.

galea (Maier, 1959, p.306, pl.29, fig.4) Davey et al., 1969, p.15. Oligocene; formerly *Galea*.

lychnaea (Maier, 1959, p.310, pl.30, fig.6) Davey et al., 1969, p.15. Miocene; formerly *Galea*.

medusettiformis (O. Wetzel, 1933b, p.41, pl.4, fig.19) Lejeune-Carpentier, 1938, p.169. Senonian; formerly *Hystrichosphaera penicillata* forma *medusettiformis*.

rhizopodiphora (O. Wetzel, 1933b, p.41, pl.4, fig.18) Lejeune-Carpentier, 1938, p.169. Senonian; formerly *Hystrichosphaera penicillata* forma *rhizopodiphora*.

**senonensis* Lejeune-Carpentier, 1938, p.164-166, text-fig.1-3. Senonian.

sentosa Eaton, 1976, p.246, pl.4, fig.1-2; pl.5, fig.1,3; text-fig.8A. Middle-Late Eocene.

tauloma Eaton, 1976, p.247, pl.4, fig.3,5; pl.5, fig.5,6; text-fig.8B. Middle-Late Eocene.

tenuicapillata (O. Wetzel, 1933b, p.42, pl.4, fig.20-22) Lejeune-Carpentier, 1938, p.167. Senonian; formerly *Hystrichosphaera*.

subsp. *irregularis* (O. Wetzel, 1933b, p.42-43, pl.4, fig.20) Lentini and Williams, 1973, p.16. Senonian; formerly *Hystrichosphaera tenuicapillata* forma *irregularis*. Transfer of the forma to *Areoligera* was effected by Lejeune-Carpentier, 1938, p.167.

subsp. *pinopallina* (O. Wetzel, 1933b, p.42-43, pl.4, fig.22) Lentini and Williams, 1973, p.16. Senonian; formerly *Hystrichosphaera tenuicapillata* forma *pinopallina*. Transfer of the forma to *Areoligera* was effected by Lejeune-Carpentier, 1938, p.167.

AREOLIGERA (cont'd)

turbilineata (O. Wetzel, 1933b, p.42, pl.4, fig.21) Lejeune-Carpentier, 1938, p.167. Senonian; formerly *Hystrichosphaera tenuicapillata* forma *turbilineata*.

twistringensis (Maier, 1959, p.308-309, pl.30, fig.3-4) Davey et al., 1969, p.15. Oligocene; formerly *Galea* and *Baltisphaeridium*.

undulata Eaton, 1976, p.248, pl.4, fig.4,6; pl.5, fig.2,4; text-fig.8C,9. Middle-Late Eocene.

vermiculata Corradini, 1973, p.159-160, pl.24, fig.6-7; pl.34, fig.5. Late Cretaceous-Paleocene.

volata Drugg, 1967, p.21, pl.3, fig.11-13; pl.9, fig.4. Danian.

AREOSPHAERIDIUM Eaton, 1971, p.357-358.

arcuatum Eaton, 1971, p.360-361, pl.3, fig.1-9; text-fig.4-5. Middle Eocene.

**diktyoplokus* (Klumpp, 1953, p.392, pl.18, fig.3-7) Eaton, 1971, p.358-359. Eocene; formerly *Hystrichosphaeridium* and *Cordosphaeridium*.

subsp. *latum* (Klumpp, 1953, p.392, pl.18, fig.18-19) Lentini and Williams, 1973, p.16. Eocene; formerly *Hystrichosphaeridium diktyoplokus* subsp. *latum*.

fenestratum Bujak, 1976, p.107, pl.2, fig.9-12; pl.3, fig.1-4; text-fig.3D-F. Late Eocene.

multicornutum Eaton, 1971, p.363-364, pl.4, fig.1-7; text-fig.6. Middle Eocene.

ARPYLORUS Calandra, 1964, p.4114.

**antiquus* Calandra, 1964, p.4114, fig.1-3. Silurian.

ARTEMISIOCYSTA Benedek, 1972, p.49.

**cladodichotoma* Benedek, 1972, p.49, pl.12, fig.8; text-fig.23. Middle-Late Oligocene.

ASCODINIUM Cookson and Eisenack, 1960a, p.5.

**acrophorum* Cookson and Eisenack, 1960a, p.5, pl.1, fig.19-20. Late Albion-Cenomanian.

"*hialinum*" Baltes, 1963, p.585, nom. nud. Holotype not designated by Baltes.

ASCODINIUM (cont'd)

"*lordii*" (Cookson and Eisenack, 1968). NOW *Senoniasphaera*.

"*ovale*" (Cookson and Eisenack, 1970a). NOW *Ovoidinium*.

parvum (Cookson and Eisenack, 1958, p.28, pl.4, fig.12-13)
Cookson and Eisenack, 1960a, p.5. Late Albian-Cenomanian;
formerly *Deflandrea*.

"*pontis-mariae*" (Deflandre, 1936b). NOW *Subtilisphaera*.

"*scabrosum*" (Cookson & Hughes, 1964). NOW *Ovoidinium*.

serratum Cookson and Eisenack, 1960a, p.5, pl.1, fig.21-22.
Cenomanian.

"*stagonoides*" (Benedek, 1972). NOW *Deflandrea*.

"*trendallii*" (Cookson and Eisenack, 1970a). NOW ?*Subtilisphaera*.

"*verrucosum*" (Cookson & Hughes, 1964). NOW *Ovoidinium*.

ASCOSTOMOCYSTIS Drugg and Loeblich, 1967, p.187.

**hydria* Drugg and Loeblich, 1967, p.187, pl.3, fig.13-15;
text-fig.5. Early Eocene.

maxima Singh, 1971, p.425-426, pl.79, fig.3-4. Late Albian.

potane Drugg and Loeblich, 1967, p.187-188, pl.3, fig.10-12;
text-fig.6. Oligocene.

"*ASTROCYSTA*" Davey, 1970, p.359.

Lentin and Williams, 1976, p.150 considered this genus to be a
jr syn. of *Palaeoperidinium* Deflandre emend. Sarjeant. All
species, with the exception of *A. tricuspis* (O. Wetzel, 1933a)
which was returned to *Lejeunia*, have been transferred to
Palaeoperidinium.

ATAXIODINIUM Reid, 1974, p.588.

**choanum* Reid, 1974, p.588-589, pl.1, fig.1-2. Recent.

ATHIGMATOCYSTA Duxbury, 1977, p.23-24.

**glabra* Duxbury, 1977, p.24, pl.11, fig.1,6; text-fig.3. Berriasian-
Barremian.

"*AUSTRALIELLA*" (Vozzhennikova, 1967, p.129-130). Lentin and
Williams, 1976, p.151-152 considered this genus to be a
jr syn. of *Chatangiella* Vozzhennikova. Accordingly they
transferred all the species, apart from "*Australiella*
cooksoniae", to *Chatangiella*. "*Australiella cooksoniae*"
is now included in *Isabelidinium*.

AVELLODINIUM Duxbury, 1977, p.24.

**falsificum* Duxbury, 1977, p.24-26, pl.5, fig.1-3; text-fig.4.
Berriasian-Barremian.

BALCATTIA Cookson and Eisenack, 1974, p.78.

**cirrifera* Cookson and Eisenack, 1974, p.78, pl.24, fig.8;
pl.28, fig.16. Albian-Cenomanian.

BATIACASPHAERA Drugg, 1970b. p.813.

baculata Drugg, 1970b. p.814, fig.6F. Late Eocene.

**compta* Drugg, 1970b, p.813-814, fig.6A-E; 7A-B. Late Eocene.

macrogranulata Morgan, 1975, p.162, pl.2, fig.3a-d. Neocomian.

BATIOLADINIUM Brideaux, 1975, p.1241. The genus "*Necrobroomea*"
Wiggins, 1975, is a jr syn. of *Batioladinium*.

?*exiguum* (Alberti, 1961, p.26, pl.5, fig.14) Brideaux, 1975,
p.1240. Early Hauterivian; formerly *Broomea*.

?*gochtii* (Alberti, 1961) comb. nov.

1961 *Broomea gochtii* Alberti, p.27, pl.5, fig.8-10, ?16.
Valanginian.

**jaegeri* (Alberti, 1961, p.26, pl.5, fig.1-7) Brideaux, 1975,
p.1240. Late Barremian; formerly *Broomea*.

longicornutum (Alberti, 1961, p.27, pl.5, fig.18-21; pl.6,
fig.1-2) Brideaux, 1975, p.1240. Late Hauterivian-Late
Barremian; formerly *Broomea*.

micropodium (Eisenack and Cookson, 1960, p.7, pl.2, fig.8-9)
Brideaux, 1975, p.1240. Albian; formerly *Broomea*.

?*pelliferum* (Alberti, 1961, p.26, pl.5, fig.11-13) Brideaux, 1975,
p.1240. Late Barremian-Early Aptian; formerly *Broomea*.

?*tricornoides* (Alberti, 1961) comb. nov.

1961 ?*Broomea tricornoides* Alberti, p.28, pl.5, fig.17.
Late Hauterivian.

BELODINIUM Cookson and Eisenack, 1960b, p.249 emend. Dodekova, 1975,
p.23.

**dysculum* Cookson and Eisenack, 1960b, p.250, pl.37, fig.14;
pl.39, fig.10. Probably Tithonian.

BELODINIUM (cont'd)

obsoletum Dodekova, 1975, p.23-24, pl.4, fig.1-12; text-fig.5.
Late Bathonian.

BICARINELLUM Deflandre, 1948, p.212.

**castaninum* Deflandre, 1948, p.212, fig.28-31,34. Middle Eocene.

BIECHELERELLA Deflandre, 1948, p.209-210.

**jurassica* Deflandre, 1948, p.210-211; text-fig.26-27. Late Jurassic.

BIORBIFERA Habib, 1972, p.377.

**johnnewingii* Habib, 1972, p.377-378, pl.10, fig.2-3. Early Cretaceous.

BITECTATODINIUM Wilson, 1973, p.351.

**tepikiense* Wilson, 1973, p.351-353, fig.2, no.1-12.
Middle Pleistocene.

BOURKIDINIUM Morgan, 1975, p.160.

**granulatum* Morgan, 1975, p.160-161, pl.2, fig.2a-c. Late Aptian-Albian.

BROOMEA Cookson and Eisenack, 1958, p.41 emend. Lentin and Williams, 1976, p.143-144. Wiggins, 1975, p.102 considered *Broomea* to be a jr syn. of the genus *Pareodinia* Deflandre emend. Wiggins. This was rejected by Lentin and Williams, 1976, p.144.

"*exigua*" (Alberti, 1961). NOW ?*Batioladinium*.

"*gochtii*" (Alberti, 1961). NOW *Batioladinium*.

"*jaegeri*" (Alberti, 1961). NOW *Batioladinium*.

"*longicornuta*" (Alberti, 1961). NOW *Batioladinium*.

"*micropoda*" (Eisenack and Cookson, 1960). NOW *Batioladinium*.

"*pellifera*" (Alberti, 1961). NOW ?*Batioladinium*.

**ramosa* Cookson and Eisenack, 1958, p.41-42, pl.6, fig.6-8.
Middle-Late Jurassic.

"*seelandica*" (Lange, 1969). NOW *Isabelidinium*.

simplex Cookson and Eisenack, 1958, p.42, pl.6, fig.9.
Late Jurassic.

BROOMEA (cont'd)

"*tricornoides*" (Alberti, 1961). NOW ?*Batioladinium*.

BROTZENIA Horowitz, 1975, p.25.

**cristata* Horowitz, 1975, p.25, pl.1, fig.8. Late Triassic.

BULBODINIUM O. Wetzel, 1960, p.82. Klement, 1961, p.489-492, concluded that one species was referable to *Scriniodinium* and the remaining were species of *Deflandrea*. However, he did not effect any transfers. For complete discussion see Lentini and Williams, 1976, p.93-94.

altipetax O. Wetzel, 1960, p.83, pl.1, fig.3,5,9. Senonian.

oistoides O. Wetzel, 1960, p.83-84, pl.1, fig.6-7. Senonian.

**seitzii* O. Wetzel, 1960, p.82-83, pl.1, fig.1-2,4,8,10-13.
Senonian.

CALCICARPINUM Deflandre, 1948, p.216.

**tetraedricum* Deflandre, 1948, p.216,218; text-fig.35-37. Eocene.

CALCIGONELLUM Deflandre, 1948, p.206.

**infula* Deflandre, 1948, p.206, fig.13-18. Late Miocene.

CALCIODINELLUM Deflandre, 1947b, p.1781-1782.

**operosum* Deflandre, 1947b, p.1781-1782, fig.1-6. Late Miocene.

CALCIOGRANELLUM Deflandre, 1948, p.204.

**limbatum* Deflandre, 1948, p.204, fig.10-12. Late Miocene.

CALCIPTERELLUM Deflandre, 1948, p.207.

**colomii* Deflandre, 1948, p.208, fig.19-21. Late Miocene.

CALCISPHEARELLUM Deflandre, 1948, p.215.

**flosculus* Deflandre, 1948, p.215-216, text-fig.32-33.
Oxfordian.

CALEDONIDINIUM Reid, 1974, p.589.

**vermiculatum* Reid, 1974, p.589-590, pl.1, fig.3-5. Recent.

CALIGODINIUM Drugg, 1970b, p.814-815.

CALIGODINIUM (cont'd)

aceras (Manum and Cookson, 1964, p.27-28, pl.6, fig.9-11)
Lentin and Williams, 1973, p.21. Cenomanian; formerly
Kalyptea. The transfer of this species to *Pareodinia*
by Davey and Verdier, 1974, p.645, was rejected by Lentin
and Williams, 1975, p.2148; and the transfer of this species
to *Kalyptea* by Jain and Millepied, 1975, p.145, is herein
rejected because the archeopyle of *C. aceras* is not intercalary.

**amiculum* Drugg, 1970b, p.815, fig.8A-B, 9A-E. Dannian. The
transfer of this species to *Kalyptea* by Jain and Millepied,
1975, p.145, is herein rejected since *C. amiculum* has an
apical archeopyle.

CALLAIOSPHAERIDIUM Davey and Williams, 1966b, p.103.
"*Hexasphaera*" Clarke and Verdier, 1967, is a jr syn.
of this genus. See Clarke et al., 1968, p.181.

**asymmetricum* (Deflandre and Courteville, 1939, p.100, pl.4,
fig.1-2) Davey and Williams, 1966b, p.104. Senonian;
formerly *Hystrichosphaeridium*.

CANNINGIA Cookson and Eisenack, 1960b, p.251.

aspera Singh, 1971, p.322, pl.50, fig.1. Middle Albian.

circularis Cookson and Eisenack, 1971, p.219, pl.8, fig.6.
Middle Cretaceous.

colliveri Cookson and Eisenack, 1960b, p.251, pl.38, fig.3-4.
Aptian.

granulata Morgenroth, 1966a, p.12, pl.2, fig.10. Early Eocene.

hirtella (Alberti, 1961, p.28, pl.4, fig.20) Millioud, 1969,
p.425. Valanginian-Hauterivian; formerly *Circulodinium*.

minor Cookson and Hughes, 1964, p.43, pl.8, fig.1-3,5.
Late Albian-Early Cenomanian.

**reticulata* Cookson and Eisenack, 1960b, p.251, pl.38, fig.1-2.
Tithonian.

ringnesiorum Manum and Cookson, 1964, p.15, pl.2, fig.10.
Campanian-Maastrichtian. O.C. This plural ending is
necessary because the species is named in honor of the
Ringnes brothers.

rotundata Cookson and Eisenack, 1961a, p.72, pl.12, fig.1-5.
Senonian.

scabrosa Cookson and Eisenack, 1970a, p.146, pl.13, fig.6-7.
Senonian.

CANNINGIA (cont'd)

senonica Clarke and Verdier, 1967, p.20-21, pl.1, fig.12-14;
text-fig.7. Santonian.

torulosa Davey and Verdier, 1973, p.180,183, pl.1, fig.2,5,8.
Late Albian-Early Cenomanian.

CANNINGINOPSIS Cookson and Eisenack, 1962b, p.488.

**denticulata* Cookson and Eisenack, 1962b, p.488, pl.1, fig.16-19;
text-fig.2. Albian-Cenomanian.

"*ovalis*" (Vozzhennikova, 1967). NOW *Spinidinium*.

tabulata (Davey and Verdier, 1974, p.630, pl.92, fig.1-4, pl.93,
fig.6) Duxbury, 1977, p.27. Aptian; formerly *Cyclonephelium*.

CANNOSPHAEROPSIS O. Wetzel, 1933b, p.6 emend. Williams and
Downie, 1966c, p.222.

"*aemula*" (Deflandre, 1938b). NOW *Adnatosphaeridium*.

"*apiculata*" (Cookson and Eisenack, 1960b). NOW *Adnatosphaeridium*.

"*caulleryi*" (Deflandre, 1938b). NOW *Adnatosphaeridium*.

"*choneta*" (Cookson and Eisenack, 1962b). NOW *Adnatosphaeridium*.

densa Cookson and Eisenack, 1962b, p.493, pl.4, fig.1-3.
Late Albian-Cenomanian.

densifilosa Cookson and Eisenack, 1974, p.70, pl.24, fig.13.
Late Jurassic-Early Cretaceous.

densiradiata Cookson and Eisenack, 1962b, p.493, pl.4, fig.5-7.
Cenomanian.

elegantula Drugg, 1967. p.25, pl.4, fig.17. Danian.

"*fenestrata*" (Deflandre and Cookson, 1955). NOW *Aiora*.

"*filamentosa*" (Cookson and Eisenack, 1958). NOW *Adnatosphaeridium*.

"*filifera*" (Cookson and Eisenack, 1958). NOW *Adnatosphaeridium*.

glabra Cookson and Eisenack, 1974, p.70, pl.24, fig.12.
Middle Cretaceous.

hyperacantha Cookson and Eisenack, 1960a, p.9, pl.2, fig.14-15.
Campanian.

"*mirabilis*" (Cookson and Eisenack, 1958). NOW *Peridictyocysta*.

CANNOSPHEAEROPSIS (cont'd)

"*paucispina*" (Klement, 1960). NOW *Adnatosphaeridium*.

"*perforata*" (Alberti, 1961). NOW *Adnatosphaeridium*.

peridictya Eisenack and Cookson, 1960, p.8, pl.3, fig.5-6.
Late Albian-Cenomanian.

"*philippotii*" (Deflandre, 1947a). NOW *Nematosphaeropsis*.

praetexta Corradini, 1973, p.163, pl.25, fig.7a-b, 8, pl.35,
fig.5. Late Cretaceous-Paleocene.

pulchra Alberti, 1961, p.37, pl.10, fig.5. Coniacian.

pusulosa Morgenroth, 1966b, p.8, pl.2, fig.6. Early Oligocene.

"*reticulensis*" (Pastiels, 1948). NOW *Adnatosphaeridium*.

"*robusta*" (Morgenroth, 1966a). NOW *Adnatosphaeridium*.

scaffoldi (Baksi, 1962, p.17, pl.2, fig.25) Downie and
Sarjeant, 1964 (1965), p.101. Eocene; formerly
Hystrichosphaeridium.

"*speciosa*" (Alberti, 1961). NOW *Polystephaneophorus*.

tutulosa Cookson and Eisenack, 1960a, p.8, pl.2, fig.12-13.
Cenomanian.

"*urniformis*" (Cookson, 1953). NOW *Emmetrocysta*.

"*ursulae*" (Morgenroth, 1966a). NOW *Membranilarnacia*.

**utinensis* O. Wetzel, 1933b, p.6, pl.3, fig.9-17; text-fig.12.
Senonian.

CANTULODINIUM Alberti, 1961, p.23.

protuberatum Wall, 1965a, p.160, pl.4, fig.14-20; pl.8, fig.8.
Pliensbachian-Toarcian (Lias).

**speciosum* Alberti, 1961, p.23, pl.3, fig.20-23; pl.12, fig.3.
Valanginian.

CARPODINIUM Cookson and Eisenack, 1962b, p.489 emend. Leffingwell
and Morgan, 1977, p.297.

**granulatum* Cookson and Eisenack, 1962b, p.489, pl.1, fig.6-10
emend. Leffingwell and Morgan, 1977, p.297-298. Albian.

obliquicostatum Cookson and Hughes, 1964, p.48, pl.6, fig.1-6.
Late Albian-Early Cenomanian.

CASSICULOSPHAERIDIA Davey, 1969a, p.141.

magna Davey, 1974, p.46, pl.1, fig.3-7. Barremian.

**reticulata* Davey, 1969a, p.142, pl.3, fig.7; pl.4, fig.3.
Cenomanian.

CASSIDIUM Drugg, 1967, p.22.

**fragile* (Harris, 1965, p.97, pl.27, fig.4-5) Drugg, 1967,
p.22. Early Eocene; formerly *Ovoidites*, a pollen genus
to which this species was originally, erroneously, assigned.

hexalobosum Cookson and Eisenack, 1974, p.76, pl.26, fig.6-7.
Middle Cretaceous-Senonian.

CATILOPSIS Drugg, 1970b, p.821.

**abdita* Drugg, 1970b, p.821, fig.17D-F; 18A-C; 19A-B.
Early Eocene.

CAUCA Davey and Verdier, 1971, p.14.

**parva* (Alberti, 1961, p.16, pl.9, fig.1-4) Davey and Verdier,
1971, p.14-15. Early Aptian-Albian; formerly *Hystrichodinium*.

CERATIOPSIS Vozzhennikova, 1963, p.181.

Lentin and Williams, 1976, p.153, considered this genus to be
a jr syn. of *Deflandrea*. However, that view is herein rejected
because of the nature of the hexa 2a archeopyle.

albertii (Corradini, 1973) comb. nov.

1973 *Deflandrea albertii* Corradini, p.174-175, pl.27, fig.7a-b,8;
pl.28, fig.2. Late Cretaceous-Paleocene.

baltica (Vozzhennikova, 1967) comb. nov.

1967 *Cerodinium balticum* Vozzhennikova, p.154, pl.11, fig.2a-b.
Eocene; also formerly *Deflandrea*.

boloniensis (Riegel, 1974) comb. nov.

1974 *Deflandrea boloniensis* Riegel, p.354-356, pl.1, fig.6-10;
text-fig.3. ?Senonian.

crassistriata (Jain et al., 1975) comb. nov.

1975 *Deflandrea crassistriata* Jain et al., p.8-9, pl.6, fig.64-65.
Danian.

depressa (Morgenroth, 1966a) comb. nov.

1966a *Deflandrea depressa* Morgenroth, p.8, pl.1, fig.2. Early
Eocene.

CERATIOPSIS (cont'd)

diebelii (Alberti, 1959b, p.99, pl.9, fig.18-21) Vozzhennikova, 1967, p.159. Late Senonian-Paleocene; formerly *Deflandrea*. O.C.

subsp. "*brevicornis*" Vozzhennikova, 1967, p.160, nom. nud. (described but not figured).

granulostriata (Jain and Millepied, 1973) comb. nov.
1973 *Senegaliniun granulostriatum* Jain and Millepied, p.24-25, pl.1, fig.7-11; pl.2, fig.18; pl.3, fig.29. Maastrichtian; also formerly *Deflandrea*.

**leptoderma* Vozzhennikova, 1963, p.180; text-fig.8. Paleocene. The transfer of this species to *Deflandrea* by Lentin and Williams, 1976, p.41, is herein rejected.

markovae Vozzhennikova, 1967, p.159, pl.119, fig.5,7; pl.120, fig.1-4. Paleocene-Eocene. The transfer of this species to *Deflandrea* by Lentin and Williams, 1976, p.42 is herein rejected since *C. markovi* does not have a broad hexa 2a intercalary archeopyle.

pannucea (Stanley, 1965) comb. nov.
1965 *Deflandrea pannacea* Stanley, p.220, pl.22, fig.1-4,8-10. Paleocene.

?*prutensis* Grigorovitch, 1971, p.92,94, pl.2, fig.2. Paleocene.

sibirica (Vozzhennikova, 1963) comb. nov.
1963 *Cerodinium sibiricum* Vozzhennikova, p.181; text-fig.9-10. Paleocene-Eocene. This species was the type of the genus *Cerodinium* which is considered to be synonymous with *Ceratiopsis*. *Ceratiopsis* is given priority because it appears first in the original publication where both genera were erected; in addition the type of the genus *Ceratiopsis*, *C. leptodermata*, better illustrates the most important features of the plexus of fossils which make up the genus.

speciosa (Alberti, 1959b) comb. nov.
1959b *Deflandrea speciosa* Alberti, p.97, pl.9, fig.12-13. Late Paleocene.

subsp. *glabra* (Gocht, 1969) comb. nov.
1969 *Deflandrea speciosa* forma *glabra* Gocht, p.10; text-fig.12-13. Late Paleocene. This forma was raised to the subspecies level by Lentin and Williams, 1973, p.45.

striata (Drugg, 1967) comb. nov.
1967 *Deflandrea striata* Drugg, p.18, pl.2, fig.13-17. Danian.

CERATIOPSIS (cont'd)

subquadra (Corradini, 1973) comb. nov.

1973 *Deflandrea subquadra* Corradini, p.175-176, pl.28, fig.1.
Senonian.

CERATIUM Schrank, 1793, p.34. Modern genus defined from the motile stage. Fossil cysts formerly included within this genus have been transferred to *Palaeocystodinium*.

CERATOCORYS Stein, 1883. (Modern genus, all fossil forms transferred to *Microdinium*.)

CERATOCYSTIDIOPSIS Deflandre, 1937b, p.89.

"*incerta*" (Deflandre-Rigaud, 1954). NOW *Odontochitinopsis*.

"*ludbrookii*" (Cookson and Eisenack, 1958). NOW *Endoceratium*.

"*molesta*" (Deflandre, 1937b). NOW *Odontochitinopsis*.

**simplex* Deflandre, 1937b, p.89-90, pl.17, fig.1. Late Cretaceous.

"*CERODINIUM*" Vozzhennikova, 1963, p.181. Lentin and Williams, 1976, p.154 considered this genus a jr syn. of *Deflandrea* Eisenack emend. Lentin and Williams. Accordingly, they transferred the two species *Cerodinium sibiricum*, the type of the genus, and *C. balticum* to *Deflandrea*. Both these species are herein (p.20) transferred to *Ceratiopsis*.

CHATANGIELLA Vozzhennikova, 1967, p.128-129 emend. Lentin and Williams, 1976, p.51-52.

armata (Cookson and Eisenack, 1970a, p.142-143, pl.13, fig.9)
Lentin and Williams, 1976, p.53. Senonian; formerly *Deflandrea*.

?*biapertura* (McIntyre, 1975, p.66, pl.3, fig.5-8) Lentin and Williams, 1976, p.53. Campanian-Maastrichtian; formerly *Deflandrea*.

bondarenkoi (Vozzhennikova, 1967, p.130-131, pl.59, fig.1a-b;
pl.60, fig.2) Lentin and Williams, 1976, p.53. Santonian;
formerly *Australiella*. O.C.

campbellensis (Wilson, 1967b, p.225, fig.2-3) Lentin and Williams, 1976, p.53. Paleocene; formerly *Deflandrea*.

chetiensis (Vozzhennikova, 1967, p.131, pl.60, fig.1a-b)
Lentin and Williams, 1976, p.54. Santonian; formerly *Australiella*.

coronata (McIntyre, 1975, p.64-65, pl.3, fig.1-4) Lentin and Williams, 1976, p.54. Campanian; formerly *Deflandrea*.

CHATANGIELLA (cont'd)

decorosa (McIntyre, 1975, p.63-64, pl.2, fig.1-4) Lentin and Williams, 1976, p.54. Campanian-Maastrichtian; formerly *Deflandrea*.

ditissima (McIntyre, 1975, p.62-63, pl.1, fig.1-4) Lentin and Williams, 1976, p.54. Santonian-Maastrichtian; formerly *Deflandrea*.

granulifera (Manum, 1963, p.61, pl.3, fig.5-9) Lentin and Williams, 1976, p.54. Senonian; formerly *Deflandrea* and *Australiella*.

subsp. *tenuis* (Davey, 1970, p.340-341, pl.2, fig.1) Lentin and Williams, 1976, p.54. Albian; formerly *Australiella granulifera* subsp. *tenuis* and *Deflandrea granulifera* var. *tenuis*. The variety was raised to the subspecies level by Lentin and Williams, 1973, p.18.

madura Lentin and Williams, 1976, p.54 nom. subst. pro *Chatangiella manumii* (Cookson and Eisenack, 1970a, p.141-142, pl.11, fig.10-11) Lentin and Williams, 1976, p.54, non *Chatangiella manumii* (Vozzhennikova, 1967, p.184-185, pl.107, fig.1-4) Lentin and Williams, 1976, p.54. Senonian; formerly *Deflandrea manumii*.

magna (Davey, 1970, p.342-343, pl.2, fig.6-8) Lentin and Williams, 1976, p.54. Cenomanian; formerly *Deflandrea*.

manumii (Vozzhennikova, 1967, p.184-185, pl.107, fig.1-4) Lentin and Williams, 1976, p.54. Turonian-Campanian; formerly *Cooksoniella*.

micracantha (Cookson and Eisenack, 1960a, p.3, pl.1, fig.9) Lentin and Williams, 1976, p.54. Campanian; formerly *Deflandrea* and *Australiella*.

multispinosa (Cookson and Eisenack, 1970a, p.141, pl.11, fig.7-9) Lentin and Williams, 1976, p.54. Albian-Cenomanian; formerly *Deflandrea*.

**niiga* Vozzhennikova, 1967, p.129, pl.56, fig.1-4; pl.58, fig.1-4. Santonian.

?*scheii* (Manum, 1963, p.56-58, pl.1, fig.1-16; text-fig.1) Lentin and Williams, 1976, p.54. Middle Cretaceous; formerly *Deflandrea* and *Cooksoniella*. Lentin and Williams, 1976, p.54 tentatively placed this species in the genus *Chatangiella* due to the parasutural ridges which occur on this species which are not typical of the genus.

CHATANGIELLA (cont'd)

serratula (Cookson and Eisenack, 1958, p.28, pl.4, fig.4)
Lentin and Williams, 1976, p.55. Campanian-Early Maastrichtian;
formerly *Deflandrea*.

spectabilis (Alberti, 1959b, p.99, pl.9, fig.7-8) Lentin and
Williams, 1976, p.55. Late Senonian; formerly *Deflandrea*
and *Australiella*.

tripartita (Cookson and Eisenack, 1960a, p.2, pl.1, fig.10)
Lentin and Williams, 1976, p.55. Senonian; formerly *Deflandrea*
and *Australiella*. This species was the type of *Australiella*,
which Lentin and Williams, 1976, p.151 considered to be a jr syn.
of *Chatangiella* Vozzhennikova.

verrucosa (Manum, 1963, p.60, pl.3, fig.1-4) Lentin and
Williams, 1976, p.55. Middle Cretaceous; formerly *Deflandrea*
and *Australiella*.

victoriensis (Cookson and Manum, 1964, p.522, pl.76, fig.3-8)
Lentin and Williams, 1976, p.55. Senonian; formerly
Deflandrea and *Australiella*.

vnigri (Vozzhennikova, 1967, p.185, pl.59, fig.2; pl.79,
fig.3; pl.107, fig.1; pl.109, fig.1-2; pl.110, fig.2-3)
Lentin and Williams, 1976, p.55. Turonian-Santonian; formerly
Cooksoniella. This species was the type of *Cooksoniella*, which
Lentin and Williams, 1976, p.155 considered to be a jr syn. of
Chatangiella Vozzhennikova.

"*CHELINOCYSTA*" Sarjeant, 1967a, p.327, nom. nud. No diagnosis
given. See Clarke et al., 1968, p.182 for discussion.

CHIROPTERIDIUM Gocht, 1960, p.221.

aspinatum (Gerlach, 1961, p.199, pl.29, fig.7-8) Brosius, 1963,
p.48. Middle Oligocene; formerly *Membranophoridium*.

dispersum Gocht, 1960, p.227, pl.18, fig.1-16; text-fig.16-27.
Middle Oligocene.

inornatum Drugg, 1970b, p.811-812, fig.3C-F. Danian.

?*korykum* (Maier, 1959, p.310, pl.30, fig.7-8) Lentin and
Williams, 1973, p.25. Middle Miocene; formerly *Galea*.

**lobospinosum* (Gocht in Weiler, 1956, p.138, pl.12, fig.1-3;
text-fig.8) Gocht, 1960, p.222. Middle Oligocene; formerly
Baltisphaeridium and *Hystrichosphaeridium*.

mespilanum (Maier, 1959, p.306-307, pl.29, fig.5-6) Lentin and
Williams, 1973, p.26. Middle Oligocene-Middle Miocene; formerly
Galea.

CHIROPTERIDIUM (cont'd)

partispinatum (Gerlach, 1961, p.201, pl.29, fig.6) Brosius, 1963, p.48. Middle-Late Oligocene; formerly *Membranophoridium*.

CHLAMYDOPHORELLA Cookson and Eisenack, 1958, p.56.

apiculata Cookson and Eisenack, 1970a, p.150-151, pl.13, fig.3. Albian-Cenomanian.

discreta Clarke and Verdier, 1967, p.24, pl.2, fig.9-10; text-fig.9. Cenomanian.

grossa Manum and Cookson, 1964, p.17, pl.5, fig.1-2. Cenomanian.

lagena Cookson and Eisenack, 1970a, p.151, pl.13, fig.4. Albian-Cenomanian.

largissima Singh, 1971, p.378, pl.67, fig.5-6. Middle Albian.

membranoidea Vozzhennikova, 1967, p.114-115, pl.48, fig.1-10. Late Jurassic.

**nyei* Cookson and Eisenack, 1958, p.56, pl.11, fig.1-3. Aptian-Turonian.

rari tubulae Dodekova, 1975, p.27-28, pl.1, fig.7-10; pl.6, fig.13-16; text-fig.6. Late Bathonian.

tabulata Singh, 1971, p.379, pl.67, fig.7. Middle Albian.

urna Cookson and Eisenack, 1960a, p.10, pl.3, fig.7. Late Albian-Cenomanian.

wallala Cookson and Eisenack, 1960b, p.255, pl.38, fig.13; pl.39, fig.11. Oxfordian to Early Kimmeridgian.

CHONESPHAERA Klumpp, 1953, p.395.

**incerta* Klumpp, 1953, p.395, pl.19, fig.9. Eocene.

CHYTROEISPHAERIDIA (Sarjeant, 1962a, p.492) Downie and Sarjeant, 1964 (1965), p.102 emend. Pocock, 1972, p.99-100.

baetica Riegel, 1974, p.349-350, 353-354, pl.1, fig.1-5; text-fig.2. ?Senonian.

cariacoensis Wall, 1967, p.113, pl.16, fig.13-14. Quaternary.

**chytroeides* (Sarjeant, 1962a, p.493, pl.70, fig.13, 16) Downie and Sarjeant, 1964 (1965), p.103. Oxfordian.

dictydia Sarjeant, 1972, p.41, pl.3, fig.3; pl.6, fig.6. Bathonian-Callovian.

CHYTROEISPHAERIDIA (cont'd)

euteiches Davey, 1969a, p.141, pl.3, fig.8-9. Cenomanian.

mantellii Gitmez and Sarjeant, 1972, p.186, pl.1, fig.3-4; pl.12, fig.3. Early Kimmeridgian.

pocockii Sarjeant, 1968, p.182, pl.1, fig.13. Late Callovian.

reticulata Davey, 1969b, p.14, pl.4, fig.3-4,6. Campanian-Maastrichtian.

?*scabrata* Pocock, 1972, p.100, pl.27, fig.23-25. Late Bajocian.

This species is questionably retained in *Chytroeisphaeridia* although Pocock implies that the archeopyle is precingular.

simplica Wall, 1965b, p.308, text-fig.7,20. Recent.

?*variabilis* Pocock, 1972, p.100, pl.23, fig.14-16. Late Bajocian.

This species is questionably retained in *Chytroeisphaeridia* although Pocock states that the archeopyle is precingular.

CILIOSPHAERIDIUM Grigorovich, 1971, p.94.

**cingulatum* Grigorovich, 1971, p.94, pl.2, fig.1. Paleocene. O.C.

"*CIRCULODINIUM*" Alberti, 1961, p.28. Millioud, 1969, p.425 transferred the type of the genus, "*Circulodinium hirtellum*", to *Canningia*. The remaining species, *Circulodinium deflandrei*, was considered by Millioud, 1969, p.427, to be a jr syn. of *Cyclonephelium distinctum* Deflandre and Cookson.

CIRRIFERA Cookson and Eisenack, 1960a, p.10.

**unilateralis* Cookson and Eisenack, 1960a, p.10, pl.3, fig.8. Late Albian-Cenomanian.

CLADOPYXIDIUM McLean, 1972, p.862.

**septatum* McLean, 1972, p.862-863, pl.1, fig.1-3,5-8,10-12. Paleocene.

CLATHROCTENOCYSTIS Wiggins, 1972, p.302-303.

**elegans* Wiggins, 1972, p.303-304, text-fig.3, pl.2-3. Neocomian, probably Valanginian or Early Hauterivian.

CLEISTOSPHAERIDIUM Davey et al., 1966, p.166.

?*aciculare* Davey, 1969a, p.158, pl.6, fig.11-12. Cenomanian.

Brideaux, 1971, p.93-94 stated that *C. aciculare* is a partial synonym of *Cleistosphaeridium multispinosum* (Singh) Brideaux.

CLEISTOSPHAERIDIUM (cont'd)

actinocoronatum Benedek, 1972, p.34, pl.12, fig.13; text-fig.13.
Middle-Late Oligocene.

ancoriferum (Cookson and Eisenack, 1960a, p.8, pl.2, fig.11)
Davey et al., 1966, p.167; emend. Cookson and Eisenack, 1968,
p.119-120. Albian-Cenomanian; formerly *Hystrichosphaeridium*.
Clarke and Verdier, 1967, p.54 considered this species to be
a jr syn. of *Cleistosphaeridium huguoniottii* (Valensi) Davey.
Clarke and Verdier included the two species in *Hystrichosphaeridium*,
their original generic assignment. Cookson and Eisenack, 1974,
p.66 refuted Clarke and Verdier's synonymy and retained
Cleistosphaeridium ancoriferum as a separate species.

armatum (Deflandre, 1937b, p.76, pl.16, fig.6-7) Davey, 1969a,
p.153. Late Senonian; formerly *Baltisphaeridium* and
Hystrichosphaeridium.

"*ashdodense*" (Rossignol, 1962, p.132, pl.2, fig.2 (first figured
in Rossignol, 1961, pl.1, fig.9)). Wall, 1967, p.109 considered
this species to be a jr syn. of *Lingulodinium machaerophorum*;
formerly *Hystrichosphaeridium* and *Baltisphaeridium*.

bergmannii Archangelsky, 1969a, p.414, pl.2, fig.8,11. Eocene.

brevispinosum Jain and Millepied, 1975, p.150, pl.5, fig.80-82.
Early-?Late Aptian.

?*danicum* (W. Wetzel, 1952, p.396, pl.A, fig.5; text-fig.8)
Davey et al., 1969, p.15. Paleocene; formerly *Baltisphaeridium*,
Hystrichosphaeridium and *Areoligera*.

"*disjunctum*" Davey et al., 1966, p.169, pl.11, fig.9. Reid,
1974, p.591 considered this species a jr syn. of *Lingulodinium
machaerophorum* (Deflandre and Cookson) Wall.

**diversispinosum* Davey et al., 1966, p.167, pl.10, fig.7.
Early Eocene.

echinoides (Maier, 1959, p.318, pl.32, fig.5-6) Davey et al.,
1969, p.15. Oligocene; formerly *Baltisphaeridium* and
Hystrichosphaeridium.

ehrenbergii (Deflandre, 1947c, text-fig.1, no.5) Davey et al.,
1969, p.16. Oxfordian; formerly *Baltisphaeridium* and
Hystrichosphaeridium.

?*flexuosum* Davey et al., 1966, p.169, pl.2, fig.5. Cenomanian.

"*heteracanthum*" (Deflandre and Cookson, 1955). NOW
Heterosphaeridium.

CLEISTOSPHAERIDIUM (cont'd)

huguoniottii (Valensi, 1955a, p.38; text-fig.2a) Davey, 1969a, p.135. Late Cretaceous; formerly *Hystrichosphaeridium* and *Baltisphaeridium*.

subsp. *pertusum* (Davey, 1969a, p.156, pl.7, fig.6-7,9)
Lentin and Williams, 1973, p.28. Cenomanian; formerly
Cleistosphaeridium huguoniottii var. *pertusum*.

leve (Maier, 1959, p.308, pl.30, fig.1-2) Davey et al., 1969,
p.16. Oligocene-Miocene; formerly *Galea* and *Baltisphaeridium*.

lumectum (Sarjeant, 1960, p.139, pl.6, fig.1) Davey et al.,
1969, p.16. Late Oxfordian; formerly *Baltisphaeridium*.

mediterraneum Corradini, 1973, p.137-138, pl.19, fig.5a-b;
text-fig.4. Senonian.

mojsisovicsii Morbey, 1975, p.40, pl.15, fig.5-9. Rhaetian-
Hettangian.

multifurcatum (Deflandre, 1937b, p.76, pl.16, fig.1-3)
Davey et al., 1969, p.16. Late Cretaceous; formerly
Hystrichosphaeridium and *Baltisphaeridium*.

multispinosum (Singh, 1964, p.141, pl.20, fig.1-2) Brideaux,
1971, p.93. Middle Albian-Early Cenomanian; formerly
Baltisphaeridium.

?*oligacanthum* (W. Wetzel, 1952, p.402, pl.A, fig.8; text-fig.21-22)
Davey et al., 1969, p.16. Paleocene; formerly *Hystrichosphaeridium*
and *Baltisphaeridium*.

subsp. *complanatum* (W. Wetzel, 1952, p.404-405, pl.A, fig.11a-b)
Lentin and Williams, 1973, p.29. Paleocene; formerly
Hystrichosphaeridium oligacanthum subsp. *complanatum*.

subsp. *granulatum* (W. Wetzel, 1952, p.404; text-fig.25) Lentin
and Williams, 1973, p.29. Paleocene; formerly *Hystrichosphaeridium*
oligacanthum subsp. *granulatum*.

subsp. *stella* (W. Wetzel, 1952, p.403, pl.A, fig.4; text-fig.23)
Lentin and Williams, 1973, p.29. Paleocene; formerly
Hystrichosphaeridium oligacanthum subsp. *stella*.

subsp. *velatum* (W. Wetzel, 1952, p.403-404, pl.A, fig.7;
text-fig.24) Lentin and Williams, 1973, p.29. Paleocene;
formerly *Hystrichosphaeridium oligacanthum* subsp. *velatum*.

parvum Davey, 1969a, p.157, pl.7, fig.11-12. Cenomanian.

patagonicum Archangelsky, 1969b, p.200-201, pl.3, fig.9-10.
Eocene.

CLEISTOSPHAERIDIUM (cont'd)

pectiniforme (Gerlach, 1961, p.195, pl.28, fig.14; text-fig.18)
Davey et al., 1969, p.16. Oligocene; formerly *Baltisphaeridium*.

"*pilosum*" (Ehrenberg, 1843). NOW *Tenua*.

polyacanthum Gitmez, 1970, p.284-286, pl.12, fig.10; text-fig.22.
Early Kimmeridgian.

polypes (Cookson and Eisenack, 1962b, p.491, pl.4, fig.11-13)
Davey, 1969a, p.154. Albian-Cenomanian; formerly
Hystrichosphaeridium recurvatum subsp. *polypes*.

subsp. *clavulum* (Davey, 1969a, p.154, pl.6, fig.9-10)
Lentin and Williams, 1973, p.30. Cenomanian; formerly
Cleistosphaeridium polypes var. *clavulum*.

polytrichum (Valensi, 1947, p.818, text-fig.4) Davey et al.,
1969, p.16. Late Bathonian; formerly *Baltisphaeridium* and
Hystrichosphaeridium.

sphericum Horowitz, 1975, p.24, pl.1, fig.5. Late Jurassic.

?*spiralisetum* (deWit, 1943, p.383, text-fig.2,11) Davey et al.,
1969, p.16. Late Cretaceous; formerly *Hystrichosphaeridium*
and *Baltisphaeridium*.

tenue Harris, 1974, p.164, pl.2, fig.7-9. Paleocene. O.C.

tiara (Klumpp, 1953, p.390, pl.17, fig.8-10) Davey et al.,
1969, p.16. Eocene; formerly *Baltisphaeridium*,
Hystrichosphaeridium and *Cordosphaeridium*.

tribuliferum (Sarjeant, 1962a, p.487, pl.70, fig.4; text-fig.6c-7)
Davey et al., 1969, p.16. Oxfordian; formerly *Baltisphaeridium*.

COBRICOSPHAERIDIUM Harland and Sarjeant, 1970, p.216-217.

**hebes* Harland and Sarjeant, 1970, p.217-218, pl.21, fig.1-2;
text-fig.2. Holocene.

spiniferum Harland and Sarjeant, 1970, p.218-219, pl.21,
fig.1,3,4-5; text-fig.3-4. Holocene.

subsp. *elegans* Harland and Sarjeant, 1970, p.219-220, pl.21,
fig.4-5; text-fig.4. Holocene.

subsp. *spiniferum* Harland and Sarjeant, 1970, p.218-219, pl.21,
fig.1,3; text-fig.3. Holocene.

"*CODONIA*" Cookson and Eisenack, 1960a, p.11. Junior homonym
of *Codonia*, Huebner, 1823. SEE *Codoniella*.

CODONIELLA Cookson and Eisenack, 1961a, p.75. (*nom. subst.*
pro Codonia Cookson and Eisenack, 1960a *non Huebner*, 1823).

**campanulata* (Cookson and Eisenack, 1960a, p.11, pl.3, fig.1-3)
Downie and Sarjeant, 1964 (1965), p.103. Santonian.

langparensis Jain *et al.*, 1975, p.12, pl.5, fig.57-58, pl.4,
fig.56. Danian.

COMETODINIUM Deflandre and Courteville, 1939, p.98.

**obscum* Deflandre and Courteville, 1939, p.99, pl.2, fig.1.
Turonian.

COMPARODINIUM Morbey, 1975, p.43.

diacroraetium Morbey, 1975, p.44, pl.16, fig.3-6; text-fig.20.
Rhaetian.

**koessenium* Morbey, 1975, p.44, pl.15, fig.14; pl.16, fig.1-2;
text-fig.19a, bl. Rhaetian-Hettangian.

COMPOSITOSPHAERIDIUM Dodekova, 1974, p.25-26. Lentin and Williams,
1975, p.2148 stated that Beju, 1971, p.292 considered
"*Hystrichosphaeridium costatum*", the type of the genus
Compositosphaeridium, to be a *jr syn.* of *Hystrichosphaeridium*
polonicum Gorka, 1965. Pending detailed examination of the
holotype of *H. polonicum*, Lentin and Williams recommended that
both species be retained, thus making *Compositosphaeridium* a
validly published genus.

**costatum* (Davey and Williams, 1966b, p.62, pl.10, fig.4)
Dodekova, 1974, p.26. Oxfordian; formerly *Hystrichosphaeridium*
and *Cordosphaeridium*. Lentin and Williams, 1975, p.2148 did not con-
cur with Beju's (1971, p.292) contention that
Hystrichosphaeridium costatum is a *jr syn.* of
Hystrichosphaeridium polonicum Gorka, 1965.

CONIFERATIUM Burgess, 1971, p.80-81.

**frontierense* Burgess, 1971, p.81, pl.1, fig.6,9; text-fig.13.
Albian-Early Cenomanian.

CONOSPHAERIDIUM Cookson and Eisenack, 1969, p.5. The genus
Conosphaeridium was erected by Cookson and Eisenack, 1969,
p.5, with *Hystrichosphaeridium striatoconus* (Deflandre and
Cookson, 1955) as the type of the genus. However, Sarjeant,
1969, p.14, transferred *H. striatoconus* to *?Litosphaeridium*
thus making *Conosphaeridium* a superfluous genus. Lentin and
Williams, 1973, p.31 rejected the transfer of Sarjeant, 1969
and retained *Conosphaeridium* as a separate genus.

CONOSPHAERIDIUM (cont'd)

**striatoconus* (Deflandre and Cookson, 1955, p.275, pl.2, fig.10)
Cookson and Eisenack, 1969, p.5. Albian-Cenomanian; formerly
Baltisphaeridium and *Hystrichosphaeridium*.

tubulosum Cookson and Eisenack, 1969, p.5-6, pl.2, fig.D-F.
Albian-Cenomanian.

"*COOKSONIELLA*" Vozzhennikova, 1967, p.183. Lentin and Williams,
1976, p.155 considered this genus to be a *jr syn.* of
Chatangiella Vozzhennikova emend. Lentin and Williams.

"?*damasii*" (Lejeune-Carpentier, 1942). NOW *Palaeoperidinium*.

"*Larjakiensis*" (Vozzhennikova, 1967, p.71-72, pl.16, fig.1-2)
Harker and Sarjeant, 1975, p.224. NOW *Palaeoperidinium*
deflandrei subsp. *larjakiense*; formerly *Peridinium conicum*
var. *larjakiense*. The transfer of this taxon to "*Cooksoniella*"
is herein rejected. Species of *Palaeoperidinium*, including
the type of the genus *P. pyrophorum*, commonly possess an endocyst.
Therefore Harker and Sarjeant, 1975 are incorrect in assuming
that the presence of an endocyst in *P. deflandrei* subsp.
larjakiense precludes its assignment to the genus
Palaeoperidinium. Also the evidence for an intercalary
archeopyle resulting from the loss of paraplate 2a is
inconclusive in the line drawings of Vozzhennikova, 1967, pl.16,
fig.1-2.

"*manumii*" (Vozzhennikova, 1967). NOW *Chatangiella*.

"?*paleocenica*" (Cookson and Eisenack, 1965c). NOW *Palaeoperidinium*.

"*scheii*" (Manum, 1963). NOW *Chatangiella*.

"**vnigri*" (Vozzhennikova, 1967). NOW *Chatangiella*.

CORDOSPHAERIDIUM Eisenack, 1963b, p.261 emend. Davey, 1969c,
p.35.

"*axiale*" (Eisenack, 1965). NOW *Lanternosphaeridium*.

biarmatum Morgenroth, 1966a, p.21, pl.4, fig.6-7. Early Eocene.

"*bipolare*" (Cookson and Eisenack, 1965b). NOW *Lanternosphaeridium*.

callosum Morgenroth, 1966a, p.21, pl.4, fig.8-10. Early Eocene.

cantharellum (Brosius, 1963, p.41, pl.6, fig.1) Gocht, 1969,
p.45. Late Oligocene; formerly *Hystrichosphaeridium*.

"*capricornum*" (Cookson and Eisenack, 1965a). NOW *Systematophora*.

CORDOSPHAERIDIUM (cont'd)

"*centrocarpum*" (Deflandre and Cookson, 1955). NOW
Opercudinum.

commune Corradini, 1973, p.151, pl.22, fig.1a-b; pl.33, fig.1-2.
Late Cretaceous-Paleocene.

"*costatum*" (Davey and Williams, 1966b). NOW *Compositosphaeridium*.

cracenospinosum Davey and Williams, 1966b, p.87, pl.3, fig.4.
Early Eocene.

"*diktyoplokus*" (Klumpp, 1953). NOW *Areosphaeridium*.

divergens (Eisenack, 1954, p.67, pl.9, fig.14) Eisenack,
1963b, p.262. Early Oligocene; formerly *Baltisphaeridium*
and *Hystrichosphaeridium*.

"*eoinodes*" (Eisenack, 1958). NOW *Kleithriaspaeridium*.

?*erectum* (Manum and Cookson, 1964, p.14, pl.3, fig.5-6)
Davey and Williams, 1969, p.6. Cretaceous; formerly
Hystrichosphaeridium.

exilimurum Davey and Williams, 1966b, p.87, pl.11, fig.2.
Early Eocene.

"?*fasciatum*" (Davey and Williams, 1966b). NOW *Kleithriaspaeridium*.

fibrospiniosum Davey and Williams, 1966b, p.86, pl.5, fig.5.
Early Eocene.

"*filosum*" (Wilson, 1967a). NOW *Turbiosphaera*.

"*floripes*" (Deflandre and Cookson, 1955). NOW *Homotryblium*.

subsp. "*breviradiatum*" (Cookson and Eisenack, 1961b). NOW
Homotryblium.

funiculatum Morgenroth, 1966a, p.67, pl.9, fig.16; pl.12, fig.21.
Early Eocene.

gracile (Eisenack, 1954, p.66, pl.8, fig.17; pl.10, fig.3-8;
pl.12, fig.7,21) Davey and Williams, 1966b, p.84. Oligocene;
formerly *Hystrichosphaeridium inodes* var. *gracile* and
Cordosphaeridium inodes var. *gracile*.

**inodes* (Klumpp, 1953, p.391, pl.19, fig.1-2) Eisenack, 1963b,
p.261 emend. Morgenroth, 1968, p.549-550. Late Eocene;
formerly *Hystrichosphaeridium*.

var. "*gracile*" (Eisenack, 1954). NOW *Cordosphaeridium gracile*.

CORDOSPHAERIDIUM (cont'd)

inodes (cont'd)

subsp. *inodes* Klumpp, 1953, p.391, pl.18, fig.1-2. Late Eocene.

subsp. "*minimum*" (Morgenroth, 1966a). NOW *Cordosphaeridium minimum*.

subsp. *minus* Morgenroth, 1966a, p.24, pl.5, fig.4-5. Early Eocene.

subsp. *robustum* Gocht, 1969, p.42, pl.2, fig.1-2. Eocene.

klumppiae Corradini, 1973, p.152, pl.22, fig.2a-c. Late Cretaceous-Paleocene.

latispinosum Davey and Williams, 1966b, p.88, pl.5, fig.8. Early Eocene.

lemniscatum Corradini, 1973, p.152-153, pl.22, fig.4a-b,5; p.33, fig.2,4; pl.39, fig.2. Late Cretaceous-Paleocene.

major (Lejeune-Carpentier, 1940, p.220-221, text-fig.13) Corradini, 1973, p.149. Senonian; formerly *Hystrichosphaeridium* and *Polysphaeridium*.

microtriaina (Klumpp, 1953, p.390, pl.17, fig.6-7) Eisenack 1963b, p.263. Late Eocene; formerly *Hystrichosphaeridium*.

subsp. "*centrocarpum*" (Deflandre and Cookson, 1955) De Coninck, 1969, p.32. Lentini and Williams, 1973, p.33 rejected this interpretation by De Coninck and retained the species *centrocarpum* as the type of the genus *Operculodinium*.

subsp. *nanum* (Rozen, 1965, p.311, pl.2, fig.7-8; text-fig.21) Lentini and Williams, 1973, p.33. Late Eocene; formerly *Cordosphaeridium microtriaina* var. *nanum*.

minimum (Morgenroth, 1966a, p.24, pl.5, fig.6-7) Benedek, 1972, p.25-26. Early Eocene; formerly *Cordosphaeridium inodes* subsp. *minimum*.

multispinosum Davey and Williams, 1966b, p.89-90, pl.3, fig.6. Early Eocene.

palmatum (White, 1842, p.39, pl.IV, fig.12) De Coninck, 1965, p.32. Late Cretaceous; formerly *Xanthidium*.

senegalense Jain and Millepied, 1975, p.149, pl.5, fig.68. Campanian-Maastrichtian.

simplex Michael, 1964, p.32-33, pl.3, fig.4. Early Barremian.

CORDOSPHAERIDIUM (cont'd)

solaster Morgenroth, 1966a, p.25, pl.5, fig.8-9. Early Eocene.

"*spinosum*" (White, 1842). NOW *Exochosphaeridium*.

tenuistriatum Heisecke, 1970, p.245, pl.7, fig.1; pl.12, fig.3-4.
Early Paleocene.

"*tiara*" (Klumpp, 1953). NOW *Cleistosphaeridium*.

truncigerum (Deflandre, 1937b, p.71-72, pl.13, fig.6-7) De Coninck,
1975, p.80. Senonian; formerly *Hystrichosphaeridium* and
?*Litosphaeridium*.

uncinispinosum De Coninck, 1969, p.32-33, pl.9, fig.6-8.
Early Eocene.

xanthium Benedek, 1972, p.27-28, pl.9, fig.8; text-fig.9.
Middle-Late Oligocene.

CORNUDINIUM Pocock, 1972, p.93.

**stavelyense* Pocock, 1972, p.94, pl.24, fig.15-16. Late Bajocian.

CORONIFERA Cookson and Eisenack, 1958, p.45 emend. Davey, 1974,
p.47.

albertii Millioud, 1969, p.425-426, pl.1, fig.4. Late Hauterivian.

**oceanica* Cookson and Eisenack, 1958, p.45, pl.12, fig.6.
Albian.

tubulosa Cookson and Eisenack, 1974, p.73, pl.28, fig.12.
Paleocene. O.C.

"*CRASPEDODINIUM*" Cookson and Eisenack, 1974, p.75. Lentini and
Williams, 1976, p.157 considered this genus to be a *jr syn.*
of *Ovoidinium*. The type of the genus and single species
"*Craspedodinium indistinctum*" was accordingly transferred to
Ovoidinium.

CRIBROPERIDINIUM Neale and Sarjeant, 1962, p.443 emend. Davey,
1969, p.125.

cooksoniae Norvick, 1976, p.36-37, pl.1, fig.1-3; text-fig.13.
Cenomanian. O.C.

cornutum Davey, 1974, p.48-49, pl.2, fig.1-5. Middle-Late
Barremian.

edwardsii (Cookson and Eisenack, 1958, p.32, pl.3, fig.5-6;
text-fig.7) Davey, 1969a, p.128. Albian-Early Turonian;
formerly *Gonyaulax* and *Gonyaulacysta*.

CRIBROPERIDINIUM (cont'd)

intricatum Davey, 1969a, p.125-128, pl.2, fig.1-3; text-fig.11-12.
Albian.

muderongense (Cookson and Eisenack, 1958, p.32, pl.3, fig.3-4)
Davey, 1969a, p.128. Aptian; formerly *Gonyaulax*.

orthoceras (Eisenack, 1958, p.388, pl.21, fig.3-11; pl.24, fig.1)
Davey, 1969a, p.128-129. Aptian; formerly *Gonyaulax*. Davey
and Verdier, 1971, p.17 considered *Cribroperidinium orthoceras*
to be a jr syn. of *Cribroperidinium edwardsii* (Cookson and
Eisenack) Davey. They did not, however, give a correct citation.
Singh, 1971, p.307 and Dodekova, 1971, p.8 included *C. orthoceras*
in *Gonyaulacysta*. Lentini and Williams, 1973, p.35 rejected the
above transfers on the basis of the morphology of *C. orthoceras*
which conforms to that of the genus *Cribroperidinium*.

**sepimentum* Neale and Sarjeant, 1962, p.443, pl.19, fig.4;
text-fig.3. Hauterivian.

ventriosum (O. Wetzel, 1933a, p.161-162, pl.2, fig.4-6;
text-fig.1,8) Lentini and Williams, 1973, p.35. Senonian;
formerly *Peridinium* and *Palaeoperidinium*.

CRYPTARCHEODINIUM Deflandre, 1939, p.145 emend. Gitmez, 1970,
p.246.

**calcaratum* Deflandre, 1939, p.145, pl.6, fig.6 emend. Gitmez, 1970,
p.246-248. Kimmeridgian.

CTENIDODINIUM Deflandre, 1938b, p.181 emend. Sarjeant, 1966b,
p.154 emend. Sarjeant, 1975a, p.55.

combazii Dupin, 1968, p.2, pl.1, fig.1-6. Middle and Late
Bathonian.

continuum Gocht, 1970b, p.141-142, pl.26, fig.3; pl.27, fig.5;
pl.29, fig.1-2; pl.32, fig.15; pl.33, fig.8. Early Bathonian.

"*culmulum*" (Norris, 1965) Lentini and Williams, 1973, p.35. The
transfer of this species from *Dichadogonyaulax* to *Ctenidodinium*
was rejected by Sarjeant, 1975a, p.50-51.

elegantulum Millioud, 1969, p.427, pl.2, fig.1-3. Late
Hauterivian-Barremian.

mosaicum Dodekova, 1975, p.18-19, pl.1, fig.1-6; pl.2, fig.1-3,6.
Late Bathonian.

**ornatum* (Eisenack, 1935, p.176, pl.4, fig.9-10) Deflandre, 1938b,
p.181. Oxfordian; formerly *Lithodinia jurassica* var. *ornata*.

CTENIDODINIUM (cont'd)

**ornatum* (cont'd)

Lentin and Williams, 1973, p.35 rejected the transfer of this species to *Gonyaulacysta* by Pocock, 1972, p.87-88. *Ctenidodinium ornatum* has an epicystal archeopyle (combination AP) whilst forms within *Gonyaulacysta* have a simple precingular archeopyle.

pachydermum (Deflandre, 1938b, p.176, pl.7, fig.6-10; text-fig.7-10) Gocht, 1970b, p.142-143. Oxfordian; formerly *Gonyaulax* and *Gonyaulacysta*.

"*panneum*" (Norris, 1965) Lentin and Williams, 1973, p.36. The transfer of this species from *Dichadogonyaulax* to *Ctenidodinium* was rejected by Sarjeant, 1975a, p.55.

rotundum Dodekova, 1975, p.19-20, pl.4, fig.13-14, text-fig.1. Late Bathonian.

"*schizoblatum*" (Norris, 1965) Lentin and Williams, 1973, p.36. The transfer of this species from *Dichadogonyaulax* to *Ctenidodinium* was rejected by Sarjeant, 1975a, p.55.

tenellum Deflandre, 1938b, p.182, pl.9, fig.9-10. Oxfordian.

CUBICULOSPHAERA Harris, 1974, p.163-164.

**maslinensis* Harris, 1974, p.164, pl.2, fig.10. Middle Eocene.

CYCLAPOPHYSIS Benson, 1976, p.182.

**monmouthensis* Benson, 1976, p.183, pl.1, fig.9-12; pl.2, fig.1. Late Maastrichtian-Early Paleocene.

CYCLODICTYON Cookson and Eisenack, 1958, p.58.

minor Pocock, 1972, p.101, pl.23, fig.10. Callovian.

**paradoxum* Cookson and Eisenack, 1958, p.58-59, pl.12, fig.1-2. Cenomanian-Early Turonian.

CYCLONEPHELIUM Deflandre and Cookson, 1955, p.285 emend. Williams and Downie, 1966c, p.223, and emend. Ioannides, et al., 1976, p.450.

areolatum Cookson and Eisenack, 1960b, p.253, pl.38, fig.7-8. Tithonian.

assamicum Jain et al., 1975, p.11, pl.5, fig.61-62; pl.6, fig.73. Danian.

"?*attadalicum*" (Cookson and Eisenack, 1962b). NOW *Aptea*.

CYCLONEPHELIUM (cont'd)

castelcasense Corradini, 1973, p.161, pl.24, fig.2,5a-b;
pl.35, fig.1-2. Late Cretaceous-Paleocene.

clathromarginatum Cookson and Eisenack, 1962b, p.495, pl.6,
fig.1-4. Late Albian-Cenomanian.

**compactum* Deflandre and Cookson, 1955, p.285, pl.2, fig.11-13;
text-fig.44-46. Albian-Santonian.

crassimarginatum Cookson and Eisenack, 1974, p.74-75, pl.28,
fig.1-4. Middle Cretaceous.

densebarbatum Cookson and Eisenack, 1960b, p.253, pl.38, fig.10.
Tithonian.

distinctum Deflandre and Cookson, 1955, p.285-286, pl.2, fig.14;
text-fig.47-48. Senonian.

subsp. *brevispinatum* (Millioud, 1969, p.427-428, pl.1, fig.8-9)
Lentin and Williams, 1973, p.36. Late Hauterivian-Early
Aptian; formerly *Cyclonephelium distinctum* var. *brevispinatum*.

subsp. *distinctum* Deflandre and Cookson, 1955, p.285-286, pl.2,
fig.14; text-fig.47-48. Senonian. Cookson and Eisenack, 1974,
p.74 are incorrect in their citation "*Cyclonephelium distinctum*
Deflandre and Cookson, 1955, var. *distinctum* var. nov.".

divaricatum Williams and Downie, 1966c, p.223-224, pl.25, fig.1;
text-fig.60. Early Eocene.

"*downiei*" (Sarjeant, 1960a, p.138; holotype illustrated by Downie,
1957, p.425, pl.20, fig.10) Ioannides *et al.*, 1977, p.451.
The above transfer is herein rejected, the species being
retained in *Acanthaulax*, since Sarjeant, 1976c, p.6 stated that
the archeopyle is preingular, resulting from the loss of
paraplate 3".

"*eisenackii*" Davey, 1969a, p.170, pl.8, fig.3-4; pl.9, fig.4;
text-fig.16a-b. Albian. Cookson and Eisenack, 1974, p.74
considered this species to be a jr syn. of *Aptea polymorpha*
Eisenack. O.C.

expansum Corradini, 1973, p.161-162, pl.24, fig.8a-b; text-fig.7.
Late Cretaceous-Paleocene.

exuberans Deflandre and Cookson, 1955, p.285. Early Eocene; formerly
Membranilarnax pterospermooides O. Wetzel sensu Pastiels, 1948,
p.46, pl.5, fig.11,13-14.

hughesii Clarke and Verdier, 1967, p.21-22, pl.2, fig.6;
text-fig.8. Cenomanian-Early Turonian.

CYCLONEPHELIUM (cont'd)

incultum Morgenroth, 1966b, p.9, pl.2, fig.5. Early Oligocene.

intricatum Eaton, 1971, p.365, pl.4, fig.8-10. Middle Eocene.

laciniiforme Gerlach, 1961, p.206, pl.29, fig.4. Middle-Late Oligocene.

lemniscatum Stanley, 1965, p.229-230, pl.24, fig.1-6. Paleocene.

membraniphorum Cookson and Eisenack, 1962b, p.495, pl.6, fig.8-14. Albian-Cenomanian.

microfenestratum Bujak, 1976, p.112, pl.3, fig.12; pl.4, fig.1-7; text-fig.3I. Late Eocene.

ordinatum Williams and Downie, 1966c, p.225-227, pl.25, fig.3; text-fig.62. Early Eocene.

pastielsii Deflandre and Cookson, 1955, p.285. Early Eocene; formerly *Membranilarnax* cf. *liradiscoides* O. Wetzel sensu Pastiels, 1948, p.47, pl.5, fig.15. The references to Pastiels, 1948 in Downie and Sarjeant, 1964 (1965) (as pl.5, fig.5) and in Harker and Sarjeant, 1975, p.226 (as p.47, pl.15, fig.5) are incorrect. The correct citation is Pastiels, 1948, p.47, pl.5, fig.15.

paucimarginatum Cookson and Eisenack, 1962b, p.494, pl.6, fig.5-7. ?Late Albian-Cenomanian.

paucispinum Davey, 1969a, p.170, pl.9, fig.1-2. Cenomanian.

reticulosum Gerlach, 1961, p.204, pl.29, fig.2. Middle-Late Oligocene.

retiintextum Cookson, 1965a, p.88, pl.11, fig.4. ?Senonian.

semicirculatum Morgenroth, 1966b, p.9-10, pl.2, fig.3-4. Middle Oligocene.

spinatum Eaton, 1976, p.259-260, pl.8, fig.3; text-fig.12. Early-Middle Eocene.

"*tabulatum*" (Davey and Verdier, 1974). NOW *Canninginopsis*.

textum Bujak, 1976, p.110, pl.3, fig.6-11; text-fig.3G-H. Late Eocene.

vannophorum Davey, 1969a, p.168-170, pl.9, fig.3; pl.11, fig.11-12; text-fig.16E. Cenomanian.

variabile Cookson and Eisenack, 1967a, p.134-135, pl.19, fig.9-11. Paleocene.

CYCLONEPHELIUM (cont'd)

vicinum Eaton, 1976, p.260-261, pl.8, fig.4-5; text-fig.13.
Early-Late Eocene.

vitilare Cookson, 1965b, p.138-139, pl.24, fig.1-7. Paleocene.

CYCLOPSIELLA Drugg and Loeblich, 1967, p.188-190.

**elliptica* Drugg and Loeblich, 1967, p.190, pl.3, fig.1-6;
text-fig.7. Oligocene.

trematophora (Cookson and Eisenack, 1967a) comb. nov.
1967a *Leiosphaeridia trematophora* Cookson and Eisenack, p.136,
p.19, fig.13. Late Eocene.

vieta Drugg and Loeblich, 1967, p.192,194, pl.3, fig.7-9;
text-fig.8. Oligocene.

CYSTIDIOPSIS Nagy, 1965, p.209.

**certus* Nagy, 1965, p.209-210, pl.5, fig.27-30. Middle Miocene.

"*CYSTODINIOPSIS*" Vozzhennikova, 1963, p.185, nom. nud. See
Loeblich and Loeblich, 1969, p.194. "*C. hyperxantha*"
is now included in *Palaeocystodinium*.

DANEA Morgenroth, 1968, p.541-542.

**mutabilis* Morgenroth, 1968, p.542-544, pl.43, fig.5-9; pl.44,
fig.1-3. Danian.

DAPCODINIUM Evitt, 1961a, p.996.

**priscum* Evitt, 1961a, p.996-1001, pl.19, fig.1-14; text-fig.1-20.
Hettangian (Lias).

DEFLANDREA Eisenack, 1938, p.187, emend. Williams and Downie, 1966c,
p.231, emend. Lentini and Williams, 1976, p.35-36.

"*acribes*" (Davey and Verdier, 1971). NOW *Alterbia*.

"*acuminata*" (Cookson and Eisenack, 1958). NOW *Alterbia*.

"*acutula*" (Wilson, 1967b). NOW *Alterbia*.

"*albertii*" (Corradini, 1973). NOW *Ceratiopsis*.

"*amphiata*" (McIntyre, 1975). NOW ?*Isabelidinium*.

andromiensis Vozzhennikova, 1967, p.142-143, pl.71, fig.3-4;
pl.72, fig.1-2. Eocene.

DEFLANDREA (cont'd)

antarctica Wilson, 1967a, p.58,60, fig.23-24,26-27. Erratics,
probably Eocene.

arcuata Vozzhennikova, 1967, p.143-144, pl.66, fig.1; pl.68,
fig.3a-b. Late Eocene-Early Oligocene.

subsp. *oporiensis* (Grigorovitch, 1971) stat. nov.

1971 *Deflandrea arcuata* forma *oporiensis* Grigorovitch, p.92,
pl.1, fig.5. Eocene.

"*armata*" (Cookson and Eisenack, 1970a). NOW *Chatangiella*.

"*asymmetrica*" (Wilson, 1967a). NOW *Alterbia*.

"*asymmetrica*" (Davey and Verdier, 1971). NOW *Subtilisphaera*.

With the transfer of this species from *Deflandrea* to
Subtilisphaera by Lentin and Williams, 1976, p.119, the
original name was no longer a jr hom.; therefore the nom. subst.
Deflandrea daveyi and *Deflandrea deformans* became superfluous.

"*bakeri*" (Deflandre and Cookson, 1955). NOW *Isabelidinium*.

"*balcattensis*" (Cookson and Eisenack, 1969). NOW *Subtilisphaera*.

"*balmei*" (Cookson and Eisenack, 1962b). NOW *Alterbia*.

"*baltica*" (Vozzhennikova, 1967). NOW *Ceratiopsis*.

"*belfastensis*" (Cookson and Eisenack, 1961a). NOW *Isabelidinium*.

"*biaperturata*" (McIntyre, 1975). NOW ?*Chatangiella*.

"*bicavata*" (Jain and Millepied, 1973) Herngreen, 1975, p.61.

The transfer of this species from *Senegaliniun* to *Deflandrea*
is herein rejected because the archeopyle is a standard hexa
2a intercalary.

"*boloniensis*" (Riegel, 1974). NOW *Ceratiopsis*.

"*campbellensis*" (Wilson, 1967b). NOW *Chatangiella*.

"*cincta*" (Cookson and Eisenack, 1958). NOW *Ovoidinium*.

"*conica*" Vozzhennikova, 1960, nom. nud. No description.

"*conorata*" (Stover, 1973). NOW *Isabelidinium*.

"*cooksoniae*" (Alberti, 1959b). NOW *Isabelidinium*.

cornumammillata du Chene and Chateauneuf, 1975, p.31-32, pl.2,
fig.1-13. Early Ilerdian (Late Paleocene).

DEFLANDREA (cont'd)

"*coronata*" (McIntyre, 1975). NOW *Chatangiella*.

"*crassistriata*" (Jain et al., 1975). NOW *Ceratiopsis*.

"*cretacea*" (Cookson, 1956). NOW *Isabelidinium*.

cygniformis Pöthe de Baldis, 1966, p.221, pl.2, fig.C.
Early Tertiary.

"*dakotaensis*" (Stanley, 1965). NOW *Isabelidinium*.

danica Lange, 1969, p.114-115, pl.1, fig.6. Danian.

dartmooria Cookson and Eisenack, 1965b, p.133-134, pl.16,
fig.1-2; text-fig.1. Paleocene.

"*daveyi*" (Lentin and Williams, 1973, p.40). This name designated
as a nom. subst. for *Deflandrea asymmetrica* Davey and Verdier,
1971, is a jr syn. of "*Deflandrea deformans*" Davey and Verdier,
1973. The species was transferred to *Subtilisphaera* by Lentin
and Williams, 1976, p.119, and hence reverted to the name
Subtilisphaera asymmetrica.

"*decorosa*" (McIntyre, 1975). NOW *Chatangiella*.

"*deformans*" (Davey and Verdier, 1973, p.197, nom. nov. pro
D. asymmetrica Davey and Verdier, 1971, p.39-40, pl.2,
fig.4,6) non *D. asymmetrica* Wilson, 1967a, p.62-63. With
the transfer of the former species from *Deflandrea* to
Subtilisphaera by Lentin and Williams, 1976, p.119, the
original name was no longer a jr hom.; therefore the
nom. subst. *Deflandrea deformans* became superfluous.

"*delicata*" (Baltes ex Lentin and Williams, 1973). NOW
Isabelidinium.

delineata Cookson and Eisenack, 1965c, p.140-141, pl.18, fig.3-5;
text-fig.1. Paleocene.

denticulata Alberti, 1959b, p.102-103, text-fig.1.
Paleocene-Early Eocene.

subsp. *minor* (De Coninck, 1969, p.16, pl.1, fig.16-17;
pl.2, fig.1-2) Lentin and Williams, 1973, p.40. Early
Eocene; formerly *Deflandrea denticulata* forma *minor*.

"*depressa*" (Morgenroth, 1966a). NOW *Ceratiopsis*.

"*diebelii*" (Alberti, 1959b). NOW *Ceratiopsis*.

"*dilwynensis*" (Cookson and Eisenack, 1965c). NOW *Alterbia*.

DEFLANDREA (cont'd)

"*dissoluta*" Vozzhennikova, 1967, p.144, pl.73, fig.1-4. Eocene.

"*distincta*" (Wilson, 1967a). NOW *Alterbia*.

"*ditissima*" (McIntyre, 1975). NOW *Chatangiella*.

"*druggii*" (Stover, 1973). NOW *Isabelidinium*.

"*dubia*" (Jain and Millepied, 1973, p.25, pl.2, fig.12-13)
Herngreen, 1975, p.61. Maastrichtian; formerly *Senegaliniun*.
The transfer of this species from *Senegaliniun* to *Deflandrea*
is not attributable to Lentin and Williams, 1976, p.40.

"*echinoidea*" (Cookson and Eisenack, 1960a). NOW *Spinidinium*.

"*ectorugosa*" (Archangelsky, 1969b). NOW *Alterbia*.

"*endopapillata*" Archangelsky, 1969b, p.192-193, pl.1, fig.8-9;
pl.2, fig.3-4. Late Eocene.

"*eocenica*" Baltes ex Lentin and Williams, 1973, p.40, 1969
Deflandrea eocenica (provisional designation) Baltes, p.34,
pl.5, fig.8-9; Holotype - fig.9. Early Eocene.

"*euthema*" (Davey and Verdier, 1971). NOW ?*Subtilisphaera*.

"*extensa*" (Stover, 1973). NOW ?*Vozzhennikovia*.

"*extrema*" (Cookson and Eisenack, 1974). NOW ?*Spongodinium*.

"*eyrensis*" (Cookson and Eisenack, 1971). NOW *Alterbia*.

"*filigrana*" (Benedek, 1972). NOW ?*Vozzhennikovia*.

"*flounderensis*" Stover, 1974, p.174-175, pl.3, fig.1a-c,2.
Early Eocene.

"*foliacea*" (Eisenack and Cookson, 1960). NOW *Alterbia*.

"*fuegiensis*" Menendez, 1965, p.8-9, pl.1, fig.1-3; pl.3, fig.16.
Late Cretaceous.

"*gaditana*" Riegel, 1974, p.356-357, pl.2, fig.8-9; pl.3, fig.1-2.
?Senonian. The transfer of this species to *Senegaliniun* by
Harland, 1977, p.189, is herein rejected.

"*galeata*" (Lejeune-Carpentier, 1942, p.186-188, fig.15-20) Lentin
and Williams, 1973, p.41. Senonian; formerly *Peridinium*.

"*gallia*" (Davey and Verdier, 1973). NOW *Spinidinium*.

"*gambangensis*" (Cookson and Eisenack, 1970a). NOW *Isabelidinium*.

DEFFLANDREA (cont'd)

"*glabra*" (Cookson and Eisenack, 1969). NOW *Isabelidinium*.

"*globosa*" (Davey, 1970). NOW *Isabelidinium*.

"*glomerata*" (Davey, 1970). NOW *Isabelidinium*.

granulata Menendez, 1965, p.9-10, pl.1, fig.4. Eocene-Oligocene.

"*granulifera*" (Manum, 1963). NOW *Chatangiella*.

granulosa Cookson and Eisenack, 1965a, p.122, pl.11, fig.8-9.

Late Eocene.

"*granulostriata*" (Jain and Millepied, 1973). NOW *Ceratiopsis*.

heterophlycta Deflandre and Cookson, 1955, p.249, pl.5, fig.6;
text-fig.5. Late Eocene.

subsp. "*pusulosa*" (Rozen, 1965, p.293-294, pl.1, fig.3-4;
text-fig.2) Lentin and Williams, 1973, p.41. This is
considered to be a jr syn. of *Deflandrea phosphoritica*
by Lentin and Williams, 1976, p.41.

hialina Baltes ex Lentin and Williams, 1973, p.41, *Deflandrea*
hialina (provisional designation) Baltes, 1969, p.34, pl.1,
fig.3-4; Holotype - fig.4. Oligocene-Early Miocene.

"*ingramii*" (Cookson and Eisenack, 1970a). NOW *Alterbia*.

"*irmoechinata*" (Heisecke, 1970). NOW ?*Gonyaulacysta*.

"*kansana*" (Tasch, 1964). NOW ?*Ovoidinium*.

"*korojonensis*" (Cookson and Eisenack, 1958). NOW *Isabelidinium*.

"*laevigata*" (Malloy, 1972). NOW *AndalusIELLA*.

"*lata*" (Cookson and Eisenack, 1968). NOW *Isabelidinium*.

"*leptoderma*" (Vozzhennikova, 1963). The transfer of this species
from *Ceratiopsis* to *Deflandrea* by Lentin and Williams, 1976,
p.41, is herein rejected.

leptodermata Cookson and Eisenack, 1965a, p.121-122, pl.11,
fig.6-7. Late Eocene.

"*limpida*" Singh, 1971, p.359-361, pl.61, fig.1-12; text-fig.62.
Lentin and Williams, 1973, p.43 considered this species to be
a jr syn. of *Spinidinium vestitum* Brideaux.

"*longispinosa*" (Wilson, 1968). NOW *Wetzeliella*.

DEFLANDREA (cont'd)

"*macmурdoensis*" (Wilson, 1967a). NOW *Spinidinium*.

"*macrocysta*" (Cookson and Eisenack, 1960a). NOW *Alterbia*.

"*madurensis*" (Cookson and Eisenack, 1970a). NOW *Isabelidinium*.

"*magna*" (Davey, 1970). NOW *Chatangiella*.

"*magnifica*" (Stanley, 1965). NOW *Lejeunia*.

"*manumae*" (Cookson and Eisenack, 1970a). NOW *Chatangiella madura*.

"*markovii*" (Vozzhennikova, 1967). NOW *Ceratiopsis*.

medcalfii Stover, 1974, p.175-176, pl.3, fig.3a-c. Middle Paleocene. The designation of *D. medcalfii* as a sub-species of *Deflandrea dartmooria* by Lentin and Williams, 1976, p.39 is herein rejected.

"*menendezii*" (Póthe de Baldis, 1966, p.223, pl.2, fig.A). This species, which is based on the observation of one specimen, is considered to be a jr. syn. of *Deflandrea phosphoritica* by Lentin and Williams, 1976, p.42.

"*micracantha*" (Cookson and Eisenack, 1960a). NOW *Chatangiella*.

"*microarma*" (McIntyre, 1975). NOW *Isabelidinium*.

"*microgranulata*" (Stanley, 1965). NOW *Alterbia*.

micropoda Cookson and Eisenack, 1974, p.49, pl.47, fig.11.
Late Eocene.

"*minor*" (Alberti, 1959b). NOW *Alterbia*.

"*minor*" (Cookson and Eisenack, 1960a). Jr. hom. of *D. minor* Alberti, 1959, NOW *Alterbia balmei*.

"*montanaensis*" (Harland, 1977). NOW *Spinidinium*.

"*multispinosa*" (Cookson and Eisenack, 1970a). NOW *Chatangiella*.

"*nucula*" (Cookson and Eisenack, 1962b). NOW *Amphidiadema*.

obliquipes Deflandre and Cookson, 1955, p.252, pl.4, fig.6.
Middle Paleocene-Early Eocene.

"*obscura*" (Drugg, 1967). NOW *Alterbia*.

oebisfeldensis Alberti, 1959b, p.95-96, pl.8, fig.10-13.
Paleocene-Early Eocene.

DEFLANDREA (cont'd)

oebisfeldensis (cont'd)

subsp. *angustata* (Vozzhennikova, 1967, p.146-147, pl.72, fig.3-4) Lentin and Williams, 1973, p.43. Eocene; formerly *Deflandrea oebisfeldensis* forma *angustata*.

subsp. *oebisfeldensis* Alberti, 1959b, p.95-96, pl.8, fig.10-13. Paleocene-Early Eocene.

subsp. *ovalis* (Vozzhennikova, 1967, p.146, pl.71, fig.2) Lentin and Williams, 1973, p.43. Eocene; formerly *Deflandrea oebisfeldensis* forma *ovalis*.

pachyceros Deflandre and Cookson, 1955, p.252, pl.4, fig.7. Late Paleocene-Early Eocene.

"*pannucea*" (Stanley, 1965). NOW *Ceratiopsis*.

"*parva*" (Cookson and Eisenack, 1958). NOW *Ascodinium*.

"*pellucida*" (Deflandre and Cookson, 1955). NOW *Isabelidinium*.

"*pentagonalis*" (Corradini, 1973). NOW *Lejeunia*.

"*pentaradiata*" (Cookson and Eisenack, 1965c). NOW *Alterbia*.

"*perlucida*" (Alberti, 1959b). NOW *Subtilisphaera*.

**phosphoritica* Eisenack, 1938, p.187, text-fig.6. Late Eocene-Early Oligocene.

subsp. *australis* Cookson and Eisenack, 1961b, p.39-40, pl.1, fig.2-3. Eocene.

var. *lata* (Vozzhennikova, 1967, p.142, pl.69, fig.5-6) Lentin and Williams, 1973, p.44. Eocene-Early Oligocene; formerly *Deflandrea phosphoritica australis* forma *lata*.

subsp. *phosphoritica* Eisenack, 1938, p.187, text-fig.6. Late Eocene-Early Oligocene.

var. *attenuata* (Vozzhennikova, 1967, p.140-141, pl.65, fig.2-4; pl.67, fig.2-4; pl.69, fig.4; pl.70, fig.1,4,6-7,10) Lentin and Williams, 1973, p.44. Eocene-Early Oligocene; formerly *Deflandrea phosphoritica phosphoritica* forma *attenuata*.

var. *phosphoritica* Eisenack, 1938, p.187, text-fig.6. Late Eocene-Early Oligocene.

subsp. *vozzhennikovae* Grigorovich, 1972, p.66, fig.3. Early Miocene. Lentin and Williams, 1976, p.43, questioned the age assignment of this sub-species.

DEFLANDREA (cont'd)

"*pilosa*" (Davey, 1969b). NOW *Alterbia*.

"*pirnaensis*" (Alberti, 1959b). NOW *Subtilisphaera*.

"*plea*" (Tasch, 1964). NOW ?*Gonyaulacysta*.

"*pontis-mariae*" (Deflandre, 1936b). NOW *Subtilisphaera*.

"*pulchra*" (Benson, 1976). NOW *Spinidinium*.

"*raiiae*" (Kjellstrom, 1973). NOW *Alterbia*.

"*rectangularis*" (Cookson and Eisenack, 1962b). NOW *Amphidiadema*.

subsp. "*samuelsonii*" (Kjellstrom, 1973) Lentin and Williams, 1975, p.2149; formerly *Deflandrea rectangularis* var. *samuelsonii*. Gocht, 1976, p.322 considered this taxon to be a jr syn. of *Hystrichosphaeropsis quasicibrata* (O. Wetzel) Gocht.

"*rhombica*" (Cookson and Eisenack, 1974). NOW *Spinidinium echinoideum* subsp. *rhombicum*.

"*rhombohedra*" (Benson, 1976). NOW *Alterbia*.

"*rhombovalis*" (Cookson and Eisenack, 1970a). NOW *Isabelidinium*.

robusta Deflandre and Cookson, 1955, p.250, pl.4, fig.9. Eocene.

"*rotundata*" (Eisenack and Cookson, 1960). NOW *Subtilisphaera*.

"*sagittula*" (Drugg, 1970b). NOW *Spinidinium*.

"*scheii*" (Manum, 1963). NOW ?*Chatangiella*.

scolensis Grigorovich, 1971, p.92, pl.1, fig.3. Eocene.

sergipensis Herngreen, 1975, p.61, pl.3, fig.13-15. Late Senonian.

"*serratula*" (Cookson and Eisenack, 1958). NOW *Chatangiella*.

severensis Benson, 1976, p.195-196, pl.10, fig.1-3. Late Maastrichtian.

"*sibirica*" (Vozzhennikova, 1963). NOW *Ceratiopsis*.

"*speciosa*" (Alberti, 1959b). NOW *Ceratiopsis*.

subsp. "*glabra*" (Gocht, 1969). NOW *Ceratiopsis*.

"*spectabilis*" (Alberti, 1959b). NOW *Chatangiella*.

DEFLANDREA (cont'd)

"*spinosissima*" (Cookson and Eisenack, 1970a). NOW *Isabelidinium*.

spinulosa Alberti, 1959b, p.95, pl.8, fig.8-9. Middle-Late Oligocene.

stagonoides (Benedek, 1972, p.10, pl.2, fig.12; text-fig.5) Lentini and Williams, 1976, p.44. Late Oligocene; formerly *Ascodinium*.

"*striata*" (Drugg, 1967). NOW *Ceratiopsis*.

"*subquadra*" Corradini, 1973). NOW *Ceratiopsis*.

"*sverdrupiana*" (Manum, 1963). NOW *Spinidinium*.

"*?tenera*" (Krutzsch, 1962). NOW *Vozzhennikovia*.

"*terrula*" (Davey, 1974). NOW ?*Subtilisphaera*.

"*thomasii*" (Cookson and Eisenack, 1961a). NOW *Isabelidinium*.

"*tripartita*" (Cookson and Eisenack, 1960a). NOW *Chatangiella*.

truncata Stover, 1974, p.176-177, pl.5, fig.2,3a-c. Early Eocene.

"*ventriosa*" (Alberti, 1959b). NOW *Subtilisphaera*.

"*verrucosa*" (Manum, 1963). NOW *Chatangiella*.

"*vestita*" (Brideaux, 1971). NOW *Spinidinium*.

"*victoriensis*" (Cookson and Manum, 1964). NOW *Chatangiella*.

wardenensis Williams and Downie, 1966c, p.233, pl.26, fig.5. Early Eocene.

"*?wellingtoniana*" (Tasch, 1963). NOW *Nannoceratopsiella*.

wetzelii Morgenroth, 1966a, p.9, pl.1, fig.4-5. Early Eocene. O.C.

DEFLANDRIDIUM Nagy, 1969, p.294.

**stellatum* Nagy, 1969, p.294, pl.2, fig.1,3-4,6. Late Miocene.

DIACANTHUM Habib, 1972, p.376.

**hollisteri* Habib, 1972, p.376-377, pl.9, fig.1,3; pl.10, fig.1; text-fig.2. probably Valanginian.

DIACROCANTHIDIUM Deflandre and Foucher, 1967, p.3. The type of this genus "*D. echinulatum*" was invalidly transferred from *Palaeostomocystis*. See Loeblich and Loeblich, 1970, p.200.

DIACROCANTHIDIUM (cont'd)

**echinulatum* (Deflandre, 1937b, p.55, pl.11, fig.9) Loeblich and Loeblich, 1970, p.200. Late Cretaceous; formerly *Palaeostomocystis*. O.C.

spinigerum De Coninck, 1969, p.43-44, pl.13, fig.11-13. Early Eocene.

DICHADOGONYAULAX Sarjeant, 1966b, p.153 emend. Sarjeant, 1975a, p.50. Lentin and Williams, 1973, p.46 considered this genus to be a jr syn. of *Ctenidodinium* emend. Sarjeant. Sarjeant, 1975a, p.50, however, refuted the above authors' findings, preferring to retain *Dichadogonyaulax* as a distinct and separate genus.

**culmula* (Norris, 1965, p.793-795, fig.1-2,6-9) Loeblich and Loeblich, 1968, p.211. Portlandian; formerly *Gonyaulax* and *Ctenidodinium*.

gochtii Sarjeant, 1976a, p.11,13, pl.2, fig.1; pl.3, fig.4; text-fig.2A-C. Bathonian.

kettonensis Sarjeant, 1976a, p.13,15, pl.1, fig.1-2; pl.3, fig.1-2; pl.6, fig.1; text-fig.3A-D. Bathonian.

norrissii (Pocock, 1972, p.92-93, pl.24, fig.1,9-10,12; text-fig.9) Sarjeant, 1975a, p.55. Callovian; formerly *Leptodinium*.

pannea (Norris, 1965, p.796-798, fig.3,10-13) Sarjeant, 1969, p.14. Kimmeridgian-Portlandian; formerly *Leptodinium* and *Ctenidodinium*.

schizoblata (Norris, 1965, p.798-800, fig.4-5,14-17) Sarjeant, 1969, p.14. Portlandian; formerly *Leptodinium* and *Ctenidodinium*.

sellwoodii Sarjeant, 1975a, p.52,55, pl.1, fig.A-H; pl.2, fig.I-K; pl.3, fig.L-Q. Bathonian.

stauromatos Sarjeant, 1976a, p.9-11, pl.2, fig.4; pl.3, fig.5-6; text-fig.1A-C. Bathonian.

DICONODINIUM Eisenack and Cookson, 1960, p.3.

acutum Jain and Millepied, 1973, p.30, pl.3, fig.41-42. Aptian.

arcticum Manum and Cookson, 1964, p.18-19, pl.6, fig.1-4. Cenomanian.

caulleryi (Deflandre, 1935, p.229, pl.6, fig.4) Deflandre, 1966, p.4. Senonian; formerly *Palaeoperidinium*.

DICONODINIUM (cont'd)

cristatum Cookson and Eisenack, 1974, p.77, pl.24, fig.3-5.
Albian-Cenomanian.

dabendorfense (Alberti, 1961, p.5, pl.3, fig.4) Lentin and
Williams, 1973, p.46. Valanginian; formerly *Gymnodinium*.

davidii Morgan, 1975, p.157-159, pl.1, fig.1a-b,2a-d. Aptian-
Albian.

dispersum (Cookson and Eisenack, 1958, p.39, pl.10, fig.12,14)
Eisenack and Cookson, 1960, p.3. Albian-Cenomanian; formerly
Palaeohystrichophora.

distinctum Jain and Millepied, 1975, p.154-155, pl.6, fig.98-99.
Campanian-Maastrichtian.

?*fehmannense* (Morgenroth, 1966a, p.4-5, pl.1, fig.1) Lentin and
Williams, 1973, p.46. Early Eocene; formerly *Gymnodinium*.

firmum Harland, 1973, p.669-670, pl.84, fig.8,9,15; text-fig.6.
Late Campanian.

glabrum Eisenack and Cookson, 1960, p.3-4, pl.1, fig.11. Late
Albian-Cenomanian.

inequicornutum Baltes, 1971, p.5, pl.1, fig.8-12. Early Pliocene.

inflatum Eisenack and Cookson, 1960, p.4, pl.1, fig.12-13.
Late Albian-Cenomanian.

minutum (Deflandre and Cookson, 1955, p.257, fig.4) Deflandre
and Deflandre-Rigaud, 1966. Santonian; formerly
Palaeohystrichophora.

**multispinum* (Deflandre and Cookson, 1955, p.257, pl.1, fig.5)
Eisenack and Cookson, 1960, p.3. Santonian; formerly
Palaeohystrichophora.

pelliferum (Cookson and Eisenack, 1958, p.38, pl.10, fig.11)
Eisenack and Cookson, 1960, p.3. Albian; formerly
Palaeohystrichophora.

pusillum Singh, 1971, p.383-384, pl.68, fig.5-8. Middle-Late
Albian.

rhombiforme Vozzhennikova, 1967, p.50, pl.7, fig.1-4; pl.15,
fig.5. Turonian. O.C.

tenuistriatum Eisenack and Cookson, 1960, p.4, pl.1, fig.14-16.
Late Albian-Cenomanian.

DICONODINIUM (cont'd)

ventriosum (Alberti, 1961, p.5-6, pl.3, fig.5) Lentin and Williams, 1973, p.47. Turonian; formerly *Gymnodinium*.

"*DICTYOPYXIDIA*" Eisenack, 1961, p.316 (nom. subst. pro *Dictyopyxis* Cookson and Eisenack, 1960b). Sarjeant, 1976a, p.23-24 considered this genus to be a jr syn. of *Ellipsoidictyum* Klement. Sarjeant (op cit.) also considered the type of the genus "*Dictyopyxidalia*", "*D. areolata*", to be a jr syn. of *Ellipsoidictyum cinctum* Klement. The three remaining species in "*Dictyopyxidalia*" are herein transferred to *Ellipsoidictyum*.

"*DICTYOPYXIS*" Cookson and Eisenack, 1960b, p.255. Non *Dictyopyxis* Ehrenberg - (a diatom). SEE *Dictyopyxidalia*. Sarjeant, 1976a, p.23-24 gives a very thorough review of the above genera.

DICTYOSPHAERIDIUM W. Wetzel, 1952, p.406.

**deflandrei* W. Wetzel, 1952, p.406, pl.A, fig.12. Late Cretaceous.

DINGODINIUM Cookson and Eisenack, 1958, p.39.

"*?albertii*" Sarjeant, 1966c, p.210-211, pl.21, fig.3; pl.23, fig.1. Habib, 1976, p.382 considered this species to be a jr syn. of *Dingodinium cerviculum* Cookson and Eisenack.

cerviculum Cookson and Eisenack, 1958, p.40, pl.1, fig.12-14. Late Neocomian-Aptian.

cooksoniae Pocock, 1972, p.99, pl.23, fig.9; text-fig.16. Oxfordian-Kimmeridgian. O.C.

europaeum Eisenack, 1958, p.392-393, pl.24, fig.4. Late Aptian.

**jurassicum* Cookson and Eisenack, 1958, p.39, pl.1, fig.10-11. Late Jurassic.

minutum Dodekova, 1975, p.25, pl.5, fig.13-15. Late Bathonian.

DINOGYMNIUM Evitt et al., 1967, p.4-8.

**acuminatum* Evitt et al., 1967, p.8-16, pl.1&2; pl.3, fig.1-8,10,12, 20; text-fig.11-23. Maastrichtian.

albertii Clarke and Verdier, 1967, p.33, pl.17, fig.3-4; text-fig.13. Santonian.

assamicum Jain et al., 1975, p.4, pl.2, fig.28-29. Maastrichtian.

avellananum (Lejeune-Carpentier, 1951, p.B-309, text-fig.3) Evitt et al., 1967, p.16-17. Maastrichtian; formerly *Gymnodinium*.

DINOGYMNIUM (cont'd)

biconicum Jain and Millepied, 1975, p.136, pl.1, fig.3-4.
Campanian-Maastrichtian.

cerviculum Cookson and Eisenack, 1970a, p.138, pl.10, fig.6.
Senonian.

cretaceum (Deflandre, 1935, p.225, pl.5, fig.6-8; text-fig.4-5)
Evitt et al., 1967, p.17-18. ?Senonian; formerly *Gymmodinium*.

curvatum (Vozzhennikova, 1967, p.43, pl.1, fig.10-12; pl.4,
fig.2-3) Lentin and Williams, 1973, p.48. Senonian; formerly
Gymnodinium.

decorum (Deflandre, 1943, p.503, pl.17, fig.2; text-fig.8-9)
Evitt et al., 1967, p.18. Senonian; formerly *Gymmodinium*.

denticulatum (Alberti, 1961, p.5, pl.3, fig. 2-3) Evitt et al.,
1967, p.18. Senonian; formerly *Gymmodinium*. Herngreen, 1975,
p.63 postulated that this species may be a sr syn. of
Dinogymnum undulosum Cookson and Eisenack.

digitus (Deflandre, 1935, p.225, text-fig.7-8) Evitt et al., 1967,
p.18-19. Senonian; formerly *Gymmodinium*.

subsp. *crassus* (Vozzhennikova, 1967, p.44, pl.5, fig.3,9-10)
Lentin and Williams, 1973, p.49. Turonian; formerly
Gymmodinium digitus var. *crassus*.

euclanensis Cookson and Eisenack, 1970a, p.139, pl.10, fig.9-12.
Senonian.

heterocostatum (Deflandre, 1935, p.225, text-fig.6) Evitt et al.,
1967, p.19-20. ?Senonian; formerly *Gymmodinium*.

subsp. *kolpaschevii* (Vozzhennikova, 1967, p.45, pl.3, fig.5)
Lentin and Williams, 1973, p.49. Senonian; formerly
Gymnodinium heterocostatum var. *kolpaschevi*. O.C.

hexagonum (Deflandre-Rigaud, 1954, p.58, text-fig.1-2) Evitt et al.,
1967, p.20. Campanian-?Maastrichtian; formerly *Gymmodinium*.

hyalinum (Vozzhennikova, 1967, p.45, pl.1, fig.9; pl.2, fig.6;
pl.3, fig.4; pl.5, fig.11) Lentin and Williams, 1973, p.49.
Senonian; formerly *Gymmodinium*.

kasachstanicum (Vozzhennikova, 1967, p.45-46, pl.2, fig.4a-b;
pl.3, fig.9a-b) Lentin and Williams, 1973, p.49. Campanian-
Maastrichtian. Formerly *Gymmodinium*.

laticinctum (Deflandre, 1943, p.501, pl.17, fig.3; text-fig.11)
Evitt et al., 1967, p.20. ?Senonian; formerly *Gymmodinium*.

DINOGYMNIUM (cont'd)

longicornis (Vozzhennikova, 1967, p.46, pl.1, fig.8; pl.3, fig.6; pl.4, fig.6a-b,7) Harland, 1973, p.678. Senonian; formerly *Gymmodinium*. This predates the same combination by Lentin and Williams, 1973, p.49.

major Jain and Millepied, 1975, p.135-136, pl.1, fig.1-2. Campanian-Maastrichtian.

marthae (Deflandre, 1943, p.500, pl.17, fig.1; text-fig.1-4) Evitt et al., 1967, p.21. Senonian; formerly *Gymmodinium*.

microgranulosum Clarke and Verdier, 1967, p.34-35, pl.5, fig.7-10; text-fig.14. Santonian.

mitratum (Vozzhennikova, 1967, p.40, pl.1, fig.2) Lentin and Williams, 1973, p.49. Turonian-Senonian; formerly *Amphidinium*.

muticum (Vozzhennikova, 1967, p.46-47, pl.1, fig.6-7; pl.2, fig.9) Lentin and Williams, 1973, p.49. Senonian; formerly *Gymmodinium*.

nelsonense (Cookson, 1956, p.183, pl.1, fig.8-11) Evitt et al., 1967, p.21-23. Senonian; formerly *Gymmodinium*.

sibiricum (Vozzhennikova, 1967, p.47-48, pl.2, fig.2-3b; pl.3, fig.2-3) Lentin and Williams, 1973, p.50. Senonian; formerly *Gymmodinium*. Since this species was a *nomen nudum* when first erected by Vozzhennikova, 1963, its transfer to *Dinogymnium* by Evitt et al., 1967, p.23, was invalid. Vozzhennikova validated the species in 1967.

sphaerocephalum (Vozzhennikova, 1967, p.48, pl.2, fig.7; pl.3, fig.1) Lentin and Williams, 1973, p.50. Senonian; formerly *Gymmodinium*.

subsp. *laeve* (Vozzhennikova, 1967, p.48, pl.1, fig.4; pl.2, fig.5) Lentin and Williams, 1973, p.50. Senonian; formerly *Gymmodinium sphaerocephalum* var. *laevis*.

strombomorphum (Deflandre, 1943, p.501, pl.17, fig.4-6; text-fig.5-7) Evitt et al., 1967, p.23. ?Senonian; formerly *Gymmodinium*.

undulosum Cookson and Eisenack, 1970a, p.138, pl.10, fig.3. Senonian.

vozzhennikovae Lentin and Williams, 1973, p.50, nom. subst. pro. *Gymmodinium albertii* Vozzhennikova, 1967, p.41-42, pl.5, fig.7-8. Turonian. non *Dinogymnium albertii* Clarke and Verdier, 1967, p.33.

westralium (Cookson and Eisenack, 1958, p.25, pl.1, fig.9) Evitt et al., 1967, p.23-24. Senonian; formerly *Gymmodinium*.

DINOPTERYGIUM Deflandre, 1935, p.231. *Oodnadattia* Eisenack and Cookson, 1960, p.6, is a jr syn. of this genus; see discussion in Norris and Sarjeant, 1965, p.44. Also Clarke and Verdier, 1967, p.36, listed the type of the genus *Oodnadattia*, O. *tuberculata* as a jr syn. of *Dinopterygium cladoides*.

**cladoides* Deflandre, 1935, p.231, pl.8, fig.6. Senonian.

cookeanae (Kimyai, 1966, p.471, pl.2, fig.21) Lentin and Williams, 1973, p.50. Cenomanian; formerly *Oodnadattia*. O.C.

"*perforatum*" (Clarke and Verdier, 1967). NOW *Pterodinium*.

"*tuberculatum*" (Eisenack and Cookson, 1960). Clarke and Verdier, 1967, p.36 considered this species to be a jr syn. of *Dinopterygium cladoides*.

DIOXYA Cookson and Eisenack, 1958, p.59.

**armata* Cookson and Eisenack, 1958, p.59, pl.11, fig.11; text-fig.20. Albian.

villosa Eisenack and Cookson, 1960, p.10, pl.2, fig.15-16. Albian.

DIPHYES Cookson, 1965a, p.85 emend. Davey and Williams, 1966b, p.95-96.

appendiculare Cookson and Eisenack, 1970a, p.149, pl.13, fig.5. Senonian. O.C.

**colligerum* (Deflandre and Cookson, 1955, p.278, pl.7, fig.3) Cookson, 1965a, p.86-87. Early Eocene; formerly *Baltisphaeridium* and *Hystrichosphaeridium*.

latiusculum Matsuoka, 1974, p.329, pl.44, fig.6. Early-Middle Miocene. O.C.

?*monstruosum* (Tasch, 1964, p.195, pl.1, fig.12) Davey and Williams, 1969, p.7. Albian; formerly *Hystrichosphaeridium*.

"*nudum*" (Cookson, 1965a). NOW *Duosphaeridium*.

DIPLOFUSA Cookson and Eisenack, 1960a, p.10.

**gearlensis* Cookson and Eisenack, 1960a, p.10, pl.3, fig.10. Cenomanian.

"*DIPLOTESTA*" (Cookson and Eisenack, 1960b, non Brongniart, 1874). NOW *Wallodinium*.

DISCORSIA Duxbury, 1977, p.30.

DISCORSIA (cont'd)

**nanna* (Davey, 1974, p.59, pl.4, fig.9-10) Duxbury, 1977, p.31.
Barremian. This species was emended by Duxbury at the time of
the transfer.

DISPHAERIA Cookson and Eisenack, 1960a, p.11, emend. Norvick, 1973,
p.45. Norvick in his emendation of *Disphaeria* transferred *Thalassiphora*
delicata (Williams and Downie), *Thalassiphora pelagica*
(Eisenack), *Thalassiphora reticulata* (Morgenroth), and *Thalassiphora*
succincta (Morgenroth) to *Disphaeria*. The transfer of
the type species of *Thalassiphora*, *T. pelagica*, to *Disphaeria*
makes the first genus a jr syn. of the latter. Norvick states in
his introduction that the type of *Disphaeria*, *D. macropyla*, has a
"possible" archaeopyle, whereas Gocht, 1968, p.153, and Gocht,
1969, p.67 and text-figs 46 and 47, demonstrate conclusively
that *Thalassiphora pelagica* has a precingular archeopyle resulting
from the loss of paraplate 3". *Thalassiphora delicata*, *T.*
reticulata, and *T. succincta* also have been shown to have a
precingular archeopyle. In view of the uncertainty concerning
the nature of the archeopyle in *Disphaeria*, the transfer of the
species *Thalassiphora pelagica*, *T. delicata*, *T. reticulata*, and
T. succincta to *Disphaeria* is herein rejected.

**macropyla* Cookson and Eisenack, 1960a, p.11, pl.3, fig.13-14
emend. Norvick, 1976, p.99-101. Turonian.

munda (Davey and Verdier, 1973, p.38, pl.3, fig.5,7,10) Norvick,
1976, p.99. Albian-Cenomanian; formerly *Thalassiphora*.

DISPHAEROGENA O. Wetzel, 1933b, p.51.

**carposphaeropsis* O. Wetzel, 1933b, p.51, pl.4, fig.34. Late
Cretaceous.

DISTATODINIUM Eaton, 1976, p.262.

**craterum* Eaton, 1976, p.263-264, pl.9, fig.1-5. Late Eocene.

ellipticum (Cookson, 1965a, p.87, pl.11, fig.1-3a) Eaton, 1976,
p.264. Late Eocene; formerly *Hystrichosphaeridium* and
Tanyosphaeridium.

paradoxum (Brosius, 1963, p.41, pl.4, fig.1,6; text-fig.2, no.1a-c)
Eaton, 1976, p.265. Late Oligocene; formerly *Hystrichosphaeridium*,
Tanyosphaeridium and *?Oligosphaeridium*.

DIVERSISPINA Benson, 1976, p.184.

**truncata* Benson, 1976, p.184-185, pl.2, fig.6-9. Late
Maastrichtian-Early Paleocene.

DOIDYX Sarjeant, 1966c, p.205.

DOIDYX (cont'd)

**anaphrissa* Sarjeant, 1966c, p.206, pl.22, fig.8; pl.23, fig.6; text-fig.55. Early Barremian. Harker and Sarjeant, 1975, p.224 rejected the transfer of this species to the genus *Tenua* Eisenack emend. Sarjeant, by Benedek, 1972, p.9-10.

granulata Horowitz, 1975, p.25, pl.1, fig.4. Late Triassic.

DOMASIELLA Eisenack, 1969, p.111.

**discophora* (Cookson and Eisenack, 1962b, p.492, pl.7, fig.17-21) Loeblich and Loeblich, 1970, p.200. Aptian-Albian; formerly *Domasia*, an acritarch.

DOROCYSTA Davey, 1970, p.358.

**litotes* Davey, 1970, p.358-359, pl.5, fig.6-7; text-fig.2A. Cenomanian.

"*DRACODINIUM*" Gocht, 1955, p.87, jr syn. of *Wetzelia*. Williams and Downie, 1966b, p.195, transferred *D. solidum* to *Wetzelia* subgenus *Wetzelia* therein removing the type of the genus and making *Dracodinium* a superfluous genus.

DRUGGIDIUM Habib, 1973, p.49,51.

**apicopaucicum* Habib, 1973, p.51-52, pl.1, fig.1-3; pl.3, fig.1-3; text-fig.3. Berriasian-Barremian.

deflandrei (Millioud, 1969, p.429-430, pl.2, fig.5-7) emend. Habib, 1973, p.52-53. Barremian; formerly *Microdinium*.

rhabdoreticulatum Habib, 1973, p.53, pl.2, fig.3-7. Valanginian-Albian.

DUOSPHAERIDIUM Davey and Williams, 1966b, p.97.

**nudum* (Cookson, 1965a, p.87, pl.10, fig.1-4) Loeblich and Loeblich, 1968, p.211. Late Eocene; formerly *Diphyes*.

rugosum Drugg, 1970b, p.816-817, fig.11A-C. Danian.

EGMONTODINIUM Gitmez and Sarjeant, 1972, p.228-229.

**polyplacophorum* Gitmez and Sarjeant, 1972, p.229-231, pl.8, fig.1-4; pl.9, fig.3; pl.11, fig.5-6,8; text-fig.24. Middle-Late Kimmeridgian.

EISENACKIA Deflandre and Cookson, 1955, p.258, emend. Sarjeant, 1966b, p.152, emend. McLean, 1973a, p.262.

EISENACKIA (cont'd)

circumtabulata Drugg, 1967, p.15, pl.1, fig.12-13. Danian.

**crassitabulata* Deflandre and Cookson, 1955, p.258, 261, pl.5, fig.2; text-fig.6-16, emend. McLean, 1973a, p.262. Paleocene-Early Eocene.

ornata Cookson and Eisenack, 1965a, p.124, pl.13, fig.1-8 emend. Stover, 1975, p.40-41. Late Eocene.

scrobiculata Morgenroth, 1966a, p.12-13, pl.2, fig.12; pl.3, fig.1. Early Eocene.

ELLIPSODINIUM Clarke and Verdier, 1967, p.68-69.

**rugulosum* Clarke and Verdier, 1967, p.69, pl.14, fig.4-6; text-fig.29. Cenomanian-Santonian. The same species as *Chelinocysta lita*, nom. nud. Sarjeant, 1967a, p.327.

ELLIPSOIDICTYUM Klement, 1960, p.78.

**cinctum* Klement, 1960, p.78-80, pl.6, fig.15-16; pl.7, fig.1-2; text-fig.36-37. Middle Oxfordian.

circulatum (Clarke and Verdier, 1967) comb. nov.

1967 *Dictyopyxidium circulata* Clarke and Verdier, p.67-68, pl.1, fig.11; pl.2, fig.3; text-fig.28. Cenomanian-Santonian.

imperfectum (Brideaux and McIntyre, 1975) comb. nov.

1975 *Dictyopyxidium imperfecta* Brideaux and McIntyre, p.25-26, pl.7, fig.1-5. Early-Middle Albian.

reticulatum (Valensi, 1953) comb. nov.

1953 *Palaeoperidinium reticulatum* Valensi, p.28, pl.2, fig.4-5, 14, 19; pl.13, fig.6; text-fig.2d. Bajocian; formerly *Palaeoperidinium* and *Dictyopyxidium*.

EMMETROCYSTA Stover, 1975, p.42.

**urniformis* (Cookson, 1953, p.118, pl.2, fig.41-43) Stover, 1975, p.42. Oligocene; formerly *Cannosphaeropsis* and *Polystephanephorus*.

EMSLANDIA Gerlach, 1961, p.171.

"*australiensis*" NOW *Scriniodinium*. Invalidly transferred to *Emslandia* by Nagy, 1965, p.202.

**emslandensis* Gerlach, 1961, p.172-173, pl.26, fig.13-14. Middle Oligocene-Middle Miocene.

ENDOCERATIUM Vozzhennikova, 1965, p.89.

ENDOCERATIUM (cont'd)

**ludbrookii* (Cookson and Eisenack, 1958, p.52, pl.5, fig.7-8)
Loeblich and Loeblich, 1966, p.93. Albian; formerly
Ceratocystidiopsis and *Pseudoceratium*. O.C.

"*perforatum*" Vozzhennikova, 1967, p.188, pl.112, fig.1a-b,3;
pl.113, fig.1, jr syn. of *Xenascus ceratiooides*, see Davey and
Verdier, 1971, p.27.

ENDOSCRINIUM (Klement, 1960) Vozzhennikova, 1967, p.174.

campanulum (Gocht, 1959, p.61, pl.4, fig.6; pl.5, fig.1)
Vozzhennikova, 1967, p.175. Hauterivian; formerly
Scriniodinium.

eisenackii (Deflandre, 1938b, p.171, pl.6, fig.7-10; text-fig.3-4)
Gocht, 1970b, p.146-147. Oxfordian; formerly *Gonyaulax* and
Gonyaulacysta. O.C.

subsp. *oligodentatum* (Cookson and Eisenack, 1958, p.30, pl.2,
fig.11) Gocht, 1970b, p.146. Late Jurassic. O.C.

**galeritum* (Deflandre, 1938b, p.167, pl.5, fig.7-9; text-fig.1)
Vozzhennikova, 1967, p.176. Oxfordian; formerly *Gymnodinium*
and *Scriniodinium*.

subsp. *fornicatum* (Klement, 1960, p.25-26, pl.1, fig.7-12)
Lentin and Williams, 1973, p.54. Middle Oxfordian; formerly
Scriniodinium galeritum subsp. *fornicatum*.

subsp. *galeritum* (Deflandre, 1938b, p.167, pl.5, fig.7-9;
text-fig.1) Vozzhennikova, 1967, p.176-177. Oxfordian.

subsp. *reticulatum* (Klement, 1960, p.26-27, pl.2, fig.1-2)
Lentin and Williams, 1973, p.54. Middle Oxfordian;
formerly *Scriniodinium galeritum* subsp. *reticulatum*.

turidum (Deflandre, 1938b, p.166, pl.5, fig.4-6) Gocht, 1970b,
p.144-146. Early Oxfordian; formerly *Scriniodinium* and
Gymnodinium.

oxfordianum (Sarjeant, 1962a, p.485, pl.69, fig.13-14)
Vozzhennikova, 1967, p.177. Oxfordian; formerly *Scriniodinium*.

pharo Duxbury, 1977, p.32, pl.9, fig.5; text-fig.8. Berriasian-
Valanginian.

subvallare (Sarjeant, 1962b, p.262-263, pl.1, fig.10; text-fig.7)
Lentin and Williams, 1973, p.54. Late Oxfordian; formerly
Scriniodinium.

ENERGLYNIA Sarjeant, 1976b, p.164.

ENERGLYNIA (cont'd)

**kyrbasia* Sarjeant, 1976b, p.166,168,170,172, fig.1-16.
Late Bathonian.

EOCLADOPYXIS Morgenroth, 1966a, p.7.

**peniculata* Morgenroth, 1966a, p.7-8, pl.3, fig.2-3. Early
Eocene. See McLean, 1976, p.348 for revised description. O.C.

EODINIA Eisenack, 1936, p.73 emend. Gocht, 1975a, p.27.

**pachytheca* Eisenack, 1936, p.73, text-fig.1-6 emend. Gocht,
1975a, p.27. Callovian.

EOPSEUDOCERATIUM (Neale and Sarjeant, 1962, p.446) Lentin and
Williams, 1973, p.54; formerly *Pseudoceratium* subgenus
Eopseudoceratium.

**gochtii* Neale and Sarjeant, 1962, p.446,448, pl.20, fig.3-4;
text-fig.5. Late Hauterivian-Middle Barremian. O.C.

EPELIDOSPHAERIDIA Davey, 1969a, p.142.

**spinosa* (Cookson and Hughes, 1964, p.49, pl.8, fig.6-8) Davey,
1969a, p.143. Early Cenomanian; formerly *Palaeoperidinium*.

EPICEPHALOPYXIS Deflandre, 1935, p.234.

**adhaerens* Deflandre, 1935, p.234, pl.9, fig.5-6. Late Cretaceous.

"*indentata*" (Deflandre and Cookson, 1955). NOW *Paralecaniella*,
which is questionably included in the Chlorophyta. See
Cookson and Eisenack, 1970b, p.323.

"*spectabilis*" (Deflandre and Cookson, 1955). NOW *Wanaea*.

EPIPLOSPHAERA Klement, 1960, p.73.

areolata Klement, 1960, p.76-77, pl.8, fig.5-9. Early Kimmeridgian.

**bireticulata* Klement, 1960, p.74-75, pl.8, fig.1-4. Early
Kimmeridgian.

reticulospinosa Klement, 1960, p.75-76, pl.8, fig.10-12. Early
Kimmeridgian.

ERIKANIA Morgenroth, 1966a, p.27.

**dynamica* Morgenroth, 1966a, p.27-28, pl.6, fig.7-8. Early Eocene.

EVANSIA Pocock, 1972, p.95.

EVANSIA (cont'd)

**granulata* Pocock, 1972, p.95, pl.24, fig.7; text-fig.12.
Late Bajocian.

"*EVITTIA*" Pocock, 1972, p.93. Jr hom. of the acritarch genus
Evittia Brito, 1967, p.477. See *Pocockia* nom. subst. herein.

"*EVITTOBINIUM*" Deflandre, 1964, p.5030. Lentin and Williams, 1976,
p.159, following the observations of Evitt (personal
communication), considered *Evittodinium* to be a *nomen dubium*.

"**giselae*" Deflandre, 1964, p.5030, fig.1-5. Senonian. Lentin
and Williams, 1976, p.159 considered this species to be a
nomen dubium.

EXOCHOSPHAERIDIUM Davey et al., 1966, p.165.

arnace Davey and Verdier, 1973, p.184-185, pl.1, fig.3,6.
Late Albian-Early Cenomanian.

bifidum (Clarke and Verdier, 1967, p.72, pl.17, fig.5-6;
text-fig.30) Clarke et al., 1968, p.182. Cenomanian-
Campanian; formerly *Baltisphaeridium*.

subsp. *involutum* (Davey, 1969c, p.29, pl.2, fig.1-3) Lentin
and Williams, 1973, p.56. Campanian-Maastrichtian; formerly
Exochosphaeridium bifidum var. *involutum*.

brevispinum Norvick, 1976, p.53, pl.4, fig.5-6. Cenomanian.

caputmedusae Cookson and Eisenack, 1974, p.68, pl.25, fig.16.
Senonian.

cenomaniense Norvick, 1976, p.52-53, pl.4, fig.4,8. Cenomanian.

indicum Jain and Taugourdeau-Lantz, 1973, p.63, pl.3, fig.7.
Early Cretaceous.

palmatum (Deflandre and Courteville, 1939, p.101, pl.3, fig.1)
Davey et al., 1969, p.16. Late Cretaceous; formerly
Baltisphaeridium and *Hystrichosphaeridium*.

**phragmites* Davey et al., 1966, p.165-166, pl.2, fig.8-10.
Cenomanian.

?*pseudohystrichodinium* (Deflandre, 1937b, p.73, pl.15, fig.3 4)
Davey et al., 1969, p.16-17. Late Cretaceous; formerly
Baltisphaeridium and *Hystrichosphaeridium*.

scitulum Singh, 1971, p.346-347, pl.57, fig.8-9. Middle Albian.

EXOCHOSPHAERIDIUM (cont'd)

spinosum (White, 1842, p.237, pl.4, fig.6) Davey 1969a, p.166.
Late Cretaceous; formerly *Xanthidium*, *Hystrichosphaeridium*,
Baltisphaeridium and *Cordosphaeridium*.

subsp. *deflandrei* (Lejeune-Carpentier, 1941, p.84, fig.6-7)
Lentin and Williams, 1973, p.56. Late Cretaceous; formerly
Hystrichosphaeridium spinosum var. *deflandrei*.

striolatum (Deflandre, 1937b, p.72, pl.15, fig.1-2) Davey,
1969a, p.164. Late Cretaceous; formerly *Hystrichosphaeridium*
and *Baltisphaeridium*.

subsp. *truncatum* (Davey, 1969a, p.164-166, pl.7, fig.1-3)
Lentin and Williams, 1973, p.56. Cenomanian; formerly
Exochosphaeridium striolatum var. *truncatum*.

"*FAVILARMAX*" Sarjeant, 1963a, p.720, jr syn. of *Valensiella*.
See Sarjeant, 1964a, p.172-173, and Loeblich and Loeblich,
1966, p.30.

FIBRADINIUM Morgenroth, 1968, p.537-538.

**annetorpense* Morgenroth, 1968, p.538, pl.42, fig.4-7; text-fig.1-2.
Danian.

FLORENTINIA Davey and Verdier, 1973, p.185-186.

clavigera (Deflandre, 1937b, p.71, pl.11, fig.1-2) Davey and
Verdier, 1973, p.192 emend. Davey and Verdier, 1976, p.315.
Senonian; formerly *Hystrichosphaeridium*, *Baltisphaeridium*,
Hystrichosphaera and *Hystrichokolpoma*.

deanei (Davey and Williams, 1966b, p.58, pl.6, fig.4,8) Davey
and Verdier, 1973, p.187. Cenomanian; formerly
Hystrichosphaeridium.

**laciniata* Davey and Verdier, 1973, p.186-187, pl.2, fig.1,3,4,6,7,9.
Late Albian-Early Cenomanian.

mantellii (Davey and Williams, 1966b, p.66, pl.6, fig.6) Davey
and Verdier, 1973, p.191. Late Cenomanian; formerly
Hystrichosphaeridium.

radiculata (Davey and Williams, 1966b, p.65, pl.7, fig.9; pl.9,
fig.6) Davey and Verdier, 1973, p.191 emend. Davey and Verdier,
1976, p.318. Late Cenomanian; formerly *Hystrichosphaeridium*.

resex Davey and Verdier, 1976, p.319-320, pl.4, fig.1-3;
text-fig.2. Turonian.

FROMEA Cookson and Eisenack, 1958, p.55.

acambra Sah et al., 1970, p.148, pl.2, fig.28. Late Cretaceous.

**amphora* Cookson and Eisenack, 1958, p.56, pl.5, fig.10-11.
Albian-Cenomanian.

elongata Beju, 1971, p.289-290, pl.3, fig.7-10; text-fig.6A-E.
Bajocian-Oxfordian. This species and others that appeared in
1969 in a privately circulated manuscript by Beju were listed
as nom. nud. by Lentin and Williams, 1973. Unfortunately,
these authors were not aware of Beju, 1971, in which the
species were validly published.

"*elongata*" (Jain and Millepied, 1975). Jr hom. of *F. elongata*
Beju, 1971. NOW *Fromea granulata*.

granulata nom. nov., nom. subst. pro *F. elongata* Jain and
Millepied, 1975 (p.141, pl.2, fig.29-30; holotype fig.30)
non *F. elongata* Beju, 1971, p.289-290. Aptian-Albian.

warlinghamensis Gitmez and Sarjeant, 1972, p.188-189, pl.1,
fig.6,8; pl.9, fig.5-6. Kimmeridgian.

FUSIFORMACYSTA Morgan, 1975, p.161.

**salasii* Morgan, 1975, p.161, pl.2, fig.4a-c,5a-b. Early Neocomian.

"*GALEA*" Maier, 1959, p.305. Jr hom. of *Galea*, Meuschen, 1787.

The type of the genus *Galea galea* was transferred to
Areoligera by Davey et al., 1969, p.15. For present
assignment of other species of *Galea* refer to the Appendix.

GARDODINIUM Alberti, 1961, p.18.

albertii Neale and Sarjeant, 1962, p.445-446, pl.19, fig.8;
text-fig.4. Hauterivian.

deflandrei Clarke and Verdier, 1967, p.26-28, pl.3, fig.10-12;
text-fig.10. Cenomanian-Santonian.

"*eisenackii*" (Alberti, 1961, p.18, pl.3, fig.8-13). Hauterivian-
Aptian. This species, the original type of the genus, is
considered to be a jr syn. of *Gardodinium trabeculosum* (Gocht, 1959)
Alberti, 1961, by Davey, 1974, p.51. *Gardodinium trabeculosum*
therefore becomes the type of the genus.

"*elongatum*" Singh, 1971, p.381-383, pl.68, fig.3-4. Brideaux and
McIntyre, 1975, p.33 considered this species to be a jr syn.
of "*Gardodinium eisenackii*" Alberti, which Davey, 1974,
p.51 considered to be a jr syn. of *Gardodinium trabeculosum*
(Gocht) Alberti.

GARDODINIUM (cont'd)

ordinale Davey, 1974, p.51, pl.3, fig.5-6. Middle-Late Barremian.

pyriforme Vozzhennikova, 1967, p.179, pl.100, fig.1,4. Barremian.

**trabeculosum* (Gocht, 1959, p.62, pl.4, fig.5) Alberti, 1961, p.18. Hauterivian; formerly *Scriniodinium*. The original type of the genus *Gardodinium*, *G. eisenackii*, is considered to be a jr syn. of *G. trabeculosum* by Davey, 1974, p.51; the latter species therefore becomes the type of the genus.

GEISELODINIUM Krutzsch, 1962, p.42.

eocenicum Krutzsch, 1962, p.44, pl.11, fig.17-19; text-fig.1d. Middle Eocene.

**geiseltalense* Krutzsch, 1962, p.43, pl.11, fig.8-13; text-fig.1b. Middle Eocene.

hallense Krutzsch, 1962, p.44, pl.11, fig.14-16; text-fig.1c. Middle Eocene.

miocenicum Nagy, 1965, p.201, pl.1, fig.3; pl.2, fig.11. Middle Miocene.

tyonekense Engelhardt, 1976, p.122, pl.1, fig.1-14. Miocene.

GILLINIA Cookson and Eisenack, 1960a, p.11-12.

**hymenophora* Cookson and Eisenack, 1960a, p.12, pl.3, fig.4-6; text-fig.5. ?Turonian-Maastrichtian.

GINGINODINIUM Cookson and Eisenack, 1960a, p.7 emend. Lentin and Williams, 1976, p.95-96.

ornatum (Felix and Burbridge, 1973, p.23-24, pl.4, fig.12) Lentin and Williams, 1976, p.97. Maastrichtian; formerly *Trithyrodinium*.

**spinulosum* Cookson and Eisenack, 1960a, p.7, pl.2, fig.9. Late Albian-Cenomanian.

"*tabulatum*" (Cookson and Eisenack, 1965c). NOW *Palaeoperidinium*.

GLENODINIUM Ehrenberg, 1837, p.174. Modern genus defined from the motile stage.

smrecyniense Woloszynska, 1928, (Modern species recorded by Macko, 1957, p.117, pl.A, fig.1; pl.73, fig.15-16. From the Miocene. Since the detailed morphology of Macko's specimens is unknown, they are retained in *Glenodinium* pending further examination).

GLOEODINIOPSIS Schopf, 1968, p.684. Questionable affinity.

**lamellosa* Schopf, 1968, p.684, pl.84, fig.2. Late Precambrian.

GLOMODINIUM Dodekova, 1975, p.26.

**reticulopilosum* Dodekova, 1975, p.26-27, pl.5, fig.1-6. Late Bathonian.

GLOSSODINIUM Ioannides et al., 1977, p.452-453.

bicuneatum (Deflandre, 1938b, p.180, pl.8, fig.7) Ioannides et al., 1977, p.453. Oxfordian; formerly *Palaeoperidinium* and *Scriniodinium*.

**dimorphum* Ioannides et al., 1977, p.453, pl.2, fig.13-14; text-fig.8. Kimmeridgian.

GLYPHANODINIUM Drugg, 1964, p.237-238.

**facetum* Drugg, 1964, p.238-239, fig.1-6. Danian.

GONIODEMA Stein, 1883, p.9,13,16,19,21. Modern genus defined from the motile stage. Fossil cysts formerly included within this genus have been transferred to *Heteraulacacysta* Drugg and Loeblich.

GONYAULACYSTA Deflandre, 1964, p.5030 ex Norris and Sarjeant, 1965, p.65 emend. Sarjeant, 1969, p.7-8.

aculeata (Klement, 1960, p.42, pl.5, fig.6-9; text-fig.21) Sarjeant, 1969, p.8. Early Kimmeridgian; formerly *Gonyaulax*.

aichmetes Sarjeant, 1966b, p.123-124, pl.13, fig.5-6; text-fig.30. Late Barremian.

aldorfensis Gocht, 1970b, p.136-138, pl.30, fig.1-3; pl.31, fig.9-11; pl.32, fig.1-3; text-fig.5-9. Early Bathonian.

ambigua (Deflandre, 1939, p.144, pl.6, fig.2) Sarjeant, 1969, p.8. Kimmeridgian; formerly *Gonyaulax*.

angulosa Gitmez, 1970, p.252, pl.2, fig.4-5; text-fig.7a-b. Early Kimmeridgian.

apionis (Cookson and Eisenack, 1958, p.36, text-fig.3-4) Sarjeant, 1969, p.8. Albian; formerly *Gonyaulax*.

areolata Sarjeant, 1961a, p.95. Erected as *Gonyaulax areolata*, which was a jr hom.; it was subsequently given the name *Gonyaulax scarburghensis* by Sarjeant, 1964c, p.472-473. This species is now in *Gonyaulacysta*, where its earliest specific epithet has priority.

GONYAULACYSTA (cont'd)

auctifica Brideaux, 1971, p.82-83, pl.23, fig.40-41; text-fig.9a-b.
Late Albian.

axicerastes Sarjeant, 1966b, p.114-116, pl.13, fig.11-12;
text-fig.25. Middle Barremian.

boreas Davey, 1974, p.52-53, pl.4, fig.1-4; pl.7, fig.5. Late
Barremian.

canadensis Pocock, 1972, p.89, pl.24, fig.1-2; text-fig.4.
Oxfordian-Kimmeridgian.

cassidata (Eisenack and Cookson, 1960, p.3, pl.1, fig.5-6)
Sarjeant, 1966b, p.125-126. Aptian-Cenomanian; formerly
Gonyaulax helicoidea subsp. *cassidata*.

cauda Gitmez and Sarjeant, 1972, p.193-194, pl.2, fig.1-2,4-5.
Kimmeridgian.

"*caytonensis*" (Sarjeant, 1959). NOW *Lithodinia*.

cladophora (Deflandre, 1938b, p.173, pl.7, fig.1-5; text-fig.5-6)
Dodekova, 1967, p.17-18. Early Oxfordian; formerly *Gonyaulax*.

subsp. *cladophora* (Deflandre, 1938b, p.173-176, pl.7, fig.1-5;
text-fig.5-6) Lentin and Williams, 1973, p.59. Early
Oxfordian; formerly *Gonyaulax cladophora* subsp. *cladophora*.
Downie and Sarjeant, 1964 (1965), p.114, give the incorrect
citation *Gonyaulax cladophora* Defl. subsp. *cladophora* Klement.

subsp. *extensa* (Klement, 1960, p.36-37, pl.4, fig.1-4;
text-fig.16) Lentin and Williams, 1973, p.60. Early
Kimmeridgian; formerly *Gonyaulax cladophora* subsp. *extensa*.

subsp. *hemipolyedrica* (Klement, 1960, p.36, pl.3, fig.10-12;
text-fig.14-15) Lentin and Williams, 1973, p.60. Early
Kimmeridgian; formerly *Gonyaulax cladophora* subsp.
hemipolyedrica.

subsp. *isovalvata* (Klement, 1960, p.37-38, pl.4, fig.5-9;
text-fig.17) Lentin and Williams, 1973, p.60. Early
Kimmeridgian; formerly *Gonyaulax cladophora* subsp.
isovalvata.

"*clathratum*" (Cookson and Eisenack, 1960b). NOW *Leptodinium*.

confossa Duxbury, 1977, p.33, pl.2, fig.2-4. Hauterivian.

confusa (Vozzhennikova, 1969, p.80, pl.17, fig.1a-b; pl.25,
fig.4-5; pl.27, fig.3-4) Sarjeant, 1969, p.9. Late Jurassic;
formerly *Gonyaulax*.

GONYAULACYSTA (cont'd)

crassicornuta (Klement, 1960, p.38, pl.5, fig.1) Sarjeant, 1969,
p.9. Early Kimmeridgian; formerly *Gonyaulax*.

cretacea (Neale and Sarjeant, 1962, p.441, pl.19, fig.1-2;
text-fig.2) Sarjeant, 1969, p.9. Hauterivian; formerly
Gonyaulax.

crispa (W. Wetzel, 1966, p.870, pl.15, fig.4a-b) Sarjeant, 1969,
p.9. Middle Jurassic; formerly *Gonyaulax*.

dangeardii Sarjeant, 1968, p.226-227, pl.1, fig.21; pl.3, fig.8-15;
text-fig.3. Oxfordian.

"*delicata*" (Davey, 1969a). NOW *Leptodinium*.

diamanta (Churchill and Sarjeant, 1963, p.34-36, pl.1, fig.19;
text-fig.3) Lentin and Williams, 1976, p.76. Holocene;
formerly *Peridinium* and *Phthanoperidinium*.

diaphanis (Cookson and Eisenack, 1958, p.36, pl.3, fig.13-14;
text-fig.10-11) Sarjeant, 1969, p.9. ?Aptian; formerly
Gonyaulax.

dictyophora (Deflandre, 1938b, p.178, pl.8, fig.1-3) Sarjeant,
1967b, p.249. Oxfordian; formerly *Palaeoperidinium*.

diutina Duxbury, 1977, p.34-35, pl.1, fig.3-4; text-fig.9.
Berriasian-Hauterivian.

downiei Pocock, 1972, p.87, pl.22, fig.1-2; text-fig.2.
Oxfordian-Kimmeridgian.

"*edwardsii*" (Cookson and Eisenack, 1958). NOW *Cribroperidinium*.

ehrenbergii Gitmez, 1970, p.252-254, pl.2, fig.8-9; text-fig.8.
Early Kimmeridgian.

"*eisenackii*" (Deflandre, 1938b). NOW *Endoscrinium*.

subsp. "*oligodentata*" (Cookson and Eisenack, 1958) Sarjeant, 1972,
p.17. This transfer is herein rejected and the subspecies
is retained in *Endoscrinium eisenackii*.

elamii Horowitz, 1975, p.25-26, pl.1, fig.9. Late Triassic.

episoma Sarjeant, 1966b, p.118-119, pl.13, fig.9-10; text-fig.27.
Late Barremian.

"*evittii*" (Dodekova, 1969). NOW *Occisucysta*.

exilicristata Davey, 1969a, p.121, pl.1, fig.1-2; fig.9A-B.
Cenomanian.

GONYAULACYSTA (cont'd)

exsanguia Duxbury, 1977, p.35-36, pl.1, fig.6-7; text-fig.10.
Hauterivian-Barremian.

"*extensa*" Clarke and Verdier, 1967, p.30, pl.4, fig.7-9;
text-fig.11. Jr syn. of *Psaligonyaulax deflandrei* Sarjeant,
1966b according to Clarke et al., 1968, p.181.

fallax Morgenroth, 1968, p.536, pl.41, fig.4-6. Danian.

fastigiata Duxbury, 1977, p.36-37, pl.1, fig.8-9,12; text-fig.11.
Hauterivian-Barremian.

fetchamensis Sarjeant, 1966b, p.128-130, pl.15, fig.1-2;
text-fig.33. Cenomanian.

filapicata Gocht, 1970b, p.134-135, pl.26, fig.4,6-9; pl.27,
fig.1-3,7; pl.28, fig.3; pl.31, fig.1-5; text-fig.2a,3-4.
Early Bathonian.

"*fragosa*" Brideaux, 1971, p.83, pl.23, fig.42; pl.24, fig.44-45;
text-fig.8c-d. Harker and Sarjeant, 1975, p.224 and Brideaux
and McIntyre, 1975, p.33 considered this species to be a jr syn.
of *Endoscrinium campanulum* (Gocht) Vozzhennikova.

giga Horowitz, 1970, p.178, pl.4, fig.20. Late Jurassic-Early
Cretaceous.

giuseppi (Morgenroth, 1966a, p.5, pl.2, fig.3-6) Sarjeant,
1969, p.9. Early Eocene; formerly *Gonyaulax*.

subsp. *major* (Morgenroth, 1966a, p.6, pl.2, fig.5-6) Lentini
and Williams, 1973, p.61. Early Eocene; formerly
Gonyaulax giuseppi subsp. *major*.

globata Gitmez and Sarjeant, 1972, p.195-197, pl.3, fig.1-2;
text-fig.5A-B. Middle-Late Kimmeridgian.

globosa Brideaux, 1971, p.81, pl.23, fig.37-38; text-fig.7g-h.
Middle-Late Albian.

gongylos Sarjeant, 1966b, p.111-113, pl.13, fig.1-2; text-fig.23.
Early Oxfordian.

gottisi Dupin, 1968, p.4, pl.1, fig.7-12. Late Jurassic. O.C.

granulata (Klement, 1960, p.39, pl.4, fig.10-13; text-fig.18-20)
Sarjeant, 1969, p.9. Middle Oxfordian-Early Kimmeridgian;
formerly *Gonyaulax*.

granuligera (Klement, 1960, p.41, pl.5, fig.4-5) Sarjeant,,
1969, p.10. Middle Oxfordian-Early Kimmeridgian; formerly
Gonyaulax.

GONYAULACYSTA (cont'd)

hadra Sarjeant, 1966b, p.119-121, pl.14, fig.1; text-fig.28.
Late Barremian.

helicoidea (Eisenack and Cookson, 1960, p.2, pl.1, fig.4,9)
Sarjeant, 1966b, p.116-117. Neocomian-Aptian; formerly
Gonyaulax.

subsp. *tuberculata* (Vozzhennikova, 1967, p.83, pl.41, fig.3a-b)
Lentin and Williams, 1973, p.62. Tithonian; formerly
Gonyaulax helicoidea var. *tuberculata*. (Variety correctly
transferred to *Gonyaulacysta* by Dodekova, 1971, p.10.)

hyaloderma (Deflandre, 1939, p.144, pl.6, fig.3-4) Sarjeant,
1967b, p.252. Kimmeridgian; formerly *Palaeoperidinium*.

hyalodermopsis (Cookson and Eisenack, 1958, p.34, pl.3, fig.11-12;
text-fig.5-6) Sarjeant, 1969, p.10. Neocomian-Aptian; formerly
Gonyaulax.

"*incomposita*" (Drugg, 1970b). NOW *Leptodinium*.

indicosa Brideaux, 1971, p.83, nom. subst. pro *Gonyaulacysta*
granulatum (Singh, 1964, p.135, pl.18, fig.2-3). Brideaux.
Middle-Late Albian; formerly *Paleoperidinium*.

irmoechinata (Heisecke, 1970, p.230, pl.1, fig.3; pl.2, fig.2-3)
Lentin and Williams, 1976, p.41. Early Paleocene; formerly
Deflandrea.

italica Corradini, 1973, p.132-133, pl.19, fig.8a-b; pl.33,
fig.5a-b; text-fig.3. Late Cretaceous-Paleocene.

**jurassica* (Deflandre, 1938b, p.168, pl.6, fig.2-5; text-fig.1-2)
Norris and Sarjeant, 1965, p.65. Oxfordian; formerly *Gonyaulax*.

subsp. *brevis* (Johnson and Hills, 1973, p.206, pl.1, fig.11,14)
Lentin and Williams, 1975, p.2151. ?Late Callovian-Early
Oxfordian; formerly *Gonyaulacysta jurassica* var. *brevis*.

subsp. *longicornis* (Deflandre, 1938b, p.171, pl.6, fig.6)
Lentin and Williams, 1973, p.62. Oxfordian; formerly
Gonyaulacysta jurassica var. *longicornis*. Subspecies
transferred as a variety to the genus *Gonyaulacysta* by
Gitmez, 1970, p.260.

"*kostromiensis*" (Vozzhennikova, 1967). NOW *Nelchinopsis*.

longicornis (Downie, 1957, p.420, pl.20, fig.8) Sarjeant, 1969,
p.10. Late Kimmeridgian; formerly *Gonyaulax*.

?*mamillifera* (Deflandre, 1939, p.143, pl.6, fig.1) Sarjeant,
1969, p.10. Kimmeridgian; formerly *Gonyaulax*.

GONYAULACYSTA (cont'd)

?mecsekensis (Nagy, 1969, p.292, pl.1, fig.6,8) Lentin and Williams, 1976, p.110. Late Pannonian; formerly *Palaeoperidinium*. O.C.

microceras (Eisenack, 1958, p.391, pl.21, fig.13) Clarke and Verdier, 1967, p.31. Late Aptian; formerly *Gonyaulax*.

"*mirabilis*" (Klement, 1960). NOW *Leptodinium*.

monacantha (Deflandre, 1935, p.228, pl.6, fig.1) Lentin and Williams, 1976, p.110. ?Senonian: formerly *Palaeoperidinium*. Sarjeant, 1967b, p.252 recommended transfer of this species to *Gonyaulacysta*.

"*mosaicum*" (Downie, 1957). NOW *Leptodinium*.

nannotrix (Deflandre, 1939, p.143, pl.6, fig.7) Sarjeant, 1969, p.10. Kimmeridgian; formerly *Gonyaulax*.

nuciformis (Deflandre, 1938b, p.180, pl.8, fig.4-6) Sarjeant, 1968, p.227. Oxfordian; formerly *Gonyaulax* and *Palaeoperidinium*.

"*nuda*" (Nagy, 1969) NOW ?*Tectatodinium*. See discussion under "*Palaeoperidinium pannonicum*".

obesa Brideaux, 1971, p.82, pl.23, fig.39; text-fig.8a-b.
Late Albian.

obscura (Lejeune-Carpentier, 1946, p.B191, fig.3-5) Sarjeant, 1969, p.10. Senonian; formerly *Gonyaulax*.

ordocava Duxbury, 1977, p.37-38, pl.1, fig.10-11; text-fig.12.
Hauterivian.

"*ornata*" (Eisenack, 1935). NOW *Ctenidodinium*.

"*orthoceras*" (Eisenack, 1958). NOW *Cribroperidinium*.

"*pachyderma*" (Deflandre, 1938b). NOW *Ctenidodinium*.

palla Sarjeant, 1966b, p.113-114, pl.13, fig.3-4; text-fig.24.
Early Barremian.

pannonica (Nagy, 1965, p.200-201, pl.1, fig.1-2; pl.2, fig.10; text-fig.1-2) Lentin and Williams, 1973, p.63. Early Pliocene; formerly *Gonyaulax*.

parorthoceras Davey, 1968, p.1. Holotype figured by Sarjeant, 1966b, as *Gonyaulacysta orthoceras*, pl.14, fig.5-6; text-fig.29. Late Barremian.

GONYAULACYSTA (cont'd)

perforans (Cookson and Eisenack, 1958, p.30, pl.2, fig.1-4,7-8; text-fig.8-9) Sarjeant, 1969, p.10. Late Jurassic; formerly *Gonyaulax*.

perforobtusa Duxbury, 1977, p.39, pl.1, fig.1; text-fig.13. Hauterivian.

"*pila*" (Gocht, 1959). NOW *Leptodinium*.

piriformis (Conrad, 1941, p.9, pl.1, fig.G) Lentini and Williams, 1976, p.111. Maastrichtian; formerly *Palaeoperidinium*. Sarjeant, 1967b, p.255 recommended transfer of this species to *Gonyaulacysta*.

?*plea* (Tasch, 1964, p.196, pl.1, fig.15) Lentini and Williams, 1976, p.43. Albian; formerly *Peridinium* and *Deflandrea*.

pyra (Drugg, 1967, p.14, pl.1, fig.17; pl.9, fig.6a-b) Sarjeant, 1969, p.11. Maastrichtian-Danian; formerly *Gonyaulax*.

rara Kar et al., 1972, p.147, pl.1, fig.4-5. Tertiary.

sarjeantii (Vozzhennikova, 1967, p.87-88, pl.31, fig.1-3) Sarjeant, 1969, p.11. Tithonian; formerly *Gonyaulax*. O.C.

subsp. *sphaericola* (Vozzhennikova, 1967, p.89, pl.25, fig.1-2; pl.28, fig.4; pl.32, fig.1-4) Lentini and Williams, 1973, p.63. Tithonian; formerly *Gonyaulax sarjeanti* var. *sphaericum*.

"*scarburghensis*" (Sarjeant, 1964c). NOW *Gonyaulacysta areolata*.

scottii (Cookson and Eisenack, 1958, p.30, pl.2, fig.5-6) Sarjeant, 1969, p.11. Early-Middle Kimmeridgian; formerly *Gonyaulax*. O.C.

serrata (Cookson and Eisenack, 1958, p.34, pl.3, fig.2; text-fig.12-14) Sarjeant, 1969, p.11. Late Jurassic-Neocomian; formerly *Gonyaulax*.

setcheyensis Sarjeant, 1976c, p.4-6, pl.1, fig.7; text-fig.1. Kimmeridgian.

"*striata*" (Clarke and Verdier, 1967). NOW *Leptodinium*.

?*superornata* (W. Wetzel, 1966, p.869, pl.16, fig.8a-b) Eisenack and Kjellstrom, 1971b, p.306g. Bathonian; formerly *Gonyaulax* and *Meiourogonyaulax*.

systremmata Gitmez and Sarjeant, 1972, p.204-205, pl.5, fig.7-8. Early Kimmeridgian. O.C.

teicha Davey, 1974, p.53-54, pl.4, fig.5-7. Early Barremian.

GONYAULACYSTA (cont'd)

?*tenuiceras* (Eisenack, 1958, p.389, pl.21, fig.14-15; pl.22, fig.1-3; pl.24, fig.2) Sarjeant, 1969, p.11. Late Barremian-Aptian; formerly *Gonyaulax*.

temuicormuta (Cookson and Eisenack, 1962b, p.478, pl.3, fig.12-13; text-fig.1a-b) Sarjeant, 1969, p.11. Albian; formerly ?*Leptodinium*.

tenuitabulata (Gerlach, 1961, p.159, pl.25, fig.10-11; text-fig.1-3) De Coninck, 1969, p.23. Middle Oligocene-Middle Miocene; formerly *Gonyaulax*.

transparens (Sarjeant, 1959, p.334, pl.13, fig.3; text-fig.3) Sarjeant, 1969, p.11. Early Callovian; formerly *Gonyaulax*.

wetzelii (Lejeune-Carpentier, 1939, p.B526, text-fig.1-2) Sarjeant, 1969, p.11. ?Senonian; formerly *Gonyaulax*. O.C.

whatleyi Sarjeant, 1972, p.19-21, pl.7, fig.1; text-fig.4. Bathonian-Middle Callovian.

whitei Sarjeant, 1966b, p.126-128, pl.14, fig.2; text-fig.32. Cenomanian.

GONYAULAX Diesing, 1866, p.305,382. Modern genus defined from the motile stage. Fossil cysts formerly included within this genus have been transferred to *Gonyaulacysta* Deflandre ex Norris and Sarjeant, with the exception of those species listed below.

"*acanthosphaera*" (Sarjeant, 1961a). NOW *Lithodinia*.

"*aceras*" (Eisenack, 1958). NOW *Leptodinium*.

"*amabilis*" (Deflandre, 1939). NOW *Leptodinium*.

"*bulloidea*" (Cookson and Eisenack, 1960b). NOW *Lithodinia*.

"*caytonensis*" (Sarjeant, 1959). NOW *Lithodinia*.

"*chaloneri*" (Sarjeant, 1963b). NOW *Rhaetogonyaulax*.

"*clathrata*" (Cookson and Eisenack, 1960b). NOW *Leptodinium*.

"*cornigera*" (Valensi, 1953). NOW *Hystrichogonyaulax*.

"*cristulata*" (Sarjeant, 1959). NOW *Lithodinia*.

"*culmula*" (Norris, 1965). NOW *Dichadogonyaulax*.

"*decapitata*" (W. Wetzel, 1966). NOW *Lithodinia*.

"*edwardsii*" (Cookson and Eisenack, 1958). NOW *Cribroperidinium*.

GONYAULAX (cont'd)

- "eisenackii" (Deflandre, 1938b). NOW *Endoscrinium*.
"eumorpha" (Cookson and Eisenack, 1960b). NOW *Leptodinium*.
"freakei" (Sarjeant, 1963c). NOW *Leptodinium*.
"heslertonensis" (Neale and Sarjeant, 1962). NOW *Heslertonia*.
"kostromiensis" (Vozzhennikova, 1967). NOW *Nelchinopsis*.
"margaritifera" (Cookson and Eisenack, 1960a). NOW *Leptodinium*.
"millioudii" (Sarjeant, 1963c). NOW *Leptodinium*.
"muderongensis" (Cookson and Eisenack, 1958). NOW *Cribroperidinium*.
"nealei" (Sarjeant, 1962a). NOW *Hystrichogonyaulax*.
"orthoceras" (Eisenack, 1958). NOW *Cribroperidinium*.
"pachyderma" (Deflandre, 1938b). NOW *Ctenidodinium*.
"paliuros" (Sarjeant, 1962a). NOW *Acanthaulax*.
"porosa" (Lejeune-Carpentier, 1946). NOW *Leptodinium*.
"reticulata" (Nagy, 1969). NOW *Leptodinium*.
"rhaetica" (Sarjeant, 1963b). NOW *Rhaetogonyaulax*.
"venusta" (Klement, 1960). NOW *Acanthaulax*.

GORKADINUM Loeblich and Loeblich, 1966, p.93. nom. subst. pro
Tetrasphaera Gorka, 1965.

**rarium* (Gorka, 1965, p.307, pl.2, fig.6a-b) Loeblich and Loeblich,
1966, p.93. Early Kimmeridgian; formerly *Tetrasphaera*. O.C.

GYMNODINUM Stein, 1878, p.89-91,97. Modern genus defined from the
motile stage. Fossil cysts formerly included within this genus
have been transferred to *Dinogymnum* Evitt *et al.*, with the
exception of those species listed below.

- "attadalense" (Cookson and Eisenack, 1958). NOW *Scriniodinium*.
"australiense" (Deflandre and Cookson, 1955). NOW *Scriniodinium*.
"crystallinum" (Deflandre, 1938b). NOW *Scriniodinium*.
"dabendorfense" (Alberti, 1961). NOW *Diconodinium*.
"dorsispirale" (Churchill and Sarjeant, 1963). NOW *Muiradinium*.

GYMNODINIUM (cont'd)

- "fehmarnense" (Morgenroth, 1966a). NOW *Diconodinium*.
"galeritum" (Deflandre, 1938b). NOW *Endoscrinium*.
"luridum" (Deflandre, 1938b). NOW *Endoscrinium*.
"parvimarginatum" (Cookson and Eisenack, 1958). NOW *Scriniodinium*.
"pontis-mariae" (Deflandre, 1936b). NOW *Subtilisphaera*.
"torulosum" (Deflandre, 1943). NOW *Scriniodinium*.
"ventriosum" (Alberti, 1961). NOW *Diconodinium*.

HALOPHORIDIA Cookson and Eisenack, 1962a, p.271.

**xena* Cookson and Eisenack, 1962a, p.271, pl.37, fig.6-8. Albian-Cenomanian.

HAPSIDAULAX Sarjeant, 1975b, p.143-144.

**margarethae* Sarjeant, 1975b, p.144-147, pl.1a-d; text-fig.1-3. Bathonian.

HEBECYSTA Bujak and Fisher, 1976, p.64.

**previcornuta* Bujak and Fisher, 1976, p.64, pl.9, fig.11-15; text-fig.6A,B. Norian.

HEIBERGELLA Bujak and Fisher, 1976, p.52,54.

aculeata Bujak and Fisher, 1976, p.56,58, pl.8, fig.14-20; text-fig.4D. Carnian-Norian.

**asymmetrica* Bujak and Fisher, 1976, p.54,56, pl.8, fig.1-8; text-fig.4A-B. Carnian-Norian.

salebrosacea Bujak and Fisher, 1976, p.56, pl.8, fig.9-13; text-fig.4C. Carnian-Norian.

"HELIODINIUM" Alberti, 1961, p.33 emend. Sarjeant, 1966b, p.142. Jr syn. of *Hystrichodinium* Deflandre, 1935. Davey, 1974, p.54 transferred the type of the genus *Heliodinium* (*H. voigtii*) to *Hystrichodinium*. The remaining species *Heliodinium patriciae* Neale and Sarjeant, 1962, was transferred to *Hystrichodinium* by Lentin and Williams, 1975, p.2151, who thus made *Heliodinium* a superfluous genus. The retention of *Heliodinium* by Harker and Sarjeant, 1975, p.225 is herein rejected, since the difference in process construction between *Heliodinium* and *Hystrichodinium*, as specified by Sarjeant, 1966b, p.142, cannot be determined with certainty with the light microscope.

HEMICYSTODINIUM Wall, 1967, p.110.

**zoharyi* (Rossignol, 1962, p.132, pl.2, fig.10) Wall, 1967, p.110.
Pleistocene; formerly *Hystrichosphaeridium*.

subsp. *ktana* (Rossignol, 1964, p.88, pl.2, fig.6-7,10; pl.3,
fig.11) Lentin and Williams, 1973, p.67. Pleistocene;
formerly *Hystrichosphaeridium zoharyi* var. *ktana*.

HEMIPLACOPHORA Cookson and Eisenack, 1965a, p.125.

**semilunifera* Cookson and Eisenack, 1965a, p.126, pl.14, fig.4-9,16.
Late Eocene.

HERENDEENIA Wiggins, 1969, p.145-146.

**pisciformis* (Cookson and Eisenack, 1958, p.61, pl.8, fig.6)
Wiggins, 1969, p.146-148. Late Jurassic; formerly *Omatia*.

HESLERTONIA Sarjeant, 1966b, p.133.

**heslertonensis* (Neale and Sarjeant, 1962, p.440, pl.19, fig.5;
pl.20, fig.5) Sarjeant, 1966b, p.133. Hauterivian-Barremian;
formerly *Gonyaulax*.

pellucida Gitmez, 1970, p.297-299, pl.4, fig.12; pl.14, fig.2;
text-fig.26. Early Kimmeridgian.

striata (Cookson and Eisenack, 1960a, p.9, pl.3, fig.10-11)
Norwick, 1976, p.47. Cenomanian; formerly *Cymatiosphaera*.

teichophera (Sarjeant, 1961a, p.107-108, pl.15, fig.9; text-fig.
9a-b) Sarjeant, 1976c, p.8. Oxfordian; formerly *Cymatiosphaera*.

HETERAULACACYSTA Drugg and Loeblich, 1967, p.183.

**campanula* Drugg and Loeblich, 1967, p.183-184, pl.1, fig.6-8c;
text-fig.2. Middle Eocene.

fehmarnensis Lentin and Williams, 1973, p.67; description and
holotype. Morgenroth, 1966a, p.7, pl.2, fig.7-8. Early Eocene.
Morgenroth, 1966a, included this species in *Goniodoma polyedricum*
which is a modern motile species. Eisenack and Kjellström, 1971a,
p.445, transferred *G. polyedricum* to the fossil genus
Heteraulacacysta, including all modern forms and Morgenroth's
fossil forms. Lentin and Williams, 1973, p.67-68, rejected this
transfer on the basis that *Heteraulacacysta* is a fossil cyst genus
and erected the species *H. fehmarnensis* for fossil cysts which
resemble *Goniodoma polyedricum*.

?*leptalea* Eaton, 1976, p.305-306, pl.21, fig.1-2. Middle-Late Eocene.

HETEROSPHAERIDIUM Cookson and Eisenack, 1968, p.115.

HETEROSPHAERIDIUM (cont'd)

**conjunctionum* Cookson and Eisenack, 1968, p.115; text-fig.4G-H.
Santonian-Early Campanian.

heteracanthum (Deflandre and Cookson, 1955, p.276, pl.2, fig.5-6;
text-fig.40-41) Eisenack and Kjellström, 1971a, p.451. ?Late
Cretaceous-Early Eocene; formerly *Baltisphaeridium*,
Hystrichosphaeridium and *Cleistosphaeridium*.

subsp. *sparsiprocessum* (Varma and Dangwal, 1964, p.64, pl.1,
fig.7) Eisenack and Kjellström, 1971a, p.453. Eocene-Oligocene;
formerly *Hystrichosphaeridium*.

HEXAGONIFERA Cookson and Eisenack, 1961a, p.73 emend. Cookson and
Eisenack, 1962b, p.496.

?*chlamydata* Cookson and Eisenack, 1962b, p.496, pl.7, fig.1-3,5-8.
Albian-Cenomanian. Lentin and Williams, 1976, p.84 questionably
retained *H. chlamydata* in *Hexagonifera*, even though the species
appears to have an apical archeopyle (Cookson and Eisenack, 1962b,
pl.7, fig.1-3,6,8).

"*cylindrica*" (Habib, 1970, p.374, pl.10, fig.2). Lentin and
Williams, 1976, p.84 rejected the transfer of this species
from *Prismatocystis* to *Hexagonifera* by Habib, 1972, p.378.

"*defloccata*" (Davey and Verdier, 1973). NOW *Thalassiphora*.

**glabra* Cookson and Eisenack, 1961a, p.74, pl.12, fig.9-13.
Senonian.

"*jurassica*" (Gitmez and Sarjeant, 1972). NOW *Senoniasphaera*.

?*laticaudata* Vozzhennikova, 1967, p.125-126, pl.54, fig.1.
Santonian. Lentin and Williams, 1976, p.85 recommended that
the species name *H. laticaudata* not be used because of the
extremely poor illustration of the holotype which renders
morphological elucidation impossible.

?*scabrata* Jain and Taugourdeau-Lantz, 1973, p.64, pl.4, fig.11-12.
Early Cretaceous. This species is herein questionably
retained in *Hexagonifera* since according to Jain and
Taugourdeau-Lantz, 1973, p.64, the archeopyle is apical.

"*suspecta*" (Manum and Cookson, 1964). NOW *Trithyrodinium*.

"*vermiculata*" (Cookson and Eisenack, 1961a). NOW *Trithyrodinium*.

"*HEXASPHAERA*" Clarke and Verdier, 1967, p.42. Clarke et al., 1968,
p.181 considered this genus to be a jr syn. of
Callaiosphaeridium.

HISTIOCYSTA Davey, 1969a, p.138.

**palla* Davey, 1969a, p.138-140, pl.1, fig.5-6; text-fig.14A-B.
Cenomanian.

HISTIOPHORA Klement, 1960, p.51.

**ornata* Klement, 1960, p.51-53, pl.16, fig.11-14; text-fig.28-30.
Late Jurassic.

HOMOTRYBLIUM Davey and Williams, 1966b, p.100.

abbreviatum Eaton, 1976, p.267-268, pl.10, fig.2-4. Early-
Late Eocene.

bifurcatum Caro, 1973, p.354,357, pl.2, fig.6. Middle Paleocene.

floripes (Deflandre and Cookson, 1955, p.276, pl.7, fig.1-2,7)
Stover, 1975, p.36. Early Tertiary; formerly *Hystrichosphaeridium*
and *Cordosphaeridium*.

subsp. *breviradiatum* (Cookson and Eisenack, 1961b) comb. nov.
1961 *Hystrichosphaeridium floripes* subsp. *breviradiatum*
Cookson and Eisenack, p.44, pl.2, fig.10-11. Late Eocene;
also formerly *Cordosphaeridium*.

oceanicum Eaton, 1976, p.268, pl.10, fig.5-8. Middle-Late Eocene.

pallidum Davey and Williams, 1966b, p.102-103, pl.12, fig.4,6;
text-fig.22. Early Eocene.

plectilum Drugg and Loeblich, 1967, p.184-186, pl.2, fig.1-9;
text-fig.3. Oligocene.

tasmaniense Cookson and Eisenack, 1967a, p.133-134, pl.20,
fig.1-2. Paleocene.

**tenuispinosum* Davey and Williams, 1966b, p.101-102, pl.4, fig.11;
pl.12, fig.1,5,7; text-fig.21. Early Eocene.

HOROLOGINELLA Cookson and Eisenack, 1962a, p.271.

apiculata Cookson and Eisenack, 1962a, p.272, pl.37, fig.4.
Campanian.

?*extrema* Cookson and Eisenack, 1962a, p.272-273, pl.37, fig.10.
Cenomanian.

incurvata Cookson and Eisenack, 1962a, p.272, pl.37, fig.5.
Early Eocene.

**lineata* Cookson and Eisenack, 1962a, p.272, pl.37, fig.1-3.
Aptian-?Albian.

HOROLOGINELLA (cont'd)

?*obliqua* Cookson and Eisenack, 1962a, p.273, pl.37, fig.9.
?Late Albian-Cenomanian.

?*spinosa* Cookson, 1965a, p.89, pl.10, fig.10-12; pl.11, fig.10.
Late Eocene.

spinosigibberosa Brideaux and Fisher, 1976, p.22-24, pl.4, fig.9;
pl.5, fig.1-16. Late Oxfordian-?Portlandian.

HYSTRICHODINIUM Deflandre, 1935, p.182 emend. Clarke and Verdier,
1967, p.37-38.

"*alatum*" (Cookson and Eisenack, 1962b). NOW *Xiphophoridium*.

amphiacanthum Cookson and Eisenack, 1958, p.37, pl.5, fig.9.
Late Jurassic or Neocomian.

compactum Alberti, 1961, p.15, pl.9, fig.5-6. Valanginian.

dasy Davey, 1969a, p.175-176, pl.10, fig.8-9. Cenomanian.

furcatum Alberti, 1961, p.16, pl.9, fig.7-8. Hauterivian.

infundibulum Jain *et al.*, 1975, p.11-12, pl.3, fig.35.
Maastrichtian.

oligacanthum Deflandre and Cookson, 1955, p.255-257, pl.1, fig.1;
text-fig.2-3. Albian.

"*parvum*" (Alberti, 1961). NOW *Cauca*.

patriciae (Neale and Sarjeant, 1962, p.451-452, pl.19, fig.3;
text-fig.7) Lentini and Williams, 1975, p.2151. Hauterivian;
formerly *Heliodinium*.

**pulchrum* Deflandre, 1935, p.229-230, pl.5, fig.1; text-fig.9-11.
Senonian.

subsp. *densispinum* (Deflandre, 1936a, p.35-36, pl.9, fig.3)
Lentini and Williams, 1973, p.70. Senonian; formerly
Hystrichodinium pulchrum var. *densispinum*.

subsp. *globosum* (Deflandre, 1936a, p.35, pl.9, fig.1-2) Lentini
and Williams, 1973, p.70. Senonian; formerly *Hystrichodinium*
pulchrum var. *globosum*.

ramoides Alberti, 1961, p.15-16, pl.8, fig.11-13. Late
Barremian.

voigtii (Alberti, 1961, p.33, pl.8, fig.1-5 emend. Sarjeant, 1966b,
p.142-144) Davey, 1974, p.54. Barremian-Early Aptian; formerly
Heliodinium. O.C.

HYSTRICHOGONYAULAX Sarjeant, 1969, p.13-14.

"*coreoides*" (Benedek, 1972). NOW *Phthanoperidinium*.

**cornigera* (Valensi, 1953, p.27, pl.1, fig.4,8,10; pl.2, fig.1-2; pl.13, fig.5; text-fig.2a) Sarjeant, 1969, p.14. Bathonian; formerly *Gonyaulax*.

nealei (Sarjeant, 1962a, p.480, pl.69, fig.1; text-fig.2) Sarjeant, 1969, p.14. Oxfordian; formerly *Gonyaulax*.

"*polytrix*" (Benedek, 1972). NOW *Phthanoperidinium*.

"*HYSTRICHOKIBOTIUM*" Klumpp, 1953, p.387. Gocht, 1969, p.32 considered this genus to be a *jr syn.* of "*Hystrichosphaera*". Accordingly, he transferred the type of the genus, *Hystrichokibotium pseudofurcatum*, to *Hystrichosphaera*. Subsequently Sarjeant, 1970, p.76 transferred *Hystrichosphaera pseudofurcata* to *Spiniferites*.

"*trabeculiferum*" (Deflandre and Cookson, 1955). NOW *Spiniferites*.

HYSTRICHOKOLPOMA Klumpp, 1953, p.388, emend. Williams and Downie, 1966a, p.176.

"*biformoides*" (Eisenack, 1954). NOW *Achilleodinium*.

bulbosum (Ehrenberg, 1838, pl.1, fig.17) Morgenroth, 1968, p.546-547. Danian; formerly *Hystrichosphaera*, *Hystrichosphaeridium* and *Baltisphaeridium*. O.C.

**cinctum* Klumpp, 1953, p.389, pl.17, fig.3-5. Late Eocene.

"*clavigerum*" (Deflandre, 1937b). NOW *Florentinia*.

denticulatum Matsuoka, 1974, p.330-331, pl.44, fig.3-5. Early-Middle Miocene. O.C.

eisenackii Williams and Downie, 1966a, p.176-178, pl.17, fig.1-3; text-fig.46. Early Eocene. O.C.

subsp. *turgidum* (Williams and Downie, 1966a, p.178-179, pl.17, fig.5) Lentini and Williams, 1973, p.71. Early Eocene; formerly *Hystrichokolpoma eisenacki* var. *turgidum*.

ellipticum Matsuoka, 1974, p.330, pl.44, fig.2. Early-Middle Miocene. O.C.

"*ferox*" (Deflandre, 1937b). NOW *Silicisphaera*.

?*fimbriatum* Morgenroth, 1968, p.547-548, pl.45, fig.7-8. Danian. O.C.

HYSTRICHOKOLPOMA (cont'd)

granulatum Eaton, 1976, p.269-270, pl.10, fig.11-13; text-fig.15.
Early-Middle Eocene. O.C.

mentitum McLean, 1974, p.68-69, pl.8, fig.1-5; text-fig.1B. Late Paleocene.

poculum Maier, 1959, p.312-313, pl.31, fig.3. Middle Miocene.

rigaudiae Deflandre and Cookson, 1955, p.279-281, pl.6, fig.6,10;
text-fig.42. Eocene-Miocene. O.C.

salacium Eaton, 1976, p.271-272, pl.11, fig.1-3; text-fig.16.
Early-Late Eocene. O.C.

sequanaportus Deflandre and Deflandre-Rigaud, 1958, cards 1352-
1353, 4 figs. Late Cretaceous.

tumescens McLean, 1974, p.66,68, pl.8, fig.6-9; text-fig.1A.
Late Paleocene.

unispinum Williams and Downie, 1966a, p.179-180, pl.17, fig.6-7.
Early Eocene.

?*xipheum* (Maier, 1959, p.309, pl.30, fig.5) Davey and Williams,
1969, p.5. Middle Miocene; formerly *Galea* and *Hystrichosphaeridium*.
O.C.

"*HYSTRICHOSPHAERA*" O. Wetzel, 1933b, p.33 ex Deflandre, 1937b, p.61.
Jr syn. of *Spiniferites*. See Sarjeant, 1970, p.75. All species
with the exception of those listed below have been transferred
to *Spiniferites*.

"*biformis*" (Wiesner, 1936). NOW *Hystrichosphaeridium*.

"*borussica*" (Eisenack, 1954). NOW *Rottnestia*.

"*buccina*" (Davey and Williams, 1966a). Jr syn. of *Spiniferites*
pseudofurcatus (Klumpp) Sarjeant. See discussion under
"*Spiniferites buccinus*".

"*bulbosa*" (Ehrenberg, 1838). NOW *Hystrichokolpoma*.

"*ceratiooides*" (Deflandre, 1937b). NOW *Xenascus*.

"*cruciata*" (O. Wetzel, 1933b). NOW *Hystrichosphaeridium*.

"*furcata*" (Ehrenberg, 1838). Jr syn. of *Spiniferites ramosus*.
See discussion under "*Spiniferites furcatus*".

"*hirsuta*" (Ehrenberg, 1838). NOW *Operculodinium*.

forma "*minor*" (O. Wetzel, 1933b). NOW *Operculodinium*.

HYSTRICHOSPHAERA (cont'd)

hirsuta (cont'd)

forma "*varians*" (O. Wetzel, 1933b). NOW *Operculodinium*.

"*ovum*" (Deflandre, 1935). NOW *Hystrichosphaeropsis*.

"*paradoxa*" (Cookson and Eisenack, 1968). NOW *Systematophora*.

"*penicillata*" (Ehrenberg, 1843). NOW *Hystrichosphaeridium*.

forma "*coronata*" (O. Wetzel, 1933b). NOW *Areoligera coronata*.

forma "*medusettiformis*" (O. Wetzel, 1933b). NOW *Areoligera medusettiformis*.

forma "*rhizopodiphora*" (O. Wetzel, 1933b). NOW *Areoligera rhizopodiphora*.

"*pilosa*" (Ehrenberg, 1843). NOW *Tenua*.

"*pseudofurcata*" (Varma and Dangwal, 1964). NOW *Spiniferites varmae*.

"*salpingophora*" (Deflandre, 1935). NOW *Hystrichosphaeridium*.

"*tenuicapillata*" (O. Wetzel, 1933b). NOW *Areoligera*.

"*tubifera*" (Ehrenberg, 1838). NOW *Hystrichosphaeridium*.

"*xanthiopyxides*" (O. Wetzel, 1933b). NOW *Prolixosphaeridium*.

HYSTRICHOSPHAERIDIUM Deflandre, 1937b, p.68, emend. Davey and Williams, 1966b, p.55-56.

"*aemulum*" (Deflandre, 1938b). NOW *Adnatosphaeridium*.

"*albertense*" (Pocock, 1962). NOW *Oligosphaeridium*.

"*alcicornu*" (Eisenack, 1954). NOW *Achromosphaera*.

"*amalthei*" (W. Wetzel, 1966). NOW *Polysphaeridium*.

"*ancoriferum*" (Cookson and Eisenack, 1960a). NOW *Cleistosphaeridium*.

"*anthophorum*" (Cookson and Eisenack, 1958). NOW *Oligosphaeridium*.

aquitanicum Deunff, 1961, p.39-40, pl.2, fig.12-13. Cretaceous.

arborispinum Davey and Williams, 1966b, p.61, pl.9, fig.5,10. Early-Middle Barremian.

"*armatum*" (Deflandre, 1937b). NOW *Cleistosphaeridium*.

HYSTRICHOSPHAERIDIUM (cont'd)

aruncium Tasch, 1964, p.193, pl.3, fig.12. Albian.

arundum Eisenack and Cookson, 1960, p.8, pl.3, fig.7-9. Albian.

"*ashdodense*" (Rossignol, 1962). Jr syn. of *Lingulodinium machaerophorum*.

"*asperum*" (Maier, 1959). NOW *Polysphaeridium*.

assamicum Sah et al., 1970, p.146-147, pl.2, fig.20-21. Late Cretaceous.

"*asterigerum*" (Gocht, 1959). NOW ?*Oligosphaeridium*.

asterium Eaton, 1976, p.273, pl.11, fig.7-10. Late Eocene.

"*asymmetricum*" (Deflandre and Courteville, 1939). NOW *Callaiosphaeridium*.

biforme (Wiesner, 1936, p.154, pl.7, fig.9) Deflandre, 1946a, card 881. Late Cretaceous; formerly *Hystrichosphaera*.

"*biformoides*" (Eisenack, 1954). NOW *Achilleodinium*.

bowerbankii Davey and Williams, 1966b, p.69-70, pl.8, fig.1,4. Cenomanian. O.C.

breviatum Morgenroth, 1966a, p.29, pl.7, fig.11-12. Early Eocene.

"*brideauxii*" Lentin and Williams, 1973, p.74 (nom. subst. pro *Hystrichosphaeridium cylindratum* Brideaux, 1971, p.91-92, pl.26, fig.69-70; pl.27, fig.74; text-fig.9c, non *Hystrichosphaeridium cylindratum* Morgenroth, 1966a). Harker and Sarjeant, 1975, p.225-226 considered this species to be a jr syn. of *Hystrichosphaeridium cooksoniae* Singh.

"*bulbosum*" (Ehrenberg, 1838). NOW *Hystrichokolpoma*.

calvum Tasch, 1964, p.193, pl.1, fig.21. Albian.

cambayense Varma and Dangwal, 1964, p.63, pl.1, fig.1-2. Eocene-Oligocene.

"*caminuspinum*" (Wall, 1965a). NOW ?*Polysphaeridium*.

"*cantharellum*" (Brosius, 1963). NOW *Cordosphaeridium*.

"*capitatum*" (Cookson and Eisenack, 1960b). NOW *Tenua*.

"*caulleryi*" (Deflandre, 1938b). NOW *Adnatosphaeridium*.

HYSTRICHOSPHAERIDIUM (cont'd)

"*centrocarpum*" (Deflandre and Cookson, 1955). NOW *Operculodinium*.

choanophorum Deflandre and Cookson, 1955, p.271-272; text-fig.23-29. Pliocene.

"*clavigerum*" (Deflandre, 1937b). NOW *Florentinia*.

"*coelenteratum*" (Tasch, 1964). NOW ?*Oligosphaeridium*.

"*colligerum*" (Deflandre and Cookson, 1955). NOW *Diphyes*.

collum Tasch, 1964, p.194, pl.2, fig.7, 16. Albian.

"*complex*" (White, 1842). NOW *Oligosphaeridium*.

cooksoniae Singh, 1971, p.329-330, pl.51, fig.7-8; pl.52, fig.1-4. Late Albian. O.C.

"*coronatum*" (O. Wetzel, 1933b). NOW *Areoligera*.

"*costatum*" (Davey and Williams, 1966b). NOW *Compositosphaeridium*.

"*crassipes*" (Reade, 1839). NOW ?*Litosphaeridium*.

"*cribrotubiferum*" (Sarjeant, 1960). NOW *Surculosphaeridium*.

cruciatum (O. Wetzel, 1933b, p.48, pl.4, fig.30) Deflandre, 1937b, p.79. Late Cretaceous; formerly *Hystrichosphaera*.

cylindratum Morgenroth, 1966a, p.30, pl.8, fig.3-4. Early Eocene.

"*cylindratum*" Brideaux, 1971, p.91-92, pl.26, fig.69-70; pl.27, fig.74; text-fig.9c. Jr hom., nom subst. *Hystrichosphaeridium "brideauxii"* Lentin and Williams, 1973, p.74. This species is a jr syn. of *Hystrichosphaeridium cooksoniae*. See Harker and Sarjeant, 1975, p.225-226.

"*danicum*" (W. Wetzel, 1952). NOW *Cleistosphaeridium*.

"*deanei*" (Davey and Williams, 1966b). NOW *Florentinia*.

"*deflandrei*" (Valensi, 1947). NOW ?*Polysphaeridium*.

"*dictyophorum*" (Cookson and Eisenack, 1958). NOW *Oligosphaeridium*.

"*dictyostilum*" Menendez, 1965, p.11-12, pl.2, fig.6; pl.3, fig.18-22. Eaton, 1971, p.359 considered this species to be a jr syn. of *Areosphaeridium diktyoplakus* (Klumpp) Eaton.

difficile Manum and Cookson, 1964, p.12-14, pl.3, fig.1-3, 7. Cenomanian.

HYSTRICHOSPHAERIDIUM (cont'd)

"*diktyoplodus*" (Klumpp, 1953). NOW *Areosphaeridium*.

"*dispare*" (Tasch, 1964). NOW ?*Oligosphaeridium*.

"*divergens*" (Eisenack, 1954). NOW *Cordosphaeridium*.

dowlingii Harland, 1973, p.681, pl.85, fig.1; text-fig.10.
Late Campanian.

eccentrum Tasch, 1964, p.194, pl.1, fig.6; pl.2, fig.9. Albian.

echinatum Menendez, 1965, p.12-13, pl.2, fig.9. Late Cretaceous.

"*echinoides*" (Maier, 1959). NOW *Cleistosphaeridium*.

"*ehrenbergii*" (Deflandre, 1947c). NOW *Cleistosphaeridium*.

"*elegantulum*" Lejeune-Carpentier, 1940, p.22; text-fig.11-12.
Jr syn. of *Oligosphaeridium complex* (White) Davey and Williams.
See Deflandre, 1946b, p.111.

"*ellipticum*" (Cookson, 1965a). NOW *Distatodinium*.

entomium Tasch, 1964, p.193, pl.3, fig.15. Albian.

"*eoinodes*" (Eisenack, 1958). NOW *Kleithriasphaeridium*.

equispinosum Tasch, 1963, p.336, pl.1, fig.12. Early Permian.
Questionable affinity.

"*erectum*" (Manum and Cookson, 1964). NOW ?*Cordosphaeridium*.

"*fabium*" (Tasch, 1964). NOW ?*Polysphaeridium*.

"*ferox*" (Deflandre, 1937b). NOW *Silicisphaera*.

"*floripes*" (Deflandre and Cookson, 1955). NOW *Homotryblium*.

"*flosculus*" (Deflandre, 1937b). NOW ?*Silicisphaera*.

"*follium*" (Tasch, 1964). NOW ?*Polysphaeridium*.

"*fucosum*" (Valensi, 1955a). NOW ?*Polysphaeridium*.

"*geometricum*" (Pastiels, 1948 non Deflandre, 1942). NOW
Apectodinium homomorphum.

gliwicense Macko, 1957, p.113, pl.71, fig.11-15; pl.72, fig.1.
Miocene.

"*grallaeforme*" (Brosius, 1963). NOW *Achromosphaera*.

HYSTRICHOSPHAERIDIUM (cont'd)

"*granulosum*" (Deflandre, 1937b). NOW *Prolixosphaeridium*.

"*heteracanthum*" (Deflandre and Cookson, 1955). NOW *Heterosphaeridium*.

hillii (Merrill, 1895, p.17; text-fig.21) Sarjeant, 1964b, p.175.
Early Cretaceous; formerly *Geodia*. O.C.

"*hirsutum*" (Ehrenberg, 1838). NOW *Operculodinium*.

"*hirundo*" (Eisenack, 1958). NOW *Lanternosphaeridium*.

"*horridum*" (Deflandre, 1937b). NOW *Baltisphaeridium*, an acritarch.

"*huguonioti*" (Valensi, 1955a). NOW *Cleistosphaeridium*.

"*inodes*" (Klumpp, 1953). NOW *Cordosphaeridium*.

var. "*gracile*" (Eisenack, 1954). NOW *Cordosphaeridium gracile*.

irregularare (Merrill, 1895, p.16; text-fig.4) Sarjeant, 1964b,
p.175. Early Cretaceous; formerly *Geodia*.

"*irregularare*" (Pocock, 1962). NOW *Oligosphaeridium*.

"*isocalamus*" (Deflandre and Cookson, 1955). NOW *Tanyosphaeridium*.

"*israelianum*" (Rossignol, 1962). NOW *Operculodinium*.

kiowanum Tasch, 1964, p.193, pl.2, fig.1. Albian.

"*langii*" (Wall, 1965a). NOW ?*Polysphaeridium*.

latirictum Davey and Williams, 1966b, p.66-67, pl.10, fig.8.
Early Eocene.

leonardianum Tasch, 1963, p.336, pl.1, fig.10-11. Early Permian.

"*leptodermum*" (Maier, 1959). NOW *Spiniferites*.

"*lobospinosum*" (Gocht, in Weiler, 1956). NOW *Chiropteridium*.

"*longifurcatum*" (Firtion, 1952). NOW *Surculosphaeridium*.

"*longifilum*" (Maier, 1959). NOW *Baltisphaeridium*, an acritarch.

"*machaeophorum*" (Deflandre and Cookson, 1955). NOW *Lingulodinium*.

"*macrotubulum*" (Neale and Sarjeant, 1962). NOW *Oligosphaeridium*.

"*magdalium*" (Drugg, 1967). NOW *Tanyosphaeridium*.

HYSTRICHOSPHAERIDIUM (cont'd)

"*magnarmatum*" Tasch, 1964, p.192, pl.1, fig.22. Albian.

"*major*" (Lejeune-Carpentier, 1940). NOW *Cordosphaeridium*.

"*mantellii*" (Davey and Williams, 1966b). NOW *Florentinia*.

"*marsupium*" (Tasch, 1964). NOW ?*Polysphaeridium*.

"*microtriaina*" (Klumpp, 1953). NOW *Cordosphaeridium*.

"*mineralosum*" Varma and Dangwal, 1964, p.64, pl.1, fig.8-9.

Eocene-Oligocene.

subsp. *jekhowskyi* Varma and Dangwal, 1964, p.65, pl.1, fig.12; pl.2, fig.1. Eocene-Oligocene.

subsp. *labiatum* Varma and Dangwal, 1964, p.64-65, pl.1, fig.10-11. Eocene-Oligocene.

"*monstruosum*" (Tasch, 1964). NOW ?*Diphyes*.

"*multicornutum*" Kimyai, 1966, p.471, pl.2, fig.20. Cenomanian.

"*multifurcatum*" (Deflandre, 1937b). NOW *Cleistosphaeridium*.

"*oligacanthum*" (W. Wetzel, 1952). NOW *Cleistosphaeridium*.

"*pachydermum*" Cookson and Eisenack, 1960b, p.251-252, pl.38, fig.5; text-fig.5. Oxfordian-Tithonian.

"*palmatum*" (Deflandre and Courteville, 1939). NOW *Exochosphaeridium*.

"*paracostatum*" Cookson and Eisenack, 1974, p.65-66, pl.25, fig.11-13. Albian-Senonian.

"*paradoxum*" (Brosius, 1963). NOW *Distatodinium*.

"*parvispinum*" (Deflandre, 1937b). NOW *Prolinoxphaeridium*.

"*parvum*" Davey, 1969b, p.5, pl.1, fig.8; pl.2, fig.1. ?Campanian-Maastrichtian.

"*pattei*" (Valensi, 1948). NOW *Lanterna*.

"*patulum*" Davey and Williams, 1966b, p.60, pl.10, fig.5. Early Eocene.

"*paulinae*" (Valensi, 1953). NOW ?*Polysphaeridium*.

"*penicillatum*" (Ehrenberg, 1843, p.61) Deflandre, 1937b, p.27; formerly *Xanthidium*, *Ovum hispidum* and *Hystrichosphaera*.

"perforatum" (Gocht, 1959). NOW *Oligosphaeridium*.

"perovatum" (Tasch, 1964). NOW ?*Polysphaeridium*.

perplexum Varma and Dangwal, 1964, p.64, pl.1, fig.5-6. Eocene-Oligocene.

petilum Gitmez, 1970, p.289-290, pl.9, fig.1,6; text-fig.24. Early Kimmeridgian.

"*pilosum*" (Ehrenberg, 1843). NOW *Tenua*.

"*placacanthum*" (Deflandre and Cookson, 1955). NOW *Systematophora*.

polonicum Gorka, 1965, p.306-307, pl.3, fig.5-6. Oxfordian.

polyplasium Maier, 1959, p.322-323, pl.33, fig.7-8. Miocene.

"*polytrichum*" (Valensi, 1947). NOW *Cleistosphaeridium*.

protellipticum Tasch, 1964, p.194, pl.2, fig.2. Albian.

"*pseudhystrichodinium*" (Deflandre, 1937b). NOW ?*Exochosphaeridium*.

pseudorecurvatum Morgenroth, 1966a, p.30-31, pl.8, fig.5-6. Early Eocene.

"*pulcherrimum*" (Deflandre and Cookson, 1955). NOW *Oligosphaeridium*.

"*radiculatum*" (Davey and Williams, 1966b). NOW *Florentinia*.

"*ramuliferum*" (Deflandre, 1937b). NOW *Achromosphaera*.

raritanianum Kimyai, 1966, p.471, pl.2, fig.19. Cenomanian.

"*readei*" (Davey and Williams, 1966b). NOW *Kleithriaspaeridium*.

recurvatum (White, 1842, p.39, pl.8, fig.12) Davey and Williams, 1966b, p.67-68. Senonian; formerly *Xanthidium*.

subsp. *parvum* (Rozen, 1965, p.303-304, pl.4, fig.6; text-fig.13) Lentini and Williams, 1973, p.79. Late Eocene; formerly *Hystrichosphaeridium recurvatum* var. *parvum*.

subsp. "*polypes*" (Cookson and Eisenack, 1962b). NOW *Cleistosphaeridium polypes*.

redonense Morzadec-Kerfourn, 1966, p.139, pl.2, fig.1-2. Holocene.

"*reniforme*" (Tasch, 1964). NOW *Oligosphaeridium*.

replexum Tasch, 1964, p.193, pl.3, fig.14. Albian.

HYSTRICHOSPHAERIDIUM (cont'd)

"*rhabdophorum*" (Valensi, 1955b). NOW ?*Polysphaeridium*.

salpingophorum Deflandre, 1935, p.232, pl.9, fig.1 emend. Davey and Williams, 1966b, p.61-62. Senonian; formerly *Hystrichosphaera*.

"*scaffoldi*" (Baksi, 1962). NOW *Cannosphaeropsis*.

sheppenyense Davey and Williams, 1966b, p.68-69, pl.11, fig.3. Early Eocene.

"*simplex*" (White, 1842). NOW ?*Polysphaeridium*.

"*simplicispinum*" (Davey and Williams, 1966b). NOW *Kleithriasphaeridium*.

"*siphoniphorum*" (Cookson and Eisenack, 1958). NOW *Litosphaeridium*.

spini-pansatum (Merrill, 1895, p.17; text-fig.20) Sarjeant, 1964b, p.175. Early Cretaceous; formerly ?*Geodia*.

"*spinosum*" (White, 1842). NOW *Exochosphaeridium*.

"*spiralisetum*" (deWit, 1943). NOW *Cleistosphaeridium*.

stellatum Maier, 1959, p.320-321, pl.33, fig.3-4. Middle Oligocene-Middle Miocene.

stephanophorum Benedek, 1972, p.30-31, pl.9, fig.6; text-fig.10. Middle and Late Oligocene.

"*striatoconus*" (Deflandre and Cookson, 1955). NOW *Conosphaeridium*.

"*striolatum*" (Deflandre, 1937b). NOW *Exochosphaeridium*.

"*tiara*" (Klumpp, 1953). NOW *Cleistosphaeridium*.

"*torynum*" (Cookson and Eisenack, 1960b). NOW ?*Prolixosphaeridium*.

transculentum Sah et al., 1970, p.147, pl.2, fig.18-19. Late Cretaceous.

"*tribrachiosum*" (Tasch, 1964). NOW ?*Polysphaeridium*.

"*tridactylites*" (Valensi, 1955a). NOW *Silicisphaera*.

triradicosum Tasch, 1964, p.194, pl.2, fig.4,14. Albian.

"*truncigerum*" (Deflandre, 1937b). NOW *Cordosphaeridium*.

HYSTRICHOSPHAERIDIUM (cont'd)

**tubiferum* (Ehrenberg, 1838, pl.1, fig.16) Deflandre, 1937b, p. 68,
emend. Davey and Williams, 1966b, p.56-58. ?Late Cretaceous;
formerly *Xanthidium*, *Ovum hispidum* and *Hystrichosphaera*.

subsp. *brevispinum* (Davey and Williams, 1966b, p.58, pl.10,
fig.10) Lentini and Williams, 1973, p.80. Early Eocene;
formerly *Hystrichosphaeridium tubiferum* var. *brevispinum*.

unituberculatum Tasch, 1964, p.194, pl.3, fig.8. Albian.

valgum Tasch, 1964, p.192-193, pl.2, fig.10. Albian.

"*vasiformum*" (Neale and Sarjeant, 1962). NOW *Oligosphaeridium*.

verbinense Courteville in Deflandre, 1946a, card 945. Late
Cretaceous.

"*vestitum*" (Deflandre, 1938b). NOW *Surculosphaeridium*.

"*whitei*" (Deflandre and Courteville, 1939). NOW *Impletosphaeridium*.

"*xanthiopyxides*" (O. Wetzel, 1933b). NOW ?*Prolixosphaeridium*.

"*xipheum*" (Maier, 1959). NOW ?*Hystrichokolpoma*.

"*zoharyi*" (Rossignol, 1962). NOW *Hemicystodinium*.

"*HYSTRICHOSPHAERINA*" Alberti, 1961, p.38. Sarjeant, 1966c, p.209
considered this genus to be a jr syn. of *Systematophora* Clement.
Accordingly, he transferred the type of the genus,
"*Hystrichosphaerina schindewolfi*", to *Systematophora*. The
remaining species "*Hystrichosphaerina turonica*" (Alberti) is
also included in *Systematophora*.

HYSTRICHOSPHAEROPSIS Deflandre, 1935, p.232 emend. Sarjeant, 1966b,
p.138 emend. Gocht, 1976, p.331-333.

"*borussica*" (Eisenack, 1954). NOW *Rottnestia*.

complanata Eisenack, 1965, p.153, pl.14, fig.5-7; pl.15, fig.5;
text-fig.2-3. Late Eocene-Early Oligocene.

obscura Habib, 1972, p.379-380, pl.21, fig.1-3. Late Miocene.

**ovum* Deflandre, 1935, p.232, pl.8, fig.111. Senonian. Lentini
and Williams, 1973, p.81 rejected the transfer of this species
to "*Hystrichosphaera*" by Deflandre, 1937b, p.67.

quasicribrata (O. Wetzel, 1961, p.340, pl.2, fig.3) Gocht, 1976,
p.322. Erratic, ?Late Cretaceous; formerly *Triblastula*.

"HYSTRICOSTROGYLON" Agelopoulos, 1964, p.673, superfluous name.

Jr syn. of *Achromosphaera*. See Eaton, 1976, p.237, who transferred the type and single species of the genus, *H. membraniphorum*, to *Achromosphaera*.

"IMBATODINIUM" Vozzhennikova, 1967, p.52-53. Wiggins, 1975, p.103 considered this genus to be a jr syn. of *Pareodinia* Deflandre emend. Wiggins. He accordingly transferred the type of the genus, *Imbatodinium kondratjevi*, and three other species, *I. antennatum* and *I. verrucosum*, to *Pareodinia*. *Imbatodinium villosum* is now *Pareodinia dasyiforma* Wiggins. The remaining species *Imbatodinium imbatodinense* is herein transferred to *Pareodinia*. The transfer of *Imbatodinium imbatodinense* to "Necrobroomea" by Wiggins, 1975, p.111 is herein rejected.

IMPLETOSPHAERIDIUM Morgenroth, 1966a, p.32.

capillaceum Morgenroth, 1966a, p.33, pl.9, fig.12. Early Eocene.

cracens Eaton, 1976, p.306, pl.21, fig.6; text-fig.25E. Early-Late Eocene.

?*densicomatum* (Maier, 1959, p.307, pl.29, fig.7-8) Morgenroth, 1966a, p.33. Middle Oligocene-Middle Miocene; formerly *Galea* and *Baltisphaeridium*.

erinaceum Morgenroth, 1966a, p.33-34, pl.8, fig.10-12. Early Eocene.

implicatum Morgenroth, 1966a, p.34, pl.9, fig.1-3. Early Eocene.

insolitum Eaton, 1976, p.308, pl.21, fig.5,8; text-fig.25B. Early-Late Eocene.

kroemmelbeinii Morgenroth, 1966a, p.34-35, pl.9, fig.4-5. Early Eocene. Orthographic correction used by Eaton, 1976, p.308.

labyrinthus Morgenroth, 1966a, p.35, pl.9, fig.6-7. Early Eocene.

luxurium Eaton, 1976, p.309, pl.21, fig.3-4; text-fig.25F. Middle-Late Eocene.

multispinosum Benedek, 1972, p.31-32, pl.11, fig.11; pl.12, fig.15. Middle Oligocene.

panniforme (Gerlach, 1961, p.196, pl.28, fig.13) Morgenroth, 1966a, p.35. Middle Oligocene; formerly *Baltisphaeridium*.

"*placacanthum*" (Deflandre and Cookson, 1955). NOW *Systematophora*.

IMPLETOSPHAERIDIUM (cont'd)

pycnospinosum Benedek, 1972, p.32, pl.12, fig.14. Middle-Late Oligocene.

rugosum Morgenroth, 1966a, p.36, pl.10, fig.2-3. Early Eocene.

**transfodum* Morgenroth, 1966a, p.32, pl.10, fig.4-5. Early Eocene.

whitei (Deflandre and Courteville, 1939, p.103, pl.3, fig.5-6) Morgenroth, 1966a, p.37. Senonian; formerly *Hystrichosphaeridium* and *Baltisphaeridium*.

INVERSIDINIUM McLean, 1973b, p.730.

caudatum Benson, 1976, p.218,220, pl.13, fig.4-6. Late Maastrichtian-Early Paleocene.

**exilimurum* McLean, 1973b, p.730,732, pl.90, fig.1-9. Late Paleocene.

"*ISABELIA*" Lentin and Williams, 1976, p.56. non *Isabelia Barbosa-Rodrigues* - (an orchid). SEE *Isabelidinium*.

ISABELIDINIUM Lentin and Williams, 1977, p.167. (nom. subst. pro *Isabelia* Lentin and Williams, 1976, p. 56).

?*amphiatum* (McIntyre, 1975, p.65-66, pl.2, fig.5-8) Lentin and Williams, 1977, p.167 Campanian-Maastrichtian; formerly *Deflandrea*.

bakeri (Deflandre and Cookson, 1955, p.251, pl.4, fig.1-2,4) Lentin and Williams, 1977, p.167. Paleocene-Early Eocene; formerly *Deflandrea*.

belfastense (Cookson and Eisenack, 1961a, p.71, pl.11, fig.4-6) Lentin and Williams, 1977, p.167. Senonian; formerly *Deflandrea*.

conoratum (Stover, 1974, p.171-172, pl.1, fig.8a-b) Lentin and Williams, 1977, p.167. Early-Middle Paleocene; formerly *Deflandrea*. O.C.

cooksoniae (Alberti, 1959b, p.97, pl.9, fig.1-6) Lentin and Williams, 1977, p.167. Late Senonian; formerly *Deflandrea* and *Australiella*.

cretaceum (Cookson, 1956, p.184-185, pl.1, fig.1-5 (non 6-7, which are now *Nelsoniella aceras*)) Lentin and Williams, 1977, p.167. Late Cretaceous; formerly *Deflandrea*.

dakotaense (Stanley, 1965, p.217-218, pl.19, fig.1-3) Lentin and Williams, 1977, p.167. Paleocene; formerly *Deflandrea*. The illustrations accompanying Stanley, 1965, show that this species has a 3I endoarcheopyle.

ISABELIDINIUM (cont'd)

delicatum (Baltes, 1969, p.34, pl.1, fig.7 ex Lentin and Williams, 1973, p.40) Lentin and Williams, 1977, p.167. Early Eocene; formerly *Deflandrea*.

druggii (Stover, 1974, p.171, pl.1, fig.3a-b,4) Lentin and Williams, 1977, p.167. Early-Middle Paleocene; formerly *Deflandrea*. O.C.

gambangense (Cookson and Eisenack, 1970a, p.140, pl.11, fig.1-2) Lentin and Williams, 1977, p.167. Senonian; formerly *Deflandrea*.

glabrum (Cookson and Eisenack, 1969, p.3, fig.1a) Lentin and Williams, 1977, p.167. Albian-Cenomanian; formerly *Deflandrea*.

?*globosum* (Davey, 1970, p.344, pl.2, fig.3) Lentin and Williams, 1977, p.167. Cenomanian; formerly *Deflandrea*. This species is tentatively placed in *Isabelidinium*, although it may represent only an endocyst.

glomeratum (Davey, 1970, p.343-344, pl.1, fig.7-9) Lentin and Williams, 1977, p.167. Cenomanian; formerly *Deflandrea*.

**korojonense* (Cookson and Eisenack, 1958, p.27-28, pl.4, fig.10-11) Lentin and Williams, 1977, p.167. Campanian-Early Maastrichtian; formerly *Deflandrea*.

latum (Cookson and Eisenack, 1968, p.110; text-fig.1a-c) Lentin and Williams, 1977, p.168. ?Santonian-Early Campanian; formerly *Deflandrea*.

madurensense (Cookson and Eisenack, 1970a, p.140, pl.11, fig.3-4) Lentin and Williams, 1977, p.168. Senonian; formerly *Deflandrea*.

microarmatum (McIntyre, 1975, p.65, pl.1, fig.5-8) Lentin and Williams, 1977, p.168. Campanian-Maastrichtian; formerly *Deflandrea*.

pellucidum (Deflandre and Cookson, 1955, p.251, pl.4, fig.3) Lentin and Williams, 1977, p.168. Paleocene-Early Eocene; formerly *Deflandrea bakeri* forma *pellucida*. This form was raised to the species level by Cookson and Eisenack, 1958, p.27.

rhombovale (Cookson and Eisenack, 1970a, p.143, pl.12, fig.10-11) Lentin and Williams, 1977, p.168. Late Albian-Senonian; formerly *Deflandrea*.

seelandicum (Lange, 1969, p.113-114, pl.2, fig.10; pl.3, fig.3) Lentin and Williams, 1977, p.168. Danian; formerly *Broomea*.

spinosisimum (Cookson and Eisenack, 1970a, p.141, pl.11, fig.5-6) Lentin and Williams, 1977, p.168. Senonian; formerly *Deflandrea*.

ISABELIDINIUM (cont'd)

thomasii (Cookson and Eisenack, 1961a, p.71-72, pl.11, fig.7-10)
Lentin and Williams, 1977, p.168. Senonian; formerly *Deflandrea*.
O.C.

JANSONIA Pocock, 1972, p.97.

**jurassica* Pocock, 1972, p.97-98, pl.29, fig.8-9; text-fig.14-15.
Late Bajocian.

JUSELLA Vozzhennikova, 1963, p.183.

crebraporosa Vozzhennikova, 1967, p.120, pl.53, fig.1-6. Early
Oligocene.

**denticulata* Vozzhennikova, 1963, p.183; text-fig.19a-b. Early
Oligocene. Holotype lost. Lectotype chosen by Vozzhennikova,
1967, p.119-120, pl.52, fig.1-5.

"*rariporosa*" Vozzhennikova, 1967, p.119-120. Invalid. Name
chosen by Vozzhennikova to replace the name *J. denticulata*
as her interpretation of the morphology of *J. denticulata*
was incorrect in 1963. However, under the I.C.B.N. (Article
62) the original specific name cannot be changed in this way.

KALLOSPHAERIDIUM De Coninck, 1969, p.44.

**brevibarbatum* De Coninck, 1969, p.44-45, pl.13, fig.14-15. Early
Eocene.

orchiesense De Coninck, 1975, p.101-102, pl.18, fig.15-17. Ypresian.

KALYPTEA Cookson and Eisenack, 1960b, p.256 emend. Wiggins, 1975,
p.110. Gocht, 1970b, p.154 considered this genus to be a
jr syn. of *Pareodinia*.

"*aceras*" (Manum and Cookson, 1964). NOW *Caligodinium*.

**diceras* Cookson and Eisenack, 1960b, p.256-257, pl.39, fig.1.
Tithonian. Gocht, 1970b, p.154 considered this species to be
a questionable jr syn. of *Pareodinia ceratophora* Deflandre.
However Wiggins, 1975, p.110 presented an emended diagnosis
for *Kalyptea* and retained *K. diceras* as the type of the genus.

distincta Jain and Millepied, 1975, p.145-146, pl.4, fig.65.
Aptian-Albian.

KALYPTEA (cont'd)

glabra (Cookson and Eisenack, 1960b, p.257, pl.39, fig.7-8) Wiggins, 1975, p.110. Probably Tithonian; formerly *Komewuia*.

"*jurassica*" Alberti, 1961, p.21, pl.7, fig.8. Wiggins, 1975, p.110 considered this species to be a *jr syn.* of *Kalyptea stegasta* (Sarjeant) Wiggins. Prior to this Gocht, 1970b, p.154 considered *Kalyptea jurassica* to be a questionable *jr syn.* of *Pareodinia ceratophora* Deflandre.

"*monoceras*" Cookson and Eisenack, 1960b, p.275, pl.39, fig.2-3. Gocht, 1970b, p.154 considered this species to be a questionable *jr syn.* of *Pareodinia ceratophora* Deflandre. Wiggins, 1975, p.103 also considered "*Kalyptea monoceras*" to be a *jr syn.* of *Pareodinia ceratophora*.

"*stegasta*" (Sarjeant, 1961a). NOW *Netrelytron*. See Sarjeant, 1976c, p.16.

"*trinetron*" (Sarjeant, 1966c). NOW *Netrelytron*. See Sarjeant, 1976c, p.16-17.

KENLEYIA Cookson and Eisenack, 1965b, p.135-136.

"*fimbriata*" (Cookson and Eisenack, 1967b). NOW *Muratodinium*.

leptocerata Cookson and Eisenack, 1965b, p.136, pl.17, fig.5-6. Paleocene.

lophophora Cookson and Eisenack, 1965b, p.136-137, pl.17, fig.7-10. Paleocene.

?*muda* De Coninck, 1969, p.45-46, pl.13, fig.24-25. Early Eocene.

**pachycerata* Cookson and Eisenack, 1965b, p.136, pl.17, fig.1-3. Paleocene.

"*KISSELEVIA*" Vozzhennikova, 1967, p.103. Presumably an orthographic misrepresentation of *Kisselovia* Vozzhennikova. Lentini and Williams, 1973, p.83 were in error when they stated that *Kisselovia* Vozzhennikova, 1963 was a *nomen nudum*. They based their statement on the fact that a holotype was not designated for the type of the genus, *Kisselovia ornata*. *Kisselovia* was and remains the correct orthography for the valid name under I.C.B.N. Art. 37.

KISSELOVIA Vozzhennikova, 1963, p.183. Lentini and Williams, 1973 p.83 were in error when they stated that *Kisselovia* was a *nomen nudum* because a holotype was not designated for the type of the genus, *K. ornata*. As Stafleu (personal communication) has pointed out, a type cannot be validly published, only a name can (I.C.B.N. Art. 37). *Kisselovia* is therefore valid.

KISSELOVIA (cont'd)

?*clathrata* (Eisenack, 1938, p.187, text-fig.5) Lentin and Williams, 1976, p.136. Late Eocene-Early Oligocene; formerly *WetzelIELLA*.

subsp. *fasciata* (Rozen, 1965, p.296-297, pl.2, fig.13; text-fig.4) Lentin and Williams, 1976, p.136. Late Eocene; formerly *WetzelIELLA clathrata* var *fasciata*. Raised to subspecies status by Lentin and Williams, 1973, p.141.

coleothrypta (Williams and Downie, 1966b, p.185-186, pl.18, fig.8-9; text-fig.47) Lentin and Williams, 1976, p.136. Early Eocene; formerly *WetzelIELLA*.

insolens Eaton, 1976, p.292-293, pl.18, fig.1-2. Early Eocene.

"*major*" Vozzhennikova, 1960, pl.3, fig.1. No diagnosis given. nom. nud. Vozzhennikova, 1967, p.104-105 designated as holotype a specimen which has been destroyed.

**ornata* Vozzhennikova, 1967, p.103-104, pl.42, fig.1-3; pl.43, fig.1-4; pl.44, fig.1-12; pl.45, fig.1-3. Eocene.

subsp. *ornata* (Vozzhennikova, 1967, p.104, pl.42, fig.1-3; pl.43, fig.1-4; pl.44, fig.4-6,9-12) Lentin and Williams, 1973, p.84. Eocene; formerly *Kisselevia ornata* forma *ornata*.

subsp. *reticulata* (Vozzhennikova, 1967, p.104, pl.44, fig.1-3,7-8; pl.45, fig.1-3) Lentin and Williams, 1973, p.84. Eocene; formerly *Kisselevia ornata* forma *reticulata*.

reticulata (Williams and Downie, 1966b, p.187-188, pl.19, fig.3,6; text-fig.48) Lentin and Williams, 1976, p.136. Early Eocene; formerly *WetzelIELLA*.

tenuivirgula (Williams and Downie, 1966b, p.188-189, pl.19, fig.2,4; text-fig.49) Lentin and Williams, 1976, p.136. Early Eocene; formerly *WetzelIELLA*.

subsp. *crassiramosa* (Williams and Downie, 1966b, p.189-190, pl.19, fig.1,5,7; text-fig.50) Lentin and Williams, 1976, p.137. Early Eocene; formerly *WetzelIELLA tenuivirgula* var. *crassiramosa*. Raised to subspecies status by Lentin and Williams, 1973, p.143. O.C.

KLEITHRIASPHAERIDIUM Davey, 1974, p.55-56.

**corrugatum* Davey, 1974, p.56-57, pl.5, fig.1-5; text-fig.3. Early Barremian.

eoinodes (Eisenack, 1958, p.402, pl.27, fig.3-4) Davey, 1974, p.58. Late Aptian; formerly *Hystrichosphaeridium* and *Cordosphaeridium*.

KLEITHRIASPHAERIDIUM (cont'd)

fasciatum (Davey and Williams, 1966b, p.90, pl.7, fig.5-6)
Davey, 1974, p.57. Barremian; formerly ?*Cordosphaeridium*.

loffrense Davey and Verdier, 1976, p.310-312, pl.1, fig.1-6.
Senonian.

readei (Davey and Williams, 1966b, p.64-65, pl.6, fig.3) Davey
and Verdier, 1976, p.314. Cenomanian; formerly
Hystrichosphaeridium. Davey and Verdier, 1976, p.314 also
emended the species diagnosis.

simplicispinum (Davey and Williams, 1966b, p.59-60, pl.9, fig.3)
Davey, 1974, p.57. Barremian; formerly *Hystrichosphaeridium*.

KOFOIDOPSIS Tasch, 1963, p.333. Questionable affinity.

**coronata* Tasch, 1963, p.333-334, pl.1, fig.7-8. Early Permian.

"*KOMEWUIA*" Cookson and Eisenack, 1960b, p.257. Wiggins, 1975,
p.110 considered this genus to be a jr syn. of *Kalyptea*
Cookson and Eisenack emend. Wiggins. He accordingly transferred
the type of the genus *Komewuia glabra* to *Kalyptea*.

KOROJONIA Cookson and Eisenack, 1958, p.54.

**dubiosa* Cookson and Eisenack, 1958, p.54, pl.12, fig.13.
Cenomanian-Early Maastrichtian.

LACINIADINIUM McIntyre, 1975, p.70.

biconiculum McIntyre, 1975, p.71, pl.4, fig.5-9. Campanian.

**orbiculatum* McIntyre, 1975, p.70-71, pl.4, fig.10-13. Campanian.

LANTERNA Dodekova, 1969, p.16.

**pulgarica* Dodekova, 1969, p.16-17, pl.2, fig.3-6; pl.3, fig.1;
text-fig.B,Db. Tithonian.

pattei (Valensi, 1948, p.539, fig.1) Brideaux and Fisher, 1976,
p.25. Bathonian; formerly *Hystrichosphaeridium* and
Baltisphaeridium.

saturnalis Brideaux and Fisher, 1976, p.24-25, pl.6, fig.1-10;
pl.7, fig.1-13. Late Oxfordian-Late Kimmeridgian.

spinosa Dodekova, 1969, p.17-18, pl.3, fig.2-3,5-6,9,12;
text-fig.C,Da. Tithonian.

LANTERNA (cont'd)

sportula Dodekova, 1969, p.18-19, pl.3, fig.4,7,10-11; text-fig.Dc.
Tithonian.

LANTERNOSPHAERIDIUM Morgenroth, 1966a, p.37.

axiale (Eisenack, 1965, p.38, pl.6, fig.4-5) Morgenroth, 1966a,
p.38-39. Late Eocene-Early Oligocene; formerly *Cordosphaeridium*.

bipolare (Cookson and Eisenack, 1965b, p.135, pl.16, fig.7-8)
De Coninck, 1969, p.38. Paleocene; formerly *Cordosphaeridium*.
The transfer of this species to *Amphorosphaeridium* by Davey,
1969c, p.35, is rejected.

essentiale De Coninck, 1969, p.38, pl.11, fig.7-8. Early Eocene.

hirundo (Eisenack, 1958, p.404-405, pl.24, fig.12) Corradini,
1973, p.154. Early Cretaceous; formerly *Hystrichosphaeridium*
and *Achomosphaera*.

**lanosum* Morgenroth, 1966a, p.38, pl.10, fig.10-11. Early Eocene.

lappaceum Drugg, 1970b, p.812-813, fig.4A-D,5A-D. Early Eocene.

licium Jain et al., 1975, p.10, pl.4, fig.51-53. Danian.

morgenrothii Corradini, 1973, p.155, pl.23, fig.1. Senonian.

mutinense Corradini, 1973, p.155-156, pl.23, fig.2,9; pl.34,
fig.2,3a-b. Senonian.

personatum Corradini, 1973, p.157, pl.23, fig.5-6. Senonian.

radiatum Morgenroth, 1966a, p.37-38, pl.10, fig.7-9. Early Eocene.

vectense Eaton, 1976, p.275-276, pl.12, fig.4-6. Middle-Late Eocene.

LECANIELLA Cookson and Eisenack, 1962a, p.269.

dictyota Cookson and Eisenack, 1962a, p.270, pl.37, fig.18-20.
Aptian-Cenomanian.

foveatae Singh, 1971, p.426, pl.79, fig.5-10; pl.80, fig.1.
Late Albian.

**margostriata* Cookson and Eisenack, 1962a, p.269-270, pl.37,
fig.16-17. Albian-Cenomanian.

LEIPOKATIUM Bradford, 1975, p.3066.

**invisitatum* Bradford, 1975, p.3067, fig.8-16. Recent.

LEJEUNIA Gerlach, 1961, p.169 emend. Kjellström, 1972, p.467
emend. Lentin and Williams, 1976, p.68.

"aechmophora" (Benedek, 1972). NOW ?*Wilsonidium*.

"ampla" (Harland, 1973). NOW *Palaeoperidinium*.

"cretacea" (Pocock, 1962). NOW *Palaeoperidinium*.

fallax Morgenroth, 1966b, p.2-3, pl.1, fig.6-7. Middle Oligocene.

**hyalina* Gerlach, 1961, p.169, pl.26, fig.10-11, emend. Kjellström, 1972, p.469. Late Oligocene.

"*kozlowskii*" Gorka, 1963, p.41, pl.5, fig.4. Late Maastrichtian.

This species was transferred to the superfluous genus "*Astrocyta*" by Davey, 1970, p.360. Harker and Sarjeant, 1975, p.223 considered "*Lejeunia kozlowskii*" to be a jr syn. of *Lejeunia tricuspis* (O. Wetzel) Gorka. The transfer of this species to *Senegalinum* by Harland, 1977, p.189, is herein rejected because of the nature of the endocyst and archeopyle.

"*laevigata*" (Malloy, 1972). NOW *AndalusIELLA*.

magnifica (Stanley, 1965, p.218-219, pl.20, fig.1-6) Lentin and Williams, 1976, p.71. Paleocene; formerly *Deflandrea*. The transfer of this species to *Senegalinum* by Harland, 1977, p.188, is herein rejected because of the nature of the endocyst and archeopyle.

paratenella Benedek, 1972, p.41-42, pl.5, fig.8; text-fig.18.
Late Oligocene.

"*parva*" (Harland, 1973). NOW *Palaeoperidinium*.

pentagonalis (Corradini, 1973, p.175, pl.28, fig.3) Lentin and Williams, 1976, p.71. Senonian; formerly *Deflandrea*. The transfer of this species to *Senegalinum* by Harland, 1977, p.189, is herein rejected because of the nature of the endocyst and archeopyle.

psilodora Benedek, 1972, p.42, pl.6, fig.5. Middle Oligocene.

"*spatiosa*" (Morgenroth, 1966b). NOW *Maduradinium*.

"*tenella*" (Morgenroth, 1966b). NOW *Vozzhennikovia*.

tricuspis (O. Wetzel, 1933a, p.166, pl.2, fig.14) Gorka, 1963, p.40. Senonian; formerly *Peridinium* and "*Astrocyta*". The transfer of this species to *Senegalinum* by Harland, 1977, p.188, is herein rejected because of the uncertainty regarding the endocyst or archeopyle type in this species.

LEPTODINIUM Klement, 1960, p.45, emend. Sarjeant, 1969, p.11-12.

LEPTODINIUM (cont'd)

aceras (Eisenack, 1958, p.391, pl.21, fig.1-2) Gitmez and Sarjeant, 1972, p.215. Aptian; formerly *Gonyaulax*.

aculeatum Wall, 1967, p.104-105, pl.14, fig.18-19; text-fig.3C-D. Pleistocene-Holocene.

alectrolophum Sarjeant, 1966b, p.134-135, pl.15, fig.3-6; text-fig.34. Middle Barremian.

amabile (Deflandre, 1939, p.143, pl.6, fig.8) Sarjeant, 1969, p.12. Kimmeridgian; formerly *Gonyaulax*. This species was transferred to *Gonyaulacysta* by Dodekova, 1971, p.7; this transfer was rejected by Lentin and Williams, 1973, p.86.

antigonium Ioannides et al., 1977, p.456-457, pl.3, fig.7-8; text-fig.10. Kimmeridgian.

arcuatum Klement, 1960, p.48, pl.6, fig.5-6, emend. Gitmez, 1970, p.270. Middle Oxfordian.

bacculatum Baltes, 1971, p.3, pl.1, fig.4-5. Early Pliocene.

cancellatum Brideaux and McIntyre, 1975, p.21-22, pl.5, fig.7-9. Middle Albian.

"*churchillii*" Harland, 1968, p.548-551, fig.12,13,22-24. Holocene. Reid, 1974, p.599 states, "The single specimen on which Harland (1968) based his new species *Leptodinium churchillii* was seen on examination to be referable to the 'nodosa' form of *Spiniferites bentori*".

clathratum (Cookson and Eisenack, 1960b, p.246-247, pl.37, fig.5; text-fig.1) Sarjeant, 1969, p.12. Probably Tithonian; formerly *Gonyaulax*. This species was transferred to *Gonyaulacysta* by Dodekova, 1971, p.10; this transfer was rejected by Lentin and Williams, 1973, p.86.

crassinervum (Deflandre, 1939, p.144, pl.6, fig.5) Sarjeant, 1969, p.12. Kimmeridgian; formerly *Palaeoperidinium*.

delicatum (Davey, 1969a, p.123-124, pl.1, fig.7-8; text-fig.10A-B) Sarjeant, 1969, p.12. Formerly *Gonyaulax*. Sarjeant, 1969, p.12, incorrectly cited the date for the publication of this species as 1968; Davey's paper actually appeared early in 1969.

dispertitum Cookson and Eisenack, 1965a, p.122-123, pl.12, fig.5-7. Late Eocene.

egemenii Gitmez, 1970, p.272-274, pl.10, fig.5-6; text-fig.18. Early Kimmeridgian.

LEPTODINIUM (cont'd)

elegans Cookson and Eisenack, 1965a, p.123-124, pl.12, fig.10-13.
Late Eocene.

eumorphum (Cookson and Eisenack, 1960b, p.246, pl.37, fig.1-3;
text-fig.3) Sarjeant, 1969, p.12. Late Jurassic; formerly
Gonyaulax.

freakei (Sarjeant, 1963c, p.85-86, pl.1, fig.1-3) Sarjeant, 1969,
p.12. Oxfordian; formerly *Gonyaulax*.

incompositum (Drugg, 1970b, p.810-811, fig.1E-0,2A) Lentin and
Williams, 1973, p.87. Oligocene; formerly *Gonyaulacysta*.

maculatum Cookson and Eisenack, 1961b, p.40, pl.2, fig.5-6.
Eocene.

margaritiferum (Cookson and Eisenack, 1960a, p.5, pl.2, fig.1-2;
text-fig.1) Sarjeant, 1969, p.13. Campanian; formerly
Gonyaulax.

membranigerum Gerlach, 1961, p.162-164, pl.26, fig.1-4,7;
text-fig.4-5. Late Oligocene.

micropunctatum Jain and Millepied, 1975, p.139, pl.2, fig.32-33.
Early-?Late Aptian.

millioudii (Sarjeant, 1963c, p.86-88, pl.1, fig.4-7) Sarjeant,
1969, p.13. Oxfordian; formerly *Gonyaulax*. O.C.

mirabile Klement, 1960, p.48-50, pl.6, fig.7-10; text-fig.25-27.
Middle Oxfordian. Transfer of this species to *Gonyaulacysta*
by Dodekova, 1967, p.19 was rejected by Lentin and Williams,
1973, p.87.

modicum Brideaux and McIntyre, 1975, p.22, pl.5, fig.10-15.
Middle Albian.

mosaicum (Downie, 1957, p.424, pl.20, fig.7; text-fig.2f) Sarjeant,
1969, p.13 emend. Sarjeant, 1976c, p.6-7. Middle Kimmeridgian;
formerly *Palaeoperidinium* and *Gonyaulacysta*.

multiplexum Wall and Dale, 1968, p.318, pl.1, fig.1-7. Early
Pleistocene.

"*norrissi*" (Pocock, 1972). NOW *Dichadogonyaulax*.

ovum Sah et al., 1970, p.147-148, pl.2, fig.25. Late Cretaceous.

"*panneum*" (Norris, 1965). NOW *Dichadogonyaulax*.

LEPTODINIUM (cont'd)

paradoxum Wall, 1967, p.106-107, pl.15, fig.5-8; text-fig.2-3A,B.
Middle Miocene-Recent.

patulum Wall, 1967, p.105-106, pl.14, fig.20; pl.15, fig.1-4;
text-fig.4. Middle Miocene-Holocene.

?*pilum* (Gocht, 1959, p.56, pl.6, fig.14; pl.8, fig.8) Sarjeant,
1969, p.13. Valanginian; formerly *Palaeoperidinium* and
Gonyaulacysta.

porosum (Lejeune-Carpentier, 1946, p.193,196; text-fig.6) Sarjeant,
1969, p.13. Senonian; formerly *Gonyaulax*.

punctatum Baltes, 1971, p.3, pl.1, fig.2-3,6-7. Early Pliocene.

regale Gocht, 1970b, p.139-140, pl.33, fig.5-7; text-fig.10.
Early Bathonian.

reticulatum (Nagy, 1969, p.293, pl.1, fig.7,10) Lentini and
Williams, 1973, p.88. Late Pannonian; formerly *Gonyaulax*.

"*schizoblatum*" (Norris, 1965). NOW *Dichadogonyaulax*.

sphaericum Wall, 1967, p.108, pl.15, fig.11-15; text-fig.2a-c.
Pleistocene-Holocene.

striatum Wall, 1967, p.107-108, pl.15, fig.9-10; text-fig.5.
Middle Miocene-Holocene.

striatum (Clarke and Verdier, 1967, p.31, pl.4, fig.11-13; pl.5,
fig.15; text-fig.12) Sarjeant, 1969, p.13. Santonian; formerly
Gonyaulacysta.

**subtile* Klement, 1960, p.46-47, pl.6, fig.1-4; text-fig.23-24.
Early Kimmeridgian.

subsp. *pectinigerum* Gocht, 1970b, p.138-139, pl.33, fig.1-4;
text-fig.11. Early Bathonian.

"?*tenuicornutum*" (Cookson and Eisenack, 1962b). NOW *Gonyaulacysta*.

victorianum Cookson and Eisenack, 1965a, p.123, pl.12, fig.8-9.
Late Eocene.

LINGULASPHAERA Drugg, 1970b, p.817.

**spinula* Drugg, 1970b, p.817-818, fig.10G,11D-E,12A-B. Early Eocene.

LINGULODINIUM Wall, 1967, emend. Wall and Dale, 1973, p.23-24.

LINGULODINIUM (cont'd)

**machaerophorum* (Deflandre and Cookson, 1955, p.274, pl.9, fig.4,8)
Wall, 1967, p.109. Miocene; formerly *Hystrichosphaeridium* and
Baltisphaeridium.

subsp. *filiforme* (Rossignol, 1964, p.91, pl.2, fig.13)
Lentin and Williams, 1973, p.89. Pleistocene; formerly
Baltisphaeridium machaerophorum var. *filiforme*.

subsp. *megacanthum* (Rossignol, 1964, p.91, pl.2, fig.15)
Lentin and Williams, 1973, p.89. Pleistocene; formerly
Baltisphaeridium machaerophorum var. *megacanthum*.

subsp. *strangulatum* (Rossignol, 1964, p.91, pl.2, fig.16)
Lentin and Williams, 1973, p.89. Pleistocene; formerly
Baltisphaeridium machaerophorum var. *strangulatum*.

pugiatum (Drugg, 1970b, p.819; text-fig.16D-E) Wall and Dale,
1973, p.24. Oligocene; formerly *Operculodinium*.

siculum (Drugg, 1970b, p.820; text-fig.16F-G) Wall and Dale,
1973, p.24. Oligocene; formerly *Trioperculodinium*.

solarum (Drugg, 1970b, p.819; text-fig.16A-C) Wall and Dale,
1973, p.24. Oligocene; formerly *Operculodinium*.

LITHODINIA Eisenack, 1935, p.175 emend. Gocht, 1975b, p.353.

acanthosphaera (Sarjeant, 1961a) comb. nov.
1961a *Gonyaulax acanthosphaera* Sarjeant, p.94-95, pl.13, fig.14;
text-fig.4. Early Oxfordian; also formerly *Acanthaulyx* and
Meiourogonyaulax.

bulloidea (Cookson and Eisenack, 1960b) comb. nov.
1960b *Gonyaulax bulloidea* Cookson and Eisenack, p.247, pl.37,
fig.11. ?Tithonian; also formerly *Meiourogonyaulax*.

callomonii (Sarjeant, 1972) comb. nov.
1972 *Meiourogonyaulax callomonii* Sarjeant, p.31-33, pl.5, fig.5;
text-fig.6. Late Bathonian-Early Callovian.

cantrellii (Sarjeant, 1972) comb. nov.
1972 *Meiourogonyaulax cantrellii* Sarjeant, p.37-38, pl.4, fig.3;
pl.6, fig.1-2; text-fig.8. Late Bathonian.

caytonensis (Sarjeant, 1959) comb. nov.
1959 *Gonyaulax caytonensis* Sarjeant, p.330, pl.13, fig.1;
text-fig.1. Early Callovian; also formerly *Gonyaulacysta* and
Meiourogonyaulax.

?*cristulata* (Sarjeant, 1959) comb. nov.
1959 *Gonyaulax cristulata* Sarjeant, p.332, pl.13, fig.2; text-fig.2.
Early Callovian; also formerly *Meiourogonyaulax*.

LITHODINIA (cont'd)

decapitata (W. Wetzel, 1966) comb. nov.

1966 *Gonyaulax decapitata* W. Wetzel, p.869, pl.16, fig.7a-b.
Bajocian; also formerly *Meiourogonyaulax*.

deflandrei (Sarjeant, 1968) comb. nov.

1968 *Meiourogonyaulax deflandrei* Sarjeant, p.228-229, pl.1,
fig.20; pl.3, fig.13; text-fig.4. Late Callovian.

dicryptos (Gitmez and Sarjeant, 1972) comb. nov.

1972 *Meiourogonyaulax dicryptos* Gitmez and Sarjeant, p.225-226,
pl.7, fig.6; text-fig.22. Kimmeridgian.

ghermanii (Beju, 1971) comb. nov.

1971 *Meiourogonyaulax ghermani* Beju, p.287-288, pl.4, fig.1-3;
text-fig.4. Callovian-Oxfordian.

insulofigurata (Dodekova, 1975) comb. nov.

1975 *Meiourogonyaulax insulofiguratum* Dodekova, p.21-22, pl.2,
fig.4-5,7-8; text-fig.4. Late Bathonian.

**jurassica* Eisenack, 1935, p.175-177, pl.4, fig.5-10; text-fig.1-4
emend. Gocht, 1975b, p.355. Callovian.

var. "ornata" (Eisenack, 1935). NOW *Ctenidodinium ornatum*.

pertusa Duxbury, 1977, p.41-43, pl.8, fig.5; text-fig.15.

Berriasian-Hauterivian.

pila (Gitmez and Sarjeant, 1972) comb. nov.

1972 *Meiourogonyaulax pila* Gitmez and Sarjeant, p.226-227, pl.4,
fig.5; pl.7, fig.3; text-fig.23. Middle-Late Kimmeridgian.

?*predae* (Beju, 1971) comb. nov.

1971 ?*Meiourogonyaulax predae* Beju, p.288-289, pl.4, fig.4-7;
text-fig.5. Callovian-Oxfordian.

psoros (Davey and Verdier, 1974) comb. nov.

1974 *Meiourogonyaulax psoros* Davey and Verdier, p.634,636, pl.92,
fig.8-9. Aptian.

reticulata (Dodekova, 1975) comb. nov.

1975 *Meiourogonyaulax reticulata* Dodekova, p.22-23, pl.2, fig.11-13;
text-fig.4. Late Bathonian.

rioultii (Sarjeant, 1968) comb. nov.

1968 *Meiourogonyaulax rioultii* Sarjeant, p.229, validation of
"*Meiourogonyaulax rioultii*" Sarjeant, 1965, p.181, pl.1, fig.1;
text-fig.1. Early Callovian.

staffinensis (Gitmez, 1970) comb. nov.

1970 *Meiourogonyaulax staffinensis* Gitmez, p.276-278, pl.3,
fig.1; text-fig.20a-b. Early Kimmeridgian.

LITHODINIA (cont'd)

stoveri (Millioud, 1969, p.429, pl.3, fig.1-3) Duxbury, 1977, p.43.
Hauterivian-Aptian; formerly *Meiourogonyaulax*.

strongylos (Sarjeant, 1972) comb. nov.
1972 *Meiourogonyaulax strongylos* Sarjeant, p.35-37, pl.4, fig.7;
text-fig.7. Late Bathonian-Early Callovian.

valensii (Sarjeant, 1966b) comb. nov.
1966b *Meiourogonyaulax valensii* Sarjeant, p.145-146, pl.15,
fig.7; text-fig.37. Bathonian.

"*LITHOPERIDINIUM*" Deflandre, 1933, p.272. Jr syn. of *Peridinites*.
See both Deflandre, 1945, card 806-809 and Norris and Sarjeant,
1965, p.38.

LITOSPHAERIDIUM Davey and Williams, 1966b, p.79-80, emend. Davey
and Verdier, 1973, p.193.

conispinum Davey and Verdier, 1973, p.193-194, pl.4, fig.4,6,8,9.
Late Albian.

?*crassipes* (Reade, 1839, pl.9, fig.2-5) Davey and Williams, 1969,
p.5. Late Cretaceous; formerly *Hystrichosphaeridium*.

"?*flosculus*" (Deflandre, 1937b). NOW ?*Silicisphaera*.

?*inversibuccinum* Davey and Williams, 1966b, p.82, pl.12, fig.3.
Early Eocene.

**siphoniphorum* (Cookson and Eisenack, 1958, p.44, pl.11, fig.8-10)
Davey and Williams, 1966b, p.80-82. Albian-Cenomanian;
formerly *Hystrichosphaeridium*.

"?*truncigerum*" (Deflandre, 1937b). NOW *Cordosphaeridium*. Lentini
and Williams, 1973, p.80 rejected the transfer of "*Hystricho-*
sphaeridium truncigerum" to ?*Lithosphaeridium*, since the species
possesses a precingular archeopyle.

LOPHODICTYOTIDIUM Pocock, 1972, p.109.

**sarjeantii* Pocock, 1972, p.109, pl.25, fig.5-6. Late Bajocian.

LUEHNDEA Morgenroth, 1970, p.346-347.

**spinosa* Morgenroth, 1970, p.347, pl.9, fig.1-4. Late Pliensbachian.

LUNATADINIUM Brideaux and McIntyre, 1973, p.396.

**dissolutum* Brideaux and McIntyre, 1973, p.396-397, 400-401, pl.1,
fig.1-13. Hauterivian-Middle Albian.

LUXADINIUM Brideaux and McIntyre, 1975, p.36.

**primulum* Brideaux and McIntyre, 1975, p.37-38, pl.12, fig.9-12; pl.13, fig.1-8. Middle Albian.

propatulum Brideaux and McIntyre, 1975, p.37 = *Scriniodinium eurypylum* auct. non Manum and Cookson 1964 in Brideaux, 1971, p.99, pl.29, fig.97-98 and in Singh, 1971, p.364, pl.62, fig.6-10. Albian.

MADURADINIUM Cookson and Eisenack, 1970a, p.150.

**pentagonum* Cookson and Eisenack, 1970a, p.150, pl.10, fig.13-17. Senonian.

spatiosum (Morgenroth, 1966b, p.3-4, pl.1, fig.5) Lentini and Williams, 1976, p.73. Early Oligocene; formerly *Lejeunia*.

MANCODINIUM Morgenroth, 1970, p.352.

**semitabulatum* Morgenroth, 1970, p.352-353, pl.12, fig.3-6; pl.13, fig.1-4. Late Pliensbachian.

MATHUROSPHAERA Varma and Dangwal, 1964, p.70.

**rajivii* Varma and Dangwal, 1964, p.70, pl.2, fig.11-12. Eocene-Oligocene. O.C.

MATURODINIUM Morgenroth, 1970, p.353-354.

**inornatum* Morgenroth, 1970, p.354-355, pl.13, fig.5-8. Late Pliensbachian.

"*MEIOUROGONYAULAX*" Sarjeant, 1966b, p.144. Gocht, 1975b, p.353 considered this genus to be a jr syn. of *Lithodinia* Eisenack emend. Gocht. All species formerly included in *Meiourogonyaulax*, with the exception of "*M. superornata*", are now included in *Lithodinia*. "*Meiourogonyaulax superornata*" is now included in *Gonyaulacysta*.

MEMBRANILARNACIA Eisenack, 1963a, p.99 emend. Williams and Downie, 1966c, p.219.

amalthei W. Wetzel, 1966, p.318, pl.31, fig.6. Late Pliensbachian (Lias).

australis (Pöthe de Baldis, 1966, p.225, pl.1, fig.h) Eisenack and Kjellström, 1971a, p.797. Early Tertiary; formerly *Membranilarnax*.

MEMBRANILARNACIA (cont'd)

"?characta" (Tasch, 1964, p.192, pl.1, fig.20) Eisenack and Kjellström, 1971a, p.799. Formerly *Membranilarnax*. Pierce, 1976, p.27 considered this species to be a jr syn. of the acritarch *Schizosporis reticulatus* Cookson and Dettmann.

densa Cookson and Eisenack, 1974, p.71, pl.25, fig.19; pl.29, fig.19. Late Eocene.

"*diktyophora*" Agelopoulos, 1967, p.49-50, pl.12, fig.3-4,6. Late Eocene. Eaton, 1976, p.277 considered this species to be a jr syn. of "*Cannosphaeropsis ursulae*" Morgenroth, 1966a, which is now included in *Membranilarnacia*.

"?*formosa*" (Tasch, 1964, p.192, pl.1, fig.23) Eisenack and Kjellström, 1971a, p.801. Formerly *Membranilarnax*. Pierce, 1976, p.27 considered this species to be a jr syn. of the acritarch *Schizosporis reticulatus* Cookson and Dettmann.

"?*gigantea*" (Tasch, 1964, p.192, pl.2, fig.13) Eisenack and Kjellström, 1971a, p.803. Formerly *Membranilarnax*. Pierce, 1976, p.27 considered this species to be a jr syn. of the acritarch *Schizosporis reticulatus* Cookson and Dettmann.

glabra Agelopoulos, 1967, p.47-49, pl.12, fig.5; pl.13, fig.2,9; text-fig.6. Late Eocene.

**leptoderma* (Cookson and Eisenack, 1958, p.50, pl.10, fig.7,9) Eisenack, 1963a, p.101. Albian; formerly *Membranilarnax*.

?*liradiscoides* (O. Wetzel, 1933b, p.52, pl.6, fig.3a-b) Downie and Sarjeant, 1964 (1965), p.129. Late Cretaceous; formerly *Membranilarnax*.

marina (Kufferath, 1950, p.34; text-fig.40) Downie and Sarjeant, 1964 (1965), p.129. Holocene; formerly *Membranilarnax*.

minuta De Coninck, 1969, p.43, pl.12, fig.13-14. Eocene.

ovalis Cookson and Eisenack, 1974, p.72, pl.29, fig.21. Senonian.

polycladiata Cookson and Eisenack in Eisenack, 1963a, p.100. Holotype: Cookson and Eisenack, 1958, p.51, pl.10, fig.8. Albian.

pterococcoides (O. Wetzel, 1933b, p.53, pl.6, fig.4) Eisenack, 1963a, p.102. Senonian; formerly *Membranilarnax*.

subsp. *minuta* (Rozen, 1965, p.312-313, pl.2, fig.4-5; text-fig.23-24) Lentin and Williams, 1973, p.92. Late Eocene; formerly *Membranilarnacia pterococcoides* var. *minuta*.

MEMBRANILARNACIA (cont'd)

"*pterospermoides*" (O. Wetzel, 1933b) Downie and Sarjeant, 1964 (1965), p.130. Transfer of this species from *Membranilarnax* to *Membranilarnacia* was rejected by Lentini and Williams, 1973, p.92.

"*reticulata*" Williams and Downie, 1966c, p.220-221, pl.24, fig.4-6; text-fig.59. De Coninck, 1969, p.43 and Gocht, 1969, p.65 considered this species to be a jr syn. of *Membranilarnacia ursulae* (Morgenroth) De Coninck.

"*reticulovata*" (Tasch, 1964, p.192, pl.2, fig.3) Eisenack and Kjellström, 1971a, p.811. Formerly *Membranilarnax*. Pierce, 1976, p.27 considered this species to be a jr syn. of the acritarch *Schizosporis reticulatus* Cookson and Dettmann.

tenella Morgenroth, 1968, p.554-555, pl.48, fig.2-4. Danian.

tenuera De Coninck, 1975, p.93-94, pl.17, fig.2-3. Ypresian.

ursulae (Morgenroth, 1966a, p.20, pl.3, fig.11-12) De Coninck, 1969, p.43. Early Eocene; formerly *Cannospaeropsis*.

MEMBRANILARNAX O. Wetzel, 1933b, p.51. Downie and Sarjeant, 1964 (1965), p.130, transferred the type of this genus, *M. pterospermoides*, to ?*Membranilarnacia*, which in effect combines the two genera *Membranilarnacia* and *Membranilarnax*. According to the I.C.B.N. rules of priority, the first published name has priority and the genus *Membranilarnacia* becomes a jr syn. However, due to the uncertainty regarding the morphology of *M. pterospermoides*, Lentini and Williams, 1973, p.93 proposed that this species be retained in *Membranilarnax*. All other species with the exception of those listed below are now included in *Membranilarnacia*.

"*amandopolitana*" (Valensi, 1955b). NOW *Valensiella*.

"*angustivela*" (Deflandre and Cookson, 1955). NOW *Samlandia*.

"*clathroderma*" (Deflandre and Cookson, 1955). NOW *Valensiella*.

"*ovula*" (Deflandre, 1947c). NOW *Valensiella*.

**pterospermoides* O. Wetzel, 1933b, p.52, pl.6, fig.1-2. Late Cretaceous.

"*MEMBRANOPHORIDIUM*" Gerlach, 1961, p.198. Brosius, 1963, p.48 transferred the type of the genus, *M. aspinatum*, and one other species *M. partispinatum*, to *Chiropteridium*. The remaining species *M. multispinatum* was regarded by Brosius, 1963, p.48 as a jr syn. of *Chiropteridium dispersum*. Gocht, 1969, p.63 lists *Membranophoridium multispinatum* as a jr syn. of *Chiropteridium dispersum*. Since all the species of "*Membranophoridium*" are now included within the genus *Chiropteridium*, "*Membranophoridium*" is in effect a jr syn. of *Chiropteridium*.

MEMBRANOSPHAERA Samoilovitch ex Norris and Sarjeant, 1965, p.40
emend. Drugg, 1967, p.29. The name *Membranosphaera* was
originally used by Samoilovitch, 1961, p.251, as the name of
a "groupe" which is not recognized by the I.C.B.N. It was
raised to generic status by Norris and Sarjeant, 1965, p.40.
The type of the genus *M. maastrichtica* was at the same time
given specific status. Other taxa of the original "groupe"
Membranosphaera were overlooked. These taxa were elevated to
the proper status within the genus *Membranosphaera*, by Lentin
and Williams, 1973, p.94.

bulluliniformis Maliavkina ex Lentin and Williams, 1973, p.94.
(Original description, Maliavkina in Samoilovitch and
Mtchedlishvili, 1961, p.253-254, pl.84, fig.1a-b,2a-b,3,4).
Late Jurassic-Late Cretaceous.

subsp. *bulluliniformis* Maliavkina ex Lentin and Williams, 1973,
p.94. (Original description Maliavkina in Samoilovitch and
Mtchedlishvili, 1961, p.253-254, pl.84, fig.1a-b,2a-b,3).
Late Cretaceous.

subsp. *sphaerica* Maliavkina ex Lentin and Williams, 1973, p.94.
(Original description, Maliavkina in Samoilovitch and
Mtchedlishvili, 1961, p.254-255, pl.84, fig.4). Late
Jurassic.

granulata Norwick, 1976, p.79-80, pl.11, fig.9; pl.12, fig.3.
Cenomanian.

**maastrichtica* Samoilovitch ex Norris and Sarjeant, 1965, p.40.
Original description, Samoilovitch in Samoilovitch and
Mtchedlishvili, 1961, p.252, pl.83, fig.1a-d,2a-d. Late
Cretaceous.

subsp. *pilata* Samoilovitch ex Lentin and Williams, 1973, p.94.
(Original description, Samoilovitch in Samoilovitch and
Mtchedlishvili, 1961, p.253, pl.83, fig.3-4a-d). Late
Cretaceous.

tuberculata Maliavkina ex Lentin and Williams, 1973, p.94.
(Original description, Maliavkina in Samoilovitch and
Mtchedlishvili, 1961, p.255, pl.84, fig.7a-b,8). Late Jurassic.

MENDICODINIUM Morgenroth, 1970, p.347-348.

**reticulatum* Morgenroth, 1970, p.348-349, pl.9, fig.5-6; pl.10,
fig.1-4. Late Pliensbachian.

MICRODINIUM Cookson and Eisenack, 1960a, p.6, emend. Sarjeant, 1966b,
p.148-149.

?*alatum* (Conrad, 1941, p.5, pl.1, fig.C) Lentin and Williams,
1976, p.109. Maastrichtian; formerly *Palaeoperidinium*. Sarjeant,
1967b, p.248 recommended the transfer of this species to
Microdinium.

MICRODINIUM (cont'd)

?*crinitum* Davey, 1969a, p.137, pl.2, fig.7-8. Cenomanian.

"*deflandrei*" (Millioud, 1969). NOW *Druggidium*.

dentatum Vozzhennikova, 1967, p.94-95, pl.38, fig.2a-e. Late Cretaceous.

subsp. *dentatum* (Vozzhennikova, 1967, p.95, pl.38, fig.2a-e) Lentin and Williams, 1973, p.95. Late Cretaceous; formerly *Microdinium dentatum* forma *dentatum*.

subsp. *sphaericum* (Vozzhennikova, 1967, p.95-96, pl.36, fig.2a-b; pl.38, fig.1a-b) Lentin and Williams, 1973, p.95. Late Cretaceous; formerly *Microdinium dentatum* forma *sphaericum*.

distinctum Davey, 1969a, p.133-135, pl.2, fig.9-11; text-fig.13D-E,I. Cenomanian.

"*echinatum*" Clarke and Verdier, 1967, p.64, pl.1, fig.9-10; text-fig.26. Clarke et al., 1968, p.181 considered this species to be a jr syn. of *Microdinium setosum* Sarjeant.

?*ellipsoideum* (Deflandre, 1936b, p.178, pl.6, fig.5-7) Lentin and Williams, 1976, p.110. Senonian; formerly *Palaeoperidinium*. Sarjeant, 1967b, p.250 recommended the transfer of this species to *Microdinium*.

glabrum Cookson and Eisenack, 1974, p.53, pl.20, fig.19. Senonian.

irregulare Clarke and Verdier, 1967, p.65-66, pl.7, fig.5-8; text-fig.27. Cenomanian-Santonian.

kustanaicum Vozzhennikova, 1967, p.96, pl.37, fig.1a-b. ?Maastrichtian.

opacum Brideaux, 1971, p.76-77, pl.21, fig.19-22; text-fig.7d-e. Middle-Late Albian.

**ornatum* Cookson and Eisenack, 1960a, p.6-7, pl.2, fig.3-8; text-fig.2-4. Albian-Turonian.

ovatum Horowitz, 1975, p.24, pl.1, fig.3. Late Triassic.

punctulatum Vozzhennikova, 1967, p.96, pl.37, fig.7a-b. ?Maastrichtian.

reticulatum Vozzhennikova, 1967, p.96-97, pl.37, fig.2-5 Eocene.

saeptum Morgenroth, 1968, p.536-537, pl.41, fig.7-9; pl.42, fig.1. Danian.

MICRODINIUM (cont'd)

setosum Sarjeant, 1966b, p.151, pl.16, fig.9-10; text-fig.39.
Cenomanian.

singulare Vozzhennikova, 1967, p.97, pl.39, fig.2a-3. Eocene. O.C.

smolenskiense (Vozzhennikova, 1967, p.93, pl.34, fig.1-6; pl.35,
fig.6; pl.36, fig.4) Lentin and Williams, 1973, p.95. Late
Cretaceous; formerly *Ceratocorys*.

spinosum Brideaux and McIntyre, 1975, p.23-24, pl.6, fig.3-5.
Middle Albian.

variospinum Davey, 1969a, p.135, pl.2, fig.5-6; text-fig.13G.
Cenomanian.

veligerum (Deflandre, 1937b, p.81, pl.12, fig.9) Davey, 1969a,
p.136-137. Senonian; formerly *Microhystridium* and *Ceratocorys*.

MICROSPHAERIDIUM Benedek, 1972, p.46-47.

**ancistroides* Benedek, 1972, p.47, pl.12, fig.3; text-fig.21.
Late Oligocene.

MIKROPITHON Agelopoulos, 1967, p.51.

**amniophorum* Agelopoulos, 1967, p.51-52, pl.10, fig.6-8. Early-
Late Eocene.

MOESIODINIUM Antonescu, 1974, p.62.

**raileanui* Antonescu, 1974, p.62-63, pl.1, fig.1-16. Middle Jurassic.

MONTANAROCYSTA Corradini, 1973, p.183.

**aemiliana* Corradini, 1973, p.183-184, pl.30, fig.2,3a-b. Late
Cretaceous-Paleocene.

"*MORKALLACYSTA*" Harris, 1974, p.163. Lentin and Williams, 1976,
p.160 considered this genus to be a jr syn. of *Palaeoperidinium*.
The type of the genus and single species "*Morkallucysta*
pyramidalis", was accordingly transferred to *Palaeoperidinium*.

MUDERONGIA Cookson and Eisenack, 1958, p.40-41.

crucis Neale and Sarjeant, 1962, p.449-450, pl.20, fig.2,6;
text-fig.6. Late Hauterivian.

extensiva Duxbury, 1977, p.54-55, pl.15, fig.10. Valanginian-
Early Hauterivian.

Cookson and Eisenack, 1958, p.41, pl.6, fig.1-5. Aptian.

MUDERONGIA (cont'd)

perforata Alberti, 1961, p.13, pl.2, fig.8-9. Turonian.

simplex Alberti, 1961, p.12, pl.2, fig.1-6; pl.12, fig.1-2.
Valanginian-Early Barremian.

staurota Sarjeant, 1966c, p.203-204, pl.21, fig.6-7; pl.23, fig.4;
text-fig.53. Early Barremian.

tetracantha (Gocht, 1957, p.168, pl.18, fig.7-9; text-fig.5)
Alberti, 1961, p.14. Late Hauterivian; formerly *Pseudoceratium*.

tomaszowensis Alberti, 1961, p.12-13, pl.2, fig.12-13. Valanginian.

MUIRADINIUM Harland and Sarjeant, 1970, p.225.

**dorsispirale* (Churchill and Sarjeant, 1963, p.33, pl.1, fig.18;
text-fig.2) Harland and Sarjeant, 1970, p.225. Holocene;
formerly *Gymmodinium*.

MUIRIELLA Churchill and Sarjeant, 1963, p.36, emend. Harland and
Sarjeant, 1970, p.226-227.

**plioplax* Churchill and Sarjeant, 1963, p.37, pl.1, fig.20-21;
text-fig.4, emend. Harland and Sarjeant, 1970, p.227-228.
Holocene.

MULTISPINULA Bradford, 1975, p.3067.

**quanta* Bradford, 1975, p.3067, 3069, fig.5-7. Recent.

MURATODINIUM Drugg, 1970b, p.818.

**fimbriatum* (Cookson and Eisenack, 1967b, p.252, pl.40, fig.1-7)
Drugg, 1970b, p.818-819. Paleocene; formerly *Kenleyia*.

NANOCERATOPSIELLA Tasch, 1963, p.333. Questionable affinity.

**permiana* Tasch, 1963, p.333, pl.1, fig.4-6. Early Permian.

wellingtoniana (Tasch, 1963, p.336, pl.1, fig.9) Lentini and
Williams, 1976, p.45. Early Permian; formerly *Deflandrea*.

NANOCERATOPSIS Deflandre, 1938b, p.183, emend. Evitt, 1961b, p.306.

"*deflandrei*" Evitt, 1961b, p.308-312, pl.1, fig.1-14; pl.2, fig.1-29;
text-fig.5, 9-17. Evitt, 1962, p.1129-1130 considered this species
to be a jr syn. of *Nannoceratopsis gracilis* Alberti.

gracilis Alberti, 1961, p.30, pl.7, fig.6, emend. Evitt, 1962,
p.1129-1130. Bajocian.

NANOCERATOPSIS (cont'd)

**pellucida* Deflandre, 1938a, p.183, pl.8, fig.8-12, emend. Evitt, 1961b, p.312. Oxfordian.

spiculata Stover, 1966, p.42-43, pl.8, fig.1a-5e. Bajocian-Bathonian.

"*NECROBROOMEA*" Wiggins, 1975, p.111. Jr syn. of *Batioladinium* Brideaux. All species, with the exception of "*Necrobroomea simplex*" and "*N. imbatodinensis*" are now included in *Batioladinium*. "*Necrobroomea simplex*" was retained in the genus *Broomea* by Lentini and Williams, 1976, p.144. "*Necrobroomea imbatodinensis*" (as *Imbatodinium imbatodinense*) is herein transferred to *Pareodinia*.

NELCHINOPSIS Wiggins, 1972, p.299.

**kostromiensis* (Vozzhennikova, 1967, p.85, pl.26, fig.1-6; pl.27, fig.1-2) Wiggins, 1972, p.301-302. Valanginian; formerly *Gonyaulax* and *Gonyaulacysta*.

NELSONIELLA Cookson and Eisenack, 1960a, p.4.

**aceras* Cookson and Eisenack, 1960a, p.4, pl.1, fig.12-13. Santonian-Campanian.

semireticulata Cookson and Eisenack, 1960a, p.4-5, pl.1, fig.15. Santonian-Campanian.

tuberculata Cookson and Eisenack, 1960a, p.4, pl.1, fig.14. Santonian-Campanian.

NEMATOSPHAEROPSIS Deflandre and Cookson, 1955, p.268, emend. Williams and Downie, 1966c, p.222.

**balcombiana* Deflandre and Cookson, 1955, p.268-269, pl.8, fig.5. Middle Miocene.

labyrinthea (Ostenfeld, 1903, p.578, fig.12) Reid, 1974, p.592. Recent; formerly assigned to the modern motile genus *Pterosperma* Pouchet.

philippotii (Deflandre, 1947a, p.1574; text-fig.2-3) De Coninck, 1969, p.29. Senonian; formerly *Cannosphaeropsis*. O.C.

scala Duxbury, 1977, p.43, pl.9, fig.2. Valanginian-Hauterivian.

velata Clarke and Verdier, 1967, p.51-52, pl.10, fig.1-2; text-fig.22. Santonian.

NETRELYTRON Sarjeant, 1961a, p.113 emend. Sarjeant, 1966c, p.199. Wiggins, 1975, p.110 considered this genus to be a *jr syn.* of *Kalyptea* Cookson and Eisenack emend. Wiggins. He accordingly transferred the type of the genus *Netrelytron stegastum*, and *N. trinetrion* to *Kalyptea*. Wiggins considered the remaining species *Netrelytron parum* Gitmez, to be a *jr syn.* of "*Kalyptea trinetrion*" (Sarjeant) Gitmez. Sarjeant, 1976c, p.15-17 retained *Netrelytron* and the species therein.

"*jurassicum*" Alberti, 1961, p.21, pl.7, fig.8. Invalidly transferred from *Kalyptea* by Sarjeant, 1966c, p.201.

parum Gitmez, 1970, p.314-315, pl.5, fig.4; pl.9, fig.4. Early Kimmeridgian. Wiggins, 1975, p.110 considered this species to be a *jr syn.* of "*Kalyptea trinetrion*" (Sarjeant) Wiggins. Sarjeant, 1976c, p.16-17, however, refuted Wiggins' conclusions.

**stegastum* Sarjeant, 1961a, p.114-115, pl.15, fig.15; text-fig.14. Early Oxfordian. Wiggins, 1975, p.110 transferred this species to *Kalyptea* Cookson and Eisenack emend. Wiggins. Sarjeant, 1976c, p.16, however, retains *Netrelytron* and the species therein, including *N. stegastum*.

trinetrion Sarjeant, 1966c, p.199-200, pl.22, fig.3; text-fig.51. Middle Barremian. Wiggins, 1975, p.110 transferred this species to *Kalyptea* Cookson and Eisenack emend. Wiggins. Sarjeant, 1976c, p.16-17, however, retains *Netrelytron* and the species therein, including *N. trinetrion*.

NORICYSTA Bujak and Fisher, 1976, p.58.

**fimbriata* Bujak and Fisher, 1976, p.60,62, pl.9, fig.1-5; text-fig.5A-B. Norian.

pannucea Bujak and Fisher, 1976, p.62, pl.9, fig.6-10; text-fig.5D. Norian.

varivallata Bujak and Fisher, 1976, p.62, pl.9, fig.16-17; text-fig.5C. Norian.

NUMMUS Morgan, 1975, p.163.

**monoculatus* Morgan, 1975, p.163, pl.3, fig.1a-d,4a-c. Late Neocomian-Aptian.

OCCISUCYSTA Gitmez, 1970, p.267.

**balia* Gitmez, 1970, p.267-268, pl.5, fig.1-2; text-fig.16. Early Kimmeridgian. O.C.

evittii (Dodekova, 1969, p.14, pl.1, fig.1-2) Gitmez, 1970, p.269. Tithonian; formerly *Gonyaulacysta*. O.C.

OCCISUCYSTA (cont'd)

monoheuriska Gitmez and Sarjeant, 1972, p.221-223, pl.7, fig.10-11; text-fig.21. Early Kimmeridgian. O.C.

tentoria Duxbury, 1977, p.44-45, pl.3, fig.8-9; text-fig.16. Berriasian-Barremian.

ODONTOCHITINA Deflandre, 1935, p.234, emend. Davey, 1970, p.354.

athabaskensis Pocock, 1962, p.78, pl.14, fig.209-210. Barremian.

"*blastema*" Davey, 1970, p.356, pl.5, fig.4-5. Davey and Verdier, 1971, p.27 considered this species to be a jr syn. of *Xenascus ceratoides* (Deflandre) Lentini and Williams.

costata Alberti, 1961, p.31, pl.6, fig.10-13, emend. Clarke and Verdier, 1967, p.58-59. Cenomanian-Turonian.

cribropoda Deflandre and Cookson, 1955, p.292, pl.3, fig.7-11; text-fig.58. Senonian.

**operculata* (O. Wetzel, 1933a, p.170, pl.2, fig.21-22; text-fig.3) Deflandre and Cookson, 1955, p.291-292. Senonian.

porifera Cookson, 1956, p.188, pl.1, fig.17. Senonian.

"*silicora*" Deflandre, 1935, p.234, pl.9, fig.8-10. Deflandre and Cookson, 1955, p.292 considered this species to be a jr syn. of *Odontochitina operculata* (O. Wetzel) Deflandre and Cookson.

"*striatoperforata*" Cookson and Eisenack, 1962b, p.490, pl.3, fig.14-19. Clarke and Verdier, 1967, p.58 considered this species to be a jr syn. of *Odontochitina costata* Alberti.

subbaramana Jain and Taugourdeau-Lantz, 1973, p.64-65, pl.4, fig.3. Early Cretaceous.

ODONTOCHITINOPSIS Eisenack, 1961, p.298-299, 308.

incerta (Deflandre-Rigaud, 1954, p.59; text-fig.3) Eisenack, 1964, p.563. Late Cretaceous; formerly *Ceratocystidiopsis*. According to Article 33, para 4 of the I.C.B.N. the transfer of *Ceratocystidiopsis incerta* to *Odontochitinopsis* by Eisenack, 1961, p.299, is invalid.

**molesta* (Deflandre, 1937b, p.90, pl.17, fig.1-2) Eisenack, 1961, p.299. Senonian; formerly *Ceratocystidiopsis*.

OLIGOSPHAERIDIUM Davey and Williams, 1966b, p.70-71.

albertense (Pocock, 1962, p.82, pl.15, fig.226-227) Davey and Williams, 1969, p.5. Barremian; formerly *Hystrichosphaeridium*.

OLIGOSPHAERIDIUM (cont'd)

anthophorum (Cookson and Eisenack, 1958, p.43, pl.11, fig.12-13; text-fig.16-18) Davey, 1969a, p.147. Late Jurassic-Early Cretaceous; formerly *Hystrichosphaeridium*.

?*asterigerum* (Gocht, 1959, p.67, pl.3, fig.1; pl.7, fig.1-4) Davey and Williams, 1969, p.5. Hauterivian; formerly *Hystrichosphaeridium*.

buciniferum Corradini, 1973, p.142-143, pl.21, fig.2a-b; text-fig.5. Senonian.

cephalum Sah et al., 1970, p.147, pl.2, fig.22-23. Late Cretaceous.

?*coelenteratum* (Tasch, 1964, p.195, pl.2, fig.11) Davey and Williams, 1969, p.5. Albian; formerly *Hystrichosphaeridium*.

* *complex* (White, 1842, p.39, pl.4, div.3, fig.11) Davey and Williams, 1966b, p.71-74. Senonian; formerly *Hystrichosphaeridium*.

"*diastema*" Singh, 1971, p.337, pl.55, fig.4-5; pl.56, fig.1-2. Harker and Sarjeant, 1975, p.226 and Brideaux and McIntyre, 1975, p.29 considered this species to be a jr syn. of *Oligosphaeridium totum* Brideaux.

dictyophorum (Cookson and Eisenack, 1958, p.44, pl.11, fig.14) Davey and Williams, 1969, p.5. Late Jurassic; formerly *Hystrichosphaeridium*.

"?*dictyostilum*" (Menendez, 1965, p.11, pl.2, fig.6; pl.3, fig.18-22) Eisenack and Kjellström, 1971a, p.845. Eaton, 1971, p.359 considered this species to be a jr syn. of *Areosphaeridium diktyoplodus* (Klumpp) Eaton.

?*dispare* (Tasch, 1964, p.195, pl.2, fig.8) Davey and Williams, 1969, p.5. Albian; formerly *Hystrichosphaeridium*.

intermedium Corradini, 1973, p.143-144, pl.21, fig.7; text-fig.6. Late Cretaceous-?Paleocene.

irregularare (Pocock, 1962, p.82, pl.15, fig.228-229 non Merrill, 1895) Davey and Williams, 1969, p.5. Barremian; formerly *Hystrichosphaeridium*.

macrotubulum (Neale and Sarjeant, 1962, p.452, pl.20, fig.7; text-fig.8a) Davey and Williams, 1966b, p.75. Hauterivian; formerly *Hystrichosphaeridium*.

"*nannum*" (Davey, 1974). NOW *Discorsia*.

"?*paradoxum*" (Brosius, 1963). NOW *Distatodinium*.

OLIGOSPHAERIDIUM (cont'd)

perforatum (Gocht, 1959, p.68, pl.3, fig.7; pl.7, fig.13-16)
Davey and Williams, 1969, p.5. Hauterivian-Barremian; formerly
Hystrichosphaeridium.

prolixispinosum Davey and Williams, 1966b, p.76-77, pl.8, fig.2-3.
Cenomanian.

pulcherrimum (Deflandre and Cookson, 1955, p.270, pl.1, fig.8;
text-fig.21-22) Davey and Williams, 1966b, p.75-76. Albian;
formerly *Hystrichosphaeridium*.

reniforme (Tasch, 1964, p.193, pl.2, fig.6) Davey, 1969a, p.148.
Albian; formerly *Hystrichosphaeridium*.

reticulatum Davey and Williams, 1966b, p.74, pl.7, fig.10.
Cenomanian.

totum Brideaux, 1971, p.88, pl.25, fig.53,55. Late Albian.

subsp. *minor* (Brideaux, 1971, p.88-89, pl.25, fig.54,57)
Lentin and Williams, 1973, p.100. Late Albian; formerly
Oligosphaeridium totum var. *minor*.

subsp. *totum* (Brideaux, 1971, p.88, pl.25, fig.53,55) Lentin and
Williams, 1973, p.100. Late Albian; formerly *Oligosphaeridium*
totum var. *totum*.

vasiformum (Neale and Sarjeant, 1962, p.452, pl.20, fig.1;
text-fig.8b) Davey and Williams, 1966b, p.74-75. Middle
Hauterivian-Early Barremian; formerly *Hystrichosphaeridium*.

OLLULA Goczan, 1962, p.194,200.

**goczani* Loeblich and Loeblich, 1966, p.442, nom. subst. pro
tautonym *O. ollula* Goczan, 1962, p.195,201, pl.3, fig.11-16.
See Loeblich and Loeblich, 1971, p.312. Cretaceous.

OMANODINIUM Bradford, 1975, p.3070.

**alticinctum* Bradford, 1975, p.3070,3072, fig.23-28. Recent.

tholus Bradford, 1975, p.3072,3074, fig.17-22. Recent.

OMATIA Cookson and Eisenack, 1958, p.60 emend. Wiggins, 1969, p.150.

butticula Wiggins, 1969, p.150, pl.2, fig.1-5. Neocomian,
probably Late Valanginian or Early Hauterivian.

**montgomeryi* Cookson and Eisenack, 1958, p.60, pl.8, fig.7-9.
Late Jurassic.

"*pisciformis*" (Cookson and Eisenack, 1958). NOW *Herendeenia*.

"OODNADATTIA" Eisenack and Cookson, 1960, p.6. Jr syn. of *Dinopterygium*; see Norris and Sarjeant, 1965, p.44. Clarke and Verdier, 1967, p.36, considered the type of the genus *O. tuberculata* to be a jr syn. of *Dinopterygium cladoides*.

OPAEOPSOMUS Pocock, 1972, p.96. (non *Opaeopsomus* Evitt in Pocock, 1972). Pocock used the name *Opaeopsomus* which appeared originally in an unpublished company report by Evitt. See I.C.B.N. Article 46D.

**wapellensis* Pocock, 1972, p.97, pl.24, fig.14. Callovian.

OPERCULITES Newman, 1965, p.18.

**carbonis* Newman, 1965, p.18-20, pl.1, fig.14-16. Campanian.

OPERCULODINIUM Wall, 1967, p.110-111.

**centrocarpum* (Deflandre and Cookson, 1955, p.272, pl.8, fig.3-4) Wall, 1967, p.111. Miocene; formerly *Baltisphaeridium*, *Hystrichosphaeridium* and *Cordosphaeridium*. De Coninck, 1969, p.32, questionably included this species as a subspecies of *Cordosphaeridium microtriaena*. This interpretation was rejected by Lentin and Williams, 1973, p.102.

flucturum Davey, 1969b, p.8, pl.2, fig.3,7-8. Maastrichtian-?Danian.

giganteum Wall, 1967, p.112, pl.16, fig.9-10. Pleistocene-Holocene.

hirsutum (Ehrenberg, 1838, p.109-135, pl.1, fig.13) Lentin and Williams, 1973, p.102. Cretaceous; formerly *Xanthidium*, *Ovum hispidum*, *Hystrichosphaeridium*, *Hystrichosphaera* and *Baltisphaeridium*.

subsp. *amplum* (W. Wetzel, 1955, p.38; text-fig.11) Lentin and Williams, 1973, p.102. Danian; formerly *Hystrichosphaeridium hirsutum* subsp. *amplum*.

subsp. *minor* (O. Wetzel, 1933b, p.45-46, pl.4, fig.26) Lentin and Williams, 1973, p.102. Late Cretaceous; formerly *Hystrichosphaera hirsuta* forma *minor*.

subsp. *varians* (O. Wetzel, 1933b, p.47-48, pl.4, fig.27-29) Lentin and Williams, 1973, p.102. Late Cretaceous; formerly *Hystrichosphaera hirsuta* forma *varians*.

israelianum (Rossignol, 1962, p.132, pl.2, fig.3) Wall, 1967, p.111. Pleistocene; formerly *Hystrichosphaeridium* and *Baltisphaeridium*.

placitum Drugg and Loeblich, 1967, p.186, pl.1, fig.9-11b; text-fig.4. Oligocene.

OPERCULODINIUM (cont'd)

?*psilatum* Wall, 1967, p.111-112, pl.16, fig.6-8. Holocene.

"*pugiatum*" (Drugg, 1970b). NOW *Lingulodinium*.

?*punctatum* Cookson and Eisenack, 1971, p.220, pl.9, fig.6. Albian-Cenomanian.

?*rarispinosum* Cookson and Eisenack, 1971, p.220-221, pl.9, fig.7-8. Albian-Cenomanian.

"*solarum*" (Drugg, 1970b). NOW *Lingulodinium*.

OVOIDINIUM Davey, 1970, p.351 emend. Lentin and Williams, 1976, p.103-104.

cinctum (Cookson and Eisenack, 1958, p.26, pl.4, fig.1-3) Davey, 1970, p.354. Late Neocomian or Early Aptian; formerly *Deflandrea*, *Evittia* and *Pocockia*. This species was chosen by Pocock (1972) as the type of the genus *Evittia* (non Brito, 1967). The name *Pocockia* was designated by Lentin and Williams (1973, p.114) as a *nomen subst.* for *Evittia* Pocock, 1972. Lentin and Williams 1976, p.104, however, consider *Pocockia nom. subst. pro Evittia* Pocock 1972 (non brito, 1967) to be a *jr syn.* of *Ovoidinium*.

?*fragile* Norvick, 1976, p.88, pl.13, fig.1,8; pl.17, fig.7. Cenomanian.

indicum Jain and Taugourdeau-Lantz, 1973, p.64, pl.4, fig.1-2. Early Cretaceous.

?*indistinctum* (Cookson and Eisenack, 1974, p.76, pl.25, fig.6-8) Lentin and Williams, 1976, p.105. Aptian-?Albian; formerly *Craspedodinium*.

?*kansanum* (Tasch, 1964, p.196, pl.1, fig.1) Lentin and Williams, 1976, p.105. Albian; formerly *Peridinium* and ?*Deflandrea*. Lentin and Williams, 1976, p.105 questionably included this species in *Ovoidinium* because of the uncertainty as to its archeopyle.

"*ostium*" (Davey, 1970). NOW *Ovoidinium verrucosum* subsp. *ostium*.

ovale (Cookson and Eisenack, 1970a, p.145, pl.13, fig.8) Lentin and Williams, 1976, p.105. Albian-Cenomanian; formerly *Ascodinium*.

scabrosum (Cookson and Hughes, 1964, p.40, pl.5, fig.1-3) Davey, 1970, p.352. Albian-Early Cenomanian; formerly *Ascodinium*.

**verrucosum* (Cookson and Hughes, 1964, p.41, pl.5, fig.4-7) Davey, 1970, p.351-352. Cenomanian; formerly *Ascodinium*.

OVOIDINIUM (cont'd)

verrucosum (cont'd)

subsp. *ostium* (Davey, 1970, p.353, pl.4, fig.5,6; text-fig.18) Lentin and Williams, 1975, p.2153. Albian-Early Cenomanian; formerly *Ovoidinium ostium*. Transfer of the species as a variety of *Ovoidinium verrucosum* was effected by Davey and Verdier, 1973, p.198.

waltonii (Pocock, 1972, p.93, pl.22, fig.13-14) Lentin and Williams, 1976, p.105. Early Jurassic; formerly *Evittia* and *Pocockia*. O.C.

PALAEOCYSTODINIUM Alberti, 1961, p.20.

australinum (Cookson, 1965b, p.140, pl.25, fig.1-4 emend. Malloy, 1972, p.63) Lentin and Williams, 1976, p.89. Paleocene; formerly *Svalbardella*.

benjamini Drugg, 1967, p.31, pl.3, fig.1; pl.9, fig.3. Maastrichtian-Danian.

?*deflandrei* Gruas-Cavagnetto, 1968, p.92-93, pl.13, fig.15-19. Late Paleocene.

?*denticulatum* Alberti, 1961, p.20-21, pl.7, fig.9. Turonian.

**golzowense* Alberti, 1961, p.20, pl.7, fig.10-12; pl.12, fig.16. Late Eocene-Late Oligocene.

granulatum (Wilson, 1967b, p.226-227, fig.7-9) Lentin and Williams, 1976, p.89. Paleocene; formerly *Svalbardella*.

hyperxanthum (Vozzhennikova, 1963, p.185, fig.20) Vozzhennikova, 1967, p.152-153. Paleocene; formerly *Cystodiniopsis*. O.C.

lidiae (Gorka, 1963, p.37, pl.5, fig.6) Davey, 1969b, p.12-13. Maastrichtian; formerly *Leiofusa*.

"*microgranulatum*" (Jain and Millepied, 1973, p.29, pl.2, fig.23; pl.3, fig.30). Lentin and Williams, 1976, p.89 considered this species to be a jr syn. of *AndalusIELLA polymorpha* (Malloy).

"*punctatum*" (Jain and Millepied, 1973, p.29, pl.2, fig.24; pl.3, fig.26-28). Lentin and Williams, 1976, p.89 considered this species to be a jr syn. of *AndalusIELLA polymorpha* (Malloy).

?*rhombooides* (O. Wetzel, 1933a, p.168, pl.2, fig.17) Lentin and Williams, 1973, p.103. Senonian; formerly *Ceratium* cf. *fusus* forma *rhombooides*. Lentin and Williams, 1973 elevated *Ceratium* cf. *fusus* forma *rhombooides* to the species level in order to remove

PALAEOCYSTODINIUM (cont'd)

?*rhomboides* (cont'd)

fossil forms from *Ceratium fusus*. The assignment of these forms to *C. fusus* had previously been questioned by Eisenack, 1961, p.300-301, and Evitt, 1961c, p.402. As the figured forms most nearly compare with *Palaeocystodinium*, Lentin and Williams, 1973, p.103-104, questionably transferred the forms to this genus.

subsp. *filosum* (O. Wetzel, 1933a, p.169, pl.2, fig.20) Lentin and Williams, 1973, p.103. Senonian; formerly *Ceratium* cf. *fusus* forma *filosum*.

subsp. *incertum* (Deflandre, 1936a, p.29, pl.10, fig.8-9) Lentin and Williams, 1973, p.103. Senonian; formerly *Ceratium* cf. *fusus* forma *incerta*. O.C.

subsp. *nodosum* (O. Wetzel, 1933a, p.169, pl.2, fig.19) Lentin and Williams, 1973, p.104. Senonian; formerly *Ceratium* cf. *fusus* forma *nodosum*.

subsp. *ovatum* (O. Wetzel, 1933a, p.168-169, pl.2, fig.18) Lentin and Williams, 1973, p.104. Senonian; formerly *Ceratium* cf. *fusus* forma *ovatum*.

scabratum Jain et al., 1975, p.12-13, pl.6, fig.63. Danian.

PALAEOGLENDINIUM Deflandre, 1935, p.227.

**cretaceum* Deflandre, 1935, p.227, pl.7, fig.2-3. ?Senonian.

PALAEOHYSTRICHOPHORA Deflandre, 1935, p.230, emend. Deflandre and Cookson, 1955, p.257.

brevispinosa Pocock, 1962, p.81, pl.14, fig.222-223. Barremian.

"*dispersa*" (Cookson and Eisenack, 1958). NOW *Diconodinium*.

**infusorioides* Deflandre, 1935, p.230-231, pl.8, fig.4. ?Senonian.

isodiametrica Cookson and Eisenack, 1958, p.38, pl.12, fig.11-12. Campanian-Early Maastrichtian.

"*minuta*" (Deflandre and Cookson, 1955). NOW *Diconodinium*.

"*multispina*" (Deflandre and Cookson, 1955). NOW *Diconodinium*.

?*muriciformis* (Conrad, 1941, p.7, pl.1, fig.k) Lentin and Williams, 1976, p.110. Maastrichtian; formerly *Palaeoperidinium*. Sarjeant, 1967b, p.253 recommended transfer of this species to *Palaeohystrichophora*.

"*myalupensis*" (Churchill and Sarjeant, 1963). NOW *Aquadulcum*.

PALAEOHYSTRICHOPHORA (cont'd)

paucisetosa Deflandre, 1943, p.507-508; text-fig.26. ?Senonian.

paucispina Alberti, 1961, p.19-20, pl.3, fig.25. Albian.

"*pellifera*" (Cookson and Eisenack, 1958). NOW *Diconodinium*.

"*pikeae*" (Churchill and Sarjeant, 1963). NOW *Aquadulcum*.

"*spinosissima*" (Deflandre, 1938b). NOW *Pareodinia*.

PALAEOPERIDINIUM Deflandre, 1935, p.227 emend. Sarjeant, 1967b, p.246.

"*alatum*" (Conrad, 1941). NOW *Microdinium*.

amplum (Harland, 1973, p.673-674, pl.84, fig.1,7; text-fig.8)
Lentin and Williams, 1976, p.109. Late Campanian; formerly
Lejeunia and *Astrocytta*.

basilium (Drugg, 1967, p.13, pl.1, fig.9-11; pl.9, fig.1a-b) Drugg,
1970b, p.810. ?Maastrichtian-Danian; formerly *Peridinium*.

"*bicuneatum*" (Deflandre, 1938b). NOW *Glossodinium*.

"*castaneum*" (Deflandre, 1935). NOW *Trichodinium*.

"*caulleryi*" (Deflandre, 1935). NOW *Diconodinium*.

"*cayeuxii*" (Deflandre, 1935). NOW *Phanerodinium*.

"*cornutum*" Vozzhennikova, 1963; text-fig.14, nom. nud. No
description given.

"*crassineratum*" (Deflandre, 1939). NOW *Leptodinium*.

cretaceum Pocock, 1962, p.80, pl.14, fig.219-221 ex Davey, 1970,
p.359. This species was the type of the genus "*Astrocytta*"
Davey, 1970, p.359, which Lentin and Williams, 1976, p.110
considered to be a jr syn. of *Palaeoperidinium* Deflandre emend.
Sarjeant. Also formerly *Lejeunia*.

damasii (Lejeune-Carpentier, 1942, p.185-186, fig. 10) Lentin and
Williams, 1976, p.110. Senonian; formerly *Peridinium* and
?*Cooksoniella*.

deflandrei Lentin and Williams, 1973, p.105. Lentin and Williams
erected this species to accommodate fossil specimens formerly
attributed to the modern taxon *Peridinium conicum*. For a
description of such forms please refer to Deflandre, 1939b, p.174;
holotype pl.4, fig.4.

PALAEOPERIDINIUM (cont'd)

deflandrei (cont'd)

subsp. *larjakiense* (Vozzhennikova, 1967, p.71-72, pl.16, fig.1-2)
Lentin and Williams, 1973, p.105. Paleocene; formerly
Peridinium conicum var. *larjakiense* and *Cooksoniella*
larjakiensis.

"*dictyophorum*" (Deflandre, 1938b). NOW *Gonyaulacysta*.

"*ellipsoideum*" (Deflandre, 1936b). NOW ?*Microdinium*.

eurypyrum (Manum and Cookson, 1964, p.20-21, pl.4, fig.7-13)
Evitt, 1975, p.81. Late Cretaceous; formerly *Scriniodinium*.

"*granulatum*" (Singh, 1964). NOW *Gonyaulacysta indicosa* nom. subst.
Brideaux, 1971.

hansonianum (Traverse, 1955, p.77-79, pl.13, fig.147) Lentin and
Williams, 1973, p.105 emend. Evitt, 1974, p.2-3. Late Oligocene;
formerly *Peridinium*.

"*hyalodermum*" (Deflandre, 1939). NOW *Gonyaulacysta*.

"*manumcooksoni*" (Corradini, 1973, p.176-177, pl.28, fig.4,6)
Lentin and Williams, 1976, p.110. Late Cretaceous-Paleocene;
formerly *Astrocytula*. Lentin and Williams, 1976, p.110 considered
this species to be a jr syn. of *Palaeoperidinium cretaceum*
Pocock ex Davey.

marginatum (Vozzhennikova, 1967, p.107, pl.46, fig.1,3-4,6) Lentin
and Williams, 1976, p.110. Paleocene; formerly *Pentagonum*.

"*mecsekense*" (Nagy, 1969). NOW ?*Gonyaulacysta*.

"*monacanthum*" (Deflandre, 1935). NOW *Gonyaulacysta*.

"*mosaicum*" (Downie, 1957). NOW *Leptodinium*.

"*muriciforme*" (Conrad, 1941). NOW ?*Palaeohystrichophora*.

"*nuciforme*" (Deflandre, 1938b). NOW *Gonyaulacysta*.

"*nuciformoides*" (Gorka, 1965, p.324, pl.2, fig.1-2). Sarjeant,
1968, p.227 considered this species to be a jr syn. of
Gonyaulacysta nuciformis (Deflandre) Sarjeant.

"*nudum*" (Downie, 1957). NOW *Pareodinia*.

"*nudum*" (Nagy, 1969). NOW ?*Tectatodinium nudum*. See discussion
under "*Palaeoperidinium pannonium*" Lentin and Williams.

PALAEOPERIDINIUM (cont'd)

"paleocenicum" (Cookson and Eisenack, 1965c, p.142-143, pl.19, fig.1-4) Lentin and Williams, 1976, p.110. Middle Paleocene; formerly *Peridinium* and ?*Cooksoniella*.

"pannonium" Lentin and Williams, 1973, p.106, nom. subst. pro *Palaeoperidinium nudum* Nagy, 1969 (*non Palaeoperidinium nudum* Downie, 1957), p.291, pl.1, fig.1. NOW ?*Tectatodinium*. This species is, according to Nagy, 1969, p.291, most closely comparable to "*Palaeoperidinium nuciforme*" (Deflandre, 1938b) which was transferred to *Gonyaulacysta* by Sarjeant, 1968, p.227. Harker and Sarjeant, 1975, p.224 transferred "*Palaeoperidinium pannonium*" to *Phthanoperidinium*. Lentin and Williams, 1976, p.110 proposed that "*Palaeoperidinium pannonium*" be transferred to *Gonyaulacysta* as ?*Gonyaulacysta nuda* (Nagy, 1969). After further study of the diagnosis and single illustration "*Palaeoperidinium pannonium*" is herein questionably transferred to *Tectatodinium* as ?*Tectatodinium nudum* (Nagy, 1969) comb. nov.

"parvum" (Harland, 1973, p.672-673, pl.84, fig.3,12-14; text-fig.7) Lentin and Williams, 1976, p.111. Late Campanian; formerly *Lejeunia*.

"pilum" (Gocht, 1959). NOW *Leptodinium*.

"piriforme" (Conrad, 1941). NOW *Gonyaulacysta*.

"pyramdale" (Harris, 1973, p.163, pl.1, fig.5-11) Lentin and Williams, 1976, p.111. Paleocene; formerly *Morkallacysta*.

*"pyrophorum" (Ehrenberg, 1838, pl.1, fig.1,4) Sarjeant, 1967b, p.246-247. Late Cretaceous; formerly *Peridinium*.

"reticulatum" (Valensi, 1953). NOW *Ellipsoidictyum*.

"rhomboideale" (Gorka, 1965). NOW ?*Trichodinium*.

"sibiricum" (Vozzhennikova, 1963, p.183; text-fig.17a-b) Lentin and Williams, 1976, p.111. Paleocene; formerly *Pentagonum*.

"spinosissimum" (Deflandre, 1938b). NOW *Pareodinia*.

"spinosum" (Cookson and Hughes, 1964). NOW *Epelidosphaeridia*.

?"subconicoides" (Lejeune-Carpentier, 1942, p.183-185; text-fig.1-8) Lentin and Williams, 1973, p.106. Senonian; formerly *Peridinium*.

"tabulatum" (Cookson and Eisenack, 1965c, p.143-144, pl.19, fig.5-8; text-fig.3) Lentin and Williams, 1976, p.111. Middle Paleocene; formerly *Ginginodinium*.

"velatum" (Conrad, 1941). NOW ?*Scriniodinium*.

PALAEOPERIDINIUM (cont'd)

"*ventriosum*" (O. Wetzel, 1933a). NOW *Cribroperidinium*.

PALAEOSPHAERIUM Gorka, 1965, p.308.

**infrequens* Gorka, 1965, p.308, pl.2, fig.7. Early Kimmeridgian.

PALAEOSTOMOCYSTIS Deflandre, 1937b, p.52.

apiculata Cookson and Eisenack, 1960a, p.12, pl.3, fig.15.
Santonian-Campanian.

bakonyensis Goczan, 1962, p.193-194, 200, pl.3, fig.4-10.
Maastrichtian.

chytra Drugg, 1967, p.35, pl.6, fig.12. Maastrichtian-Danian.

cretacea (O. Wetzel, 1933a, p.175, pl.2, fig.28-29) Deflandre,
1937b, p.54. Late Cretaceous; formerly ?*Trachelomonas cretacea*.
Trachelomonas is a genus of the class Euglenineae.

cylindrica Cookson and Eisenack, 1960b, p.258, pl.39, fig.16.
Late Jurassic-Neocomian.

decora Deflandre, 1945, card 850, fig.436a. Late Cretaceous.

"*echinulata*" (Deflandre, 1937b). NOW *Diacrocanthidium*.

fragilis Cookson and Eisenack, 1962b, p.496-497, pl.7, fig.10-11.
Aptian-Cenomanian.

granulosa Cookson and Eisenack, 1974, p.79, pl.28, fig.10.
Albian-Cenomanian.

laevigata Drugg, 1967, p.35, pl.6, fig.14-15. Maastrichtian-Danian.

oblonga Deflandre, 1945, card 852. Late Cretaceous.

pulchella Conrad, 1941, p.10; text-fig.3. Maastrichtian.

punctulosa Deflandre, 1941, p.22-23, pl.6, fig.11. Late Cretaceous.

**reticulata* Deflandre, 1937b, p.53-54. Late Cretaceous. Originally
figured in Deflandre, 1935, pl.9, fig.13, nom. nud.

sinuosa Cookson and Eisenack, 1960b, p.258, pl.38, fig.16-17.
Tithonian.

sphaerica Deflandre, 1937b, p.54. Late Cretaceous. Originally
figured in Deflandre, 1935, pl.9, fig.14, nom. nud.

PALAEOTETRADINIUM Deflandre, 1936b, p.189.

PALAEOTETRADINIUM (cont'd)

"*hermesinoides*" (O. Wetzel, 1940, p.138-140, pl.5, fig.7). NOW
Veryhachium. See Harker and Sarjeant, 1975, p.225.

"*hyalodermum*" (Cookson, 1956, p.188, pl.1, fig.12-16). Downie and
Sarjeant, 1963, p.94 transferred this species to the acritarch
genus *Veryhachium* Deunff.

**silicorum* Deflandre, 1936b, p.189, pl.9, fig.11. ?Senonian.
P. silicorum Deflandre, 1934, p.967; text-fig.6, nom. nud.
since the genus *Palaeotetradinium* was not validly published
until 1936.

PALHISTIODINIA Deflandre, 1938b, p.185.

**arcana* Deflandre, 1938b, p.185, pl.5, fig.10. Oxfordian.

"*PALMNICKIA*" Eisenack, 1954, p.69. Morgenroth, 1966a, p.40 stated
that *Palmnickia* falls within the range of variation found in
Samlandia chlamydophora Eisenack, 1954. Both Morgenroth, 1966a,
p.39 and Benedek, 1972, p.36 considered the type of the genus
Palmnickia, *P. lobifera*, to be a synonym of *Samlandia*
chlamydophora Eisenack, 1954. The remaining species "*Palmnickia*
californica" is herein transferred to *Samlandia*.

PALYNODINIUM Gocht, 1970a, p.135,137-138,140. According to
Loeblich and Loeblich, 1971, p.312, the genus *Palynodinium*
Gocht, 1970a is invalid as no description or diagnosis is given,
see I.C.B.N. Art. 42, par. 1. However, this particular
requirement of Art. 42 will be removed, retroactively, in the
new I.C.B.N. (in press). Thus *Palynodinium* Gocht, 1970a will
be valid.

**grallator* Gocht, 1970a, p.135,137-138,140; text-fig.2; text-fig.4,
no.1-8; text-fig.5, no.1-2. Late Cretaceous.

PARAGONY AULACYSTA Johnson and Hills, 1973, p.207.

**calloviensis* Johnson and Hills, 1973, p.207, pl.2, fig.9,15,16;
text-fig.9A-C. Early Callovian.

"*PARANETRELYTRON*" Sarjeant, 1966c, p.201. Wiggins, 1975, p.102
considered this genus to be a jr syn. of *Pareodinia* Deflandre
emend. Wiggins.

"**strongylum*" Sarjeant, 1966c, p.201-202, pl.21, fig.5; pl.23,
fig.5; text-fig.52. Wiggins, 1975, p.103 considered this species
to be a jr syn. of *Pareodinia ceratophora* Deflandre.

PAREODINIA Deflandre, 1947c, p.4 emend. Wiggins, 1975, p.103.

PAREODINIA (cont'd)

"aceras" (Manum and Cookson, 1964). Lentin and Williams, 1975, p.2153, rejected the transfer of this species to *Pareodinia* by Davey and Verdier, 1974, p.645. The species has therefore been retained in *Caligodinium* Drugg, 1970b.

alaskensis Wiggins, 1975, p.104, pl.2, fig.7-8. ?Callovian-Middle Kimmeridgian.

antennata (Gitmez and Sarjeant, 1972, p.232-233, pl.11, fig.2-3) Wiggins, 1975, p.107. Kimmeridgian; formerly *Imbatodinium*.

"aphelia" (Cookson and Eisenack, 1958, p.60, pl.12, fig.3-4,9). Wiggins, 1975, p.103 considered this species to be a jr syn. of *Pareodinia ceratophora* Deflandre.

apotomocerastes Sarjeant, 1972, p.27-28, pl.3, fig.4. Late Bathonian-Early Callovian.

arctica Wiggins, 1975, p.103, pl.2, fig.1-5. Late Jurassic, probably Tithonian.

borealis Brideaux and Fisher, 1976, p.21-22, pl.3, fig.3-4,6-9; pl.4, fig.1-8. Late Oxfordian-Berriasian.

capillosa Brideaux and Fisher, 1976, p.20-21, pl.2, fig.3-10; pl.3, fig.1-2,5. Late Oxfordian-Berriasian.

**ceratophora* Deflandre, 1947c, p.4; text-fig.1-3, emend. Gocht, 1970b, p.153-156. Late Callovian.

subsp. *pachyceras* (Sarjeant, 1959, p.337, pl.13, fig.10; text-fig.5a) Lentin and Williams, 1973, p.108. Early Callovian; formerly *Pareodinia ceratophora* var. *pachyceras*. Sarjeant, 1976c, p.10 retained *Pareodinia ceratophora* var. *pachyceras*. His arguments for so doing are, however, inconclusive.

subsp. *scopaeus* (Sarjeant, 1972, p.26, pl.2, fig.4) Lentin and Williams, 1973, p.108. Late Bathonian-Early Callovian; formerly *Pareodinia ceratophora* var. *scopaeus*.

curvocervicata Tasch, 1964, p.196, pl.3, fig.1. Albian.

dasyiforma Wiggins, 1975, p.107 nom. subst. pro *Pareodinia villosa* Vozzhennikova, 1967, p.56, pl.12, fig.1-3; pl.13, fig.1-3; pl.14, fig.1-2; pl.15, fig.1-2 (non *Pareodinia villosa* Tasch, 1964). Late Jurassic; formerly *Imbatodinium villosum*.

evittii (Pocock, 1972, p.94-95, pl.24, fig.6,8; text-fig.11) Wiggins, 1975, p.105. Late Bajocian-Callovian; formerly *Tenua*.

groenlandica Sarjeant, 1972, p.27, pl.2, fig.2; pl.5, fig.1. Late Bathonian-Early Callovian.

PAREODINIA (cont'd)

imbatodinensis (Vozzhennikova, 1967) comb. nov.

1967 *Imbatodinium imbatodinensis* Vozzhennikova, p.55, pl.12, fig.4a-c. Late Jurassic. The transfer of this species from *Imbatodinium* to "Necrobroomea" by Wiggins, 1975, p.111 is herein rejected because of the nature of the archeopyle and of the antapex in this species.

kondratjevii (Vozzhennikova, 1967, p.55, pl.9, fig.1-9; pl.10, fig.1-6; pl.11, fig.1-3; pl.15, fig.3-4) Wiggins, 1975, p.104. Late Jurassic; formerly *Imbatodinium*. O.C.

minuta Wiggins, 1975, p.104, pl.2, fig.9-10. Late Jurassic.

moderna Kufferath, 1950, p.37-38; text-fig.34. Holocene.

nuda (Downie, 1957, p.424, pl.20, fig.11; text-fig.2e) Sarjeant, 1967b, p.254. Late Kimmeridgian; formerly *Palaeoperidinium*. Wiggins, 1975, p.103 considered this species to be a jr syn. of *Pareodinia ceratophora* Deflandre. Sarjeant, 1976c, p.11 preferred to retain *Pareodinia nuda*, which is characterized by a longer apical horn with separation of the wall layers at the tip.

osmingtonensis (Sarjeant, 1962b, p.262, pl.1, fig.5; text-fig.6) Wiggins, 1975, p.105. Late Oxfordian; formerly *Pluriarvalium*.

subsp. *rostrata* Wiggins, 1975, p.106-107, pl.5, fig.1-2. Late Jurassic.

prolongata Sarjeant, 1959, p.335-336, pl.13, fig.8; text-fig.4. Early Callovian.

psilata Jain and Millepied, 1975, p.143-144, pl.3, fig.51. Aptian-Albian.

"*ramosa*" (Cookson and Eisenack, 1958) Wiggins, 1975, p.107. The transfer of this species from *Broomea* to *Pareodinia* by Wiggins (*op.cit.*) was rejected by Lentin and Williams, 1976, p.144.

robusta Wiggins, 1975, p.105, pl.3, fig.1-4. Late Jurassic.

spinosa Alberti, 1961, p.24, pl.4, fig.16. Late Barremian.

spinossissima (Deflandre, 1938b, p.179, pl.9, fig.11) Wiggins, 1975, p.107. Late Jurassic; formerly *Palaeoperidinium*, *Palaeohystrichophora* and ?*Acanthaulax*.

"*tripartita*" (Johnson and Hills, 1973, p.208, pl.2, fig.12-14,17-18; pl.3, fig.1-2; text-fig.11A-C). Wiggins, 1975, p.105 considered this species to be a jr syn. of *Pareodinia evittii* (Pocock) Wiggins.

PAREODINIA (cont'd)

"*tripartita*" (cont'd)

var. "*acuta*" Johnson and Hills, 1973, pl.2, fig.12; *nom. nud.*
No description; name appears only in explanation of plates.

var. "*obtusus*" (Johnson and Hills, 1973, p.208). Incorrect name
for "*Pareodinia tripartita* subsp. *tripartita*". See discussion
under "*P. tripartita* subsp. *tripartita*". Wiggins, 1975,
p.105 considered this subspecies to be a *jr syn.* of
Pareodinia evittii (Pocock) Wiggins.

subsp. "*rotunda*" (Johnson and Hills, 1973, p.209, pl.3, fig.1-2;
text-fig.11C) Lentin and Williams, 1975, p.2153. Late
Bathonian; formerly *Pareodinia tripartita* var. *rotundus*.
Wiggins, 1975, p.105 considered this subspecies to be a
jr syn. of *Pareodinia evittii* (Pocock) Wiggins.

subsp. "*tripartita*" (Johnson and Hills, 1973, p.208, pl.2,
fig.12,13,17,18; text-fig.11B) Lentin and Williams, 1975,
p.2153. Late Bathonian; formerly *Pareodinia tripartitus* var.
obtusus. I.C.B.N. (1972), Article 26: "The name of an infra-
specific taxon which includes the type of the correct name of
the species has as its final epithet, unaltered, as that of the
correct name of the species, but without citation of the author's
name. The type of the correct name of each such infraspecific
taxon is the same as that of the correct name of the species."
Johnson and Hills cite the same holotype for *Pareodinia*
tripartitus and *Pareodinia tripartitus* var. *obtusus*; therefore
Pareodinia tripartitus var. *obtusus* is an incorrect name for
P. tripartitus var. *tripartitus*. Wiggins, 1975, p.105
considered *Pareodinia tripartita* to be a *jr syn.* of
Pareodinia evittii (Pocock) Wiggins.

verrucosa (Vozzhennikova, 1967, p.56, pl.12, fig.6) Wiggins,
1975, p.105. Late Jurassic; formerly *Imbatodinium*.

villosa Tasch, 1964, p.195-196, pl.1, fig.9. Albian.

PARVOCAVATUS Gitmez, 1970, p.306.

spinosis Duxbury, 1977, p.46-47, pl.9, fig.3; text-fig.17.
Berriasian.

**tuberosus* Gitmez, 1970, p.307-308, pl.6, fig.9; text-fig.31.
Early Kimmeridgian.

PARVULODINIUM Dodekova, 1975, p.29.

**clavatum* Dodekova, 1975, p.30, pl.6, fig.4-9; text-fig.8. Late
Bathonian.

PENTADINIUM Gerlach, 1961, p.164-165.

**laticinctum* Gerlach, 1961, p.165-166, pl.26, fig.5-6; text-fig.6-7.
Middle Oligocene-Middle Miocene.

subsp. *granulatum* Gocht, 1969, p.29-30, pl.9, fig.17-18;
text-fig.20. Middle Oligocene.

subsp. *imaginatum* Benedek, 1972, p.43-44, pl.6, fig.9; pl.2,
fig.11. Late Oligocene.

subsp. *lophophorum* Benedek, 1972, p.44, pl.6, fig.8; text-fig.19.
Middle Oligocene.

taeniagerum Gerlach, 1961, p.167-168, pl.26, fig.8-9,12,15; text-
fig.8. Middle Oligocene-Middle Miocene.

subsp. *imaginatum* Benedek, 1972, p.45-46, pl.6, fig.12.
Late Oligocene.

subsp. *lophophorum* Benedek, 1972, p.45, pl.6, fig.13. Middle
Oligocene.

"*PENTAGONUM*" Vozzhennikova, 1963, p.183. Lentin and Williams,
1976, p.161 considered this genus to be a *jr syn.* of
Palaeoperidinium. They accordingly transferred the two validly
published species, "*Pentagonum sibiricum*" the type of the genus
and "*P. marginatum*", to *Palaeoperidinium*.

"*conicoides*" Vozzhennikova, 1963, *nom. nud.* No description. The
name appears only in the description for text-fig.17 where it
is erroneously used for *P. sibiricum*.

PERIDICTYOCYSTA Cookson and Eisenack, 1974, p.70.

**mirabilis* (Cookson and Eisenack, 1958, p.48, pl.8, fig.3-5)
Cookson and Eisenack, 1974, p.70. Late Jurassic; formerly
Cannosphaeropsis.

PERIDINITES Lefèvre, 1933a, p.418. (Type of the genus was selected
by Deflandre, 1945, card 800).

barbadensis Lefèvre, 1933a, p.416. (Figured in Lefèvre, 1933b,
text-fig.9-12). Early Tertiary.

diodon Lefèvre, 1933a, p.417-418. (Figured in Lefèvre, 1933b;
text-fig.23). Early Tertiary.

globosus Lefèvre, 1933a, p.416. (Figured in Lefèvre, 1933b,
text-fig.15-16). Early Tertiary.

maculatus (Vozzhennikova, 1967, p.117-118, pl.49, fig.1-12; pl.50,
fig.1-8) Lentin and Williams, 1973, p.110. Early Oligocene;
formerly *Lithoperidinium*.

PERIDINITES (cont'd)

oamaruensis (Deflandre, 1933, p.265; text-fig.1-7) Deflandre, 1945, card 806-809. Tertiary; formerly *Lithoperidinium*.

ovalis Lefèvre, 1933a, p.417. (Figured in Lefèvre, 1933b, text-fig.21-22). Early Tertiary.

**parvulus* Lefèvre, 1933a, p.416. (Figured in Lefèvre, 1933b; text-fig.6-8). Early Tertiary.

perforatus Lefèvre, 1933a, p.418. (Figured in Lefèvre, 1933b, text-fig.25-30). Early Tertiary. Designated type species by Deflandre, 1948, card 800.

piriformis Lefèvre, 1933a, p.417. (Figured in Lefèvre, 1933b, text-fig.17-18). Early Tertiary.

subsp. *compactum* (Lefèvre, 1933a, p.417; figured in Lefèvre, 1933b, text-fig.19-20) Lentin and Williams, 1973, p.110. Early Tertiary; formerly *Peridinites piriformis* var. *compactum*.

rossicus (Deflandre, 1940, p.266; text-fig.1-4) Deflandre, 1945, card 817-818. Eocene; formerly *Lithoperidinium*.

sphaericus Lefèvre, 1933a, p.416-417. (Figured in Lefèvre, 1933b, text-fig.13-14). Early Tertiary.

subsp. *minor* (Lefèvre, 1933b, p.224; text-fig.24) Lentin and Williams, 1973, p.111. Early Tertiary; formerly *Peridinites sphaericus* var. *minor*.

PERIDINIUM Ehrenberg, 1832, p.38. Modern genus defined from the motile stage. Fossil cysts formerly included within this genus have been transferred to *Palaeoperidinium* Deflandre with the exception of those species listed below.

"*comatum*" (Morgenroth, 1966b). NOW *Phthanoperidinium*.

conicum (Gran) Ostenfeld and Schmidt. Modern species defined from the motile stage. Fossil cysts assigned to this species by Deflandre, 1939b, are now included in *Palaeoperidinium deflandrei*.

"*crenulatum*" (De Coninck, 1975). NOW *Phthanoperidinium*.

"*delitiense*" (Ehrenberg, 1838). NOW *Spongodinium*.

"*diamantum*" (Churchill and Sarjeant, 1963). NOW *Gonyaulacysta*.

"*eocenicum*" (Cookson and Eisenack, 1965a). NOW ?*Phthanoperidinium*.

"*galeatum*" (Lejeune-Carpentier, 1942). NOW *Deflandrea*.

"*illustrans*" (O. Wetzel, 1933a). NOW ?*Phthanoperidinium*.

PERIDINIUM (cont'd)

"*kansanum*" (Tasch, 1964). NOW ?*Ovoidinium*.

"*lambdoideum*" (Nagy, 1966). NOW *Phthanoperidinium*.

"*pleum*" (Tasch, 1964). NOW ?*Gonyaulacysta*.

"*resistente*" (Morgenroth, 1966a). NOW *Phthanoperidinium*.

"*schizokeras*" (De Coninck, 1975). NOW *Phthanoperidinium*.

"*stockmansi*" (De Coninck, 1975). NOW *Phthanoperidinium*.

"*tricuspis*" (O. Wetzel, 1933a). NOW *Lejeunia*.

"*ventriosum*" (O. Wetzel, 1933a). NOW *Cribroperidinium*.

PERISSEIASPHAERIDIUM Davey and Williams, 1966b, p.78.

"*eisenackii*" Davey and Williams, 1969, p.6, = *Hystrichosphaeridium anthophorum* sensu Eisenack, 1958, p.402, pl.26, fig.1-2 non Cookson and Eisenack, 1958. Late Aptian. Davey and Verdier, 1974, p.640 considered this species to be a jr syn. of *Systematophora schindewolfii* (Alberti, 1961) Downie and Sarjeant, 1964 (1965).

**pannosum* Davey and Williams, 1966b, p.78-79, pl.3, fig.5; pl.11, fig.8; text-fig.15. Early Eocene.

PHANERODINIUM Deflandre, 1937a, p.110.

**cayeuxii* (Deflandre, 1935, p.229, pl.6, fig.2-3) Deflandre, 1937a, p.110. Senonian; formerly *Palaeoperidinium*.

subsp. *laeve* (Lejeune-Carpentier, 1951, p.310-322; text-fig.6) Lentini and Williams, 1973, p.112. Senonian; formerly *Phanerodinium cayeuxii* var. *laeve*.

fourmarieri Lejeune-Carpentier, 1951, p.311; text-fig.7. Senonian.

setiferum Deflandre, 1937a, p.112-114; text-fig.5. Senonian.

PHOBEROCYSTA Millioud, 1969, p.431-432. See also *Xenascus*.

"*ceratiooides*" (Deflandre, 1937b). NOW *Xenascus*.

?*dubia* Corradini, 1973, p.182, pl.29, fig.6a-b. Senonian.

gochtii Corradini, 1973, p.179-181, pl.29, fig.1a-b,3; text-fig.9. Senonian.

PHOBEROCYSTA (cont'd)

**neocomica* (Gocht, 1957, p.172-178, pl.19, fig.1-5; pl.20, fig.1-7; text-fig.7-16) Millioud, 1969, p.432. Hauterivian; formerly ?*WetzelIELLA*.

subsp. *circulata* (Gocht, 1957, p.178; text-fig.14) Lentin and Williams, 1973, p.112. Hauterivian; formerly ?*WetzelIELLA neocomica* forma *circulata*.

subsp. *convexa* (Gocht, 1957, p.178, pl.20, fig.1-2) Lentin and Williams, 1973, p.112. Hauterivian; formerly ?*WetzelIELLA neocomica* forma *convexa*.

subsp. *cruciformis* (Gocht, 1957, p.176-177, pl.19, fig.5; pl.20, fig.3; text-fig.9-10) Lentin and Williams, 1973, p.112. Hauterivian; formerly ?*WetzelIELLA neocomica* forma *cruciformis*.

subsp. *dedecosa* (Gocht, 1957, p.177, text-fig.11) Lentin and Williams, 1973, p.112. Hauterivian; formerly ?*WetzelIELLA neocomica* forma *dedecosa*.

subsp. *pteridia* (Gocht, 1957, p.178; text-fig.14) Lentin and Williams, 1973, p.112. Hauterivian; formerly ?*WetzelIELLA neocomica* forma *pteridia*.

subsp. *subovalis* (Gocht, 1957, p.177, text-fig.12-13) Lentin and Williams, 1973, p.113. Hauterivian; formerly ?*WetzelIELLA neocomica* forma *subovalis*.

sarjeantii Corradini, 1973, p.181, pl.29, fig.2a-b,4a-b; pl.37, fig.3. Senonian.

serpagliae Corradini, 1973, p.181-182, pl.29, fig.5,7a-b; pl.37, fig.4. Senonian.

PHTHANOPERIDINIUM Drugg and Loeblich, 1967, p.182.

alectrolophum Eaton, 1976, p.295,298, pl.17, fig.10-11; text-fig.23A. Late Eocene.

**amoenum* Drugg and Loeblich, 1967, p.182, pl.1, fig.1-5; text-fig.1. Oligocene.

campoense Caro, 1973, p.359-360, pl.4, fig.7. Early Eocene.

comatum (Morgenroth, 1966b, p.1, pl.1, fig.1-2) Eisenack and Kjellström, 1971a, p.907. Early Oligocene; formerly *Peridinium*. The transfer of this species from *Peridinium* to *Phtthanoperidinium* is not attributable to Eaton, 1976, p.294.

coreoideum (Benedek, 1972, p.20, pl.9, fig.4) Lentin and Williams, 1976, p.76. Middle Oligocene; formerly *Hystrichogonyaulax*.

PHTHANOPERIDINIUM (cont'd)

crenulatum (De Coninck, 1975) comb. nov.

1975 *Peridinium crenulatum* De Coninck, p.96, pl.17, fig.5-7, 12-15. Ypresian.

"*diamantum*" (Churchill and Sarjeant, 1963). NOW *Gonyaulacysta*.

echinatum Eaton, 1976, p.298-299, pl.17, fig.8-9,12; text-fig.23B. Early-Late Eocene.

?*eocenicum* (Cookson and Eisenack, 1965a, p.119-120, pl.11, fig.1-5) Lentin and Williams, 1973, p.113. Late Eocene; formerly *Peridinium*. The transfer of this species from *Peridinium* to ?*Phtthanoperidinium* is not attributable to Eaton, 1976, p.294.

?*illustrans* (O. Wetzel, 1933a, p.167, pl.2, fig.15) Lentin and Williams, 1973, p.113. Senonian; formerly *Peridinium*.

lambdoideum (Nagy, 1966, p.39, pl.1, fig.1-3; text-fig.1a-b) Eisenack and Kjellstrom, 1971a, p.909. Early Pliocene; formerly *Peridinium*.

"*pannonium*" (Lentin and Williams, 1973) Harker and Sarjeant, 1975, p.224. NOW ?*Tectatodinium nudum*; also formerly *Palaeoperidinium* and *Gonyaulacysta*. The transfer of this species to *Phtthanoperidinium* Drugg and Loeblich by Harker and Sarjeant, 1975, p.224 is herein rejected. See discussion under "*Palaeoperidinium pannionum*".

?*polytrix* (Benedek, 1972, p.20, pl.6, fig.1) Lentin and Williams, 1976, p.76. Middle Oligocene; formerly *Hystrichogonyaulax*.

resistente (Morgenroth, 1966a, p.5, pl.2, fig.1-2) Eisenack and Kjellström, 1971a, p.911. Early Eocene; formerly *Peridinium*. The transfer of this species from *Peridinium* to *Phtthanoperidinium* is not attributable to Eaton, 1976, p.294.

schizokeras (De Coninck, 1975) comb. nov.

1975 *Peridinium schizokeras* De Coninck, p.97, pl.17, fig.16-17. Ypresian.

stockmansii (De Coninck, 1975) comb. nov.

1975 *Peridinium stockmansi* De Coninck, p.97-98, pl.17, fig.18-37. Ypresian.

tritonum Eaton, 1976, p.299-300, pl.17, fig.2-3,6-7; text-fig.23C, 24. Early-Late Eocene.

PLANINOSPHAERIDIUM Eisenack, 1965, p.151.

**membranaceum* Eisenack, 1965, p.151, pl.14, fig.4; pl.15, fig.6; text-fig.1. Late Eocene-Early Oligocene.

PLATYCYSTIDIA Cookson and Eisenack, 1960a, p.12.

**diptera* Cookson and Eisenack, 1960a, p.14, pl.3, fig.22. ?Late Albian-Cenomanian.

"*PLURIARVALIUM*" Sarjeant, 1962b, p.260. Wiggins, 1975, p.102 considered this genus to be a jr syn. of *Pareodinia* Deflandre emend. Wiggins. He accordingly transferred the type of the genus, "*Pluriarvalium osmingtonense*" to *Pareodinia*.

"*POCOCKIA*" Lentin and Williams, 1973, p.114, nom. subst. pro *Evittia* Pocock, 1972, p.93, (*Non Evittia Brito*, 1967). Type of genus *P. cincta* (Cookson and Eisenack, 1958) Lentin and Williams, 1973, p.114. Lentin and Williams, 1976, p.162 considered the genus *Pocockia* to be a jr syn. of *Ovoidinium*. Accordingly they transferred the two species "*Pocockia cincta*" and "*Pocockia waltonii*" to *Ovoidinium*.

POLYGONIFERA Habib, 1972, p.376.

**evitti* Habib, 1972, p.376, pl.5, fig.1-2. Oxfordian-Kimmeridgian.

POLYKRIKOS Butschli, 1873, p.673. Modern genus defined from the motile stage. The single fossil cyst species included in this genus, *P. tentaculatum* O. Wetzel, 1933a, has been transferred to *Wetzelodinium* Deflandre.

POLYSPHAERIDIUM Davey and Williams, 1966b, p.91-92.

amalthei (W. Wetzel, 1966, p.317, pl.31, fig.2,2a-b) Riley and Sarjeant, 1972, p.2. Lias (Late Toarcian), formerly *Hystrichosphaeridium*.

?*asperum* (Maier, 1959, p.319, pl.33, fig.2) Davey and Williams, 1969, p.6. Middle Miocene; formerly *Hystrichosphaeridium*.

belgicum Sarjeant, 1969, p.15 = *Hystrichosphaeridium fluctuans* sensu Pastiels, 1948, p.40, pl.3, fig.16 non Eisenack, 1938, p.230-231, pl.16, fig.1. Early Eocene.

?*caminuspinum* (Wall, 1965a, p.165, pl.9, fig.3) Riley and Sarjeant, 1972, p.3. Lias (Early Sinemurian); formerly *Hystrichosphaeridium*.

?*deflandrei* (Valensi, 1947, p.817, text-fig.3) Davey and Williams, 1969, p.6. Middle Jurassic; formerly *Hystrichosphaeridium*.

elongatum Jain and Millepied, 1975, p.150-151, pl.5, fig.73-74. Maastrichtian.

?*fabium* (Tasch, 1964, p.195, pl.2, fig.5) Davey and Williams, 1969, p.6. Albian; formerly *Hystrichosphaeridium*.

?*follium* (Tasch, 1964, p.195, pl.1, fig.8) Davey and Williams, 1969, p.6. Albian; formerly *Hystrichosphaeridium*.

?*fucosum* (Valensi, 1955a, p.40, text-fig.2b) Davey and Williams, 1969, p.6. Late Cretaceous; formerly *Micrhystridium* and *Hystrichosphaeridium*.

giganteum Caro, 1973, p.360-361, pl.2, fig.12. Early Eocene.

granulosum Jain and Millepied, 1975, p.151-152, pl.5, fig.69-70. Campanian-Maastrichtian.

laminaspinosum Davey and Williams, 1966b, p.94-95, pl.8, fig.8. Cenomanian.

?*langii* (Wall, 1965a, p.163, pl.6, fig.9-11; pl.9, fig.9) Riley and Sarjeant, 1972, p.3 emend. Morbey, 1975, p.41-42. Hettangian-Sinemurian; formerly *Hystrichosphaeridium*. O.C.

"*major*" (Lejeune-Carpentier, 1940). NOW *Cordosphaeridium*.

?*marsupium* (Tasch, 1964, p.193, pl.3, fig.16) Davey and Williams, 1969, p.6. Albian; formerly *Hystrichosphaeridium*.

multispinosum Davey, 1974, p.60, pl.7, fig.4. Early Barremian.

pastielsii Davey and Williams, 1966b, p.92-93, pl.4, fig.10. Early Eocene. O.C.

?*paulinae* (Valensi, 1953, p.48, pl.12, fig.6) Davey and Williams, 1969, p.6. Middle Jurassic; formerly *Hystrichosphaeridium*.

?*perovatum* (Tasch, 1964, p.194, pl.3, fig.13) Davey and Williams, 1969, p.6. Albian; formerly *Hystrichosphaeridium*.

pumilum Davey and Williams, 1966b, p.93-94, pl.7, fig.3-4. Cenomanian.

punctatum Jain and Millepied, 1975, p.151, pl.5, fig.71-72. Maastrichtian.

?*rhabdophorum* (Valensi, 1955b, p.593, pl.3, fig.7) Davey and Williams, 1969, p.7. Late Cretaceous; formerly *Hystrichosphaeridium*.

?*simplex* (White, 1842, p.38, pl.4, fig.3, fig.10) Davey and Williams, 1969, p.7. Late Cretaceous; formerly *Xanthidium* and *Hystrichosphaeridium*.

**subtile* Davey and Williams, 1966b, p.92, pl.11, fig.1. Early Eocene.

?*tribrachiosum* (Tasch, 1964, p.195, pl.1, fig.3) Davey and Williams, 1969, p.7. Albian; formerly *Hystrichosphaeridium*.

warrenii Habib, 1976, p.383, pl.2, fig.4,6a-b. Berriasian-Aptian?

POLYSTEPHANEOPHORUS Sarjeant, 1961b, p.1096, Sarjeant created this genus in 1961; none of the species were correctly transferred until Downie and Sarjeant 1964 (1965) complied with all the rules for combinations in listing species within *Polystephaneophorus*. Sarjeant, 1976c, p.18 is incorrect in his interpretation of I.C.B.N. Art. 33.

**calathus* (Sarjeant, 1961a, p.104, pl.14, fig.7; text-fig.7) Downie and Sarjeant, 1964 (1965), p.141. Early Oxfordian; formerly *Polystephanosphaera*. Sarjeant, 1976c, p.18 is incorrect in his interpretation of I.C.B.N. Art. 33.

euryanthus Cookson and Eisenack, 1974, p.70-71, pl.24, fig.14. ?Neocomian-Albian.

paracalathus (Sarjeant, 1960, p.143, pl.6, fig.4; text-fig.3b) Downie and Sarjeant 1964 (1965), p.141. Middle Callovian; formerly *Polystephanosphaera*. Sarjeant, 1976c, p.18 is incorrect in his interpretation of I.C.B.N. Art. 33.

sarjeantii Gitmez, 1970, p.291-292, pl.11, fig.4; text-fig.25. Early Kimmeridgian.

?*sarrisi* Archangelsky, 1969a, p.411, pl.2, fig.5-7. Eocene.

speciosus (Alberti, 1961, p.37, pl.9, fig.13) Riley and Sarjeant, 1972, p.3. Late Dogger (Bathonian-Callovian); formerly *Cannosphaeropsis*.

"*urniformis*" (Cookson, 1953). NOW *Emmetrocysta*.

"*POLYSTEPHANOSPHAERA*" Sarjeant, 1960, p.140. This genus was rejected by Sarjeant, 1961b, p.1095-1096 and the type species *Polystephanosphaera valensii* was invalidly transferred to *Systematophora*. The transfer was correctly carried out by Downie and Sarjeant, 1964 (1965), p.146. Other species formerly included in "*Polystephanosphaera*" have been assigned to *Polystephaneophorus* Sarjeant.

PRIONODINIUM Leffingwell and Morgan, 1977, p.293-294.

**alaskense* Leffingwell and Morgan, 1977, p.194-195, pl.1, fig.1-3, pl.2, fig.1-5, pl.3, fig.4; text-fig.4. Late Neocomian.

alveolatum Leffingwell and Morgan, 1977, p.295-297, pl.1, fig.4-6, pl.2, fig.6-8; text-fig.5. Late Neocomian.

PRISMATOCYSTIS Habib, 1969, p.98.

cylindrica Habib, 1970, p.374, pl.10, fig.2. Albian-Cenomanian.

**ewingii* Habib, 1969, p.98, pl.3, fig.11. Albian-Early Cenomanian.

PROLIXOSPHAERIDIUM Davey et al., 1966, p.171.

basifurcatum Dodekova, 1969, p.21-22, pl.5, fig.1-6; text-fig.G.
Tithonian.

conulum Davey, 1969a, p.160-161, pl.8, fig.5-6. Cenomanian.

"*deirensense*" Davey et al., 1966, p.171-172, pl.3, fig.2; text-fig.45.
Middle Barremian. This species, the type of the genus, is
considered to be a jr syn. of *Prolixosphaeridium parvispinum*
(Deflandre, 1937b) Davey et al., 1969, by Davey and Verdier,
1974, p.636-637. *P. parvispinum* therefore becomes the correct
name of the type of the genus.

granulosum (Deflandre, 1937b, p.77, pl.16, fig.4 as *Hystrichos-
phaeridium xanthiopyxides* var. *granulosum*) Davey et al.,
1966, p.172. Senonian; Elevated to specific rank as *Balt-
isphaeridium granulosum* by Sarjeant, 1962b, p.264; formerly
Baltisphaeridium and *Hystrichosphaeridium*.

mixtispinosum (Klement, 1960, p.58, pl.6, fig.17-19) Davey et al.,
1969, p.17. Early Kimmeridgian; formerly *Baltisphaeridium*.

**parvispinum* (Deflandre, 1937b, p.77, pl.16, fig.5, as *Hystrichos-
phaeridium xanthiopyxides* var. *parvispinum*) Davey et al., 1969,
p.17. Late Aptian. Elevated to specific rank as *Hystrichos-
phaeridium parvispinum* by Cookson and Eisenack, 1958, p.45;
formerly *Baltisphaeridium* and *Hystrichosphaeridium*. The type of
the genus *Prolixosphaeridium*, *P. deirensense*, is considered to be
a jr syn. of *P. parvispinum* by Davey and Verdier, 1974, p.636-637;
the latter species therefore becomes the type of the genus.

?*torynum* (Cookson and Eisenack, 1960b, p.252, pl.38, fig.6,15)
Eisenack and Kjellström, 1971a, p.951. ?Tithonian-Neocomian;
formerly *Hystrichosphaeridium*.

?*xanthiopyxides* (O. Wetzel, 1933b, p.44, pl.4, fig.25) Davey et al.,
1969, p.17. ?Senonian; formerly *Hystrichosphaera*, *Hystricho-
sphaeridium* and *Baltisphaeridium*.

PROTOELLIPSODINIUM Davey and Verdier, 1971, p.28.

clavulum Davey and Verdier, 1974, p.637-638, pl.93, fig.7.
Aptian.

**spinocristatum* Davey and Verdier, 1971, p.28-29, pl.5, fig.2,5,11.
Albian.

spinosum Davey and Verdier, 1971, p.29-30, pl.5, fig.10. Albian.

PSALIGONYAULAX Sarjeant, 1966b, p.136.

"*apatela*" (Cookson and Eisenack, 1960b). NOW *Tubotuberella*.

PSALIGONYAULAX (cont'd)

cyprea Ioannides, et al., 1976, p.460, pl.4, fig.5-8; text-
fig.12. Kimmeridgian.

**deflandrei* Sarjeant, 1966b, p.137-138, pl.14, fig.7-8; text-fig.35.
Cenomanian.

dialis Brideaux and Fisher, 1976, p.18-20, pl.1, fig.4-6,8-12;
pl.2, fig.1-2. Late Oxfordian-Late Kimmeridgian.

galeata (Cookson and Eisenack, 1960a, p.3-4, pl.1, fig.16-18)
Davey and Verdier, 1973, p.195. Albian-Cenomanian; formerly
Scriniodinium.

simplicia (Cookson and Eisenack, 1961b p.42, pl.2, fig.3-4;
text-fig.1e-f) Sarjeant, 1969, p.15. Eocene; formerly
Rottnestia.

PSEUDOCERATIUM Gocht, 1957, p.166.

"*ceratiooides*" (Deflandre, 1937b). NOW *Xenascus*.

dettmanniae Cookson and Hughes, 1964, p.51-52, pl.7, fig.1-4.
Late Albian-Early Cenomanian.

expolitum Brideaux, 1971, p.102-103, pl.30, fig.105-106,108.
Middle-Late Albian.

"*gochtii*" (Neale and Sarjeant, 1962). NOW *Eopseudoceratum*.

"*gochtii*" Pocock, 1962, p.79, pl.14, fig.213-214. Singh, 1971,
p.320 considered this species to be a jr syn. of *Broomea* (now
Batioladinium) *jaegeri* Alberti.

"*ludbrookii*" (Cookson and Eisenack, 1958). NOW *Endoceratum*.

?*nudum* Gocht, 1957, p.168, pl.18, fig.3-4,6. Late Hauterivian.

parvum Michael, 1964, p.28, pl.2, fig.1. Early Barremian.

**pelliferum* Gocht, 1957, p.166-168, pl.18, fig.1-2; text-fig.1-3.
Valanginian-Hauterivian.

subsp. *solocispinum* (Davey, 1974, p.68, pl.9, fig.6) Lentini and
Williams, 1975, p.2154. Middle-Late Barremian; formerly
Pseudoceratum pelliferum var. *solocispinum*.

"*regium*" Singh, 1971, p.375-376, pl.66, fig.2-4; pl.67, fig.1-2.
Harker and Sarjeant, 1975, p.226 considered this species to be
a jr syn. of *Pseudoceratum expolitum* Brideaux.

robustum Michael, 1964, p.29, pl.2, fig.2. Early Barremian.

PSEUDOCERATIUM (cont'd)

"*tetracanthum*" (Gocht, 1957). NOW *Muderongia*.

turneri Cookson and Eisenack, 1958, p.55, pl.5, fig.2-6. Aptian-Albian.

PSEUDODEFLANDREA Alberti, 1959a, p.91-92. Lentin and Williams 1976, p.125 stated that this monospecific genus is based on a single complete specimen of *Pseudodeflandrea gigantea*. Alberti also recorded the hypocyst of another specimen. Lentin and Williams, 1976, postulated that *Pseudodeflandrea* may represent an aberrant form, or be a species of *Odontochitinopsis* Eisenack or *Xenascus* Cookson and Eisenack.

**gigantea* Alberti, 1959a, p.92; text-fig.1. Middle Oligocene.

PTEROCYSTIDIOPSIS Deflandre, 1937b, p.90.

?*angulosa* Deflandre, 1941, p.23-24, pl.6, fig.6-10. Late Jurassic.

ornata Deflandre, 1937b, p.91-92, pl.18, fig.1-3. Late Cretaceous.

**stephaniana* Deflandre, 1937b, p.91, pl.17, fig.7-9. Cenomanian.

"*velata*" (Deflandre and Cookson, 1955). NOW *Thalassiphora*.

PTERODINIUM Eisenack, 1958, p.395.

**aliferum* Eisenack, 1958, p.395-396, pl.24, fig.6; text-fig.6.
Late Aptian.

circumsutum Morgenroth, 1966b, p.5, pl.1, fig.3-4. Early Oligocene.

cornutum Cookson and Eisenack, 1962b, p.490, pl.3, fig.1-6.
Aptian-?Albian.

magnoserratum Cookson and Eisenack, 1962b, p.490, pl.3, fig.7-8.
Aptian-?Albian.

perforatum (Clarke and Verdier, 1967, p.36, pl.6, fig.1-3; text-fig.15) Davey and Verdier, 1971, p.30-31. Early Cenomanian;
formerly *Dinopterygium*.

reticulatum Singh, 1971, p.358-359, pl.60, fig.6-7. Middle Albian.

verrucosum Brideaux and McIntyre, 1975, p.30, pl.9, fig.1-8.
Middle Albian.

"*PYRAMIDIUM*" Clarke and Verdier, 1967, p.39. Clarke et al., 1968,
p.182 considered this genus to be a jr syn. of *Xiphophoridium* Sarjeant.

PYXIDIELLA Cookson and Eisenack, 1958, p.51.

**pandora* Cookson and Eisenack, 1958, p.52, pl.6, fig.10-11.
Late Jurassic.

scrobiculata (Deflandre and Cookson, 1955, p.291, pl.3, fig.3;
text-fig.57) Cookson and Eisenack, 1958, p.52. Santonian-
Eocene; formerly *Leiosphaera* and *Leiosphaeridia*.

PYXIDINOPSIS Habib, 1976, p.382.

**challengerensis* Habib, 1976, p.382, pl.1, fig.1; pl.3, fig.1-2.
Berriasian-Hauterivian.

RAPHIDODINIUM Deflandre, 1936b, p.184-185.

**fucatum* Deflandre, 1936b, p.185-186, pl.10, fig.1-7. ?Senonian.

RENIDINIUM Morgenroth, 1968, p.551-552.

**membraniferum* Morgenroth, 1968, p.552-553, pl.46, fig.9; pl.47,
fig.1-3. Danian.

RHAETOGONYAULAX Sarjeant, 1966b, p.152-153 emend. Harland et al.,
1975, p.860.

"*chaloneri*" (Sarjeant, 1963b, p.354; text-fig.2(right);3) Sarjeant,
1969, p.15; formerly *Gonyaulax*. Harland et al., 1975, p.863
considered this species to be a var. of *Rhaetogonyaulax rhaetica*.

**rhaetica* (Sarjeant, 1963b, p.353; text-fig.1-2(left)) Loeblich and
Loeblich, 1968, p.212 emend. Harland et al., 1975, p.862. Late
Triassic; formerly *Gonyaulax*.

subsp. *chaloneri* (Sarjeant, 1963b) stat. nov.
1963b *Gonyaulax chaloneri* Sarjeant, p.354; text-fig.2(right),3.
Late Triassic. This taxon was transferred to *Rhaetogonyaulax*
by Sarjeant, 1969, p.15. Subsequently Harland et al., 1975,
p.863 redesignated it as a variety of *Rhaetogonyaulax rhaetica*.

RHOMBODELLA Cookson and Eisenack, 1962b, p.496.

kendelbachia Morbey, 1975, p.38, pl.14, fig.1-4; pl.17, fig.1-3.
Rhaetian.

**natans* Cookson and Eisenack, 1962b, p.496, pl.7, fig.12-13.
Aptian-?Albian.

RHOMBODINIUM Gocht, 1955, p.85. This genus was lowered to the subgeneric rank within the genus *WetzelIELLA* by Alberti, 1961, p.9. Vozzhennikova, 1967, p.167-168 raised it back to the genus level. Harker and Sarjeant, 1975, p.225 again designated *Rhombodinium* as a subgenus of *WetzelIELLA* Eisenack reasoning that there exists every intermediate morphological variant between *Rhombodinium* and *WetzelIELLA*. This however is an inconclusive argument, firstly because the same can be said of many dinocyst genera and secondly because separation of *Rhombodinium* and *WetzelIELLA* can be readily accomplished in most instances. *Rhombodinium* is herein retained at the generic level.

condylos (Williams and Downie, 1966b, p.193-194, pl.20, fig.1-2) Lentin and Williams, 1976, p.128. Early Eocene; formerly *WetzelIELLA*.

"*coronatum*" (Vozzhennikova, 1967). NOW *WetzelIELLA*.

**draco* Gocht, 1955, p.86, text-fig.1. Middle Oligocene.

subsp. *freienwaldense* (Gocht, 1955, p.87; text-fig.2) Lentin and Williams, 1973, p.120. Middle Oligocene; formerly *Rhombodinium draco forma freienwaldensis*.

glabrum (Cookson, 1956, p.186, pl.2, fig.1-5) Vozzhennikova, 1967, p.169. Eocene; formerly *WetzelIELLA*.

subsp. *crassithecum* (Vozzhennikova, 1967, p.170, pl.91, fig.1-2, 4-6) Lentin and Williams, 1973, p.120. Late Eocene-Early Oligocene; formerly *Rhombodinium glabrum forma crassitheca*.

subsp. *granulatum* (Wilson, 1967c, p.493, fig.29-30) Lentin and Williams, 1973, p.120. Late Eocene; formerly *WetzelIELLA* (*Rhombodinium*) *glabra* var. *granulata*.

intermedium (Cookson and Eisenack, 1961b, p.40, pl.1, fig.5-6) Lentin and Williams, 1973, p.120. Eocene; formerly *WetzelIELLA*.

longimanum Vozzhennikova, 1967, p.171, pl.92, fig.1-3; pl.93, fig.1-6; pl.94, fig.1-3. Late Eocene.

?*minusculum* (Alberti, 1961, p.10-11, pl.1, fig.10; pl.12, fig.4) Lentin and Williams, 1973, p.120. Early Eocene; formerly *WetzelIELLA* (*Rhombodinium*) *minuscula*. McLean, 1973b, p.732 postulated that this species may belong to the genus *Inversidinium* McLean.

oravense Grigorovich, 1971, p.94, pl.2, fig.6. Eocene.

"*pentagonum*" (Vozzhennikova, 1967). NOW *WetzelIELLA*.

perforatum (du Chene and Chateauneuf, 1975) comb. nov.

1975 *WetzelIELLA* (*Rhombodinium*) *perforata* du Chene and Chateauneuf, p.30-31, pl.1, fig.8-14; pl.3, fig.7-10. Middle Eocene (Lutetian).

RHOMBODINITIUM (cont'd)

rhomboideum (Alberti, 1961, p.10, pl.1, fig.1-5; pl.12, fig.9)
Lentin and Williams, 1973, p.121. Late Eocene; formerly
WetzelIELLA (*Rhombodinium*).

rotundatum Baltes, 1969, p.35, pl.5, fig.10 ex Lentin and Williams,
1973, p.121. Oligocene; formerly *WetzelIELLA rotundata*
(provisional designation).

waipawaense (Wilson, 1967c, p.493-494, fig.18,20) Lentin and
Williams, 1973, p.121. Early Eocene; formerly *WetzelIELLA*
(*Rhombodinium*).

RHYNCHODINIOPSIS Deflandre, 1935, p.231.

**aptiana* Deflandre, 1935, p.231, pl.5, fig.10; pl.8, fig.7-10.
Senonian.

ROMANODINIUM Baltes, 1971, p.8-9.

**areolatum* Baltes, 1971, p.9, pl.3, fig.1-2. Early Pliocene.

ROTTNESTIA Cookson and Eisenack, 1961b, p.40,42.

**borussica* (Eisenack, 1954, p.62, pl.9, fig.5-7) Cookson and
Eisenack, 1961b, p.42. Early Oligocene; formerly *Hystrichosphaera*
and *Hystrichosphaeropsis*. The transfer to *Triblastula* by
Morgenroth, 1966a, p.15-16 was rejected by Eisenack, 1969, p.105-
108.

"*simplicia*" (Cookson and Eisenack, 1961b). NOW *Psaligonyaulax*.

SAEPTODINIUM Harris, 1974, p.162.

**gravattense* Harris, 1974, p.162-163, pl.1, fig.1-4. Paleocene.

"*hansonianum*" (Traverse, 1955, p.77-79, pl.13, fig.147) Harris,
1974, p.162. According to Article 33, paragraph 4, of the
I.C.B.N., transfer of *Palaeoperidinium hansonianum* (Traverse)
Lentin and Williams, 1973, to *Saeptodinium* by Harris, 1974,
p.162, is invalid. Lentin and Williams, 1976, p.110 retained
this species in *Palaeoperidinium*.

tasmaniense Harris, 1974, p.163, pl.1, fig.12; pl.2, fig.1-6.
Late Oligocene-Early Miocene.

SAMLANDIA Eisenack, 1954, p.76.

angustivela (Deflandre and Cookson, 1955, p.290, pl.7, fig.4-5)
Eisenack, 1963a, p.102. Eocene; formerly *Membranilarvax*.

SAMLANDIA (cont'd)

californica (Drugg, 1967) comb. nov.

1967 *Palmnickia californica* Drugg, p.30, pl.5, fig.14-15; pl.9, fig.8. Danian.

**chlamydophora* Eisenack, 1954, p.76, pl.11, fig.12-15. Early Oligocene.

reticulifera Cookson and Eisenack, 1965a, p.126-127, pl.15, fig.10-15. Late Eocene.

SARJEANTIA Horowitz, 1975, p.25.

**triassica* Horowitz, 1975, p.25, pl.1, fig.7. Late Triassic.

SCHEMATOPHORA Deflandre and Cookson, 1955, p.262.

**speciosa* Deflandre and Cookson, 1955, p.262-263, pl.6, fig.11-13; pl.7, fig.11 emend. Stover, 1975, p.39. Eocene-Miocene.

SCHIZOCYSTIA Cookson and Eisenack, 1962a, p.270.

laevigata Cookson and Eisenack, 1962a, p.270-271, pl.37, fig.13-14. ?Late Albian-Cenomanian.

**rugosa* Cookson and Eisenack, 1962a, p.270, pl.37, fig.11-12. ?Late Albian-Cenomanian.

SCRINIOCASSIS Gocht, 1964, p.121.

dictyotus (Cookson and Eisenack, 1960b, p.248-249, pl.37, fig.8-9) Beju, 1971, p.299. Oxfordian-Tithonian; formerly *Scriniodinium*. O.C.

subsp. *dictyotus* (Cookson and Eisenack, 1960b, p.248-249, pl.37, fig.8-9) Beju, 1971, p.299. Oxfordian-Tithonian; formerly *Scriniodinium dictyotum* subsp. *dictyotum*. O.C.

subsp. *osmingtonensis* (Gitmez, 1970, p.310-311, pl.1, fig.3; pl.8, fig.12) Lentini and Williams, 1975, p.2154. Early Kimmeridgian; formerly *Scriniodinium dictyotum* subsp. *osmingtonensis*. O.C.

subsp. *papillatus* (Gitmez, 1970, p.311, pl.9, fig.11) Lentini and Williams, 1975, p.2154. Early Kimmeridgian; formerly *Scriniodinium dictyotum* subsp. *papillatum*. O.C.

subsp. *pyrus* (Gitmez, 1970, p.311,313, pl.10, fig.1; pl.13, fig.1-2; text-fig.33a-b) Lentini and Williams, 1975, p.2154. Early Kimmeridgian; formerly *Scriniodinium dictyotum* subsp. *pyrum*. O.C.

SCRINIOCASSIS (cont'd)

**weberi* Gocht, 1964, p.121, pl.17, fig.1-4; text-fig.39. Late Lias (Late Toarcian)-Early Bajocian.

SCRINIODINIUM Klement, 1957, p.409-410.

"*apatelum*" (Cookson and Eisenack, 1960b). NOW *Tubotuberella*.

attadalense (Cookson and Eisenack, 1958, p.25, pl.1, fig.7) Eisenack, 1967, p.193 (748a). Aptian; formerly *Gymnodinium*.

australiense (Deflandre and Cookson, 1955, p.248, pl.5, fig.1) Eisenack, 1967, p.195 (748b). Middle Miocene; formerly *Gymnodinium*. Invalidly transferred to *Emslandia* by Nagy, 1965, p.202.

"*bicuneatum*" (Deflandre, 1938b). NOW ?*Glossodinium*.

"*campanulum*" (Gocht, 1959). NOW *Endoscrinium*.

ceratophorum Cookson and Eisenack, 1960b, p.249, pl.37, fig.7. Oxfordian-Early Kimmeridgian.

"*cooksoniae*" Anderson, 1960, p.30, pl.9, fig.1-3. Jr syn. of *Deflandrea pirnaensis*, see Sarjeant and Anderson, 1969, p.232-233.

**crystallinum* (Deflandre, 1938b, p.165, pl.5, fig.1-3) Klement, 1960, p.18. Oxfordian; formerly *Gymnodinium*.

"*dictyotum*" (Cookson and Eisenack, 1960b). NOW *Scriniocassis*.

"*eurypyrum*" (Manum and Cookson, 1964). NOW *Palaeoperidinium*.

"*galeatum*" (Cookson and Eisenack, 1960a). NOW *Psaligonyaulax*.

"*galeritum*" (Deflandre, 1938b). NOW *Endoscrinium*.

gochtii Pocock, 1972, p.90, pl.22, fig.12; text-fig.6. Late Bajocian.

heusseri Habib, 1970, p.366-368, pl.8, fig.4. Albian-Cenomanian.

?*iridis* Kjellström, 1973, p.40,42, fig.34. Middle-Late Maastrichtian. O.C.

klementii Pocock, 1972, p.91, pl.23, fig.1-2; text-fig.7. Callovian.

"*luridum*" (Deflandre, 1938b). NOW *Endoscrinium*.

?*nilsii* Kjellström, 1973, p.42, fig.35. Middle-Late Maastrichtian.

novissimum Morgenroth, 1968, p.540-541, pl.43, fig.3-4. Danian.

SCRINIODINIUM (cont'd)

obscurum Manum and Cookson, 1964, p.21-22, pl.4, fig.5-6. Late Cretaceous.

"*oxfordianum*" (Sarjeant, 1962a). NOW *Endoscrinium*.

parvimarginatum (Cookson and Eisenack, 1958, p.24, pl.1, fig.6) Eisenack, 1967, p.201 (770a). Late Jurassic; formerly *Gymnodinium*.

playfordii Cookson and Eisenack, 1960b, p.248, pl.37, fig.6. Oxfordian-Tithonian. O.C.

pontianum Baltes, 1969, p.35-36, pl.3, fig.15 ex Lentin and Williams, 1973, p.123. Early Pliocene; formerly *Scriniodinium pontianum* (provisional designation).

pseudocrystallinum Beju, 1971, p.295-297, pl.7, fig.1-3; text-fig.7. Oxfordian-Kimmeridgian.

reticulatum Pocock, 1972, p.91-92, pl.23, fig.3. Callovian.

rostratum Brideaux and McIntyre, 1975, p.33-34, pl.10, fig.6-14; pl.11, fig.1-3. Middle Albian.

scutellum Eisenack, 1958, p.385, pl.24, fig.3. Late Aptian.

"*subvallare*" (Sarjeant, 1962b). NOW *Endoscrinium*.

?*torulosum* (Deflandre, 1943, p.504, pl.17, fig.7-8; text-fig.17-25) Lentin and Williams, 1973, p.124. Senonian; formerly *Gymnodinium*. Lentin and Williams, 1973, questionably assigned this species to *Scriniodinium*, since according to Evitt (personal communication), it does not have a precingular archeopyle.

"*trabeculosum*" (Gocht, 1959). NOW *Gardodinium*.

?*velatum* (Conrad, 1941, p.8-9, pl.1, fig.A) Lentin and Williams, 1976, p.111. Maastrichtian; formerly *Palaeoperidinium*.

verrucosum Heisecke, 1970, p.232-234, pl.9, fig.2-3; pl.10, fig.3. Danian.

SELENOPEMPHIX Benedek, 1972, p.47.

**nephroides* Benedek, 1972, p.47-48, pl.11, fig.13; pl.16, fig.1-4. Middle-Late Oligocene.

selenoides Benedek, 1972, p.48, pl.11, fig.15; pl.16, fig.5-8; text-fig.22. Middle-Late Oligocene.

SENEGALINIUM Jain and Millepied, 1973, p.22. Lentin and Williams, 1976, p.163 incorrectly concluded that *Senegalinium* is synonymous with *Alterbia*. The type of the genus *Senegalinium*, *S. bicavatum*, appears to have a standard hexa 2a archeopyle and equal antapical horns. Herngreen, 1975, p.60-61 considered *Senegalinium* to be a jr syn. of *Deflandrea* Eisenack emend. Lentin and Williams. This conclusion is herein rejected since *Deflandrea* has a broad hexa 2a archeopyle. The views of Harland, 1977, p.188, regarding the morphology of this genus are herein rejected.

**bicavatum* Jain and Millepied, 1973, p.23, pl.1, fig.1-4; text-fig.1B. Campanian-Maastrichtian. This species was erroneously transferred to *Alterbia* by Lentin and Williams, 1976, p.49. Herngreen, 1975, p.61 transferred *Senegalinium bicavatum* to *Deflandrea* Eisenack emend. Lentin and Williams. Since *Deflandrea* is characterized by a broad hexa 2a archeopyle, this transfer is herein rejected.

"*dubium*" (Jain and Millepied, 1973). NOW *Deflandrea*.

gaditanum (Riegel, 1974) comb. nov.

1974 *Deflandrea gaditana* Riegel, p.356-357, pl.2, fig.8-9; pl.3, fig.1-2. ?Senonian.

"*granulostriatum*" (Jain and Millepied, 1973). NOW *Ceratiopsis*.

"*kozlowskii*" (Gorka, 1963). NOW *Lejeunia*.

"*magnificum*" (Stanley, 1965). NOW *Lejeunia*.

"*pentagonale*" (Corradini, 1973). NOW *Lejeunia*.

"*psilatum*" Jain and Millepied, 1973, p.23-24, pl.1, fig.5-6; text-fig.1A. Herngreen, 1975, p.61 considered this species to be a jr syn. of *Deflandrea laevigata* Malloy, which is now included in *AndalusIELLA* Riegel.

"*tricuspis*" (O. Wetzel, 1933a). NOW *Lejeunia*.

"*trisinum*" Jain and Millepied, 1973, p.25, pl.2, fig.16. Lentin and Williams, 1976, p.164 considered this species to be a jr syn. of "*Alterbia polymorpha*" (Malloy) Lentin and Williams. This last named species is now included in *AndalusIELLA*.

SENONIASPHAERA Clarke and Verdier, 1967, p.61.

jurassica (Gitmez and Sarjeant, 1972, p.240-241, pl.14, fig.5,8) Lentin and Williams, 1976, p.85. Kimmeridgian; formerly *Hexagonifera*.

Lordii (Cookson and Eisenack, 1968, p.112, fig.1,I-K) Lentin and Williams, 1976, p.102. Santonian-Early Campanian; formerly *Ascodinium*. O.C.

SENONIASPHAERA (cont'd)

microreticulata Brideaux and McIntyre, 1975, p.35, pl.11, fig.7-12; pl.12, fig.1-8. Middle Albian.

**protrusa* Clarke and Verdier, 1967, p.61-62, pl.14, fig.7-9; text-fig.24. Santonian.

rotundata Clarke and Verdier, 1967, p.62-63, pl.14, fig.1-3; text-fig.25. Santonian-Campanian.

SHUBLIKODINIUM Wiggins, 1973, p.2-4.

acanthocomum Wiggins, 1973, p.5, pl.4, fig.5-6. Late Triassic.

**arcticum* Wiggins, 1973, p.4, pl.1, fig.1-4; pl.2, fig.1-9; text-fig.2a-d. Late Triassic.

subsp. *maculatum* (Wiggins, 1973, p.4-5, pl.2, fig.10-12) Lentin and Williams, 1973, p.125. Late Triassic; formerly *Shublikodinium arcticum* var. *maculatum*.

armatum Wiggins, 1973, p.6, pl.5, fig.1. Late Triassic.

dilatatum Wiggins, 1973, p.6, pl.5, fig.3-4. Late Triassic.

echinoverrucatum Wiggins, 1973, p.6-7, pl.5, fig.5-6. Late Triassic.

granulatum Wiggins, 1973, p.6, pl.5, fig.2. Late Triassic.

scaberrimum Wiggins, 1973, p.7, pl.5, fig.6. Late Triassic.

setigerum Wiggins, 1973, p.5-6, pl.4, fig.10-11. Late Triassic.

spinulosum Wiggins, 1973, p.5, pl.4, fig.7-9. Late Triassic.

verrucosum Wiggins, 1973, p.5, pl.3, fig.1-11; pl.4, fig.1-3. Late Triassic.

subsp. *exsculptum* (Wiggins, 1973, p.5, pl.4, fig.4) Lentin and Williams, 1973, p.125. Late Triassic; formerly *Shublikodinium verrucosum* var. *exsculptum*.

SILICISPHAERA Davey and Verdier, 1976, p.320-321.

buspina Davey and Verdier, 1976, p.321-322, pl.2, fig.1-6; text-fig.3. Senonian.

**ferox* (Deflandre, 1937b, p.72, pl.11, fig.3-4) Davey and Verdier, 1976, p.322. Senonian; formerly *Hystrichosphaeridium*, *Baltisphaeridium* and *Hystrichokolpoma*.

SILICISPHAERA (cont'd)

?*floscula* (Deflandre, 1937b, p.75, pl.15, fig.5-6) Davey and Verdier, 1976, p.330. Senonian; formerly *Hystrichosphaeridium* and ?*Litosphaeridium*.

tenera Davey and Verdier, 1976, p.326-327, pl.3, fig.8-12; text-fig.6. Senonian.

?*torulosa* Davey and Verdier, 1976, p.328, pl.4, fig.10-12. Turonian.

tridactylites (Valensi, 1955a, p.37, fig.1D) Davey and Verdier, 1976, p.330. Cretaceous; formerly *Hystrichosphaeridium*, *Baltisphaeridium* and *Achomosphaera*.

SIRMIODINTIUM Alberti, 1961, p.22 emend. Warren, 1973, p.104.

**grossii* Alberti, 1961, p.22, pl.7, fig.5-7; pl.12, fig.5, emend. Warren, 1973, p.104-105. Late Hauterivian-Late Barremian. O.C.

SMOLENSKIELLA Vozzhennikova, 1967, p.181-182.

**crassitheca* Vozzhennikova, 1967, p.182-183, pl.105, fig.1-4,6; pl.106, fig.1-4. Late Cretaceous.

"*SOANIHELLA*" Vozzhennikova, 1967, p.108. Lentin and Williams, 1976, p.165 designated the type of the genus and single species, *Soaniella granulata*, as a *nomen ambiguum*. They rejected the species in accordance with Article 69 of the I.C.B.N., thus making *Soaniella* a superfluous genus.

SPEETONIA Duxbury, 1977, p.48-49.

**delicatula* Duxbury, 1977, p.49, pl.12, fig.1-2,4-5; text-fig.18. Valanginian.

SPINIDINIUM Cookson and Eisenack, 1962b, p.489 emend. Lentin and Williams, 1976, p.62-63.

"*aperturum*" (Wilson, 1967a). NOW *Vozzhennikovia*.

boydii Morgan, 1975, p.159-160, pl.1, fig.3a-d. Late Aptian-Albian.

clavum Harland, 1973, p.674-675, pl.84, fig.5-6,10; text-fig.9. Late Campanian.

densispinatum Stanley, 1965, p.226-227, pl.21, fig.1-5. Paleocene.

echinoideum (Cookson and Eisenack, 1960a, p.2, pl.1, fig.5-6) Lentin and Williams, 1976, p.64. Santonian-Campanian; formerly *Deflandrea*.

SPINIDINIUM (cont'd)

echinoideum (cont'd)

subsp. *rhombicum* (Cookson and Eisenack, 1974, p.49-50, pl.20, fig.5-9) Lentin and Williams, 1976, p.64. Albian-Cenomanian; formerly *Deflandrea rhombica*. Lentin and Williams, 1976, p.64 lowered this taxon to the subspecies level because it is distinguished from *Spinidinium echinoideum* only by having a reduced number of spines.

essoi Cookson and Eisenack, 1967a, p.135, pl.19, fig.1-8. Paleocene.

gallium (Davey and Verdier, 1973, p.196-197, pl.3, fig.1-4) Lentin and Williams, 1976, p.64. Late Albian; formerly *Deflandrea*.

lanternum Cookson and Eisenack, 1970a, p.144-145, pl.12, fig.1-3. Senonian.

macmурdoense (Wilson, 1967a, p.60-62, fig.11-16,22; text-fig.2a) Lentin and Williams, 1976, p.64. Early Tertiary; formerly *Deflandrea*.

"*microceratum*" Stanley, 1965, p.227-228, pl.22, fig.5-6. Stone, 1973, p.53-54 considered this species to be a jr syn. of *Spinidinium densispinatum* Stanley.

montanaeum (Harland, 1977) comb. nov.
1977 *Deflandrea montanaensis* Harland, p.184-185, pl.25, fig.4, 6-7,10-12. Late Campanian-Maastrichtian.

?*ovale* (Vozzhennikova, 1967) comb. nov.

1967 *Canninginopsis ovalis* Vozzhennikova, p.99, pl.40, fig.1a-b,2a-b. Paleocene-Eocene. This species clearly possesses peridinioid paratabulation and a hexa 2a paraplate (Vozzhennikova, 1967, pl.40, fig.2b). Although the nature of the archeopyle is unknown, the species is questionably placed in *Spinidinium* because of the peridinioid paratabulation and denticulate parasutures.

pulchrum (Benson, 1976) comb. nov.

1976 *Deflandrea pulchra* Benson, p.194, pl.9, fig.4-9. Early Paleocene.

rallum Heisecke, 1970, p.226-228, pl.1, fig.1-2; pl.2, fig.1. Danian.

"*rotundum*" (Wilson, 1967a). NOW *Vozzhennikovia*.

sagittulum (Drugg, 1970b, p.809-810, fig.1a-c) Lentin and Williams, 1976, p.64. Early Eocene; formerly *Deflandrea*.

**styloferum* Cookson and Eisenack, 1962b, p.489, pl.1, fig.1-5. Aptian-?Albian.

SPINIDINIUM (cont'd)

sverdrupianum (Manum, 1963, p.59-60, pl.2, fig.6-15; text-fig.3)
Lentin and Williams, 1973, p.64. Cenomanian; formerly
Deflandrea.

vestitum Brideaux, 1971, p.99-101, pl.29, fig.99-103; text-fig.10a,d.
Late Albian-Early Cenomanian. The transfer of this species to
Deflandrea by Sverdlove and Habib (1974, p.59-60) is rejected.

SPINIFERITES Mantell, 1850, p.191, emend. Sarjeant, 1970, p.75.

ancoriferus Cookson and Eisenack, 1974, p.58, pl.21, fig.4-5.
Middle-Late Cretaceous.

assamicus (Kar et al., 1972, p.147, pl.1, fig.6-7) Lentin and
Williams, 1973, p.126. Tertiary; formerly *Hystrichosphaera*.

belerius Reid, 1974, p.596-598, pl.2, fig.12-13. Recent.

bentorii (Rossignol, 1964, p.84-85, pl.1, fig.3,3bis,7-8; pl.3,
fig.2-3; text-fig.A-F) Wall and Dale, 1970, p.47. Pleistocene-
Holocene. *Spiniferites bentorii* was figured but not described
in Rossignol, 1961, pl.1, fig.7-8, and described but not
illustrated or adequate reference made to the above illustrations
in Rossignol, 1962, p.132. O.C.

subsp. *truncatus* (Rossignol, 1964, p.85, pl.1, fig.5-6; pl.3,
fig.1) Lentin and Williams, 1973, p.126. Quaternary; formerly
Hystrichosphaera bentorii var. *truncata*. O.C.

"*buccinus*" (Davey and Williams, 1966a, p.42-43, pl.4, fig.1;
text-fig.10-11) Sarjeant, 1970, p.75. Lentin and Williams,
1973, p.126 considered this species to be a jr syn. of
Spiniferites pseudofurcatus (Klumpp) Sarjeant.

bulloideus (Deflandre and Cookson, 1955, p.264, pl.5, fig.3-4)
Sarjeant, 1970, p.75. Eocene-Miocene; formerly *Hystrichosphaera*.

"*ceratiooides*" (Deflandre, 1937b). NOW *Xenascus ceratiooides*.
The transfer of this species to *Spiniferites* by Sarjeant,
1970, p.76, was rejected by Lentin and Williams, 1973, p.127.

cingulatus (O. Wetzel, 1933b, p.28, pl.4, fig.10) Sarjeant, 1970,
p.76. Senonian; formerly *Cymatiosphaera* and *Hystrichosphaera*.

subsp. *cingulatus* (O. Wetzel, 1933b, p.28, pl.4, fig.10) Lentin
and Williams, 1973, p.127. Senonian; formerly *Hystrichosphaera*
cingulata var. *cingulata*. Transfer of the variety to
Spiniferites was effected by Davey and Verdier, 1971, p.32.

subsp. *granulatus* (Clarke and Verdier, 1967, p.45-46, pl.9,
fig.5-6) Lentin and Williams, 1973, p.127. Cenomanian;
formerly *Hystrichosphaera cingulata* var. *granulata*.

SPINIFERITES (cont'd)

cingulatus (cont'd)

subsp. *intermedius* (Cookson and Eisenack) stat. nov.

1974 *Spiniferites cingulatus* var. *intermedius* Cookson and Eisenack, p.64, pl.23, fig.8-9,11. Senonian.

subsp. *ovalis* (Cookson and Eisenack, 1974) stat. nov.

1974 *Spiniferites cingulatus* var. *ovalis* Cookson and Eisenack, p.64, pl.23, fig.12. Paleocene.

subsp. "*perforatus*" (Clarke and Verdier, 1967) Clarke et al.,

1968, p.181 considered this taxon to be a jr syn. of *Hystrichosphaera cingulata* var. *reticulata* Davey and Williams, which is now *Spiniferites cingulatus* subsp. *reticulatus*.

subsp. "*polygonalis*" (Clarke and Verdier, 1967) Clarke et al.,

1968, p.181 considered this taxon to be a jr syn. of *Hystrichosphaera crassimurata* Davey and Williams, which is now included in *Spiniferites*.

subsp. *reticulatus* (Davey and Williams, 1966a, p.39, pl.1,

fig.10; pl.2, fig.4) Lentin and Williams, 1973, p.127.

Cenomanian; formerly *Hystrichosphaera cingulata* var. *reticulata*. Transfer of this taxon to *Spiniferites* effected by Davey and Verdier, 1971, p.33.

compactus Cookson and Eisenack, 1974, p.59, pl.21, fig.11.

?Aptian-Albian.

cocksoniae nom. nov., nom. subst. pro *S. granulatus* (Cookson and Eisenack, 1974, p.59, pl.27, fig.7) non *S. granulatus* Davey, 1969b. ?Aptian-Albian. O.C.

cornigerus (O. Wetzel, 1933b, p.39, pl.5, fig.6) Sarjeant, 1970, p.76. Late Cretaceous; formerly *Hystrichosphaera*.

cornutus (Gerlach, 1961, p.180, pl.27, fig.10-12) Sarjeant, 1970, p.76. Middle Oligocene-Middle Miocene; formerly *Hystrichosphaera*.

subsp. *aspinatus* (Cookson and Eisenack, 1974) stat. nov.

1974 *Spiniferites cornutus* var. *aspinatus* Cookson and Eisenack, p.63, pl.23, fig.6. Paleocene.

subsp. *cornutus* (Gerlach, 1961, p.180, pl.27, fig.10-12) Sarjeant,

1970, p.76. Middle Oligocene-Middle Miocene; formerly *Hystrichosphaera*. Cookson and Eisenack, 1974, p.62 are incorrect in their citation *Spiniferites cornutus* (Gerlach, 1961) subsp. *cornutus* subsp. nov. When Sarjeant 1970, p.76 transferred the species "*Hystrichosphaera cornutus*" to *Spiniferites* he also in effect transferred the subspecies.

SPINIFERITES (cont'd)

cornutus (cont'd)

subsp. *crassifurcatus* (Cookson and Eisenack, 1974) stat. nov.

1974 *Spiniferites cornutus* var. *crassifurcatus* Cookson and Eisenack, p.63, pl.22, fig.9. Albian-Cenomanian.

subsp. "*laevimurus*" (Davey and Williams, 1966a, p.44-45, pl.4, fig.5) Lentini and Williams, 1973, p.127. Early Eocene; formerly *Hystrichosphaera cornuta* var. *laevimura*. Cookson and Eisenack, 1974, p.62 considered this subsp. to be a jr syn. of *Spiniferites cornutus* subsp. *cornutus* (Gerlach) Sarjeant.

subsp. *normalis* (Cookson and Eisenack, 1974) stat. nov.

1974 *Spiniferites cornutus* var. *normalis* Cookson and Eisenack, p.62, pl.23, fig.5. Paleocene.

subsp. *opisthophorus* (Cookson and Eisenack, 1974) stat. nov.

1974 *Spiniferites cornutus* var. *opisthophorus* Cookson and Eisenack, p.62, pl.23, fig.1-4. Paleocene.

subsp. *sinefurcatus* (Cookson and Eisenack, 1974) stat. nov.

1974 *Spiniferites cornutus* var. *sinefurcatus* Cookson and Eisenack, p.63, pl.22, fig.8. Albian-Cenomanian.

"*crassimuratus*" (Davey and Williams, 1966a, p.39, pl.1, fig.11)

Sarjeant, 1970, p.76. Cenomanian; formerly *Hystrichosphaera*. Kjellström, 1973, p.44 considered this species to be a jr syn. of *Spiniferites pterotus* (Cookson and Eisenack) Sarjeant.

crassipellis (Deflandre and Cookson, 1955, p.265, pl.6, fig.2-3; text-fig.20) Sarjeant, 1970, p.76. Early Eocene; formerly *Hystrichosphaera*.

cristatus (Conrad, 1941, p.4-5, pl.1, fig.D; text-fig.2D) Lentini and Williams, 1973, p.128. Maastrichtian; formerly *Hystrichosphaera*.

cruciformis Wall and Dale, 1973, p.21-22, pl.1, fig.1-6; pl.2, fig.1-4. Early Holocene.

delicatus Reid, 1974, p.601-602, pl.2, fig.20-22. Recent.

?*dentatus* (Gocht, 1959, p.75-76, pl.4, fig.11; pl.7, fig.19)

Lentini and Williams, 1973, p.128 emend. Duxbury, 1977, p.49-50. Late Hauterivian; formerly ?*Hystrichosphaera*.

elongatus Reid, 1974, p.602-603, pl.3, fig.23-24. Recent.

"*furcatus*" (Ehrenberg, 1838, pl.1, fig.12,14) Davey and Williams,

1966a, p.29-33 considered "*Hystrichosphaera furcata*" to be a synonym of "*Hystrichosphaera ramosa*", which is now the type of the genus *Spiniferites*. Since the original specimens of

SPINIFERITES (cont'd)

furcatus (cont'd)

"*Spiniferites furcatus*" have been lost, while the specimens of *Spiniferites ramosus* are preserved, it appears that *S. ramosus* should have priority.

granulatus (Davey, 1969b, p.4-5, pl.1, fig.4-7) Lentin and Williams, 1973, p.128. Maastrichtian-?Danian. Formerly *Hystrichosphaera*.

"*granulatus*" (Cookson and Eisenack, 1974). NOW *Spiniferites cooksoniae* nom. nov., non *S. granulatus* Davey, 1969b.

heterostylis (Heisecke, 1970, p.238, pl.5, fig.1-4; pl.6, fig.4-5) Lentin and Williams, 1973, p.128. Danian; formerly *Hystrichosphaera*.

hyperacanthus (Deflandre and Cookson, 1955, p.264-265, pl.6, fig.7) Cookson and Eisenack, 1974, p.59. Miocene; formerly *Hystrichosphaera* and *Achomosphaera*. Reid, 1974, p.603 also transferred this species to *Spiniferites*.

inaequalis Wall and Dale, 1973, p.22, pl.1, fig.7-8. Holocene.

katatonos Corradini, 1973, p.169, pl.25, fig.3a-c, 6a-b; pl.37, fig.1-2. Late Cretaceous-Paleocene; formerly *Hystrichosphaera*.

lazus Reid, 1974, p.604-605, pl.3, fig.25-27. Recent.

leptodermus (Maier, 1959, p.321, pl.33, fig.5-6) Sarjeant, 1970, p.76. Middle Oligocene-Late Miocene; formerly *Hystrichosphaeridium*.

membranaceus (Rossignol, 1964, p.86, pl.1, fig.4,9-10; pl.3, fig.7,12) Sarjeant, 1970, p.76. Pleistocene-Recent; formerly *Hystrichosphaera furcata* var. *membranacea*. This taxon was elevated to specific rank as *Hystrichosphaera membranacea* by Wall, 1967, p.102.

membranosus (Archangelsky, 1969b, p.197-199, pl.3, fig.1-4) Lentin and Williams, 1973, p.128. Late Eocene; formerly *Hystrichosphaera*.

microceras Cookson and Eisenack, 1974, p.60-61, pl.22, fig.10-12; pl.24, fig.1-2. Paleocene.

subsp. *laticornutus* (Cookson and Eisenack, 1974) stat. nov.
1974 *Spiniferites microceras* var. *laticornutus* Cookson and Eisenack, p.61, pl.22, fig.11. Paleocene.

subsp. *microceras* (Cookson and Eisenack, 1974) stat. nov.
1974 *Spiniferites microceras* var. *microceras* Cookson and Eisenack, p.60-61, pl.22, fig.10; pl.24, fig.1-2. Paleocene.

SPINIFERITES (cont'd)

microceras (cont'd)

subsp. *opisthophorus* (Cookson and Eisenack, 1974) stat. nov.
1974 *Spiniferites microceras* var. *opisthophorus* Cookson and
Eisenack, p.61, pl.22, fig.12. Paleocene.

mirabilis (Rossignol, 1963, pl.2, fig.16-21, described but not
figured in Rossignol, 1962, p.132) Sarjeant, 1970, p.76.
Pleistocene; formerly *Hystrichosphaera*.

monilis (Davey and Williams, 1966a, p.45, pl.5, fig.2) Sarjeant,
1970, p.76 emend. Eaton, 1976, p.282. Early Eocene; formerly
Hystrichosphaera.

"*modosus*" (Wall, 1967, p.101, pl.14, fig.7-9; text-fig.2) Sarjeant,
1970, p.76; formerly *Hystrichosphaera*. Reid, 1974, p.598
considered this species to be a jr syn. of *Spiniferites bentoni*
(Rossignol) Sarjeant.

pachydermus (Rossignol, 1964, p.86, pl.1, fig.1-2; pl.3, fig.6)
Reid, 1974, p.607. Pleistocene-Holocene; formerly *Hystricho-*
sphaera furcata var. *pachyderma* and *Spiniferites ramosus* subsp.
pachydermus.

paradoxus (Cookson and Eisenack, 1968, p.114; text-fig.2G,3)
Sarjeant, 1970, p.76. Senonian; formerly *Hystrichosphaera*.

?*pedata* (O. Wetzel, 1933b, p.55-56, pl.4, fig.35) Lentin and
Williams, 1973, p.129. Late Cretaceous; formerly
?*Hystrichosphaera*.

perforatus (Davey and Williams, 1966a, p.41, pl.5, fig.7) Sarjeant,
1970, p.76. Early Eocene; formerly *Hystrichosphaera*.

porosus (Manum and Cookson, 1964, p.11-12, pl.2, fig.1-5; text-
fig.2) Harland, 1973, p.690. Late Cretaceous; formerly
Hystrichosphaera.

pseudofurcatus (Klumpp, 1953, p.388, pl.16, fig.12-14) Sarjeant,
1970, p.76. Late Eocene; formerly *Hystrichokibotium* and
Hystrichosphaera. (non Varma and Dangwal, 1964 as *Hystricho-*
sphaera. See *Spiniferites varmae* Lentin and Williams, 1973,
p.129).

subsp. *obliquus* (Wall, 1967, p.103, pl.14, fig.16; text-fig.2)
Lentin and Williams, 1973, p.129. Late Pleistocene-Recent;
formerly *Hystrichosphaera tertaria* var. *obliqua*.

pterotus (Cookson and Eisenack, 1958, p.50, pl.11, fig.7)
Sarjeant, 1970, p.76. Albian-Maastrichtian; formerly *Cymatio-*
sphaera.

SPINIFERITES (cont'd)

"*ramuliferus*" (Deflandre, 1937b) Reid, 1974, p.608. The transfer of this species from *Achomosphaera* to *Spiniferites* by Reid, 1974, p.608-609, is herein rejected.

**ramosus* (Ehrenberg, 1838, pl.1, fig.1-2,5) Loeblich and Loeblich, 1966, p.56-57. Late Cretaceous; formerly *Xanthidium*, *Ovum hispidum* and *Hystrichosphaera*. Davey and Williams, 1966a, p.29-33 considered "*Hystrichosphaera furcata*" to be a synonym of *Spiniferites ramosus*. Accordingly all subspecies of "*Hystrichosphaera furcata*" are listed below as subspecies of *Spiniferites ramosus*.

subsp. ?*angustus* (W. Wetzel, 1952, p.394, pl. A, fig. 2e, text-fig. 2) Lentin and Williams, 1973, p.129. Danian; formerly *Hystrichosphaera furcata* subsp. *angusta*.

subsp. ?*aulocosphaeropsis* (O. Wetzel, 1933b, p. 35, pl. 5, fig. 5) Lentin and Williams, 1973, p.129. Late Cretaceous; formerly *Hystrichosphaera furcata* forma *aulocosphaeropsis*.

subsp. *brevifurcatus* (Cookson and Eisenack, 1974) stat. nov. 1974 *Spiniferites ramosus* var. *brevifurcatus* Cookson and Eisenack, p.57, pl.21, fig.6,9. Turonian-Senonian.

subsp. *endoperforatus* (Corradini, 1973, p.168, pl.26, fig.9-10) Lentin and Williams, 1975, p.2155. Senonian; formerly *Spiniferites ramosus* var. *endoperforatus*.

subsp. *gracilis* (Davey and Williams, 1966a, p.34-35, pl.1, fig.5; pl.5, fig.6) Lentin and Williams, 1973, p.130. Cenomanian-Eocene; formerly *Hystrichosphaera ramosa* var. *gracilis*. Transfer of the variety to *Spiniferites* was effected by Corradini, 1973, p.165.

subsp. *granomembranaceus* (Davey and Williams, 1966a, p.37-38, pl.4, fig.4) Lentin and Williams, 1973, p. 130. Early Eocene; formerly *Hystrichosphaera ramosa* var. *granomembranacea*. Transfer of the variety to *Spiniferites* was effected by Corradini, 1973, p.166.

subsp. *granosus* (Davey and Williams, 1966a, p.35, pl.4, fig.9) Lentin and Williams, 1973, p.130. Early Eocene; formerly *Hystrichosphaera ramosa* var. *granosus*. Transfer of the variety to *Spiniferites* was effected by Corradini, 1973, p.167.

subsp. *meandriiformis* (Corradini, 1973, p.168-169, pl.26, fig.11-12) Lentin and Williams, 1975, p.2155. Senonian; formerly *Spiniferites ramosus* var. *meandriiformis*.

subsp. *multibrachiatus* (deWit, 1943, p.376; text-fig.3f) Lentin and Williams, 1973, p.130. Late Cretaceous; formerly *Hystrichosphaera furcata* forma *multibrachiata*.

SPINIFERITES (cont'd)

ramosus (cont'd)

subsp. *multibrevis* (Davey and Williams, 1966a, p.35-36, pl.1, fig.4; pl.4, fig.6; text-fig.9) Lentin and Williams, 1973, p.130. Hauterivian-Early Eocene; formerly *Hystrichosphaera ramosa* var. *multibrevis*. Transfer of the variety to *Spiniferites* effected by Davey and Verdier, 1971, p.33.

subsp. *multiplicatus* (Rossignol, 1964, p.86, pl.1, fig.14; pl.3, fig.16) Lentin and Williams, 1973, p.130. Pleistocene-Holocene; formerly *Hystrichosphaera furcata* var. *multiplicata*.

subsp. "pachydermus" (Rossignol, 1964) Lentin and Williams, 1973, p.130. Now *Spiniferites pachydermus*; formerly *Hystrichosphaera furcata* var. *pachyderma*.

subsp. *primaevus* Duxbury, 1977, p.50-51, pl.4, fig.2-3.
Valanginian.

subsp. *ramosus* (Ehrenberg, 1838, pl.1, fig.1-2,5) Loeblich and Loeblich, 1966, p.56-57. Late Cretaceous; formerly *Xanthidium*, *Ovum hispidum* and *Hystrichosphaera*.

subsp. *reticulatus* (Davey and Williams, 1966a, p.38, pl.1, fig.2-3) Lentin and Williams, 1973, p.130. Cenomanian; formerly *Hystrichosphaera ramosa* var. *reticulata*. Transfer of the variety to *Spiniferites* was effected by Davey and Verdier, 1971, p.34.

reginaldii (Mantell, 1844, p.240; text-fig.53, no.5) Sarjeant, 1970, p.76. Late Cretaceous; formerly *Xanthidium*, *Hystrichosphaera* and *Baltisphaeridium*.

ruberinus (Rossignol, 1964, p.87, pl.1, fig.12-13; pl.3, fig.22-23)
Sarjeant, 1970, p.76. Quaternary; formerly *Hystrichosphaera*.

scabrinus (Wall, 1967, p.102, pl.14, fig.10-13; text-fig.2)
Sarjeant, 1970, p.76. Pleistocene-Recent; formerly *Hystrichosphaera*.

scabrosus (Clarke and Verdier, 1967, p.49-50, pl.9, fig.7-10; text-fig.21) Lentin and Williams, 1975, p.2155. Cenomanian-Santonian; formerly *Hystrichosphaera*. The transfer of this species from *Hystrichosphaera* to *Spiniferites* is not attributable to Harker and Sarjeant, 1975, p.225.

septatus (Cookson and Eisenack, 1967b, p.253, pl.42, fig.6-10)
McLean, 1971, p.730. Late Paleocene; formerly *Baltisphaeridium*.

setosus (Philippot, 1949, p.56; text-fig.1) Sarjeant, 1970, p.76-77.
Senonian; formerly *Hystrichosphaera*.

SPINIFERITES (cont'd)

speciosus (Deflandre, 1937b, p.65, pl.11, fig.2) Sarjeant, 1970, p.77. Late Cretaceous; formerly *Hystrichosphaera*.

supparus (Drugg, 1967, p.24, pl.4, fig.5-6) Sarjeant, 1970, p.77. Maastrichtian-Danian; formerly *Hystrichosphaera*.

"*tertiarius*" (Eisenack and Gocht, 1960, p.515; text-fig.4). Jr syn. of *Spiniferites pseudofurcatus*; see Gocht, 1969, p.32 and Sarjeant, 1970, p.76; formerly "*Hystrichosphaera tertaria*".

trabeculiferum (Deflandre and Cookson, 1955, p.269, pl.8, fig.6) Lentin and Williams, 1973, p.131. Middle Miocene; formerly *Hystrichokibotium*.

?*tripodes* (Morzadec-Kerfourn, 1966, p.140-141, pl.3, fig.3-4) Lentin and Williams, 1973, p.131. Holocene; formerly *Baltisphaeridium*.

varmae Lentin and Williams, 1973, p.131 (nom. subst. pro *Hystrichosphaera pseudofurcata* Varma and Dangwal, 1964, p.66, pl.2, fig.7-8; non *Spiniferites pseudofurcatus* (Klumpp) Sarjeant, 1970). Eocene-Oligocene.

wetzelii (Deflandre, 1937b, p.65, pl.11, fig.6,8) Sarjeant, 1970, p.77. Senonian; formerly *Hystrichosphaera*.

SPONGODINIUM Deflandre, 1936b, p.169-170.

**delitiense* (Ehrenberg, 1838, p.110, pl.1, fig.1-6) Deflandre, 1936b, p.170-171. Late Cretaceous; formerly *Peridinium*.

?*extremum* (Cookson and Eisenack, 1974, p.48, pl.20, fig.4) Lentin and Williams, 1976, p.40. Albian-Cenomanian; formerly *Deflandrea*.

?*solidum* Alberti, 1961, p.31-32, pl.3, fig.17-18. Late Barremian-Aptian.

STELLADINIUM Bradford, 1975, p.3065.

**readii* Bradford, 1975, p.3065-3066, fig.2-4. Recent.

STENOPYXINIUM Deflandre, 1968, p.424.

**grassei* Deflandre, 1968, p.425-426, fig.1-6. Senonian.

STEPHANELYTRON Sarjeant, 1961a, p.109. This genus was originally considered an acritarch; however, Gitmez and Sarjeant, 1972, p.237-238, describe it as a dinoflagellate with an apical arch-eopyle. No emendation was made.

STEPHANELYTRON (cont'd)

caytonense Sarjeant, 1961a, p.110, pl.15, fig.16; text-fig.11.
Early Oxfordian.

**redcliffense* Sarjeant, 1961a, p.109-110, pl.15, fig.11; text-fig.10.
Early Oxfordian.

scarburghense Sarjeant, 1961a, p.111, pl.15, fig.12-13. Early
Oxfordian.

STEPHODINIUM Deflandre, 1936a, p.58 emend. Davey, 1970, p.347.

"*australicum*" Cookson and Eisenack, 1962b, p.491, pl.2, fig.5-10.
Clarke and Verdier, 1967, p.67 considered this species to be a
jr syn. of *Stephodinium coronatum* Deflandre.

**coronatum* Deflandre, 1936a, p.58; text-fig.103. Senonian.

"*europaicum*" Cookson and Hughes, 1964, p.50, pl.8, fig.9-17. Clarke
and Verdier, 1967, p.67 considered this species to be a *jr syn.*
of *Stephodinium coronatum* Deflandre.

pellucidum Deflandre, 1943, p.505,507; text-fig.12-16. ?Senonian.

spiniferum Cookson and Eisenack, 1965a, p.124-125, pl.14, fig.10.
Late Eocene.

SUBTILIDINIUM Morgenroth, 1968, p.539.

**minutum* Morgenroth, 1968, p.539-540, pl.42, fig.8-9; pl.43, fig.1-2;
text-fig.3-4. Danian.

SUBTILISPHAERA Jain and Millepied, 1973, p.26-27 emend. Lentin and
Williams, 1976, p.117-118.

asymmetrica (Davey and Verdier, 1971, p.39-40, pl.2, fig.4,6) Lentin
and Williams, 1976, p.119. Middle Albian; formerly "*Deflandrea*
asymmetrica" and *Deflandrea deformans* Davey and Verdier.

balcattensis (Cookson and Eisenack, 1969, p.3,5, fig.1B-F) Lentin
and Williams, 1976, p.119. Albian-Cenomanian; formerly
Deflandrea.

crassigranulosa Jain and Millepied, 1973, p.28, pl.2, fig.25.
Aptian.

"*cretacea*" (Pocock, 1962). NOW *Palaeoperidinium*. Lentin and
Williams, 1975, p.2155 rejected the transfer of this species
to *Subtilisphaera* by Jain and Millepied, 1973, p.27.

?*euthema* (Davey and Verdier, 1971, p.40, pl.3, fig.1-3) Lentin and
Williams, 1976, p.119. Middle-Late Albian; formerly *Deflandrea*.

SUBTILISPHAERA (cont'd)

perlucida (Alberti, 1959b, p.102, pl.9, fig.16-17) Jain and Millepied, 1973, p.27. Late Barremian; formerly *Deflandrea*.

pirnaensis (Alberti, 1959b, p.100, pl.8, fig.1,5) Jain and Millepied, 1973, p.27. Middle Turonian; formerly *Deflandrea*.

pontis-mariae (Deflandre, 1936b, p.167, pl.2, fig.7-9) Lentin and Williams, 1976, p.119. ?Senonian; formerly *Gymmodinium*, *Deflandrea* and *Ascodinium*.

rotundata (Eisenack and Cookson, 1960, p.2, pl.1, fig.1-2) Jain and Millepied, 1973, p.27. Albian; formerly *Deflandrea*. Lentin and Williams, 1976, p.119 did not agree with Davey, 1974, p.65 that *S. rotundata* is a jr syn. of *Subtilisphaera perlucida* (Alberti) Jain and Millepied. In Davey (op. cit.) the species are included in *Deflandrea*.

scabrata Jain and Millepied, 1973, p.28, pl.3, fig.36-39. Aptian.

**senegalensis* Jain and Millepied, 1973, p.27-28, pl.3, fig.31-33. Aptian.

"*sverdrupiana*" (Manum, 1963). NOW *Spinidinium*. The transfer of this species to *Subtilisphaera* by Jain and Millepied, 1973, p.27, is herein rejected.

?*terrula* (Davey, 1974, p.65, pl.8, fig.4-5) Lentin and Williams, 1976, p.119. Middle Barremian; formerly *Deflandrea*.

?*trendallii* (Cookson and Eisenack, 1970a, p.145-146, pl.12, fig.5-6) Lentin and Williams, 1976, p.120. Albian-Cenomanian; formerly *Ascodinium*. O.C.

ventriosa (Alberti, 1959b, p.101, pl.9, fig.14-15) Jain and Millepied, 1973, p.27. Early Aptian; formerly *Deflandrea*.

SUESSIA Morbey, 1975, p.38.

**swabiana* Morbey, 1975, p.39-40, pl.14, fig.5-11; pl.17, fig.4-9; text-fig.12-15. Rhaetian.

SUMATRADINTIUM Lentin and Williams, 1976, p.77-78.

**hispidum* (Drugg, 1970a, p.120-121, fig.12-15) Lentin and Williams, 1976, p.77. Middle Miocene-Pliocene; formerly *Xenicodinium*.

SURCULOSPHAERIDIUM Davey et al., 1966, p.160-161.

**cribrotubiferum* (Sarjeant, 1960, p.137, pl.6, fig.2-3; text-fig.1) Davey et al., 1966, p.161. Early Oxfordian; formerly *Hystrichosphaeridium*.

SURCULOSPHAERIDIUM (cont'd)

longifurcatum (Firtion, 1952, p.157, pl.9, fig.1; text-fig.1H-M)
Davey et al., 1966, p.163. Cenomanian; formerly *Hystrichosphaeridium* and *Baltisphaeridium*.

vestitum (Deflandre, 1938b, p.189, pl.11, fig.4-6) Davey et al.,
1966, p.162. Oxfordian; formerly *Hystrichosphaeridium* and *Baltisphaeridium*.

SVALBARDELLA Manum, 1960, p.21.

"*australina*" (Cookson, 1965b). NOW *Palaeocystodinium*.

**cooksoniae* Manum, 1960, p.21-22, pl.1, fig.1-3; text-fig.2.
Late Paleocene-Eocene.

"*granulata*" (Wilson, 1967b). NOW *Palaeocystodinium*.

"*polymorpha*" (Malloy, 1972). NOW *Andalusiella*.

SVERDRUPIELLA Bujak and Fisher, 1976, p.45-48.

baccata Bujak and Fisher, 1976, p.48-49, pl.1, fig.5-7; text-fig.2B.
Norian.

cristata Bujak and Fisher, 1976, p.51, pl.6, fig.4-7; text-fig.2F.
?Carnian-Norian.

downiei Bujak and Fisher, 1976, p.51, pl.7, fig.1-6; text-fig.2I.
?Carnian-Norian.

manicata Bujak and Fisher, 1976, p.50, pl.3, fig.8-11; text-fig.2G.
Norian.

mutabilis Bujak and Fisher, 1976, p.50, pl.4, fig.1-12; pl.5,
fig.1-10; pl.6, fig.1-3; text-fig.2J. ?Carnian-Norian.

ornaticingulata Bujak and Fisher, 1976, p.49, pl.1, fig.8-10;
text-fig.2K. ?Carnian-Norian.

raiaformis Bujak and Fisher, 1976, p.50, pl.3, fig.4-7; text-fig.2D.
?Carnian-Norian.

sabinensis Bujak and Fisher, 1976, p.49, pl.3, fig.1-3; text-fig.2E.
?Carnian-Norian.

**septentrionalis* Bujak and Fisher, 1976, p.48, pl.1, fig.1-4;
text-fig.2A. ?Carnian-Norian.

spinosa Bujak and Fisher, 1976, p.51, pl.6, fig.8-10; text-fig.2C.
?Carnian-Norian.

SVERDRUPIELLA (cont'd)

usitata Bujak and Fisher, 1976, p.49, pl.2, fig.1-12; text-fig.2H.
?Carnian-Norian.

SYSTEMATOPHORA Klement, 1960, p.61-62.

ancyrea Cookson and Eisenack, 1965a, p.126, pl.14, fig.1-3. Late Eocene.

**areolata* Klement, 1960, p.62-65, pl.9, fig.1-8; text-fig.32-35.
Early Kimmeridgian.

?*austinii* (Merrill, 1895, p.16, fig.11) Sarjeant, 1964b, p.175.
Early Cretaceous; formerly ?*Geodia*.

?*capricorna* (Cookson and Eisenack, 1965, p.128-129, pl.15, fig.1-9)
Eisenack, 1969, p.113. Late Eocene; formerly *Cordosphaeridium*.

complicata Neale and Sarjeant, 1962, p.455-456, pl.19, fig.6-7.
Late Hauterivian-Middle Barremian.

fasciculigera Klement, 1960, p.65, pl.9, fig.11-12. Middle Oxfordian-Early Kimmeridgian.

orbifera Klement, 1960, p.66-67, pl.9, fig.9-10; pl.10, fig.7.
Middle Oxfordian.

ovata Gitmez and Sarjeant, 1972, p.237, pl.14, fig.1-3. Kimmeridgian.

placacantha (Deflandre and Cookson, 1955, p.276, pl.9, fig.1-3)
Davey et al., 1969, p.17. Miocene; formerly *Hystrichosphaeridium*,
Baltisphaeridium and *Impletosphaeridium*.

schindewolfii (Alberti, 1961, p.38, pl.10, fig.1-3,6-7) Downie and Sarjeant, 1964 (1965), p.146. Late Barremian-Turonian;
formerly *Hystrichosphaerina*. O.C.

turonica (Alberti, 1961, p.39, pl.10, fig.4a-b) Downie and Sarjeant, 1964 (1965), p.146. Turonian; formerly *Hystrichosphaerina*.

valensi (Sarjeant, 1960, p.142, pl.6, fig.5-7; text-fig.3c)
Downie and Sarjeant, 1964 (1965), p.146. Late Oxfordian;
formerly *Polystephanosphaera*.

vetuscula (Davey, 1974, p.45, pl.1, fig.1-2) Duxbury, 1977, p.51.
Barremian; formerly *Adnatosphaeridium*.

TAENIOPHORA Klement, 1960, p.67-68.

**iunctispina* Klement, 1960, p.68-69, pl.10, fig.1-6. Middle Oxfordian.

TAENIOPHORA (cont'd)

iunctispina (cont'd)

subsp. *filamentosa* Klement, 1960, p.70, pl.10, fig.5-6. Middle Oxfordian.

subsp. *iunctispina* Klement, 1960, p.69, pl.10, fig.1-4. Middle Oxfordian.

linifera (Cookson and Eisenack, 1967b, p.253, pl.40, fig.9; p.41, fig.7-8) Eisenack and Kjellström, 1971a, p.1019. Late Paleocene; formerly *Baltisphaeridium*.

TANYOSPHAERIDIUM Davey and Williams, 1966b, p.98.

boletum Davey, 1974, p.61-62, pl.6, fig.7. Barremian.

"*ellipticum*" (Cookson, 1965a) Davey and Williams, 1969, p.7. NOW *Distatodinium*; also formerly *Hystrichosphaeridium*.

fusiformum Matsuoka, 1974, p.332-333, pl.46, fig.4,9-10. Early-Middle Miocene. O.C.

isocalamus (Deflandre and Cookson, 1955, p.272, pl.2, fig.7-8; text-fig.30-35) Davey and Williams, 1969, p.7. Early Cretaceous; formerly *Hystrichosphaeridium*.

magdalium (Drugg, 1967, p.26, pl.4, fig.8-10; pl.9, fig.7) Heisecke, 1970, p.244. Danian; formerly *Hystrichosphaeridium*.

"*paradoxum*" (Brosius, 1963) Gocht, 1969, p.54.. NOW *Distatodinium*; also formerly *Hystrichosphaeridium* and *Oligosphaeridium*.

regulare Davey and Williams, 1966b, p.99-100, pl.3, fig.4. Early Eocene.

salpinx Norvick, 1976, p.63-64, pl.9, fig.10. Cenomanian.

tenerum Benedek, 1972, p.35-36, pl.10, fig.13-14; text-fig.14. Middle-Late Oligocene.

**variecalatum* Davey and Williams, 1966b, p.98-99, pl.6, fig.7; text-fig.20. Cenomanian.

TAPEINOSPHAERIDIUM Ioannides et al., 1977, p.461-462.

granulatum Ioannides et al., 1977, p.462, pl.4, fig.18-19. Kimmeridgian.

**pericompsum* Ioannides et al., 1977, p.463, pl.5, fig.1-4; text-fig.13. Kimmeridgian.

TECTATODINIUM Wall, 1967, p.112-113.

gochtii Dodekova, 1975, p.31, pl.3, fig.8,10-13. Late Bathonian.
O.C.

?nudum (Nagy, 1969) comb. nov.

1969 *Palaeoperidinium nudum* Nagy, p.291, pl.1, fig.1. Pannonian.
See discussion under "*Palaeoperidinium pannonium*" Lentini and
Williams; also formerly *Gonyaulacysta*.

*pellitum Wall, 1967, p.113, pl.16, fig.11-12. Miocene-Holocene.

psilatum Wall and Dale, 1973, p.22-23, pl.1, fig.9-15; pl.3,
fig.1-6. Holocene.

TENERIDINIUM Krutzsch, 1962, p.41.

*magnoides Krutzsch, 1962, p.42, pl.10, fig.1-7; text-fig.1a.
Eocene.

TENUA Eisenack, 1958, p.410, emend. Sarjeant, 1968, p.230-231.
Lentin and Williams, 1973, p.135 rejected the emendation of
this genus by Pocock, 1972, p.94 since the inclusion of smooth
forms within *Tenua* would create a jr syn. of *Canningia* Cookson
and Eisenack, 1960b. The emended circumscription of Pocock is
otherwise similar to that of Sarjeant, 1968.

"anaphrissa" (Sarjeant, 1966c) Benedek, 1972, p.9-10. Harker and
Sarjeant, 1975, p.224 rejected the transfer of this species to
Tenua and retained it in the genus *Doidyx* Sarjeant.

atlantica Habib, 1972, p.375, pl.4, fig.2,5. Callovian-Oxfordian.

baculata Dodekova, 1975, p.28-29, pl.6, fig.1-3; text-fig.7.
Late Bathonian.

capitata (Cookson and Eisenack, 1960b, p.252, pl.39, fig.9) Gitmez
and Sarjeant, 1972, p.189. Oxfordian-Kimmeridgian; formerly
Hystrichosphaeridium. Considered to be a species of *Prolixo-*
sphaeridium by Singh, 1971, p.342.

dubius Jain and Millepied, 1975, p.152, pl.5, fig.75-76.
Campanian-Maastrichtian.

echinata Gitmez and Sarjeant, 1972, p.190, pl.1, fig.1,9.
Kimmeridgian.

"evittii" (Pocock, 1972). NOW *Pareodinia*.

"hystricella" Eisenack, 1958, p.411, pl.23, fig.5-7. Brideaux and
McIntyre, 1975, p.24 considered this species to be a jr syn. of
Tenua hystrix Eisenack.

TENUA (cont'd)

**hystrix* Eisenack, 1958, p.410, pl.23, fig.1-4; text-fig.10. Aptian.

neophytensa Ioannides et al., 1977, p.463, pl.5, fig.5,8-9.
Kimmeridgian.

pilosa (Ehrenberg, 1843, p.61) Sarjeant, 1968, p.231. Oxfordian;
formerly *Xanthidium*, *Ovum hispidum*, *Hystrichosphaera*, *Hystrichosphaeridium*, *Baltisphaeridium* and *Cleistosphaeridium*.

subsp. "*longispinosa*" (Sarjeant, 1961a, p.102, pl.14, fig.8)
Lentin and Williams, 1973, p.136; formerly *Baltisphaeridium*
pilosum var. *longispinosum*. Sarjeant, 1976c, p.19 considered
this taxon to be a jr syn. of the species *Prolixosphaeridium*
granulosum (Deflandre) Davey et al.

rioultii Sarjeant, 1968, p.231, pl.1, fig.12,22; pl.2, fig.1-2,4.
Late Callovian. O.C.

taugourdeaui Varma and Dangwal, 1964, p.68, pl.2, fig.9. Eocene-
Oligocene.

varispinosa (Sarjeant, 1959, p.338, pl.13, fig.7; text-fig.6)
Sarjeant, 1972, p.43. Early Callovian; formerly *Baltisphaeridium*.

verrucosa Sarjeant, 1968, p.232, pl.1, fig.17; pl.2, fig.3,6.
Late Callovian-Early Oxfordian.

villersensis Sarjeant, 1968, p.231-232, pl.1, fig.16; pl.2, fig.5,10.
Early Callovian-Early Oxfordian. O.C.

"TETRASPHAERA" (Gorka, 1965 non *Tetrasphaera* Popofsky, 1912). NOW
Gorkadinium.

"*rara*" Gorka, 1965). NOW *Gorkadinium*.

THALASSIPHORA Eisenack and Gocht, 1960, p. 513, emend. Gocht, 1968,
p. 153.

balcanica Baltes, 1971, p.6, pl.3, fig.3-7. Early Pliocene.
Transfer of this species to *Disphaeria* by Norwick, 1976, p.99
is herein rejected because of the uncertainty of the archeopyle
type in that genus.

bonaniensis Corradini, 1973, p.185-186, pl.30, fig.5,6a-b,8a-b;
pl.37, fig.5a-b; pl.38, fig.1; pl.39, fig.1. Late Cretaceous-
Paleocene.

defloccata (Davey and Verdier, 1973, p.198, pl.3, fig.6,8)
Lentin and Williams, 1976, p.85. Late Albian-Early Cenomanian;
formerly *Hexagonifera*.

delicata Williams and Downie, 1966c, p.235, pl.26, fig.8 emend.
Eaton, 1976, p.287. Early Eocene.

THALASSIPHORA (cont'd)

flammea Cookson and Eisenack, 1967b, p.252-253, pl.42, fig.1-5.
Late Paleocene.

maxima Jain and Millepied, 1975, p.146, pl.4, fig.53-54.
Campanian-Maastrichtian.

"*mundula*" (Davey and Verdier, 1973). NOW *Disphaeria*.

**pelagica* (Eisenack, 1954, p.71, pl.12, fig.17-18) Eisenack and
Gocht, 1960, p.513-514. Late Eocene-Early Oligocene; formerly
Pterospermopsis.

?*petila* Corradini, 1973, p.186, pl.31, fig.1-2. Senonian.

reticulata Morgenroth, 1966b, p.6-7, pl.2, fig.1-2. Early Oligocene.

succincta Morgenroth, 1966b, p.7-8, pl.2, fig.7-9. Early Oligocene.

sueroi Pöthe de Baldis, 1966, p.224-225, pl.2, fig.d. Early
Tertiary.

velata (Deflandre and Cookson, 1955, p.291, pl.8, fig.8)
Eisenack and Gocht, 1960, p.514-515. Early Tertiary; formerly
Pterocystidiopsis.

TOOLONGIA Cookson and Eisenack, 1960a, p.14.

**medusoides* Cookson and Eisenack, 1960a, p.14, pl.3, fig.11-12.
Senonian.

TRIBLASTULA O. Wetzel, 1933b, p.54, emend. Morgenroth, 1966a, p.15.

"*borussica*" (Eisenack, 1954) Morgenroth, 1966a, p.15-16. NOW
Rottnestia. The above transfer was rejected by Eisenack, 1969,
p.105-108.

nuda O. Wetzel, 1961, p.340, pl.2, fig.2. Erratic, ?Late
Cretaceous. Gocht, 1976, p.322 questionably considered this
species to be a synonym of *Hystrichosphaeropsis quasicribrata*
(O. Wetzel) Gocht.

"*quasicribrata*" (O. Wetzel, 1961). NOW *Hystrichosphaeropsis*.

tubulata O. Wetzel, 1961, p.340, pl.2, fig.4. Erratic, ?Late
Cretaceous. Gocht, 1976, p.322 questionably considered this
species to be a synonym of *Hystrichosphaeropsis quasicribrata*
(O. Wetzel) Gocht.

**utinensis* O. Wetzel, 1933b, p.54, pl.6, fig.5-6. Erratic,
Cretaceous.

TRICHODINIUM Eisenack and Cookson, 1960, p.5, emend. Clarke and Verdier, 1967, p.18-19.

bifurcatum Jain and Millepied, 1975, p.140-141, pl.1, fig.14-16.
Maastrichtian.

castaneum (Deflandre, 1935, p.229, pl.6, fig.8) Clarke and Verdier, 1967, p.19-20. Erratic, ?Senonian; formerly *Palaeoperidinium*.

"*ciliatum*" (Gocht, 1959, p.65, pl.8, fig.5-6) Eisenack, 1964, p.811.
Late Hauterivian; formerly *Apteodinium*. Clarke and Verdier, 1967, p.19 considered this species to be a jr syn. of *Trichodinium castaneum* (Deflandre) Clarke and Verdier.

hirsutum Cookson, 1965b, p.139, pl.25, fig.5-13. Paleocene.

"*intermedium*" (Eisenack and Cookson, 1960, p.6, pl.2, fig.5-6).
Clarke and Verdier, 1967, p.19 considered this species to be a jr syn. of *Trichodinium castaneum* (Deflandre) Clarke and Verdier.

paucispinum Eisenack and Cookson, 1960, p.5-6, pl.2, fig.7.
Albian.

**pellitum* Eisenack and Cookson, 1960, p.5, pl.2, fig.4. Aptian.

?*rhomboideale* (Gorka, 1965, p.301-302, pl.1, fig.6) Lentini and Williams, 1976, p.111. Early Kimmeridgian; formerly *Palaeoperidinium*. Sarjeant, 1967, p.256 recommended transfer of this species to *Trichodinium*.

speetonense Davey, 1974, p.63, pl.7, fig.2-3. Barremian.

spinosum Singh, 1971, p.316-317, pl.48, fig.8-9. Late Albian.

TRIGONOPYXIDIA Cookson and Eisenack, 1961a, p.75 (*nom. subst. pro Trigonopyxis* Cookson and Eisenack, 1960a, p.11, non Penard, 1912.)

**ginella* (Cookson and Eisenack, 1960a, p.11, pl.3, fig.18-20)
Downie and Sarjeant, 1964 (1965), p.149. ?Late Albian-Cenomanian.

"*TRIGONOPYXIS*" (Cookson and Eisenack, 1960a *non* Penard, 1912). NOW
Trigonopyxidia.

"*TRIOPERCULODINIUM*" (Drugg, 1970b, p.820). Wall and Dale, 1973, p.24
considered this genus to be a jr syn. of *Lingulodinium* Wall.
"*Trioperculodinium siculum*" is accordingly included in
Lingulodinium.

TRITHYRODINIUM Drugg, 1967, p.20 emend. Lentini and Williams, 1976,
p.98.

TRITHYRODINIUM (cont'd)

druggii Stone, 1973, p.54-55, pl.5, fig.18-19a. Late Campanian.

**evittii* Drugg, 1967, p.20, pl.3, fig.2-3; pl.9, fig.2. Danian.

fragile Davey, 1969b, p.11, pl.3, fig.6,9. Maastrichtian-?Danian.

"*ormatum*" (Felix and Burbridge, 1973). NOW *Ginginodinium*.

robustum Benson, 1976, p.198,200,202, pl.11, fig.9-12; pl.12, fig.1. Late Maastrichtian.

striatum Benson, 1976, p.197-198, pl.11, fig.4-8. Late Maastrichtian.

suspectum (Manum and Cookson, 1964, p.9-10, pl.1, fig.9-13) Davey, 1969b, p.12. Cenomanian; formerly *Hexagonifera*.

vermiculatum (Cookson and Eisenack, 1961a, p.74, pl.12, fig.6-8) Lentin and Williams, 1976, p.100. Senonian; formerly *Hexagonifera*.

TUBERCULODINIUM Wall, 1967, p.114.

rossignoliae Drugg, 1970a, p.116-118, fig.3,10-11. Early Miocene.
O.C.

**vancampoae* (Rossignol, 1962, p.134, pl.2, fig.1) Wall, 1967, p.114-115. Pleistocene; formerly *Pterospermopsis*. Lentin and Williams, 1973, p.139 rejected the transfer of this species to the modern genus *Pyrophacus* by Wall and Dale, 1971, p.234-235, because the thecal equivalent of the type material is unknown.

wallii Drugg, 1970a, p.115-116, fig.1,4-6. Post Miocene.

TUBIDERMODINIUM Morgenroth, 1966a, p.16.

**sulcatum* Morgenroth, 1966a, p.16-17, pl.3, fig.4-6. Early Eocene.

TUBOTUBERELLA Vozzhenikova, 1967, p.179-180.

apatela (Cookson and Eisenack, 1960b, p.249, pl.37, fig.12-13) Ioannides et al., 1977, p.464. Late Jurassic; formerly *Scriniodinium* and *Psaligonyaulax*.

**rhombiformis* Vozzhenikova, 1967, p.180, pl.101, fig.1-2; pl.102, fig.1-3; pl.104, fig.1-3. Late Jurassic.

sphaerocephalis Vozzhenikova, 1967, p.181, pl.103, fig.1-3; pl.104, fig.4-5a-b. Late Jurassic. O.C.

TURBIOSPHAERA Archangelsky, 1969a, p.408.

TURBIOSPHAERA (cont'd)

**filosa* (Wilson, 1967a, p.66, fig.2,31-32,34) Archangelsky, 1969a, p.408-411. Paleocene-Oligocene; formerly *Cordosphaeridium*.

galatea Eaton, 1976, p.289, pl.15, fig.4-6. Early Eocene.

magnifica Eaton, 1976, p.290, pl.15, fig.7-9. Middle Eocene.

UVATODINIUM Vozzhennikova, 1963, p.182.

marginatum Vozzhennikova, 1967, p.51-52, pl.8, fig.1-2. Paleocene.

**nasutum* Vozzhennikova, 1963, p.182; text-fig.13a-b. Paleocene.

VALENSIELLA Eisenack, 1963a, p.100-101.

amandopolitana (Valensi, 1955b, p.590, pl.2, fig.7; pl.5, fig.2) Eisenack, 1963a, p.102. Middle Jurassic; formerly *Membranilarnax* and *Favilarnax*.

ampulla Gocht, 1970b, p.149-150, pl.34, fig.7-9; text-fig.19a. Early Bathonian.

clathroderma (Deflandre and Cookson, 1955, p.290, pl.7, fig.6; text-fig.51) Eisenack, 1963a, p.101. ?Early Eocene; formerly *Membranilarnax*.

griphus Norvick, 1976, p.75-76, pl.8, fig.6-7; pl.10, fig.7-9. Cenomanian.

**ovula* (Deflandre, 1947c, p.9, text-fig.22-23) Eisenack, 1963a, p.101. Bajocian; formerly *Membranilarnax* and *Favilarnax*.

vermiculata Gocht, 1970b, p.150, pl.34, fig.10-11; text-fig.19d. Early Bathonian.

VALVAEODINIUM Morgenroth, 1970, p.350.

**armatum* Morgenroth, 1970, p.350-351, pl.11, fig.1-5. Lias (Late Pliensbachian).

VOZZHENNIKOVIA Lentini and Williams, 1976, p.65-66.

**apertura* (Wilson, 1967a, p.64-65, fig.3-5,8) Lentini and Williams, 1976, p.65. Paleocene-Oligocene; formerly *Spinidinium*.

VOZZHENNIKOVIA (cont'd)

?extensa (Stover, 1973, p.178-179, pl.5, fig.4a-c,5a-d,6) Lentin and Williams, 1976, p.67. Middle-Late Eocene; formerly *Deflandrea*. Lentin and Williams, 1976, p.67 questionably included this species in *Vozzhennikovia* because it possesses a broad hexa 2a archeopyle. Stover 1973, p.178 stated that the processes are fairly evenly spaced. He later observed (p.179) that the paratabulation is commonly obscure although the outlines of some precingular and postcingular paraplates can be identified by the alignment of the processes, particularly on the dorsal surface of the epicyst. This is confirmed by the accompanying illustrations (pl.5, fig.4a and 5a). Although ?*Vozzhennikovia extensa* therefore appears to represent a distinct morphotype, Lentin and Williams, 1976, p.67 preferred to questionably include it in *Vozzhennikovia*.

?filigrana (Benedek, 1972, p.12-13, pl.4, fig.3) Lentin and Williams, 1976, p.67. Middle Oligocene; formerly ?*Deflandrea*. This species, because of its broad hexa 2a archeopyle, is questionably included in *Vozzhennikovia*.

rotunda (Wilson, 1967a, p.65-66, fig.6-7) Lentin and Williams, 1976, p.67. Eocene; formerly *Spinidinium*.

tenella (Morgenroth, 1966b, p.4-5, pl.1, fig.8-9) Lentin and Williams, 1976, p.67. Early Oligocene; formerly *Lejeunia*.

tenera (Krutzsch, 1962, p.44, pl.11, fig.20-22; text-fig.1e) Lentin and Williams, 1976, p.67. Middle Eocene; formerly ?*Deflandrea*.

WALLODINIUM Loeblich and Loeblich, 1968, p.212. (*nom. subst. pro* *Diplotesta* Cookson and Eisenack, 1960, *non* Brongniart, 1874.)

anglicum (Cookson and Hughes, 1964, p.56-57, pl.11, fig.1-5) Lentin and Williams, 1973, p.140. Late Albian-Early Cenomanian; formerly *Diplotesta*.

bidigitatum (Manum and Cookson, 1964, p.25-26, pl.5, fig.4-6) Lentin and Williams, 1973, p.140. Late Cretaceous; formerly *Diplotesta*.

**glaessneri* (Cookson and Eisenack, 1960b, p.256, pl.39, fig.4-6) Loeblich and Loeblich, 1968, p.212. Oxfordian-?Aptian; formerly *Diplotesta*.

inflatum (Habib, 1969, p.98, pl.3, fig.14-15; pl.4, fig.2) Habib, 1970, p.274. Albian-Cenomanian; formerly *Diplotesta*.

krutzzschii (Alberti, 1961, p.21, pl.7, fig.19-21; pl.12, fig.6-7) Habib, 1972, p.378. Hauterivian-Barremian; formerly *Diplotesta*. O.C.

WALLODINIUM (cont'd)

lunum (Cookson and Eisenack, 1960a, p.10-11, pl.3, fig.21)
Lentin and Williams, 1973, p.140. ?Late Albian-Cenomanian;
formerly *Diplotesta*.

WANAEA Cookson and Eisenack, 1958, p.57.

acollaris Dodekova, 1975, p.20-21, pl.2, fig.9-10; pl.3, fig.1-7,9;
text-fig.2. Late Bathonian.

clathrata Cookson and Eisenack, 1958, p.58, pl.9, fig.6-8.
Late Jurassic.

digitata Cookson and Eisenack, 1958, p.58, pl.9, fig.2-5. Late
Jurassic.

fimbriata Sarjeant, 1961a, p.112-113, pl.15, fig.14; text-fig.13.
Early Oxfordian.

**spectabilis* (Deflandre and Cookson, 1955, p.293, pl.3, fig.12-14)
Cookson and Eisenack, 1958, p.57. Oxfordian; formerly
Epicephalopyxis.

WETZELIELLA Eisenack, 1938, p.187, emend. Williams and Downie, 1966b,
p.182 emend. Lentin and Williams, 1976, p.129-130.

**articulata* Eisenack, 1938, p.186; text-fig.4. Late Eocene-Early
Oligocene.

subsp. *conopia* (Williams and Downie, 1966b, p.184, pl.18, fig.5)
Lentin and Williams, 1973, p.141. Early Eocene; formerly
Wetzelella articulata var. *conopia*.

"*clathrata*" (Eisenack, 1938). NOW *Kisselovia*.

"*coleothrypta*" (Williams and Downie, 1966b). NOW *Kisselovia*.

"*condylos*" (Williams and Downie, 1966b). NOW *Rhombodynium*.

coronata (Vozzhennikova, 1967, p.170-171, pl.89, fig.1-3,5; pl.90,
fig.1-5) Lentin and Williams, 1976, p.131. Late Eocene; formerly
Rhombodynium.

crispa Agelopoulos, 1967, p.21-22, pl.3, fig.8; pl.4, fig.5a-b.
Late Eocene.

"*echinosuturata*" (Wilson, 1967c). NOW *Wilsonidium*.

echinulata Vozzhennikova, 1967, p.164-165. Figured in
Vozzhennikova, 1960, pl.3, fig.3; description not published
until 1967. Eocene.

WETZELIELLA (cont'd)

- edwardsii* Wilson, 1967c, p.477, fig.8-9. Early Eocene. O.C.
- eocaenica* Agelopoulos, 1967, p.16-17, pl.2, fig.6-7; pl.3, fig.1-7. Early-Late Eocene.
- "*glabra*" (Cookson, 1956). NOW *Rhombodinium*.
- gochtii* Costa and Downie, 1976, p.609-610, pl.92, fig.2-3. Middle Oligocene. O.C.
- hampdenensis* Wilson, 1967c, p.480-481, fig.17,19. Middle Eocene.
- "*homomorpha*" (Deflandre and Cookson, 1955). NOW *Apectodinium*.
- subsp. "*quinquelata*" (Williams and Downie, 1966b). NOW *Apectodinium*.
- horrida* du Chêne and Chateauneuf, 1975, p.28,30, pl.1, fig.1-7; pl.3, fig.1-6. Early Eocene (Cuisian).
- "*hyperacantha*" (Cookson and Eisenack, 1965b). NOW *Apectodinium*.
- "*intermedia*" (Cookson and Eisenack, 1961b). NOW *Rhombodinium*.
- irregularis* Cookson and Eisenack, 1958, p.28-29, pl.10, fig.1-2. Late Jurassic.
- irtyshensis* Alberti, 1961, p.8, pl.1, fig.11-12; pl.12, fig.8. Early Oligocene.
- "*lineidentata*" (Deflandre and Cookson, 1955). NOW *Wilsonidium*.
- longispinosa* (Wilson, 1968, p.59-60, fig.1-10) Lentini and Williams, 1976, p.132. Early Eocene; formerly *Deflandrea*.
- lunaris* Gocht, 1969, p.13-15, pl.10, fig.1-3; text-fig.6. Early Eocene.
- meckelfeldensis* Gocht, 1969, p.15-16, pl.10, fig.12-15. Early Eocene.
- "?*neocomica*" (Gocht, 1957). NOW *Phoberocysta*.
- "*ornata*" (Wilson, 1967c). NOW *Wilsonidium*.
- ovalis* Eisenack, 1954, p.59, pl.8, fig.1-7. Early Oligocene.
- pachyderma* Caro, 1973, p.365, pl.3, fig.4-6. Early Eocene.
- "*parva*" (Alberti, 1961). NOW *Apectodinium*.

WETZELIELLA (cont'd)

pentagona (Vozzhennikova, 1967, p.171-172, pl.89, fig.4; pl.95, fig.1-5; pl.96, fig.1-6) Lentin and Williams, 1976, p.132. Late Eocene-Early Oligocene; formerly *Rhombodinium*.

"*perforata*" (du Chene and Chateauneuf, 1975). NOW *Rhombodinium*.

?*pilata* Stanley, 1965, p.222, pl.21, fig.12-16. Paleocene.

"*reticulata*" (Williams and Downie, 1966b). NOW *Kisselovia*.

"*rugosa*" (Stanley, 1965). NOW ?*Wilsonidium*.

samlandica Eisenack, 1954, p.59, pl.8, fig.11-12. Early Oligocene.

similis Eisenack, 1954, p.58-59, pl.8, fig.8-10. Early Oligocene.

solida (Gocht (pars), 1955, p.88; text-fig.3a-b,4a-b,5a) Williams and Downie, 1966b, p.195. Eocene or Oligocene.

symmetrica Weiler, 1956, p.132-135, pl.11, fig.1-3; text-fig.2-5. Middle Oligocene.

subsp. *incisa* Gerlach, 1961, p.156-158, pl.25, fig.9. Middle-Late Oligocene.

subsp. *lobisca* (Williams and Downie, 1966b, p.196, pl.20, fig.3) Lentin and Williams, 1973, p.143. Early Eocene; formerly *Wetzelella symmetrica* var. *lobisca*.

subsp. *symmetrica* Weiler, 1956, p.132-135, pl.11, fig.1-3; text-fig.2-5. Middle Oligocene.

"*tabulata*" (Wilson, 1967c). NOW *Wilsonidium*.

"*tenuivirgula*" (Williams and Downie, 1966b). NOW *Kisselovia*.

unicaudalis Caro, 1973, p.366,368, pl.5, fig.1,9. Early Eocene.

varielongituda Williams and Downie, 1966b, p.196-197, pl.20, fig.4,8. Early Eocene.

wetzelii Agelopoulos, 1967, p.17-18, pl.2, fig.4-5b. Late Eocene. O.C.

WETZELODINIUM Deflandre, 1936b, p.168.

**tentaculatum* (O. Wetzel, 1933a, p.171, pl.2, fig.23; text-fig.4) Deflandre, 1936b, p.168-169. ?Senonian; formerly *Polykrikos*.

WILSONIDIUM Lentin and Williams, 1976, p.138-139.

WILSONIDIUM (cont'd)

?*aechmophorum* (Benedek, 1972, p.41, pl.5, fig.7,11; text-fig.17) Lentin and Williams, 1976, p.139. Middle-Late Oligocene; formerly *Lejeunia*. The archeopyle in this species may be hexa 2a intercalary.

echinosuturatum (Wilson, 1967c, p.477-479, fig.3,22-25) Lentin and Williams, 1976, p.139. Middle Eocene; formerly *WetzelIELLA*.

lineindentatum (Deflandre and Cookson, 1955, p.253-254, pl.5, fig.5; text-fig.17-18) Lentin and Williams, 1976, p.139. Eocene; formerly *WetzelIELLA*.

ornatum (Wilson, 1967c, p.481-482, fig.33-34) Lentin and Williams, 1976, p.139. Early Eocene; formerly *WetzelIELLA*.

?*rugosum* (Stanley, 1965, p.222-223, pl.21, fig.6-11) Lentin and Williams, 1976, p.140. Paleocene; formerly *WetzelIELLA*.

**tabulatum* (Wilson, 1967c, p.473-474, fig.2,4-7,10-11) Lentin and Williams, 1976, p.140. Late Eocene; formerly *WetzelIELLA*.

XENASCUS Cookson and Eisenack, 1969, p.7. Davey and Verdier, 1971, p.27, list the type of this genus *X. australense* as a *jr syn.* of *Phoberocysta ceratiooides* (Deflandre, 1937b) Davey and Verdier, 1971, p.26. Lentin and Williams, 1973, p.143, concurred with this interpretation. However, they retained *Xenascus* (type species: *X. ceratiooides* = *sr syn.* of *X. australense*, = *Phoberocysta ceratiooides*, = *Hystrichosphaera ceratiooides*) as a genus separate from *Phoberocysta* (type species: *P. neocomica*, = *WetzelIELLA neocomica*) on the grounds that they are morphologically distinct. *Xenascus* is characterized by a single lateral (postcingular) horn, whereas *Phoberocysta* is characterized by two similar lateral (postcingular) horns.

"*australense*" (Cookson and Eisenack, 1969, p.7, fig.1,I-K). Davey and Verdier, 1971, p.26 considered this species to be a *jr syn.* of *Xenascus ceratiooides* (Deflandre) Lentin and Williams.

**ceratiooides* (Deflandre, 1937b, p.66-67, pl.12, fig.7-8) Lentin and Williams, 1973, p.144. Senonian; formerly *Hystrichosphaera*, *Phoberocysta* and *Pseudoceratium*.

XENICODINIUM Klement, 1960, p.53-54.

**densispinosum* Klement, 1960, p.54, pl.5, fig.14-15. Early Kimmeridgian.

"*hispidum*" (Drugg, 1970a). NOW *Sumatrardinium*.

XENICODINIUM (cont'd)

lubricum Morgenroth, 1968, p.554, pl.47, fig.9; pl.48, fig.1.
Danian.

XENIKOON Cookson and Eisenack, 1960a, p.14-16.

americanus Habib, 1970, p.372, pl.10, fig.10. Albian-Cenomanian.

**australis* Cookson and Eisenack, 1960a, p.16, pl.3, fig.16-17.
Turonian-Campanian.

XIPHOPHORIDIUM Sarjeant, 1966b, p.146-147.

**alatum* (Cookson and Eisenack, 1962b, p.487, pl.2, fig.1-4).
Sarjeant, 1966b, p.147-148. Albian-Cenomanian; formerly
Hystrichodinium.

ZOSTEROSPHAERA Schopf, 1968, p.684. Questionable affinity.

**tripunctata* Schopf, 1968, p.684, pl.84, fig.6. Late Precambrian.

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APPENDIX

Included in the following list of non dinoflagellate genera (primarily acritarchs) are species which subsequently have been referred to the dinoflagellates.

BALTISPHAERIDIUM Eisenack, 1958, p.398.

"*armatum*" (Deflandre, 1937b). NOW *Cleistosphaeridium*.

"*ashdodense*" (Rossignol, 1962). Jr syn. of *Lingulodinium machaerophorum*.

"*bifidum*" (Clarke & Verdier, 1967). NOW *Exochosphaeridium*.

"*biformoides*" (Eisenack, 1954). NOW *Achilleodinium*.

"*bulbosum*" (Ehrenberg, 1838). NOW *Hystrichokolpoma*.

"*centrocarpum*" (Deflandre & Cookson, 1955). NOW *Operculodinium*.

"*clavigerum*" (Deflandre, 1937b). NOW *Florentinia*.

"*colligerum*" (Deflandre & Cookson, 1955). NOW *Diphyes*.

"*danicum*" (W. Wetzel, 1952). NOW *Cleistosphaeridium*.

"*densicomatum*" (Maier, 1959). NOW *Impletosphaeridium*.

"*divergens*" (Eisenack, 1954). NOW *Cordosphaeridium*.

"*downiei*" (Sarjeant, 1960a). NOW *Acanthaularax*.

"*echinoides*" (Maier, 1959). NOW *Cleistosphaeridium*.

"*ehrenbergi*" (Deflandre, 1947c). NOW *Cleistosphaeridium*.

"*ferox*" (Deflandre, 1937b). NOW *Silicisphaera*.

"*granulosum*" (Deflandre, 1937b). NOW *Prolixosphaeridium*.

"*heteracanthum*" (Deflandre & Cookson, 1955). NOW *Heterosphaeridium*.

"*hirsutum*" (Ehrenberg, 1838). NOW *Operculodinium*.

"*huguonioti*" (Valensi, 1955a). NOW *Cleistosphaeridium*.

"*israelianum*" (Rossignol, 1962). NOW *Operculodinium*.

"*leve*" (Maier, 1959). NOW *Cleistosphaeridium*.

"*linifera*" (Cookson & Eisenack, 1967b). NOW *Taeniophora*.

"*lobospinosum*" (Gocht in Weiler, 1956). NOW *Chiropteridium*.

"*longifurcatum*" (Firtion, 1952). NOW *Surculosphaeridium*.

BALTISPHAERIDIUM (cont'd)

- "lumectum" (Sarjeant, 1960). NOW *Cleistosphaeridium*.
"machaeophorum" (Deflandre & Cookson, 1955). NOW *Lingulodinium*.
"mixtispinosum" (Klement, 1960). NOW *Prolixosphaeridium*.
"multifurcatum" (Deflandre, 1937b). NOW *Cleistosphaeridium*.
"multispinosum" (Singh, 1964). NOW *Cleistosphaeridium*.
- "neptuni" (Eisenack, 1958). NOW *Achomosphaera*.
"oligacanthum" (W. Wetzel, 1952). NOW *Cleistosphaeridium*.
"palmatum" (Deflandre & Courteville, 1939). NOW *Exochosphaeridium*.
"panniforme" (Gerlach, 1961). NOW *Impletosphaeridium*.
"parvispinum" (Deflandre, 1937b). NOW *Prolixosphaeridium*.
"pattei" (Valensi, 1948). NOW *Lanterna*.
"pectiniforme" (Gerlach, 1961). NOW *Cleistosphaeridium*.
"pilosum" (Ehrenberg, 1843). NOW *Tenua*.
"placacanthum" (Deflandre & Cookson, 1955). NOW *Systematophora*.
"polytrichum" (Valensi, 1947). NOW *Cleistosphaeridium*.
"pseudhystrichodinium" (Deflandre, 1937b). NOW *Exochosphaeridium*.
"ramuliferum" (Deflandre, 1937b). NOW *Achomosphaera*.
"reginaldi" (Mantell, 1844). NOW *Spiniferites*.
"septatum" (Cookson & Eisenack, 1967b). NOW *Spiniferites*.
"spinosum" (White, 1842). NOW *Exochosphaeridium*.
"spiralisetum" (deWit, 1943). NOW *Cleistosphaeridium*.
"striatoconus" (Deflandre & Cookson, 1955). NOW *Conosphaeridium*.
"striolatum" (Deflandre, 1937b). NOW *Exochosphaeridium*.
"tiara" (Klumpp, 1953). NOW *Cleistosphaeridium*.
"triangulatum" (Gerlach, 1961). NOW *Achomosphaera*.
"tribuliferum" (Sarjeant, 1962a). NOW *Cleistosphaeridium*.
"tridactylites" (Valensi, 1955a). NOW *Silicisphaera*.

BALTISPHAERIDIUM (cont'd)

- "*tripodes*" (Morzadec-Kerfourn, 1966). NOW *Spiniferites*.
"*twistringensis*" (Maier, 1959). NOW *Areoligera*.
"*varispinosa*" (Sarjeant, 1959). NOW *Tenua*.
"*vestitum*" (Deflandre, 1938b). NOW *Surculosphaeridium*.
"*whitei*" (Deflandre & Courteville, 1939). NOW *Impletosphaeridium*.
"*xanthiopyxides*" (O. Wetzel, 1933b). NOW *Prolixosphaeridium*.

CYMATIOSPHAERA O. Wetzel, 1933b, p.27 emend. Deflandre, 1954,
p. 257.

- "*cingulata*" (O. Wetzel, 1933b). NOW *Spiniferites*.
"*pterotus*" (Cookson & Eisenack, 1958). NOW *Spiniferites*.

"GALEA" Maier, 1959, p. 305. Jr. homonym of *Galea* Meuschen, 1787.

- "*densicomatum*" (Maier, 1959). NOW *Impletosphaeridium*.
"*galea*" (Maier, 1959). NOW *Areoligera*.
"*koryka*" (Maier, 1959). NOW ?*Chiropteridium*.
"*leve*" (Maier, 1959). NOW *Cleistosphaeridium*.
"*lychnea*" (Maier, 1959). NOW *Areoligera*.
"*mespilana*" (Maier, 1959). NOW *Chiropteridium*.
"*twistringensis*" (Maier, 1959). NOW *Areoligera*.
"*xiphea*" (Maier, 1959). NOW *Hystrichokolpoma*.

GEODIA Lamarck, 1815.

This is a genus of sponge spicules to which Merrill, 1895,
referred the following dinoflagellate species.

- "*austini*" (Merrill, 1895). NOW ?*Systematophora*.
"*hilli*" (Merrill, 1895). NOW *Hystrichosphaeridium*.
"*irregulare*" (Merrill, 1895). NOW *Hystrichosphaeridium*.
"*spini-pansatum*" (Merrill, 1895). NOW *Hystrichosphaeridium*.

GEODIA (cont'd)

"*tripunctata*" (Merrill, 1895). Jr syn. of *Hystrichosphaera furcata* by Sarjeant, 1964b, p.175, and therefore now to be considered a Jr syn. of *Spiniferites ramosus*. See comments under *Hystrichosphaera* and *Spiniferites*.

LEIOSPHAERIDIA Eisenack, 1958, p.2 emend. Downie and Sarjeant, 1963, p.94.

"*lidiae*" (Gorka, 1963). NOW *Palaeocystodinium*.

"*scrobiculata*" (Deflandre & Cookson, 1955). NOW *Pyxidiella*.

MICRHYSTRIDIUM Deflandre, 1937b, p.79 emend. Lister, 1970, p.77.

"*paulinae*" (Valensi, 1953). NOW *Polysphaeridium*.

"*veligerum*" (Deflandre, 1937b). NOW *Microdinium*.

PTEROSPERMOPSIS W. Wetzel, 1952, p.411.

"*pelagica*" (Eisenack, 1954). NOW *Thalassiphora*.

"*vancampoae*" (Rossignol, 1962). NOW *Tuberculodinium*.



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