The Anemiacean, Schizaeacean and Related Spores: An Index to Genera and Species

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ABSTRACT

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Mesozoic and Cenozoic fossil spores with costate ornament have affinities to recent anemiacean ferns while fossil reticulate monolete spores have affinities to the recent schizaeacean ferns. Both groups are closely allied within the Order Schizaeales and they comprised a major portion of the fossil spores in the Late Jurassic and Early Cretaceous suggesting greater diversity, larger populations and wider geographical distributions for the Schizaeales during the Mesozoic than at present.

Previously proposed phylogenetic classification schemes for the Schizaeales were based mainly on characteristics of recent taxa. A modified phylogenetic classification is proposed to incorporate data from the fossil spore record.

A five part index of genera and species for costate spores, reticulate monolete spores, biorecords, implicated spores and pollen, macrofossils and recent plants is ordered alphabetically and includes 1843 entries, 177 new combinations, 11 new names, and 3 changes of rank.

RÉSUMÉ

Davies, E.H. 1985. The anemiacean, schizaeacean and related spores: An index to genera and species. Can. Tech. Rep. Hydrogr. Ocean Sci. 67: viii + 218 p.

Des spores fossiles datant du Mésozoïque et du Cénozoïque et portant une ornementation à côtes présentent des affinités avec les fougères actuelles de la famille des Anemiaceae, tandis que les spores fossiles réticulées de type monolète présentent des affinités avec les fougères actuelles de la famille des Schizeaceae. Ces deux groupes sont étroitement apparentés dans l'ordre des Schizaeales et comprennent une grande partie des spores fossiles recueillies dans les terrains du Jurassique supérieur et du Crétacé inférieur. Ceci nous suggère une plus grande diversité, de plus vastes populations et une répartition géographique plus large des Schizaeales durant le Mésozoïque qu'actuellement.

Les diverses classifications phylogénétiques proposées pour les Schizaeales étaient surtout basées sur les caractéristiques des taxa actuels. On propose une classification phylogénétique modifée pour incorporer les données de l'étude palynologique.

On a ordonné alphabétiquement un index en cinq parties des genres et espèces reconnus pour les spores à côtes, réticulées et de type monolète, leur biostratigraphie, les spores et pollens concernés, les macrofossiles et les plantes actuelles. Cet index comprend 1843 sujets, 177 nouvelles combinaisons, 11 nouvelles désignations, 3 changements de rang.

TABLE OF CONTENTS

INTRODUCTION

Mesozoic and Cenozoic fossil spores with cicatricose, canaliculate, costate or striate ornament form a coherent morphological group with close phylogenetic affinities. In general they are produced by members of the leptosporangiate schizaealean ferns which are related to the recent genera *Actinostachys, Anemia, Ceratopteris, Hemianemia* and *Mohria.*

The spores are generally robust and thick walled, caniculate to cicatricose or costate. A supramural spinate, baculate, verrucate, foveolate or granulate ornament may be developed on the costa as in the fossil genera *Nodosisporites* and *Costatoperforosporites* and the recent species *Anemia phyllitidis.* The costa may be interconnected or isolated and developed into apical thickenings as in *Plicatella baconensis,* elaborated into cock's combs as in *Plicatella cristata,* or elongated into long lance-like appendices as in *Plicatella tricuspidata.* In some genera the equatorial costa are more strongly developed than from elsewhere on the spore resulting in interradial crassitudes as in *Striatella* or in a complete cingulum as in *Contignisporites.* Both monolete and trilete forms may be found in fossil and recent genera. For example the recent genera *Actinostachys* has monolete striate spores with close resemblance to the spores of the fossil genera *Striamonoletes* and *Corniculatisporites,* and the recent genera *Mohria* and *Hemianemia* have trilete striate spores with close resemblance to the spores of the fossil genera *Cicatricosisporites* and *Plicatella.*

The spores of several fossil genera from the Paleozoic show superficial affinities to the Mesozoic cicatricose spores by having similar striate ornament.

Callisporites Butterworth and Williams, 1958 has a thick cingulum and distal coni, verrucae or irregular ridges (Namurian). *Camptotriletes* Naumova, 1939 ex Potonié and Kremp, 1954 contains a number of species (e.g., *C. biornatus)* with ornamental elements aligned in striae (Westphalian). *Provolutisporites* Teteryuk *in* Araslanova and Teteryuk, 1972 has crescentic 'folds' more or less parallel to the amb (Middle Carboniferous). *Proprisporites* Neves, 1958 with its cicatricose perisporal folds Carboniferous). *Savitrisporites* Bhardwaj, 1956 has a prominent cingulum, slight auriculae and coalescent coarse sculpture. *Striasporis* Kar, 1969 is striate proximally (Late Permian). *Striatosporites* Bhardwaj, 1954 and *Columnisporites* Pepper, 1964 have anastomosing and branching costate sculpture (Late Pennsylvanian). None of these, however, can be related readily to the schizaealean ferns with costate spores.

Using the ages given for the holotypes for species listed in the index, a generic range chart (Fig. 1) has been compiled and serves as the base for the following succession of the anemiacean and schizaeacean spores.

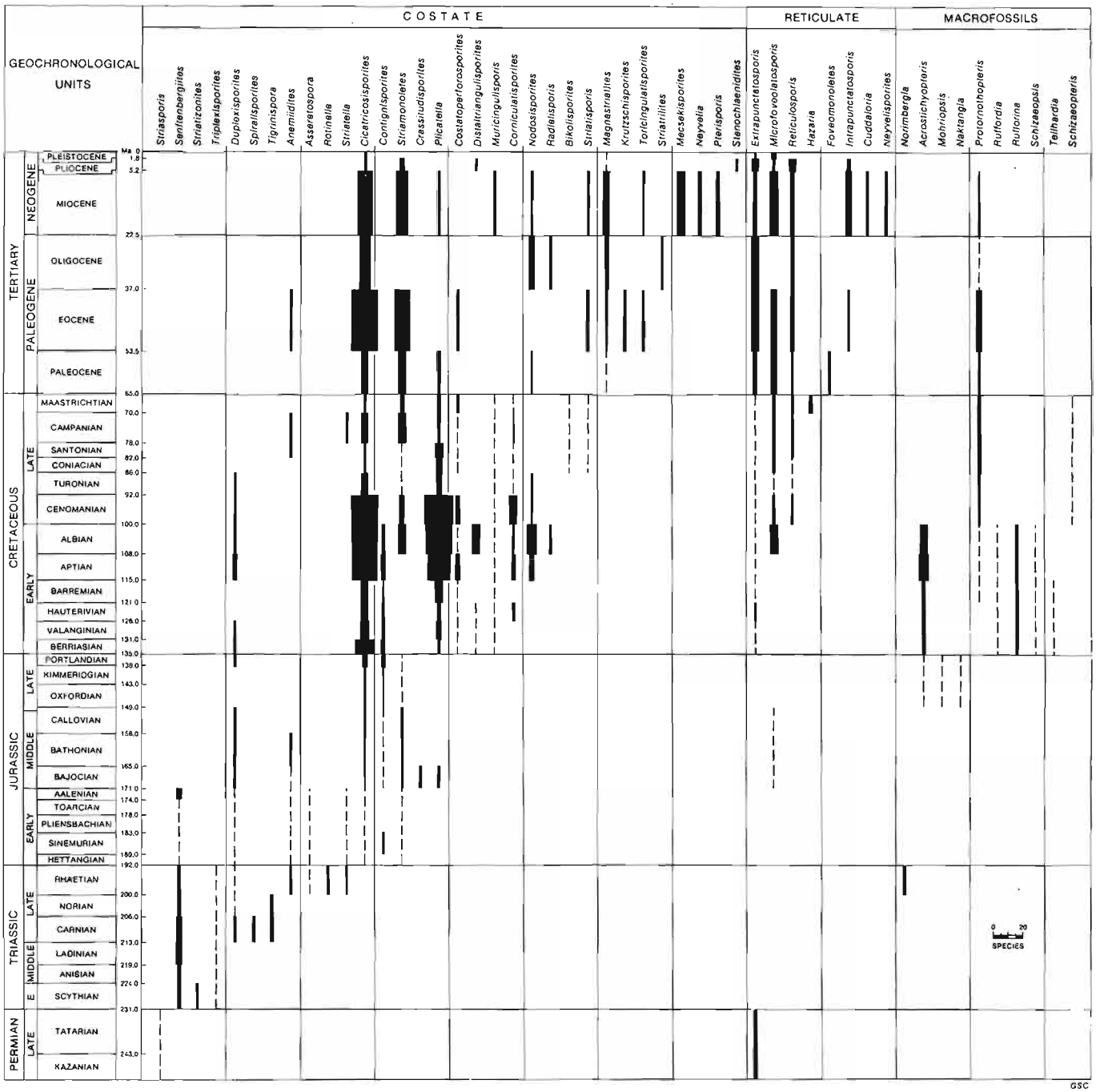

Figure 1. Ranges for valid fossil genera. The costate spore genera *(Anemiaceae* plus two Schizaeacean genera *Striamonoletes* and *Corniculatisporites)*, the reticulate monolete spore genera *(Schizaeaceae)*, and the macrofossil genera are separated from left to right. The width of the lines indicates the number of valid species described from one stage. If the given age of the holotype specimen was greater than one stage the line width was reduced proportionately to the equivalent number of stages. The dotted lines represent .5 species or less described per stage.

Arising most probably in the Early Triassic with the genera *Striatizonites* and *Triplexisporites* as a minor component of the palynoflora, cingulate, costate, trilete spores were developed during the Triassic to Middle Jurassic (Fig. 2) with the genera *Anemiidites, Asseretospora, Duplexisporites, Rotinella, Senftenbergiites, Striatella* and *Tigrinispora.*

The earliest age recorded for the acinculate, costate genus *Cicatricosisporites* has been made by Agrali (1964) with the species *C. primigenius* from the Carboniferous. However, this occurrence would appear more likely to the contamination from younger material. The next earliest species is *?C. jurassica* (Kara Murza, 1954) comb. nov., which has been recorded from the Early Jurassic. More definite recordings of early *Cicatricosisporites* have been made in the Middle Jurassic, namely *C. obliguus* (Maljavikina, 1949) comb. nov.

In the Middle Jurassic, diversification of cingulate genera continued with the introduction of such genera as *Crassitudisporites* and *Contignisporites.* The first possible auriculate species occurred in the Bajocian with a species questionably placed in *Plicatella,* namely *P. kushmurunica.* As well, the first monolete spores with costate or microfoveolate ornament have been recorded but they are only questionably attributable to *Striamonoletes* and *Microfoveolatosporis,* namely *S. digitatopsis* and *?M. pennulopsis.*

In the Late Jurassic the genera *Cicatricosisporites, Contignisporites* and *Plicatella,* which contain the greatest number of costate species, became established and began to rapidly diversify in the Tithonian by developing many costate patterns and shapes of auriculae. In the Early Cretaceous, these genera diversified increasingly and coincided with the entrance of costate trilete spores with foveolae within the muri as in the genus *Costatoperforosporites* and the entrance of the cingulate trilete genus *Distaltriangulisporites.* The trilete forms with supramural ornament on the costa such as *Nodosisporites* became common by the Aptian-Albian. These spores are morphologically identical to those of the section *Phyllitides* of the recent genus *Anemia.* Costate monolete forms such as *Corniculatisporites* with auriculae are similar to the spores of the recent genus *Actinostachys* and first appeared in the Albian. The monolete foveoreticulate spores of *Microfoveolatosporis,* which are similar to the spores produced by the recent genera *Schizaea* and *Microschizaea,* were established in the Albian.

During Late Cretaceous and Paleocene times costate spores were sparce. In the Cenomanian species of *Cicatricosisporites, Plicatella, Nodosisporites* and *Corniculatisporites* continued to diversify. However, a steady decline in species diversity and abundances for those genera began in the Turonian and continued through the Maastrichtian. Most Early Cretaceous genera such as *Plicatella, Striamonoletes, Corniculatisporites, Cicatricosisporites* and

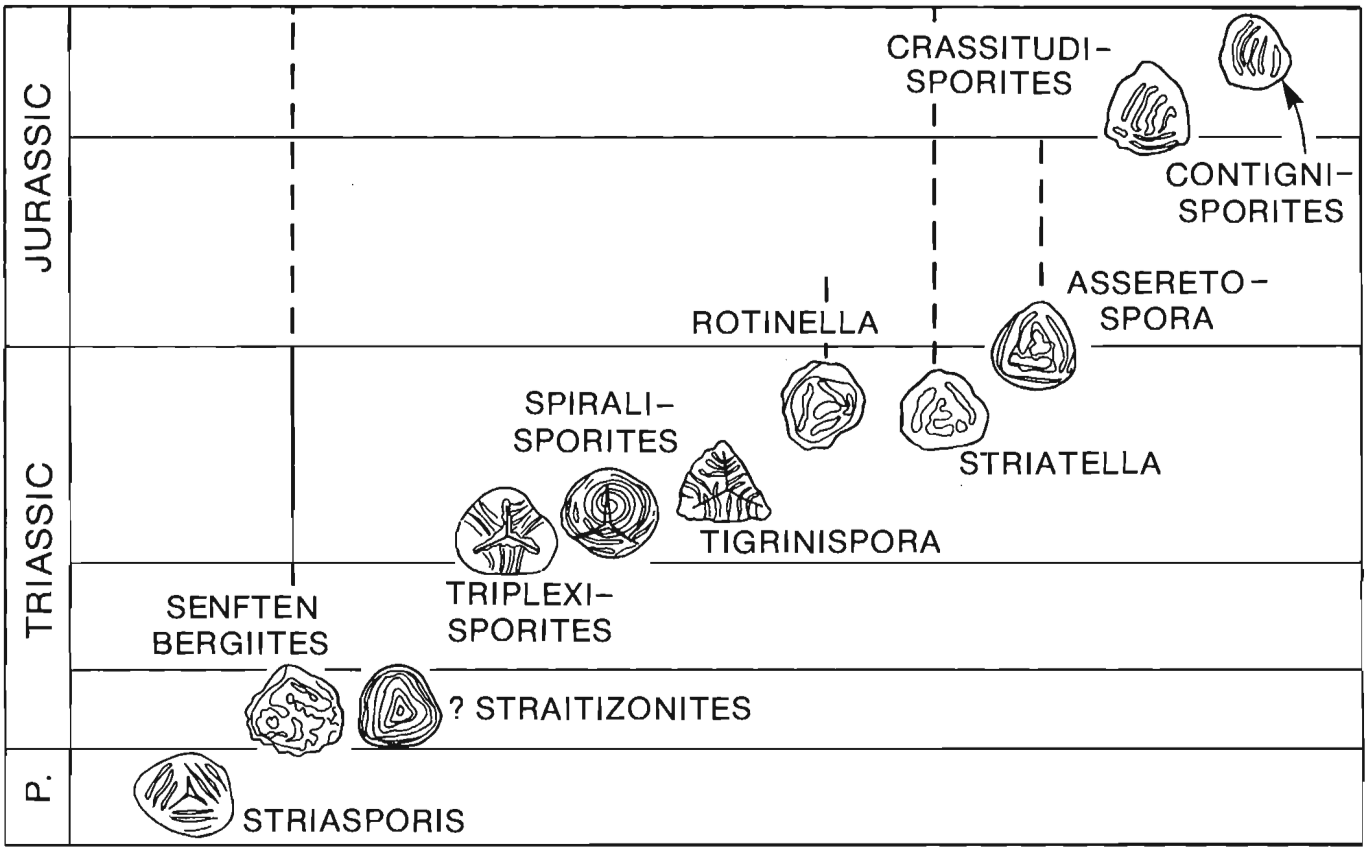

Figure 2. The succession of genera with costate ornament patterns that may be precursors to the later anemiacean genera of the Late Jurassic.

Microfoveolatosporis were still present by the end of the Cretaceous along with the new genera *Bikolisporites, Extrapunctatosporis, Hazaria, Muricingulisporis, Reticulosporis* and *Striatisporis.*

In the Paleogene, a renewed period of diversification began. The genera *Krutzschisporites, Magnastriatites, Striatriletes* and *Radialisporis* appeared while Cretaceous genera *Cicatricosisporites, Nodosisporites, Extrapunctatosporis, Hazaria* and *Striamonoletes* and *Hazaria* continued. *Magnastriatites* can be compared to the spores from the recent parkeracean genus *Ceratopteris.*

In the Miocene another radiation occurred as the following genera appeared: *Mecsekisporites* (suggested by Pacltova and Simonscics, 1970 to be related to the recent genus *Anagramma* from the family Gymnogrammaceae), *Cuddaloria, Toricingulatisporites, Neyvelia, Neyvelisporites, Intrapunctatosporis,* and *Pterosporis.* In the Pliocene, the striate-rugulate monolete genus *Stenochlaenidites* appeared.

The geological history of the cicatricose spores follows closely similarly to the general trend of pteridophyte evolution outlined by Pichi-Sermolli (1973: p.28).

> "The pteridophytes are ancient plants; they developed rapidly, but only a sparse representative of the primitive stock has survived up to our era. It is formed by different groups, each consisting of one or few families, mainly monotypic. Their relationship is so obscure as to induce some people to maintain that pteridophytes are polyphyletic. Besides these ancient and fragmentary types, the living pteridological flora consists of a fairly rich complex of groups which we regard as derived from primitive types. It appears to belong to a single line of evolution, but its groups are so heterogeneous as to suppose that they had run independently from a fairly early time. Most of them are characterized, like all plants of ancient origin, by a great genetic plasticity which has had a great importance in hindering the rising up of deep differentiations within each group; thus the distinction is chiefly based on a series of small characteristics rather than on one or few sharp differences..... Living pteridophytes are the survivors of a group which once had to be more varied in forms and was more important than now. Paleobotanists try to find the connection-lines between the extinct pteridophytes and to understand their phylogeny. No real progress can be made in our studies without collaboration since in an ancient group we cannot study living plants without knowing the fossils."

This index on cicatricose spores has been compiled in response to the positive effect that the index of genera and species for fossil dinoflagellates by Lentin and Williams (1973, 1975, 1977, 1981) has had on stabilizing taxonomy and nomenclature of that group. It is hoped that this new index will stimulate a similar interest in developing cohesiveness in terrestrial-derived palynomorph taxonomy and nomenclature.

Computer searches were made for all likely fossil costate spore genera and species from approximately 10,000 abstracted publications contained in a palynological literature data base system supported by the Geological Survey of Canada. This was complemented with extensive library research to locate a total of 1843 entries with 54 genera and 685 species or subspecies of fossil costate spores. Similarly 12 genera and 111 species of fossil microfoveolate to microreticulate spores and those were found.

The index consists of six sections, identified by a letter from **A** to **F**. Section **A** comprises an index of all legitimately published species and genera of costate fossil spores (31 valid genera). Section **B** comprises an index of microfoveolate or microreticulate monolete spores (8 valid genera). Section **C** consists of published biorecords (Hughes and Moody-Stuart, 1966, 1967, 1969) and their binomial equivalents as suggested in the literature. Section **D** contains a supplementary index of genera and species of spores and pollen in which the genera typically do not contain cicatricose or microfoveolate spores but they have had such species assigned to them at one time. Section **E** comprises taxa of macrofossil and recent genera with affinities to the families Schizaeaceae, Anemiaceae or Parkeraceae and other recent genera containing species with striate spores. Short descriptions of spores are given where known. The completeness of this section can not be guaranteed since many old papers are unattainable leaving numerous entries yet to be validated. It is hoped, however, that this will be fully developed in later editions of the index. In section **F** references are listed. Unfortunately a number of the older citations that were obtained from other papers could not be referenced exactly.

The format for this index follows similarly to that of Lentin and Williams (1973). The genera, species and intraspecific names are arranged in alphabetic order. The full reference follows for both the original and current generic assignments, including the author, date, page, plate, and figure numbers of the original assignment. However, for intermediate assignments only the original author and date, and the author, date and page of the reassignments are given. This citation is followed by a taxonomic term (see Table 1) when needed and then by the age of the type material. Next is a comment where necessary. Following this, in cases where a species has been assigned to more than one genus, there is either the current generic assignment preceded by the adverb 'NOW' or the former generic assignments preceded by the adverb 'formerly'. Lastly the type species of the genus is indicated by 'Type

TABLE 1

Definition of the terms and symbols used herein, as follows:

CFSP: Catalog of Fossil Spores and Pollen, Palynological Laboratories, Department of Geology, College of Mineral Industries, The Pennsylvanian State University, Pennsylvania, U.S.A.

ICBN: International Code of Botanical Nomenclature (Stafleu *et.al.*, 1978)

alias: having been referred to by another name

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

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

ex: Latin, out of, from; indicates the validating authors.

in: the connecting word used to indicate an author whose work has been published by another author. Another informal 'in' (not italicized) is used to connect the originating author with a subsequent author in whose work the name was located.

nom. cons., nomen conservum: Latin, a conserved name

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

nom. 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

species' and the name is emphasized in bold type. Names for species and infraspecific taxa which have been included within two or more genera are cross-referenced.

Initially the intention was to objectively list all the species included in this group of species. It quickly became apparent that with all the inconsistencies found in published taxonomy and nomenclature, it would be necessary to assess as many taxa as possible and reassign them appropriately. The major problems encountered may be grouped into five categories: priority and legitimacy, form and organ genera, hollow genera, autonyms and tautonyms.

Priority and legitimacy is the most extensive problem to overcome. In many cases it was necessary to take a stance when either side could be validly argued. For each question an attempt was made to follow the ICBN adopted in 1975, Leningrad (Stafleu *et.al.*, 1978) and reference the appropriated article.

Form- and organ-genera have been reserved historically for fossil plants where only a portion of the plant is available for study, for example spores. Palynologists have thus employed the concept of spore species and spore genera and have maintained a nomenclatural system separate from the modern and macrofossil nomenclature. Jansonius (1981) so ably commented on the subject:

> 'Practical problems of spore systematics result from imperfect knowledge and understanding. Virtually identical problems are faced by palaeobotanists working with named parts of plants, by mycologists or phycologists working with named stages in life cycles, and even by neobotanists working with incomplete herbarium specimens. There are no reasons for palynologists to aim for nomenclatural procedures different from those of other plant taxonomists.'

In the 1938 version of the ICBN the concept of organ-genera and form-genera were combined. A detailed discussion of this may be found in Jansonius (1981). Article 3, ICBN, defines form-genera:

> 'Because of the fragmentary nature of the specimens on which the species of some fossil plants are based, the genera to which they are assigned are not assignable to a family, although they may be referable to a taxon of higher rank. Such genera are known as form-genera.'

Articles 2 and 3 also indicate that every individual plant is to belong to a number of taxa of consecutively subordinate ranks: kingdom, genus, family, order, class, division and species. The ICBN does not distinguish dispersed spores from in situ spores. Neither should the spores be classified separately from the rest of the plant especially above the family level. Palynologists such as Bolchovitina (1961) and Rouse

(1959) have attributed fossil cicatricose spores to recent genera. The attempts were highly commendable. However, the spore characters of the recent genera have only been studied on relatively few species. The full generic and specific variations are therefore not known. At this time, to attribute all cicatricose spores to recent genera would be premature, bearing in mind the statement of Pichi-Sermolli (1973) above, since the recent genera are probably a remnant of a larger number of genera which occurred in the past. Within the index all fossil species that were placed in recent genera of the Schizaeaceae, Anemiaceae and Parkeraceae have been transferred to their appropriate genus found in the fossil record.

The hollow genus is a significant taxonomic problem. As outlined by Lentin and Williams (1973, p. 3):

> 'This occurs when an individual transfers the type of a genus to another genus without attending to the remaining species within the genus. These species will not automatically return to their original designations. They are rather left hanging in a 'hollow genus', a genus with no type species....

Examples of this may be found in Dörhöfer's (1977), Singh's (1971) and Srivastava's (1975b) treatments of *Plicatella* vs. *Appendicisporites*. All three authors have considered one or the other of these two genera as the senior synonym for various reasons. However, they transferred only a few species to the genus that they considered senior. This has left the bulk of the species in a hollow genus.

An *autonym* arises where an infraspecific taxon has been published that is differentiated from the type of the species. The type of the species automatically typifies an infraspecific taxon which maintains the name of the species. In a number of instances for example within the species *Plicatella incisurata*, the type subspecies was named differently, i.e. *P. incisurata typica*. The name for the subspecies must then be returned to that of the species *(P. incisurata incisurata)*. All autonyms are correctly indicated in this index.

A *tautonym* arises (Article 75, ICBN):

> 'When two or more generic names are so similar that they are likely to be confused, because they are applied to related taxa, or for any other reason, they are to be treated as variants, which are homonyms when they are based on different types'.

An example which may be found in the costate spores is *Cicatricosisporites* and *Cicatricososporites*. The names of these genera differ only by one letter, an *'i'* for an *'o'* before *'sporites'*. This has been a common practice in palynology in the

past to differentiate similar genera with different aperture types. The ICBN, however, clearly indicates by example *(Pleuripetalum* and *Pleuropetalum)* that names such as these are homonyms and that the junior homonym must be renamed, unless it has been legitimately conserved. These, in this index tautonyms are renamed and possible tautonyms are indicated.

CLASSIFICATION AND PHYLOGENY

The classification of recent homosporous ferns has been reviewed by Pichi-Sermolli (1973). Characters such as chromosome counts and prothallial morphology have been rapidly increasing in importance. The former is quite variable in ferns, especially in the Schizaeales. The use of spore morphology has played historically only a minor role in assisting in the development of the classification.

The fossil record of fern spores has been generally neglected in the development of a natural classification, even though there has been a tremendous expansion in the amount of data available over the past thirty years. Time is the only true test of evolutionary sequences and no other record of fossil organs of ferns can compare to that of fossil spores for the completeness and continuity. The combined classification proposals by Reed (1947) and Nayar (1970) appears to agree most closely with the fossil record of cicatricose spores.

Since spores from different families may have grossly similar characteristics it has been traditional to set the spore record aside. Thus an independent classification has developed for fossil spores based on Potonié's series of *Sporae Dispersae* catalogues (1956, 1958, 1960, 1966, 1970). Within this scheme all spore characters are set into an artificial phenetic hierarchy with little reference to phylogenetic trends or natural relationships. Spores of fern families, genera or even species may be separated into different supergeneric categories of Potonié's scheme. For example, many species or genera exhibit variability in the number of laesurae (e.g., they may be monolete to trilete). This results in a major separation at the Turma level. This system is useful as a quick guide or key to morphologically similar spore genera but it is difficult to use as a model from which one can derive biological concepts.

The Phylogenetic Classification of Reed (1947)

Reed (1947, p.71) attempted to revolutionize the approach to classification of ferns by placing

> "emphasis primarily on the morphology of the spores and secondarily on the structure of the sporangia, the indusia, the scales, the hairs, the stomata and the laminar tissue, as well as of the stelar anatomy".

He also compared fossil and recent species; this approach

> "aided considerably in establishing a more reasonable and coherent phylogenetic classification of the ferns".

In this study Reed (1947) established the Order Schizaeales and subdivided it as follows:

Order Schizaeales
- Family Senftenbergiaceae
  - Genus *Senftenbergia*
  - Genus *Haplopteris*
  - Genus *Cladotheca*
- Family Klukiaceae
  - Genus *Klukia*
  - Genus *Naktongia*
  - Genus *Ruffordia*
  - Genus *Schizaeopteris*
- Family Tempskyaceae
  - Genus *Tempskya*
- Family Acrostichopteridaceae
  - Genus *Acrostichopteris*
  - Genus *Schizaeopsis*
  - Genus *Pelletieria*
- Family Schizaeaceae
  - Genus *Schizaea*
  - Genus *Actinostachys*
  - Genus *Microschizaea*
- Family Lygodiaceae
  - Genus *Lygodium*
- Family Anemiaceae
  - Genus *Protornithopteris*
  - Genus *Ornithopteris*
  - Genus *Hemianemia*
  - Genus *Anemia*
- Family Mohriaceae
  - Genus *Mohria*

The Phylogenetic Classification of Nayar (1970)

Nayar (1970) used chromosome counts, prothallial morphology, spore morphology and anatomy of extant ferns, in addition to other traditional morphological criteria to suggest that (Nayar, 1970, p. 229)

> 'current interpretations of taxonomy and evolution of the homosporous ferns are possibly not totally acceptable'

The proposals for the Schizaeales were similar to those of Reed (1947).

CLASS FILCOPSIDA
- Subclass *Filicidae*
  - Order Schizaeineae (terminated as a suborder)
    - Family Schizaeaceae
      - Genus *Schizaea*
      - Genus *Actinostachys*
      - Genus *Lophidium*
    - Family Anemiaceae
      - Genus *Anemia*
      - Genus *Mohria*
    - Family Parkeriaceae
      - Genus *Ceratopteris*
    - Family Lygodiaceae
      - Genus *Lygodium*
    - Family Pteridaceae
      - Genus *Pteris*
      - Genus *Anopteris*
      - Genus *Eriosorus*
      - Genus *Jamesonia*
      - Genus *Pterozonium*
      - Genus *Onychium*
      - Genus *Pityrogramma*
      - Genus *Trismeria*
    - Family Cheilanthaceae
      - the Cheilanthoid genera
      - Genus *Pellaea*
      - Genus *Cryptogramma*
      - Genus *Hemionitis*
      - Genus *Bommeria*
      - Genus *Trachypteris*
      - Genus *Gymnopteris*
    - Family Adiantaceae
      - Genus *Adiantum*
      - Genus *Acrostichum*
      - Genus *Coniogramma*
      - Genus *Craspedodictyum*
      - Genus *Synogramma*
    - Family Vittaiaceae
      - (as presented by Copeland, 1947)

This classification of recent genera has the greatest agreement with data from fossil schizaealean ferns, especially their fossil spores. The phylogeny proposed by Nayar is presented in Fig. 3. Nayar (1970, p. 232) summarizes the relationships of the Schizaeales as:

> 'consisting of a group of the three relatively primitive families, Schizaeaceae, Anemiaceae and Lygodiaceae from which five other families of modern ferns are de-

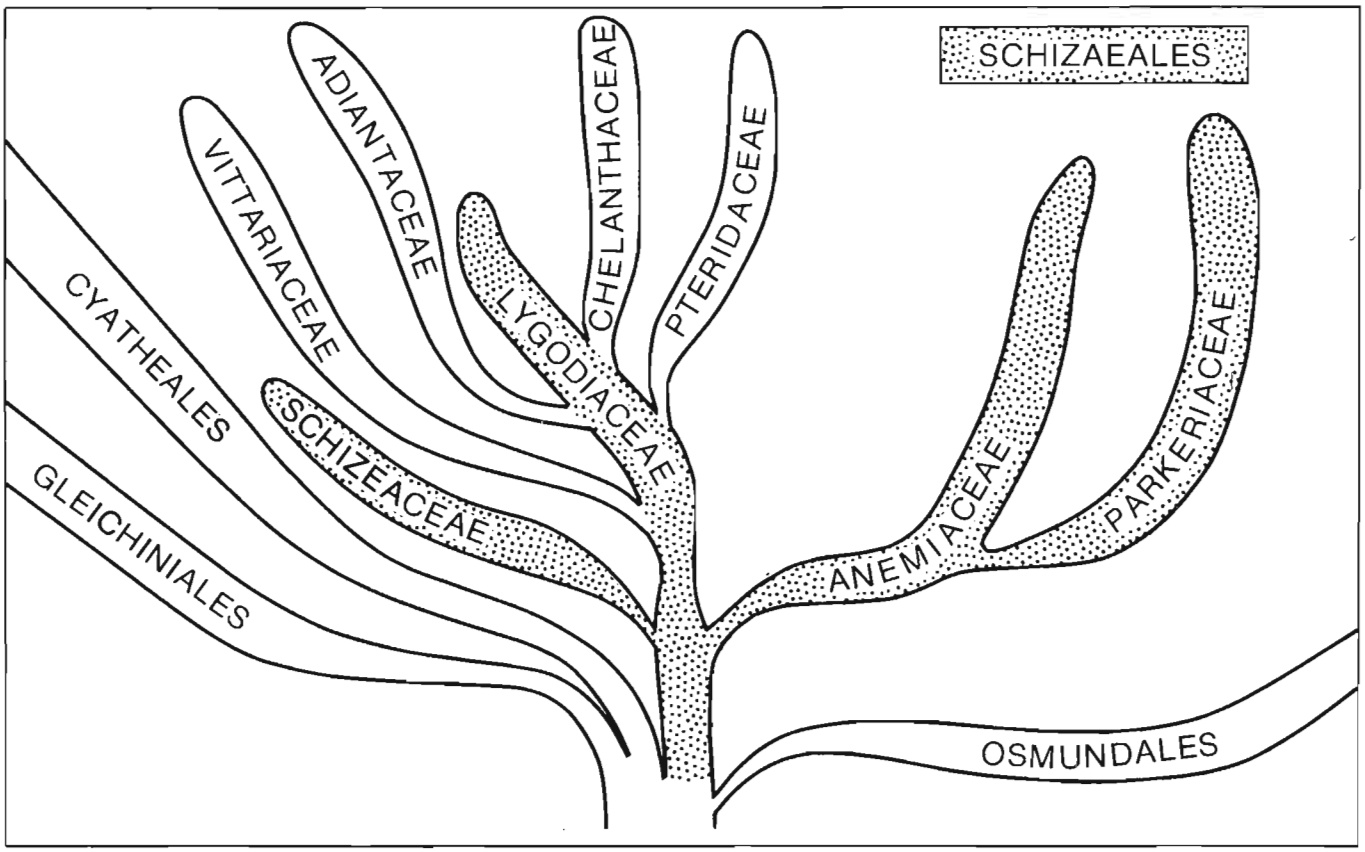

Figure 3. Schizaealean phylogeny after Nayar (1970).

rived. The Schizaeaceae seem to represent a blind end of evolution, and are presented here as devoid of any derivatives. The Anemiaceae on the other hand, are in all probability ancestral to the Parkeriaceae. The Vittariaceae, Adiantaceae, Cheilanthaceae and Pteridaceae, each following its own line of specialization and derived independently of each other. Among these four families, the Vittariaceae and the Adiantaceae are more closely allied to each other than either of them to the Cheilanthaceae and the Pteridaceae.'

The Phenetic Classification of Potonié

The classification separates genera and species into a hierarchial system of classes called 'turma'. All spore characters are weighted evenly throughout the system. No intent was made to relate spores of similar affinities or derivation.

ANTETURMA SPORITES
- TURMA MONOLETES
  - Subturma Azonomonoletes
    - Genus *Extrapunctatosporis*
    - Genus *Intrapunctosporis*
  - Infraturma Sculptatomonoleti
    - Genus *Corniculatisporites*
    - Genus *Cuddaloria*
    - Genus *Foveomonoletes*
    - Genus *Hazaria*
    - Genus *Microfoveolatosporis*
    - Genus *Neyvelisporites*
    - Genus *Reticulosporis*
    - Genus *Stenochlaenidites*
    - Genus *Striamonoletes*
- TURMA TRILETES
  - Suprasubturma Acavatriletes
    - Subturma Azonotriletes
    - Infraturma Striasporiti (Kar, 1967)
      - Genus *Anemiidites*
      - Genus *Cicatricosisporites*
      - Genus *Costatoperforosporites* (pars)
      - Genus *Magnastriatites*
      - Genus *Mecsekisporites*
      - Genus *Neyvelia*
      - Genus *Nodosisporites*
      - Genus *Cibotiumsporites*
      - Genus *Bikolisporites*
      - Genus *Pterosporis*
      - Genus *Radialisporis*
      - Genus *Rotinella*

Genus *Senftenbergiites*
Genus *Spiralisporites*
Genus *Striasporis*
Genus *Striatisporis*
Genus *Triplexisporites*
Subturma Zonatriletes
Infraturma Auriculati
Genus *Costatoperforosporites* (pars)
Genus *Plicatella*
Infraturma Cingulati
Genus *Asseretospora*
Genus *Contignisporites*
Genus *Crassitudisporites*
Genus *Duplexisporites*
Genus *Krutzschisporites*
Genus *Muricingulisporis*
Genus *Striatella*
Genus *Striatizonites*
Genus *Tigrinispora*
Genus *Toricingulatisporites*

A Modified Phylogenetic Classification Incorporating the Fossil Record

On the basis of the fossil records combined with the recent phylogenetic relationships proposed by Reed (1947) and Nayar (1970) a modified phylogenetic (Fig. 4) classification is proposed. Due to the lack of in situ spore studies on the Acrostichopteridiaceae, the "proto-Anemiacean" spores are included in a separate informal family for the present.

Order Schizaeales Reed
Family Acrostichopteridiaceae Reed
Macrofossil Genera:
Acrostichopteris
Cladophlebis (pars)
Norimbergia
?Schizaeites
Teilhardia
Family "proto-Anemiaceae"
Fossil Spore Genera:
Anemiidites
Asseretospora
Bikolisporites
Contignisporites
Crassitudisporites
Distaltriangalisporites
Duplexisporites
Rotinella
Senftenbergiites

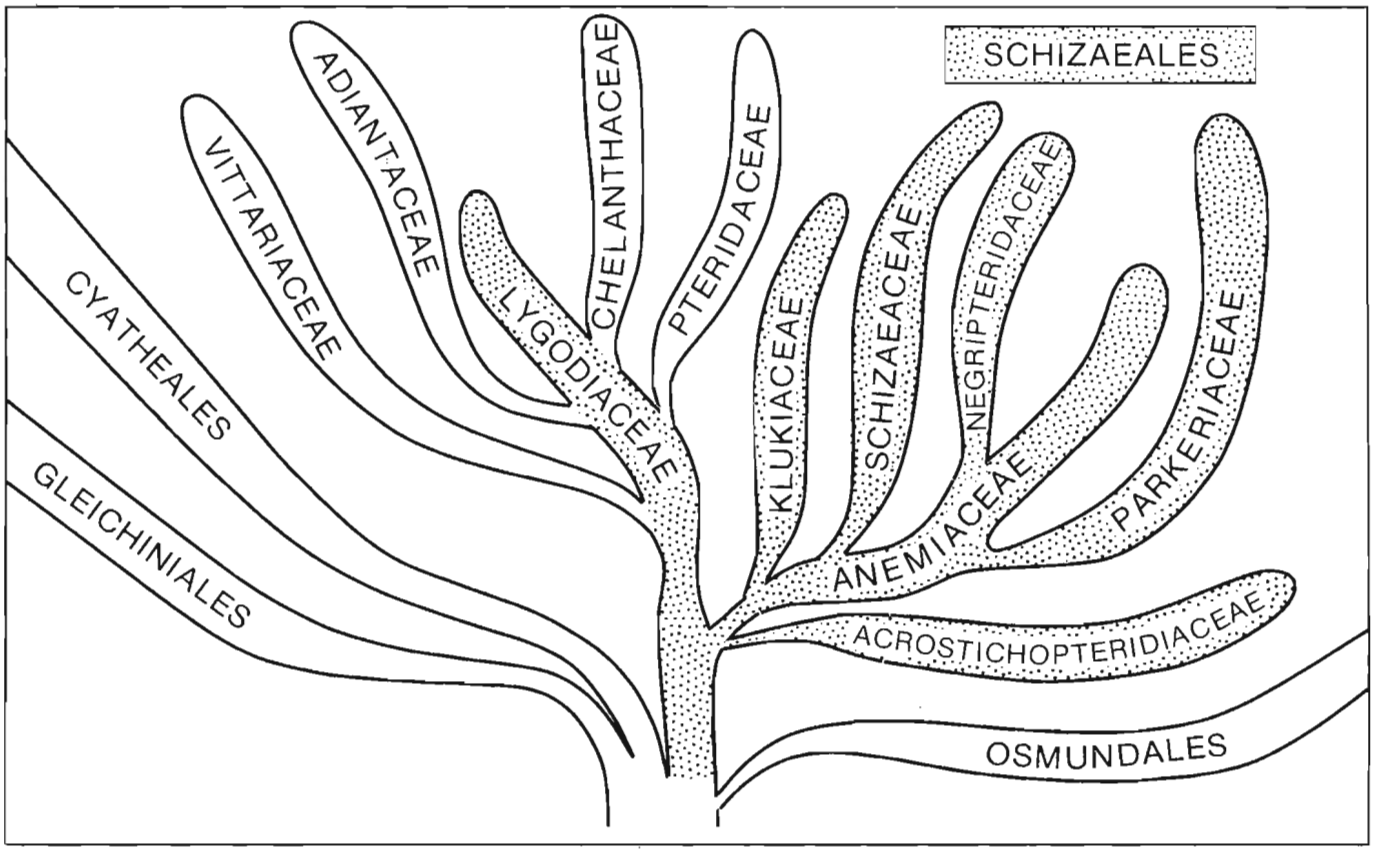

Figure 4. Modified schizaealean phylogeny based on both the fossil record and the recent phylogenetic relationships proposed by Nayar (1970) and Reed (1947).

Spiralisporites
Striasporis
Striatella
Striatizonites
Tigrinispora
Triplexisporites

Family Negripteridaceae Pichi-Sermolli
Modern Genus:
Negripteris

Family Anemiaceae Reed
Fossil Spore Genera:
Cicatricosisporites
Costatoperforosporites
Nodosisporites
Plicatella
Radialisporis
Striasporis
Macrofossil Genera:
Aneimidium
Mohriopsis
Pelleteria
Protornithopteris
Ruffordia
?*Ruflorina*
Schizaeopsis
Schizaeopteris
Modern Genera:
Anemia
Hemianemia
Mohria
Ornithopteris

Family Klukiaceae
Fossil Spore Genera:
Ischyosporites
Klukisporites
Macrofossil Genera:
Klukia
Naktangia

Family Schizaeaceae
Fossil Spore Genera:
Corniculatisporites
Cuddaloria
Extrapunctatosporis
Hazaria
Intrapunctosporis
Microfoveolatosporis
Neyvelia
Neyvelisporites

Striamonoletes
Macrofossil Genera:
Schizopteris
Modern Genera:
Actinostachys
Schizaea (Lophidium)
Microschizaea
Schizaea (Schizaea)

Family Parkeriaceae
Fossil Spore Genus:
Magnastrialites
Macrofossil Genera:
None known
Modern Genera:
Ceratopteris

Other closely related fossil spore genera which may have ancestors in the "proto-Anemiaceae", Acrostichopteridiaceae or Anemiaceae and which may have led to the more advanced fern families of the Schizaeales are:

Distalrugulatisporites
Krutzschisporites
Mecsekisporites
Muricingulisporites
Pterisporis
Stenochlaedidites
Toricingulatisporis

ACKNOWLEDGEMENTS

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Drafting and typing were aptly performed by G.M. Grant and N. Koziel respectively and to them a special thank you.

GENERA AND SPECIES INDEX

SECTION A

COSTATE AND RELATED SPORES

ANAGRAMITES Bolchovitina, 1956, p.61. A junior synonym of *Cicatricosisporites*.

Anagramites imperfectus (Maljavkina, 1953, p.62, pl.12, fig.4. Bolchovitina 1956, p.35. Early Cretaceous. NOW *Cicatricosisporites*. Type species.

ANEIMITES Kara-Murza and Romanovskaja *in* Romanovskaja, 1963, p.130. Junior homonym of *Aneimites* (Dawson) Ettinghausen, 1885 (fossil plant). Possibly a junior synonym to *Plicatella*.

Aneimites anogrammensis Kara Murza *in* Il'Ina, 1961, p.60 nomen nudum. Diagnosis, description and illustration were not given contrary to Article 38, ICBN.

Aneimites kushmurunicus Romanovskaja, 1963, p.130, pl.13, fig.3. NOW *?Plicatella*.

ANEMIAESPORITES Shugayevskaya *et al.*, 1974, p.45 nomen nudum It appears that Shugayevskaya *et al.* (1974) applied the name *Anemiaesporites* to replace *Anemia* for fossil spores as used by Bolchovitina (1961). Discussion, description and proper references were not given to validate this substitution contrary to Article 32.1, ICBN.

Anemiaesporites auriferus (Verbitskaja) Bolchovitina *in* Shugayevskaya *et al.*, 1974, p.51 nomen nudum.

Anemiaesporites caucasicus (Bolchovitina) Bolchovitina *in* Shugayevskaya *et al.*, 1974, p.49 nomen nudum.

Anemiaesporites exiliodites (Maljavkina) Bolchovitina *in* Shugayevskaya *et al.*, 1974, p.45 nomen nudum. Orthographic error for *Anemiaesporites exilioides*.

Anemiaesporites exilioides (Maljavkina) Bolchovitina *in* Shugayevskaya *et al.*, 1974, p.48 nomen nudum. NOW *Cicatricosisporites*.

Anemiaesporites pseudoauriferus (Bolchovitina) Bolchovitina *in* Shugayevskaya *et al.*, 1974, p.51 nomen nudum. NOW *Cicatricosisporites*.

ANEMIIDITES Ross, 1949, p.32. A genus containing trilete, spinate spores. This genus may be related to *Nodosisporites* where the supramural spines have become well developed in such a manner that the muri are usually obliterated leaving only the alignment of spines as the vestige of the muri, i.e. *Nodosisporites babsei*. Potonié (1956) and Ross (1949) suggest affinities to *Anemia*.

Anemiidites brevipapillosus (Couper, 1958, p.144, pl.22, fig.11-12) Döring, 1966c, p.76, Bathonian; formerly *Pilosisporites*.

Anemiidites echinatus Ross, 1949, p.32, pl.1, fig.17. Late Santonian to Early Campanian. Type species.

Anemiidites echinosporus (Potonié, 1934, p.45, pl.1, fig.33; pl.6, fig.6) Potonié, 1956, p.33. Eocene; formerly *Sporites*.

Anemiidites shabashakensis Ashraf, 1977, p.36, pl.5, fig.11-12. Liassic.

Anemiidites spinosus Mädler, 1964, p.180, pl.2, fig.11. Middle Rhaetian.

APPENDICISPORITES Weyland and Krieger, 1953, p.12 nomen nudum. A junior synonym to *Plicatella*. (See *Plicatella* for discussion).

Appendicisporites alatus Wingate, 1980, p.16, pl.5, fig.1-2.
NOW *Nodosisporites*.

Appendicisporites appendiciferus (Thiergart, 1942, pl.5, fig.1 nomen nudum ex Thiergart, 1949, p.25, pl.4 and 5, fig.33) Potonié, 1956, p.57.
NOW *Plicatella*.

Appendicisporites atricuspidatus Krutzsch, 1959a, p.115 (alias *A.* cf. *tricuspidatus* Weyland and Griefeld, 1953 in Thiergart, 1953, p.5559, pl.14, fig.35).
NOW *Plicatella*.

Appendicisporites auritus Agasie, 1969, p.17, pl.1, fig.1-2.
NOW *Plicatella*.

Appendicisporites baconicus (Deak, 1963b) Srivastava, 1975, p.11.
NOW *Plicatella*.

Appendicisporites bifurcatus Singh, 1964, p.54, pl.5, fig.1-5.
NOW *Plicatella*.

Appendicisporites bilateralis Singh, 1964, p.56, pl.4, fig.6-8.
NOW *Plicatella*.

Appendicisporites clavatus (Markova *in* Ivanova and Markova, 1961) Döring, 1966b, p.67.
NOW *Plicatella*.

Appendicisporites concentricus Kemp, 1970, p.99, pl.15, fig.5-8; pl. 16, fig.1-3, Text-fig.14d-e.
NOW *Plicatella*.

Appendicisporites cooksonae (Balme, 1957) Pocock, 1965, p.173.
NOW *Contignisporites*.

Appendicisporites crassicarinatus Harris *in* Kemp and Harris, 1977, p.17-18, pl.2, fig.10-13.
NOW *Plicatella*.

Appendicisporites crenimurus Srivastava, 1972b, p.224-226, pl.1, fig.3-6; pl.2, fig.1-6; pl.3, fig.1-2.
NOW *Nodosisporites*.

Appendicisporites crickmayii Pocock, 1965, p.163, pl.3, fig.4.
NOW *Plicatella*.

Appendicisporites crimensis (Bolchovitina, 1961) Döring, 1966b, p.67
This transfer was effected by Pocock (1965).
NOW *Plicatella*.

Appendicisporites crimensis (Bolchovitina, 1961) Pocock, 1965, p.168
NOW *Plicatella*.

Appendicisporites cristatus (Markova *in* Ivanova and Markova 1961) Pocock, 1965, p.164-164. NOW *Plicatella*.

Appendisisporites crustatus (Markova) Pocock *in* Shugayevskaya *et al.*, 1974, p.52. Orthographic error for *Appendicisporites cristatus*.

Appendicisporites degeneratus Thiergart, 1953, p.55, pl.14, fig.4.
NOW *Plicatella*.

Appendicisporites dentimarginatus Brenner, 1963, p.45, pl.6, fig.2-3
NOW *Nodosisporites*.

Appendicisporites distocarinatus Dettmann and Playford, 1968, p.75-76, pl.6, fig.3-20.
NOW *Plicatella*.

Appendicisporites dorogensoides Weyland and Greifeld, 1953, p.43, pl.11, fig.51.
NOW *Plicatella*.

Appendicisporites erdtmannii Pocock, 1965, p.167, pl.3, fig.17.
NOW *Plicatella*.

Appendicisporites ethmos Delcourt and Sprumont, 1959, p.40, pl.5, fig.19.
NOW *Costatoperforosporites*.

Appendicisporites expansus (Shugayevskaya, 1966) Shugayevskaya *in* Shugayevska *et al.*, 1974, p.60.
NOW *Plicatella*.

Appendicisporites foveolatus (Deak, 1962) Wingate, 1980, p.15 nomen nudum. The combination is illegitimate since Wingate (1980) failed to quote the original plate and figure numbers contrary to Article 33.2, ICBN.
NOW *Costatoperforosporites*.

Appendicisporites fucosus Vavrdova, 1964, p.37-36, fig.1.
NOW *Plicatella*.

Appendicisporites giganteus Groot and Groot, 1962 *in* Médus and Triat, 1969, p.216. Orthographic error for *Appendicisporites giganticus* Groot and Groot.

Appendicisporites giganticus Groot and Groot, 1962, p.144, pl.1, fig.3.
NOW *Plicatella*.

Appendicisporites globoliferus (Bolchovitina, 1961) Bolchovitina *in* Barkhatnaya and Petrosyants, 1971, p.59-60 nomen nudum. The page, plates and figure numbers were not quoted contrary to Aricle 33.2, ICBN.
NOW *Plicatella*.

Appendicisporites grandis Pocock, 1965, p.171-172, pl.4, fig.15.
NOW *Plicatella*.

Appendicisporites imperfectus Kazakova, Rybakova and Smirnova, 1980, p.117 nomen nudum. The description, diagnosis and reference to authorship were not given contrary to Article 38, ICBN. Probably an illegitimate recombination of *Plicatella triacantha imperfecta*.
NOW *Cicatricosisporites*.

Appendicisporites ingens Weyland and Krieger, 1953, p.12, pl.3, fig. 17-19. No Holotype was designated contrary to Article 37, ICBN; however, it is still valid since the effective date of the article is January 1, 1957.
NOW *Plicatella*.

Appendicisporites insignis (Markova *in* Ivanova and Markova, 1961) Khlonova, 1976, p.42.
NOW *Plicatella*.

Appendicisporites irregularis Pocock, 1965, p.169, pl.4, fig.4-5.
NOW *Plicatella*.

Appendicisporites jansonii Pocock, 1962, p.37, pl.2, fig.23.
NOW *Plicatella*.

Appendicisporites laevigatus Pocock, 1965, pl.3, fig.1-3. Middle Albian. Due to thick sexine this species was included in *Appendicisporites;* however, it is not costate and belongs to *Leiotriletes*. Probably a junior synonym to *L. equiexinus* (Couper, 1958) Döring, 1965.

Appendicisporites macalisteri Pocock, 1965, p.171, pl.4, fig.13-14.
NOW *Plicatella*.

Appendicisporites macrorhyzus (Maljavkina, 1949) Krutzsch, 1959a, p. 166. This combination was also effected by Yu and Mao, 1983, p.30.
NOW *Plicatella*.

Appendicisporites matesovae (Bolchovitina, 1961) Norris, 1967, p.94. Combination previously affected by Vavdrova, 1964.
NOW *Plicatella*.

Appendicisporites matesovae (Bolchovitina, 1961) Vavrdova, 1964, p. 38.
NOW *Plicatella*.

Appendicisportites mohriaesimilis Thiergart, 1953, p.55, pl.14, fig. 2.
NOW *Plicatella*.

Appendicisporites multicornatus Kimyai, 1966, p.467, pl.1,fig. 4.
NOW *Plicatella*.

Appendicisporites parviangulatus Döring, 1966a, p.109, pl.3, fig.4-6; pl.4, fig.4-6.
NOW *Plicatella*.

Appendicisporites perforatus Agasie, 1969, pl.1, fig.5-6.
NOW *Plicattella*.

Appendicisporites perplexus Singh, 1964, p.55-56, pl.5, fig.6-9.
NOW *Distaltriangulisporites*.

Appendicisporites potomacensis Brenner, 1963, p.46, pl.6, fig.4-5.
NOW *Plicatella*.

Appendicisporites praecipius (Verbitskaya, 1958) Döring, 1966a, p.109 nomen nudum. Contrary to Article 33.2, ICBN. Döring (1966) did not quote the page number of the original description.
NOW *Plicatella*.

Appendicisporites problematicus (Burger, 1966) Singh, 1971, p.104.
NOW *Plicatella*.

Appendicisporites pschekhaensis (Bolchovitina, 1961) Pocock, 1965, p.165.
NOW *Plicatella*.

Appendicisporites pseudocornitatus Krutzsch, 1959a, p.116 (alias *Appendicisporites tricornitatus* Weyland and Greifeld *in* Weyland and Greifeld, 1953, p.12, pl.3, fig.14, 17).
NOW *Plicatella*.

Appendicisporites pseudomacrorhysus (Markova *in* Ivanova and Markova, 1961) Vakrameyev *et al.*, 1975, p.214 nomen nudum. The year, page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Plicatella*.

Appendicisporites punctatus Pacltova, 1961, p.60, 89, pl.8, fig.1-3.
NOW *Plicatella*.

Appendicisporites robustus Kemp, 1970, p. 9-101, pl.16, fig.4-8, Text-fig.15a-b.
NOW *Plicatella*.

Appendicisporites segmentatus Brenner, 1963, p.46-47, pl.7, fig.1-2.
NOW *Nodosisporites*.

Appendicisporites sellingii Pocock, 1965, p.163, pl.3, fig.5-8.
NOW *Plicatella*.

Appendicisporites senonicus Takashashi, 1973, p.13-15, pl.2, fig.8 nomen nudum. Conacian-Santonian. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Appendicisporites silvestris (Bolchovitina, 1961) Voronova, 1971.
NOW *Plicatella*.

Appendicisporites singhii Pocock, 1965, p.170-171, pl.4, fig.11-12.
NOW *Plicatella*.

Appendicisporites spinosus Pocock, 1965, p.169-171, pl.4, fig.8-9.
NOW *Nodosisporites*.

Appendicisporites stellantis Wingate, 1980, p.16-17, pl.5, fig.3-7.
NOW *Nodosisporites*.

Appendicisporites stylosus (Thiergart, 1953, p.549, pl.2, fig.16-17) Deak, 1963b, p.254.
NOW *Plicatella*.

Appendicisporites subtricornitatus Sato, 1961, p.86, pl.2, fig.22-26
NOW *Plicatella*.

Appendicisporites tricarinatus Weyland and Greifeld *in* Ercegovac and Andelkovic, 1972, p.104 nomen nudum.
Orthographic error for *Appendicisporites tricornitatus*.

Appendicisporites triceps Weyland and Krieger, 1953, p.12, pl.3, fig. 5-16. Holotype was not designated contrary to Article 37, ICBN, but precided the effective date of the article (January 1, 1958), therefore the name is still valid.
NOW*Plicatella*.

Appendicisporites trichacanthus (Maljavkina, 1949) Pocock, 1965, p.165.
NOW *Plicatella*.

Appendicisporites trichacanthus var. *dissectus* (Markova *in* Ivanova and Markova, 1961) Singh, 1964, p.51.
NOW *Plicatella*.

Appendicisporites tricomitatus Weyland and Greifeld *in* Vakhrameyev *et al.*, 1975, p.218, nomen nudum. An orthographic error for *Appendicisporites tricornitatus*.

Appendicisporites tricornatus Weyland and Greifeld *in* Hopkins, 1974, p.14 nomen nudum; in Vakhrameyev *et al.*, 1975, p.218 nomen nudum. An orthographic error for *Appendicisporites tricornitatus*.

Appendicisporites tricorniatus Weyland and Greifeld *in* Ashraf, 1977, p.95 nomen nudum. An orthographic error for *Appendicisporites tricornitatus*.

Appendicisporites tricornitatus Weyland and Greifeld, 1953, p.43, pl.11, fig.52.
NOW *Plicatella*.

Appendicisporites tricostatus (Bolchovitina, 1953) Pocock, 1965, p.166.
NOW *Plicatella*.

Appendicisporites tricuspidatus Weyland and Greifeld, 1953, p.12, Table 3, fig.18. Type Species.
NOW *Plicatella*.

Appendicisporites tripartatus (Bolchovitina, 1961) Khlonova, 1976, p.42.
NOW *Plicatella*.

Appendicisporites trituberculatus Baltes, 1965, p.7, pl.1, fig.13 nomen nudum. Early Cretaceous. This species was provisionally assigned and lacked a designated holotype specimen contrary to Article 34.1 and Article 37, ICBN.

Appendicisporites truncatus Baltes, 1967, p.185, pl.2, fig.4 nomen nudum. Middle Albian. This species was provisionally assigned contrary to Article 34.1, ICBN.

Appendicisporites tuberculatus Döring, 1966a, p.109, pl.3, fig.1-3.
NOW *Plicatella*.

Appendicisporites undosus Hedlund, 1966, p.16, pl.4, fig.2a-b.
NOW *Plicatella*.

Appendicisporites unicus (Markova *in* Ivanova and Markova, 1961) Singh, 1964, p.53.
NOW *Plicatella*.

ASSERETOSPORA Schuurman, 1977, p.197.

Asseretospora gyrata (Playford and Dettmann, 1965, p.144, pl.12, fig.20). Schuurman, 1977, p.198. Rhaetian-Liassic; formerly *Duplexisporites*. Type species.

Asseretospora trisectus (Maljavkina, 1949, p.70, pl.13, fig.7-8) comb. nov. Early Jurassic; formerly *Chomotriletes*.

AZONOMONOLETES Bolchovitina, 1961, pl.5, fig.1 nomen nudum. A monolete striate genus? This genus was mentioned in the plates descriptions but it was not described in the text, nor was a type species designated contrary to Article 38 and Article 37, ICBN.

BIKOLISPORITES (Juhasz, 1972, p.48) Srivastava, 1975b, p.23.

Bikolisporites toratus (Weyland and Greifeld, 1953, p.42, pl.11, fig.56-59. Lectotype designated by Potonié and Kremp, 1955, p. 96) Srivastava, 1975b, p.23, Senonian; formerly *Trilites (Bikolisporites), Corrugatisporites, Duplexisporites.* Type species.

CANALICULATISPORITES Potonié, 1956, p.48 nomen nudum. This genus was invalidly published, lacking a type species (predates the effective date of Article 37, ICBN) and diagnosis contrary to Article 38, ICBN. It is a senior homonym to *Caniculatisporites* Dybova and Jachowicz, 1957, p.118.

CICATRICOSISPORITES Potonié and Gelletich, 1933, p.522 emend. Potonié, 1966, p.58. (See text for full discussion).

Cicatricosisporites abacus Burger, 1966, p.242, pl.7, fig.3. NOW *Plicatella.*

Cicatricosisporites ajalaensis Puri, 1963, p.43, pl.5, fig.120-121 nomen nudum. Lectotype designated herein as Puri, 1963, pl.5, fig.120. Senonian.

Cicatricosisporites almegrensis (Pocock, 1962, p.38, pl.2, fig.27-29) comb. nov. Valanginian; formerly *Chomotriletes.*

Cicatricosisporites amalocostriatus Zhang, 1965, p.175, pl.4, fig.2, Early Cretaceous.

Cicatricosisporites angicanalis Döring, 1965, p.49, pl.17, fig.1-2; pl.18, fig.1. Late Berriasian (Wealden A).

Cicatricosisporites annulatus Archangelsky and Gamerro, 1966b, p.368 pl.2, fig.6-8. Early Cretaceous. Dörhöfer (1977) equates this species with biorecord 26 CICATR A 51. The distal muri are foveolate indicating a close relationship to *Costatoperforosporites.*

Cicatricosisporites apicanalis Paden Phillips and Felix, 1971, p. 295-296, pl.2, fig.4-5. Early Albian.

Cicatricosisporites apiteretus Paden Phillips and Felix, 1971, p. 298-299, pl.2, fig.10-11. Cenomanian.

Cicatricosisporites aralica (Bolchovitina, 1961, p.13, pl.1, fig. 9f-h) Brenner, 1963, p.47. Early-Middle Albian; formerly *Ruffordia.*

Cicatricosisporites augustus Singh, 1971, p.68, pl.7, fig.3-11. Middle Albian. Dörhöfer (1977, p.38) considered this species to be a junior synonym to *Cicatricosisporites minutaestriatus*.

Cicatricosisporites auritus Agasie, 1969, p.17, pl.1, fig.1-2. NOW *Plicatella*.

Cicatricosisporites auritus Singh *in* Khlonova, 1976, p.41. Orthographic error for *Cicatricososporites auritus*. NOW *Striamonoletes*.

Cicatricosisporites australiensis (Cookson, 1953, p.470, pl.2, fig. 31-34) Potonié, 1956, p.48. This transfer was also effected by Krutzsch, 1959a, p.167. Early Cretaceous. Balme (1957), suggests that *Cicatricosisporites remissus* is equivalent. Dörhöfer (1977) equates this species to biorecord 19 CICATRI A 6; formerly *Mohriaesporites, Mohrioisporites, Mohriosporites*.

Cicatricosisporites avnimelechii Horowitz, 1970, p.164, pl.2, fig. 4-6. Late Jurassic-Early Cretaceous.

Cicatricosisporites baconicus Deak, 1963b, p.252, pl.2, fig.10-11. NOW *Plicatella*.

Cicatricosisporites baculatus Regali, Uesugui and Santos, 1974, p.264-265, pl.15, fig.2. NOW *Nodosisporites*.

Cicatricosisporites baqueroensis Archangelsky and Gamerro, 1966b, p.367-368, pl.2, fig.1. NOW *Plicatella*.

Cicatricosisporites bellus Zhang, 1965, p.176, pl.5, fig.2a-b. Early Cretaceous.

Cicatricosisporites berouensis Jardiné and Magloire, 1965, p.202, pl.1, fig.17. Late Albian.

Cicatricosisporites bifurcatus (Pierce, 1961, p.31, pl.1, fig.26) comb. nov. early Late Cretaceous; formerly *Striatriletes*.

Cicatricosisporites brevilaesuratus Couper, 1958, p.136, pl.18, fig. 1-3, emend. Kemp, 1970, p.94-95. Wealden.

Cicatricosisporites britannicae Dörhöfer, 1977, p.71, Table 1 nomen nudum. A description, diagnosis and illustration were not supplied contrary to Article 32.1, 33.2 and 37, ICBN.

Cicatricosisporites budugica (Kuvaeva, 1970, p.43, pl.1, fig.3-4) comb. nov. Barremian; formerly *Anemia*.

Cicatricosisporites burglii Solé de Porta, 1972, p.236, pl.4, fig. 2-3 nomen nudum. Campanian. Neither description nor diagnosis was provided contrary to Article 38, ICBN.

Cicatricosisporites caffrorites (Markova *in* Ivanova and Markova, 1961, p.87-88, Table 22, fig.5) Deak and Combaz, 1968, p.75. Cenomanian; formerly *Mohria*.

Cicatricosisporites cardiformis (Kara-Murza, 1954, p.58, pl.7, fig. 15) comb. nov. Valanginian-Aptian. Possibly a tautonym to *Cicatricosisporites cardioliformis* Malyavkina, 1958; formerly *Aneimia, Anemia, Chomotriletes*.

Cicatricosisporites cardioliformis (Malyavkina, 1958, p.45, pl.1, fig.14) comb. nov. Neocomian; formerly *Aneimia, Anemia*.

Cicatricosisporites carlylensis Pocock, 1962, p.40, pl.2, fig.33-34. Tithonian.

Cicatricosisporites cavagnettoae Roche, 1968, p.150, pl.1, fig.21-22 Landenian.

Cicatricosisporites chattensis Krutzsch, 1961c, p.302, pl.1, fig.1. Middle to Late Oligocene.

Cicatricosisporites chattensis subsp. *chattensis* Krutzsch, 1961c, p.302, pl.1, fig.1 (autonym). Middle to Late Oligocene. This subspecies has undulating muri which may possibly relate it more to *Nodosisporites* than to *Cicatricosisporites*.

Cicatricosisporites chattensis subsp. *minor* Krutzsch, 1967, p.84, pl.24, fig.5-11. Late Oligocene.

Cicatricosisporites chetensis Kara-Murza, 1954, p.56, pl.7, fig.2; comb. nov. Valanginian-Early Aptian; formerly *Aneimia, Anemia, Chomotriletes, Plicatella*.

Cicatricosisporites cicatricosoides Krutzsch, 1959a, p.171, pl.34, fig.361-365. Middle Eocene.

Cicatricosisporites cirae Kedves and Solé de Porta, 1963, p.60, pl.9 fig.1-9.
NOW *Magnastriatites*.

Cicatricosisporites claricanalis Paden Phillips and Felix, 1971, p.299-300, pl.2, fig.13. Cenomanian.

Cicatricosisporites clarus (Bolchovitina, 1959a, p.94, pl.2, fig.33) comb. nov. Late Cretaceous; formerly *Mohria, Pelletieria*.

Cicatricosisporites coconinoensis Agasie, 1969, p.18, pl.1, fig.9-10 Cenomanian.

Cicatricosisporites columbiensis Kedves and Solé de Porta, 1963, p.58, pl.6, fig.1-2 (Oligocene-Miocene).

Cicatricosisporites cooksonae Balme, 1957, p.19, pl.1, fig.23-24; pl.2, fig.25-26.
NOW *Contignisporites*.

Cicatricosisporites costatus Schuler and Sittler, 1969, p.166, pl.2, fig.15-17. Oligocene-Miocene.

Cicatricosisporites crassiexinus Yu and Mao, 1983, p.29, pl.1, fig. 15-16. Albian.

Cicatricosisporites crassistriatus Burger, 1966, p.241, pl.7, fig.2. Wealden (Middle Valanginian). Dörhöfer (1977) equates this species to biorecord 5 CICATR A 2.

Cicatricosisporites crassiterminatus Hedlund, 1966, p.19, pl.4, fig. 1a-c. Cenomanian.

Cicatricosisporites crimensis (Bolchovitina, 1961) Hughes and Moody-Stuart, 1969, p.108.
NOW *Plicatella*.

Cicatricosisporites cristatus Regali, Uesugui and Santos, 1974, p.265, pl.14, fig.1. Eocene-Miocene.

Cicatricosisporites cundinamarcensis Kedves and Solé de Porta, 1963, p.61, pl.10, fig.4-6.
NOW *Magnastriatites*.

Cicatricosisporites cuneiformis Pocock, 1965, p.58, pl.2, fig.17. Middle Albian.

Cicatricosisporites dahucihangensis Hong *et al.*, 1982, p.105
nomen nudum. Neither description nor diagnosis was provided contrary to Article 38, ICBN.

Cicatricosisporites dangtuensis Li, 1979, p.41, pl.2, fig.19-20.
Aptian-Albian.

Cicatricosisporites degeneratus (Thiergart, 1953, p.55, pl.14, fig. 4) Krutzsch, 1959a, p.168.
NOW *Plicatella*.

Cicatricosisporites delicatus Paden Phillips and Felix, 1971, p.296-297, pl.2, fig.6-7. Middle Early Albian. Phillips and Felix (1971) considered this species to be equivalent to the subspecies *Cicatricosisporites dorogensis minor* Kedves, 1961.

Cicatricosisporites densus Li, 1979, p.214-242, pl.2, fig.27-30.
Aptian-Albian.

Cicatricosisporites dichotomus (Kedves, 1961, p.129-130, pl.6, fig. 8-10) comb. nov. Early Eocene (Sparnacian); formerly *Striatisporis*.

Cicatricosisporites dorogensis Potonié and Gelletich, 1933, p.522, pl.1, fig.1-5. Holotype reillustrated clearly by Krutzsch, 1967, fig.4a-e. Early Eocene; formerly *Mohria, Mohriasporites, Mohrioisporites, Mohrioidites, Schizaesporites*. Type species.

Cicatricosisporites dorogensis subsp. *dorogensis* Potonié and Gelletich, 1933, p.522, pl.1, fig.1 (autonym). Eocene.

Cicatricosisporites dorogensis dorogensis var. *dorogensis* Potonié and Gelletich, 1933, p.622, pl.1, fig.1 (autonym). Middle Eocene.

Cicatricosisporites dorogensis subsp. *major* Kedves, 1961, p.126, pl.5, fig.10; pl.6, fig.7. The holotype is illustrated in Kedves, 1960, pl.20, fig.14. Early Eocene (Sparnacian). Brenner (1963) considers this subspecies to be equivalent to the type subspecies *Cicatricosisporites dorogensis dorogensis*.

Cicatricosisporites dorogensis major var. *major* Kedves, 1961, p.126, (illustrated by Kedves, 1960, pl.20, fig.14) (autonym). Early Eocene (Sparnacian).

Cicatricosisporites dorogensis major var. *pseudodivisus* Kedves, 1962, p.160, pl.2, fig.1,2 nomen nudum. Eocene. Neither diagnosis nor description supplied contrary to Article 38.1, ICBN.

Cicatricosisporites dorogensis major var. *rugulatearis* Kedves, 1961, p.128-129, pl.6, fig.5. Early Eocene (Sparnacian).

Cicatricosisporites dorogensis major var. *triplanoid* (Kedves, 1960, pl.20, fig.8) Kedves, 1961, p.128 nomen nudum. Early Eocene (Sparnacian). No page cited, therefore, illegitimate combination contrary to Article 33.2, ICBN.

Cicatricosisporites dorogensis major var. *triplanorugulatearis* Kedves, 1961, p.129 (Holotype illustrated in Kedves, 1960, pl. 19, fig.3). Early Eocene (Sparnacian).

Cicatricosisporites dorogensis subsp. *minor* Kedves, 1961, p.126, pl.20, fig.1-6. Early Eocene (Sparnacian).

Cicatricosisporites dorogensis minor var. *minor* Kedves, 1961, p.127, pl.5, fig.4 (autonym). Early Eocene (Sparnacian).

Cicatricosisporites dorogensis minor var. *rugulatearis* Kedves, 1961, p.127-128, pl.6, fig.1-2. Early Eocene (Sparnacian).

Cicatricosisporites dorogensis minor var. *torus* Kedves, 1961, p.127 (holotype illustrated in Kedves, 1960, pl.20, fig.1). Early Eocene (Sparnacian).

Cicatricosisporites dorogensis minor var. *triplan* Kedves, 1961 p.127, pl.5, fig.7. Early Eocene (Sparnacian).

Cicatricosisporites dorogensis minor var. *triplanoid* (Kedves, 1960, pl.20, fig.9) Kedves, 1961, p.127. Early Eocene (Sparnacian).

Cicatricosisporites dorogensis minor var. *triplanorugulatearis* Kedves, 1961, p.128, pl.6, fig.3-4. Early Eocene (Sparnacian).

Cicatricosisporites dorongesis in Krutzsch, 1959a, p.169 nomen nudum. Orthographic error for *C. dorogensis*.

Cicatricosisporites dorsostriatus (Bolchovitina, 1956) Singh, 1964, p.57.
NOW *Contignisporites*.

Cicatricosisporites dunrobinensis Couper, 1958, p.137, pl.17, fig. 13-15.
NOW *Contignisporites*.

Cicatricosisporites embryonalis Krutzsch, 1959a, p.174, pl.36, fig. 376-378. Middle Eocene. This species may belong to *Radialisporis*.

Cicatricosisporites ethmos (Delcourt and Sprumont, 1959) Archangelsky and Gamerro, 1966, p.366b.
NOW *Costatoperforosporites*.

Cicatricosisporites exiguus Herngreen, 1971, p.296, 288, pl.1, fig. 14-16. Late Barremian-Early Aptian.

Cicatricosisporites exilioides (Maljavkina, 1949, p.61, pl.12, fig. 2) Bolchovitina, 1953, p.37, pl.4, fig.7-8 ex Dörhöfer, 1977, p.37; formerly *Plicatella trichacantha exiliformis* and *Anemia, Aneimia, Aneimiasporites, Chomotriletes*. Dörhöfer (1977) equates this species to biorecord 23 CICATR DCE.

Cicatricosisporites exilis (Maljavkina, 1949, p.60, pl.11, fig.2 ex Bolchovitina, 1959a, p.94) Gao and Zhao, 1976, p.35. Cenomanian-Turonian; formerly *Plicatella incisurata exilis* and *Mohria*.

Cicatricosisporites fistulosus Paden Phillips and Felix, 1971, p.299 pl.2, fig.12.
NOW *Costatoperforosporites difoveolatus*.

Cicatricosisporites foraminatus Deak and Combaz, 1968, p.75 nomen nudum. They attributed this species to Verdier, 1962 (an unpublished thesis manuscript). Although recognizing its invalidity they created an invalidly published name. (Article 34 and contrary to Recommendation 34A, ICBN).

Cicatricosisporites formosus Solé de Porta, 1972, p.236, pl.4, fig. 1 nomen nudum. Campanian. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites furcatus Deak, 1963b, p.254, pl.2, fig.6-7. Late Aptian. Burger (1966) considered this species as the junior synonym to *Cicatricosisporites venustus* Deak, 1963b.

Cicatricosisporites futabaensis Takashashi, 1973, p.14-15 nomen nudum. Conacian-Santonian. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites germana (Poluchina *in* Pokrovskaya and Stel'mak, 1964, p.216, pl.254, fig.7) comb. nov. Hauterivian-Barremian; formerly *Saccolma*.

Cicatricosisporites giganteus Archangelsky and Gamerro, 1966b, p.366-367, pl.2, fig.3-4.
NOW *Plicatella*.

Cicatricosisporites girardotensis Solé de Porta, 1972, p.236, pl.4, fig.4, 7 nomen nudum. Campanian. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites globosus Döring, 1965, p.45, pl.17, fig.6-8. Latest Berriasian (Wealden F). Hughes and Moody-Stuart (1969) considered this species equivalent to biorecord 11 CICATR AWW.

Cicatricosisporites globuliferus (Bolchovitina) Bolchovitina in Dobruskaya, 1973, p.111 nomen nudum. The page, plate and figure numbers of the original description were not cited contrary to Article 33.2, ICBN.
NOW *Plicatella*.

Cicatricosisporites goeppertii (Seward, 1913, text-fig.2A) Groot and Penny, 1960, p.230. Singh (1971) considered it to be synonymous with *Cicatricosisporites mohrioides*. However, Brenner (1963) considered it to be a junior synonym of *Cicatricosisporites aralicus*.
NOW *Ruffordia*.

Cicatricosisporites goniodontos Paden Phillips and Felix, 1971, p.297-298, pl.2, fig.8-9. Cenomanian.

Cicatricosisporites grabowensis Döring, 1965, p.49-50, pl.21, fig. 3-4. Late Berriasian (Wealden E). Hughes and Moody-Stuart (1969) considered this species potentially equivalent to biorecord 6 CICATR B 5.

Cicatricosisporites gracilis Li, 1980, p.2-3 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites grandiosus Kedves and Solé de Porta, 1963, p.59, pl.7-8.
NOW *Magnastriatites*.

Cicatricosisporites gushanensis Li, 1979, p.142, pl.2, fig.28-29. Aptian-Albian.

Cicatricosisporites hakobuchiensis Miki, 1977, Table 5 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites hallei Delcourt and Sprumont, 1955, p.17-19, pl. 1, fig.1-2. Wealden. Delcourt and Sprumont (1955) compared this species with the spores of *Anemia tomentosa* and *Mohria caffrorum*.

Cicatricosisporites hannoverana Dörhöfer, 1977, p.38, pl.9, fig.4-7, 10. Berriasian.

Cicatricosisporites hispanicus Haseldonckyx, 1973, p.148, pl.1, fig. 1-2. Bartonian (Late Eocene).

Cicatricosisporites hughesii Dettmann, 1963, pl.10, fig.6-16; fig.4. Aptian-Albian.

Cicatricosisporites hungaricus Kedves, 1960, p.100, pl.4, fig.7. Eocene.

Cicatricosisporites imbricatus (Markova *in* Ivanova and Markova, 1961, p.88, pl.22, fig.6) Singh, 1964, p.73-74. Cenomanian; formerly *Mohria*.

Cicatricosisporites imperfectus (Maljavikina, 1953, p.62, pl.12, fig.4) comb. nov. Lower Aptian; formerly *Anemia, Aneimia, Anagramma, Anagramites, Appendicisporites, Chomotriletes,* and *Plicatella trichacanta imperfecta*.

Cicatricosisporites incisuratus (Malyavkina, 1949, p.60, pl.11, fig. 1-2) comb. nov. Early Aptian; formerly *Plicatella, Pseudoplicatella*.

Cicatricosisporites incisuratus exilis (Malyavkina, 1949, p.60, pl.11, fig.2) comb. nov. Early Aptian; formerly *Plicatella*.

Cicatricosisporites incisuratus incisuratus (Malyavkina, 1949, p.60, pl.11, fig.1) comb. nov. (autonym). Early Aptian.

Cicatricosisporites insignis (Markova *in* Ivanova and Markova, 1961) Döring, 1966b, p.67.
NOW *Plicatella*.

Cicatricosisporites intersectus Rouse, 1962, p.197, pl.3, fig.30-31. Paleocene-Eocene.

Cicatricosisporites irregularis Kedves, 1964, p.145,pl.1, fig.1. Early Eocene. Senior homonym to *Cicatricosisporites irregularis* Pocock, 1965.

Cicatricosisporites irregularis Pocock, 1965, p.169, pl.4, fig.4-5. Junior homonym to *Cicatricosisporites irregularis* Kedves, 1964.
NOW *Plicatella*.

Cicatricosisporites jiaoheenis Li, 1980, p.3 nomen nudem. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites jansonii (Pocock, 1962) Pocock, 1967, p.130 nomen nudum. The page, plate and figure numbers of original description were not cited contrary to Article 33.2, ICBN.
NOW *Plicatella*.

?*Cicatricosisporites jurassicus* (Kara Murza, 1954, p.114, pl.18, fig. 13-16) comb. nov. Early Jurassic; formerly *Chomotriletes*.

Cicatricosisporites knoxi (Baksi, 1962, p.19, pl.3, fig.4) Nandi, 1981, p.31. Oligocene; formerly *Schizaeaesporites*.

Cicatricosisporites lepigerus Baker *in* Zhang, 1978, Table 2, pl.2, fig.13 nomen nudum. Zhang (1978) designated a species as *Cicatricosisporites* cf. *lepigerus* Bak. *Mohria lepigera* Baker is a modern species.

Cicatricosisporites luciferus Hughes and Moody-Stuart, 1967, p.349, pl.1, fig.A-K, fig.1, A-C.
NOW *Plicatella*.

Cicatricosisporites ludbrookii Dettmann, 1963, p.54, pl.9, fig.17-22 Aptian-Albian.

Cicatricosisporites lupicus (Mathur and Chopra, 1982, p.63, pl.2, fig.19) comb. nov. Pleistocene; formerly *Schizaeaceaesporites*.

Cicatricosisporites lusaticus Krutzsch, 1967, p.86, pl.25, fig.1-9.
NOW *Nodosisporites*.

Cicatricosisporites macrocostatus (Biswas *in* Baksi, 1962, p.20, pl.4, fig.53) Sah and Dutta, 1968, p.185. Lectotype *Cicatricosisporites macrocostata* Biswas *in* Baksi, 1962, pl.4, fig.53. Miocene. Placed simultaneously in the recent genus *Ceratopteris* by Sah and Dutta (1968); formerly *Ceratopteris*.

Cicatricosisporites magnus Döring, 1965, p.49, pl.15, fig.1-2; pl.16 fig.1. Late Berriasian (Wealden E). Burger (1966) considered this species to be a junior synonym of *Cicatricosisporites sternum*.

Cicatricosisporites mandioccaniformis (Khlonova, 1960, p.24, pl.2, fig.21) comb. nov. Cenomanian-Turonian; formerly *Aneimia, Anemia*.

Cicatricosisporites mecsekensis Nagy, 1964, p.391-392, pl.2, fig.13; pl.3, fig.16-17. Upper Pannonian (Miocene).

Cicatricosisporites mediostriatus (Bolchovitina, 1961, p.66, pl.19, fig.3a-b; pl.21, fig.1a-c) Pocock, 1965, p.157. Hauterivian; formerly *Pelletieria, Mohria*.

Cicatricosisporites mesozoicus Agasie, 1969, p.18, pl.1, fig.12. Cenomanian.

Cicatricosisporites microdorogensis Gruas-Cavagnetto, 1967, p.58-59, pl.6, fig.8-9, 13,17. Sparnacean (Eocene).

Cicatricosisporites microstriatus Jardiné and Magloire, 1965, p.202, pl.1, fig.18-19. Aptian-Albian.

Cicatricosisporites minimus Nagy, 1964, p.391, Table 2, fig.14-15. Early Helvetian (Miocene).

Cicatricosisporites minor (Bolchovitina, 1959a, p.94, pl.11, fig.31) Pocock, 1965, p.160. Late Cretaceous; formerly *Mohria* and *Pelletieria*. CFSP (41:237) suggest this species may be synonymous with *Cicatricosisporites striatus* (Naumova).

Cicatricosisporites minutaestriatus (Bolchovitina, 1961, pl.21, fig. 3a-g; pl.20, fig.1a-f) Pocock, 1965, p.159. Cenomanian; Dörhöfer (1977) equates this species to biorecord 25 CICATR B 21; formerly *Pelletieria, Mohria*.

Cicatricosisporites mitriformis (Korogenevskaya *in* Verbitskaya, 1958) Zhang, 1965, p.175.
NOW *Contignisporites*.

Cicatricosisporites mohrioides Delcourt and Sprumont, 1955, p.20, pl.1, fig.2. Wealden. Archangelsky and Gamerro (1966b) consider this species to be a junior synonym to *Cicatricosisporites australiensis;* formerly *Striatriletes*.

Cicatricosisporites multicostatus (Verbitskaya, 1962, p.94-95, pl.4, fig.36) comb. nov. Cenomanian; formerly *Mohria, Pelleteria, Aneimia.*

Cicatricosisporites murifovearis Krutzsch, 1959a, p.168, pl.33, fig. 354-360. Middle Eocene.

Cicatricosisporites mutabilus (Bolchovitina, 1953, p.36, pl.4, fig. 6) comb. nov. Aptian-Albian; formerly *Mohria, Pelletieria, Chomotriletes.*

Cicatricosisporites myrtellii Burger, 1966, p.243, pl.7, fig.1. Middle Valanginian. Hughes and Moody-Stuart (1969) equate this species to biorecord 10 CICATR A 5 S.

Cicatricosisporites nankingensis Zhang, 1962, p.261, pl.2, fig.17a-c Zhang, 1965, p.176. Early Cretaceous; formerly *Anemia.*

Cicatricosisporites neumanii Boltenhagen, 1976, p.3-4, pl.1, fig.1-3 Campanian-Santonian.

Cicatricosisporites nigeriensis (Puri, 1963, p.42-43, pl.5, fig.118-119) comb. nov. Lectotype (designated herein to conform to Article 37, ICBN) Puri, 1963, pl.5, fig.118. Senonian; formerly *Striatriletes.*

Cicatricosisporites notabilis Döring, 1966c, ex Döring, 1973, p.212-213, pl.10, fig.1-4; pl.11, fig.14-16. Late Kimmeridgian.

Cicatricosisporites nuni Horowitz, 1970, p.164-165, pl.3, fig.1. Late Jurassic-Early Cretaceous.

Cicatricosisporites obliquus (Maljavkina, 1949, p.48, pl.7, fig.1-2) comb. nov. Middle Jurassic; formerly *Trilaterina, Rotinella, Senftenbergiites.*

Cicatricosisporites obliquus obliquus (Maljavkina, 1949, p.48, pl.7, fig.1) comb. nov. Middle Jurassic; formerly *Trilaterina obliquus obliquus, Trilaterina obliquus typica.*

Cicatricosisporites obliquus strictus (Maljavkina, 1949, p.48, pl.7, fig.2) comb. nov. Middle Jurassic; formerly *Trilaterina.*

Cicatricosisporites offshorensis Mathur and Chopra, 1982, p.63, pl.2 fig.36. Late Miocene-Early Pliocene.

Cicatricosisporites orbiculatus Singh, 1964, p.59, pl.6, fig.9-12. Aptian.

Cicatricosisporites ornatus Srivastava, 1972a, p.9, pl.5, fig.3-11; pl.6, fig.1-4.
NOW *Costatoperferosporites*.

Cicatricosisporites pacificus (Bolchovitina, 1961, p.69, pl.22, fig. 2a-g) Zhang, 1965, p.174. Khlonova, 1976, p.40 also transferred this species. Barremian-Aptian; formerly *Pelletiera, Anemia, Aneimia*.

Cicatricosisporites pannonicus Nagy, 1969, p.325, pl.8, fig.10, 14. Early Helvetian (Miocene).

Cicatricosisporites pannonicus subsp. *pannonicus* Nagy, 1969, p.323, pl.8, fig.10, 14 (autonym); formerly *Cicatricosisporites pannonicus triplanus*.

Cicatricosisporites pannonicus subsp. *triplanus* Nagy, 1969, p.323, pl.8, fig.10, 14.
NOW *Cicatricosisporites pannonicus pannonicus*.

Cicatricosisporites paradorogensis Krutzsch, 1959a, p.172, pl.32, fig.351-353; pl.35, fig.366-371; pl.36, fig.372-373.
NOW *Costatoperforosporites*.

Cicatricosisporites parvimuris Roche, 1968, p.151, pl.1, fig.23. Landenian.

Cicatricosisporites paraxodus (Bolchovitina, 1961, p.57, pl.16, fig. 4) comb. nov. Hauterivian; formerly *Anemia*.

Cicatricosisporites patapscoensis Brenner, 1963, p.50, pl.9, fig.3. Late Albian.

Cicatricosisporites perforatus (Baronova, Nemkova and Kondratiev, 1957) Singh, 1964, p.58. Cenomanian; formerly *Anemia, Aneimia*.
NOW *Costatoperforosporites*.

Cicatricosisporites perforatus (Markova *in* Ivanova and Markova, 1961, p.82, pl.22, fig.a-b) Döring, 1965, p.48.
NOW *Costatoperforosporites markovae*.

Cicatricosisporites perforatus Deak and Combaz, 1968, p.75 nomen nudum. They attributed this species to Verdier, 1962 (an unpublished thesis manuscript) creating a validly published name, a junior homonym to *Cicatricosisporites perforatus* (Baronova *et al.*, 1957) Singh 1964.

Cicatricosisporites phaeseolus (Delcourt and Sprumont) Krutzsch *in* Khlonova, 1976, p.41. Orthographic error for *Cicatricosisporites*.
NOW *Striamonoletes*.

Cicatricosisporites phylliditiformis (Khlonova, 1960) Antonescu, 1973, pl.7, fig.6 nomen nudum. The page, plate and figure numbers of the original description were not cited contrary to Article 33.2, ICBN.
NOW *Nodosisporites*.

Cicatricosisporites phymatochylus Li, 1980, p.3 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites piercei nom. nov., nom. subst. pro *Cicatricosisporites striatus* (Pierce, 1961, p.31, pl.1, fig.24-25) comb. nov. Early Late Cretaceous; formerly *Striatriletes striatus*.

Cicatricosisporites pinguis Zhang, 1978, p.183, pl.3, fig.4. Late Jurassic to early-middle Early Cretaceous.

Cicatricosisporites plicatellaeformis (Maljavkina, 1949, p.33,37, pl.2, fig.10) stat. nov. comb. nov. Early Cretaceous; formerly *Cardioangulina cardioliformis plicatellaeformis*.

Cicatricosisporites potomacensis Brenner, 1963, p.50, pl.9, fig.4-5. Middle Albian.

Cicatricosisporites primigenius Agrali, 1964, p.5023, fig.3. Carboniferous (Westphalien C).

Cicatricosisporites proxiradiatus Kemp, 1970, p.91, pl.13, fig.1-6, text-fig.10a-b. Early Albian.

Cicatricosisporites pseudauriferus (Bolchovitina, 1953, p.38, pl.4, fig.13) Li, 1979, p.141. Vakhrameyev *et al.*, 1975, p.214 failed to cite year, page, plate and figure numbers contrary to Article 33.2, ICBN; formerly *Anemia, Aneimia, Aneimiasporites, Chomotriletes*.

Cicatricosisporites pseudauriferus pseudauriferus (Bolchovitina, 1953, p.38, pl.4, fig.13 (autonym); formerly *Plicatella, Anemia*.

Cicatricosisporites pseudauriferus sibiricus (Khlonova, 1960, p.24, pl.2, fig.20) comb. nov. Cenomanian-Turonian; formerly *Anemia*.

Cicatricosisporites pseudodorogensis Haseldonckyx, 1973, p.154, fig. 6. Orthographic error for *Cicatricososporites pseudodorogensis*.
NOW *Schizaeoisporites*.

Cicatricosisporites pseudoexilioides Baltes, 1965, p.8, pl.1, fig. 24-25 nomen nudum. Baltes (1965) stated that this species was provisionally assigned (Article 34.1) and lack a type specimen contrary to Article 37, ICBN. Aptian-Albian.

Cicatricosisporites pseudotertiarius Krutzsch, 1959a, p.170, pl.32, fig.346-348. Middle Eocene.

Cicatricosisporites pseudotripartitus (Bolchovitina, 1961, p.53, pl. 15, fig.3a-c) Dettmann, 1963, p.54-55. Cenomanian; formerly *Anemia*.

Cicatricosisporites pudens Salujha *et al.*, 1972a, p.272, pl.1, fig.24-25. Eocene to Early Miocene.

Cicatricosisporites pullatus (Shugayevskaja, 1966) Shugayevskaya *in* Shugayevskaya *et al.*, 1974, p.60.
NOW *Plicatella*.

Cicatricosisporites purbeckensis Norris, 1969, p.588, pl.104, fig. 5-11. Late Berriasian. Dörhöfer (1977) equated this species to biorecord 3 CICATR AR.

Cicatricosisporites radiatus Krutzsch, 1959b, p.126. The holotype is illustrated in Krutzsch (1957, pl.1, fig.41-42). Late Oligocene-Early Miocene.
NOW *Radialisporis*.

Cicatricosisporites recticicatricosus Döring, 1965, p.47, pl.18, fig.2-5. Latest Berriasian (Wealden F). Hughes and Moody-Stuart (1969), equated this species to biorecord 1 CICATR AT.

Cicatricosisporites regularis Nakoman, 1966a, p.78, pl.8, fig.33. Early Oligocene (Sannoisian).

Cicatricosisporites regulatearis Krutzsch in Srivastava, 1972a, nomen nudum. Orthographic error for *Cicatricosisporites rugulatearis*.

Cicatricosisporites remissus (Bolchovitina, 1956, p.58, pl.7, fig.92 a-c) comb. nov. non Busnardo and Taugourdeau, 1964, p.169. Busnardo and Taugourdeau failed to cite page, plate and figure numbers contrary to Article 33.2, ICBN; formerly *Anemia, Aneimia*.

Cicatricosisporites rersa (Kara-Murza) Pocock *in* Corna, 1972, pl.10, fig.3. Orthographic error for *Cicatricosisporites tersus*.

Cicatricosisporites reticulatus Mathur, 1972, p.59, pl.2, fig.11. Late Jurassic-Early Cretaceous.

Cicatricosisporites reticulosporites (Rouse, 1962, p.197, pl.3, fig. 27-28) comb. nov. Eocene; formerly *Lygodium*.

Cicatricosisporites rotundus Yu and Mao, 1983, p.29, pl.2, fig.2-3. Albian.

Cicatricosisporites rousei nom. nov. subst. pro *Cicatricosisporites striatus* Rouse, 1962, p.197-198, pl.4, fig.1-2. Paleocene to Eocene.

Cicatricosisporites rugulatearis Krutzsch, 1959a, p.170, pl.32, fig. 349-350. Middle Eocene.

Cicatricosisporites sarcolipes Li, 1979, p.24-25, pl.2, fig.19, 23. Aptian-Albian.

Cicatricosisporites scrabratus Mathur, 1972, p.59, pl.2, fig.10. Late Jurassic-Early Cretaceous.

Cicatricosisporites sewardii Delcourt and Sprumont, 1955, p.19-20, fig.2. Wealden. Brenner (1963) considers this species to be a junior synonym to *Cicatricosisporites dorogensis*.

Cicatricosisporites shalmaricus Srivastava, 1975b, p.28-29, pl.11, fig.7-10. Middle Albian.

Cicatricosisporites sibiricus (Kara-Murza, 1954, pl.7, fig.7-9 ex Bolchovitina, 1961, p.52) comb. nov. non Hughes and Moody-Stuart, 1969, p.107. Hughes and Moody-Stuart failed to quote year, page, plate and figure numbers contrary to Article 33.2, ICBN. Hughes and Moody-Stuart (1969) considered this species as equivalent to biorecord 3 CICATR AR. This species originally lacking a diagnosis or description contrary to Article 38, ICBN and was validated by Bolchovitina (1961, p.52, pl.14, fig.6a-b; pl.17, fig.2a-b); formerly *Anemia, Aneimia*.

Cicatricosisporites silvestris (Bolchovitina, 1961) Zhang, 1965, p.175.
NOW *Plicatella*.

Cicatricosisporites singhii Li, 1980, p.3 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites spinaestriatus Krutzsch, 1967, p.88, pl.26, fig. 1-5.
NOW *Nodosisporites.*

Cicatricosisporites spiralis Singh, 1971, p.78-79, pl.10, fig.1-3. Middle Albian.

Cicatricosisporites sprumontii Döring, 1965, p.46, pl.16, fig.7-8. Late Berrasian (Wealden A). Dörhöfer (1977) equated this species to biorecord 4 CICATR AW. Hughes and Moody-Stuart (1969) considered this species as synonymous to *Cicatricosisporites reticicatricosus* Döring, 1965 and equivalent to biorecord 1 CICATR AT.

Cicatricosisporites sternum van Amerom, 1965, p.106, pl.3, fig.1a-d. Cenomanian-Turonian.

Cicatricosisporites stoverii Pocock, 1965, p.161, pl.2, fig.24-25. Middle Albian.

Cicatricosisporites striatus (Naumova *in* Bolchovitina, 1953, p.36, pl.4, fig.1-5) comb. nov. Khlonova (1960, p.25) considers *Corculina elatior plicatelliformis* as synonymous. Bolchovitina (1961, p.66) considers this the junior synonym of *Cicatricosisporites tersus.* CFSP (41:237) suggested that this species may be synonymous with *Cicatricosisporites minor;* formerly *Mohria, Plicatella, Chomotriletes, Pelletieria.*

Cicatricosisporites striatus (Pierce, 1961, p.31, pl.1, fig.24-25) comb. nov.; formerly *Striatriletes.* Junior homonym to *Cicatricosisporites striatus* (Bolchovitina) comb. nov.
NOW *Cicatricosisporites piercei.*

Cicatricosisporites striatus Rouse, 1962, p.197-198, pl.4, fig.1-2. Junior homonym to *Cicatricosisporites striatus* (Bolchovitina) comb. nov.
NOW *Cicatricosisporites rousei.*

Cicatricosisporites striosporites (Rouse, 1962, p.196, pl.4, fig. 3-4) comb. nov. Paleocene to Eocene; formerly *Anemia.*

Cicatricosisporites stylosus (Thiergart, 1953, p.549, pl.2, fig. 16-17). Bolchovitina, 1961, p.71.
NOW *Plicatella.*

Cicatricosisporites subverrucosus Nakoman, 1965, p.294, pl.12, fig. 10.
NOW *Nodosisporites*.

Cicatricosisporites susannae (Van der Hammen, 1956b, p.115, fig.5) Potonié, 1960. Middle to Lower Oligocene; formerly *Striatriletes*.

Cicatricosisporites tabacensis Kedves and Solé de Porta, 1963, p.60, pl.10, fig.1-3. Miocene.

Cicatricosisporites taiwanensis Huang, 1978b, p.21, pl.4, fig.1-4. Miocene.

Cicatricosisporites teniatus Harris *in* Kemp and Harris, 1977, p.18-19, pl.2, fig.8-9. Paleocene.

Cicatricosisporites tersus (Kara-Murza, 1951a, p.31, pl.9, fig.11 ex Kara-Murza, 1954, p.57, pl.7, fig.14) Pocock, 1964, p.156. Valanginian to Aptian. Dörhöfer (1977) equated this species to biorecord 17 CICATR B 20; formerly *Plicatella trilobatiformis* var. *tersus, Mohria, Chomotriletes, Pelletieria*.

Cicatricosisporites ticoensis Archangelsky and Gamerro, 1966b, p.367 pl.1, fig.6-8, 10-11.
NOW *Plicatella*.

Cicatricosisporites toratus (Pierce, 1961, p.30, pl.1, fig.22) comb. nov. early Late Cretaceous; formerly *Rugutriletes*.

Cicatricosisporites triangulus Kedves, 1973, p.44, pl.14, fig.7-8. Middle Eocene.

Cicatricosisporites tricostatus (Bolchovitina, 1953) Vakhrameyev et al., 1975, p.216 nomen nudum. The year, page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Plicatella*.

Cicatricosisporites trinotatus Li, 1980, p.3 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricosisporites triquetriformis (Maljavkina, 1958, p.46, pl.5, fig. 8) comb. nov. Neocomian; formerly *Aneimia*.

Cicatricosisporites typicus Jain and Sah, 1966, p.108, pl.1, fig. 31-32; pl.2, fig.35. Late Jurassic.

Cicatricosisporites tyrmensis Shugayevskaya, 1966, p.118-119, pl.2, fig.1-2,6. Aptian.

Cicatricosisporites undatus Döring, 1966a, p.108, pl.4, fig.1. Neocomian; formerly *Aneimia*.

Cicatricosisporites valderugosus (Thiergart, 1953, p.55, pl.14, fig. 1) Krutzsch, 1959a, p.168. Cenomanian; formerly *Cicatricososporites*.

Cicatricosisporites varicicatricosus Döring, 1965, p.50, pl.20, fig. 3-4. Latest Berriasian (Wealden F).

Cicatricosisporites venustus Deak, 1963b, p.252, pl.2, fig.8-9, 12-13. Late Aptian; formerly *Striatriletes*.

Cicatricosisporites venustus Salujha *et al.*, 1972a, p.271, pl. 1,fig. 22-23. A junior homonym to *Cicatricosisporites venustus* Deak.
NOW *Magnastriatites*.

Cicatricosisporites verrucosus Kimyai, 1966, p.467, pl.1, fig.5-6. Cenomanian.

Cicatricosisporites versiformis Döring, 1966a, p.108, pl.4, fig.2-3, 9-10. Barremian.

Cicatricosisporites volgensis (Bolchovitina, 1961, p.68, pl.19, fig. 7a-b) comb. nov. Aptian; formerly *Pelletieria*.

Cicatricosisporites zhejiangensis Zhang, 1978, p.183, pl.3, fig. 7a-e. late Late Jurassic to early-middle Early Cretaceous.

CICATRICOSOSPORITES Pflug, 1952. Junior tautonym to *Cicatricosisporites*. See *Striamonoletes* for complete discussion.

Cicatricososporites auritus Singh, 1971, p.81-82, pl.10, fig.11-15.
NOW *Corniculatisporites*.

Cicatricososporites cretacius Krutzsch, 1954, p.260.
NOW *Schizaeoisporites*.

Cicatricososporites compactus Krutzsch and van Hoorne, 1977, p.21, pl.41, fig.1-5.
NOW *Striamonoletes*.

Cicatricososporites dorogensis Kedves, 1964, p.196, pl.1, fig.2.
NOW *Striamonoletes*.

Cicatricososporites drumhellerensis Srivastava, 1971, p.257, pl.1, fig. 9.
NOW *Striamonoletes*.

Cicatricososporites eocenicus (Selling) Jansonius and Hills, 1976, Card 468.
NOW *Schizaeoisporites*.

Cicatricososporites ellipsoideus Takahashi, 1964, p.220, pl.31, fig. 6-9.
NOW *Schizaeoisporites*.

Cicatricososporites foveadorogensis Krutzsch, 1959a, p.225, pl.43, fig.477-480.
NOW *Striamonoletes*.

Cicatricososporites gracilis Planderova, 1966, p.55, 85, pl.5, fig. 3.
NOW *Striamonoletes*.

Cicatricososporites laevigataeformis (Bolchovitina, 1961) Takahashi, 1973, p.13, 15 nomen nudum. The date, page, plate and figure numbers of the original description were not cited contrary to Article 33.2, ICBN.
NOW *Schizaeoisporites*.

Cicatricososporites monodorogensis Krutzsch, 1959a, p.225, pl.43, fig.481-483.
NOW *Striamonoletes*.

Cicatricososporites murifovearis Krutzsch, 1959a in Planderova, 1966 p.54 nomen nudum. Orthographic error.
NOW *Cicatricosisporites*.

Cicatricososporites nodosus Skarby, 1978, p.122, fig.1g-s, 4D1-D4, 11A-B.
NOW *Corniculatisporites*.

Cicatricososporites norrisii Srivastava, 1971, p.257, pl.1, fig.5-8.
NOW *Striamonoletes*.

Cicatricososporites palaeocenicus (Selling, 1944) Krutzsch, 1959a, p.223.
NOW *Schizaeoisporites*.

Cicatricososporites phaseolus (Delcourt and Sprumont, 1955) Krutzsch, 1959a, p.223.
NOW *Striamonoletes.*

Cicatricososporites pseudodorogensis Thomson and Pflug, 1953, p.61, pl.4, fig.13, ex Krutzsch, 1959a, p.224. Type species.
NOW *Striamonoletes.*

Cicatricososporites pseudodorogensis subsp. *pseudodorogensis* Thomson and Pflug, 1953, p.61, pl.4, fig.13 (autonym).
NOW *Striamonoletes.*

Cicatricososporites pseudodorogensis subsp. *tenuiastriatus* Pflanzl, 1956, p.239, pl.16, fig.5.
NOW *Striamonoletes tenuistriatus.*

Cicatricososporites sancti-pauli Thiergart, 1954, p.549, pl.2, fig. 10,12.
NOW *Striamonoletes.*

Cicatricososporites striatus Sontag, 1957, p.98, fig.5.
NOW *Striamonoletes.*

Cicatricososporites stylosus Thiergart, 1954, p.549, pl.2, fig.16-17
Lectotype designated herein: plate 2, fig.16 (Ibid.).
NOW *Plicatella.*

Cicatricososporites tenuistriatus Krutzsch and Lotsch, 1957, Table 1
nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Cicatricososporites valderugosus Thiergart, 1953, p.55, pl.14, fig.1
NOW *Striamonoletes.*

Cicatricososporites virgatus Pflug, 1952, p.120 ex Thompson and Pflug, 1953, p.61, pl.4.
NOW *Striamonoletes.*

CONTIGNISPORITES Dettmann, 1963, p.73-74.

Contignisporites cooksonae (Balme, 1957, p.19, pl.1, fig.23-24; pl. 2, fig.25-26) Dettmann, 1963, p.73. Neocomian-Early Aptian; formerly *Cicatricosisporites, Aneimia, Anemia.*

Contignisporites dambeckensis Döring, 1973, p.215, pl.5, fig.14-15; pl.10, fig.8-13; pl.11, fig.17-20. Upper Malm.

Contignisporites dettmanniae Singh and Kumar, 1966, pl.1, fig.12-17. Early Cretaceous.

Contignisporites dorsostriatus (Bolchovitina, 1956, p.60, pl.7, fig. 97a-b) Dettmann, 1963, p.13. Neocomian; formerly *Anemia, Cicatricosisporites.*

Contignisporites dunrobinensis (Couper, 1958, p.137, pl.17, fig.13-15) Dettmann, 1963, p.73. Lower Lias; formerly *Cicatricosisporites.* Although misspelled in Dettmann (1963, p.73 *dunrobiensis)* she correctly cited the page and plate of the original description and, therefore, the species was validly transferred. Pocock, 1970, considered this species to be a junior synonym to *Duplexisporites anagrammensis.*

Contignisporites dunrobinensis (Couper, 1958, p.137, pl.17, fig.13-15) Schulz, 1967, p. 570. This transfer was affected already by Dettmann, 1963, p.73.

Contignisporites fornicatus Dettmann, 1963, pl.16, fig.1-5. Early Cretaceous.

Contignisporits glebulentus Dettmann, 1963, p.74-75, pl.4, fig.1-10,5. Aptian-Albian. Type species.

Contignisporites hiliferus (Bolchovitina, 1961, p.51, pl.14, fig.3) comb. nov. Neocomian; formerly *Anemia.*

Contignisporites hilsei Dörhöfer, 1977, p.57, pl.12, fig.3, 6; pl.15 fig.2-3. Late Berriasian.

?Contignisporites kutchensis Venkatachala, Kar and Raza, 1969, p. 194, pl.2, fig.30-31. Late Jurassic.

Contignisporites major Döring, 1965, p.51, pl.19, fig.1-3. Late Berriasian.

Contignisporites mesozoicus Guy-Ohlson, 1978, p.20 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN.

Contignisporites mitriforminus (Korogenevskaja *in* Verbitskaya, 1958, pl.2, fig.37-37a) Dettmann, 1963, p.73. Aptian; formerly *Chomozonotriletes, Anemia, Aneimia, Cicatricosisporites.*

Contignisporites multimurus Dettmann, 1963, p.76-77, pl.16, fig.6-13 Early Cretaceous (Valanginian-Aptian).

Contignisporites novus Jain and Taugourdeau-Lantz, 1973, p.57, pl.2, fig.10-11. Early Cretaceous (Aptian-Albian).

Contignisporites palmatus Li, 1980, p.2-3 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Contignisporites perplexus (Singh, 1964, p.55, pl.5, fig.6-9) Norris, 1969, p.98.
NOW *Distaltriangulisporites*.

Contignisporites problematicus (Couper, 1958) Döring, 1965, p.51-52.
NOW *Crassitudisporites*.

Contignisporites psilatus Singh and Kumar, 1966, p.97-98, pl.1, fig. 18-20. Early Cretaceous.

Contignisporites rugulatus Guy-Ohlson, 1978, p.16-25 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN.

Contignisporites sujfunensis (Bolchovitina, 1961, p.59, pl.17, fig. 5a-c) comb. nov. Barremian-Aptian; formerly *Anemia*.
Dettmann (1963) recognized the similarity of this species to *Contignisporites*, with the exception that the distal muri run parallel to the amb.

Contignisporites triletus Venkatachala, Kar and Raza, 1969, p.195, pl.2, fig.32-33. Late Jurassic.

Contignisporites zolyomii Kedves and Simoncsics, 1964, p.609, pl.1, fig.8-10. Middle Jurassic.

CORNICULATISPORITES Kuvaeva, 1973, p.22. Kuvaeva replaced the Genus *Welwitschiapites* with this genus because it apparently has no affinity to modern ephedroid genus *Welwitchia*, the name derivation. This is contrary to Article 62, ICBN. *Welwitschiapites* as originally described had two morphoiso-types. One as an ephedroid pollen grain and the second as an auriculate, caniculate, monolete spore. (Juhasz, 1977; Potonié, 1958). Potonié (1958, p.89) designated the pollen type as a lectotype for *Welwitschiapites*. Kuvaeva (1973) designated the spore type as the holotype for *Corniculatisporites* creating another species named *Corniculatisporites magniolobatus*. *Naviculaformipites* Kimyai, 1966, is a possible synonym. However, the genus was originally described as a bisaccate pollen genus. The type specimen may be monolete or a fragment

of a trilete spore of *Plicatella*. *Corniculatisporites* should be retained until there is a re-examination of *Naviculataformipites* to confirm its morphology.

Corniculatisporites alekhinii (Bolchovitina, 1953, p.61, pl.9, fig. 20. Kuvaeva, 1973, p. 24. Campanian; formerly *Welwitschiapites*.

?Corniculatisporites atlanticus (Kimyai, 1966, p.470, pl.2, fig.11) comb. nov. Cenomanian; formerly *Naviculaformipites*.

Corniculatisporites auritus (Singh, 1971, p.81-82, pl.10, fig.11-15) Juhasz, 1977, p.24. Middle-Late Albian; formerly *Cicatricososporites*.

Corniculatisporites bolchovitinae Kuvaeva, 1972, p.25, Table 1, fig. 14-16. Cenomanian.

Corniculatisporites magniolobatus Bolchovitina, 1953, p.61, pl.9, fig.19 ex Kuvaeva, 1973, p.23-24. Hauterivian; formerly *Welwetschiapites magniobatus* (pars). Type species.

Corniculatisporites nemanicensis (Pacltova, 1961, p.63, pl.9, fig. 1-3) Juhasz, 1977, p.24. Senonian; formerly *Ephedripites*.

Corniculatisporites nodosus (Skarby, 1978, p.122, fig.1q-s, 4D1-D4, 11A-B) comb. nov. Late Cretaceous; formerly *Cicatricososporites*.

?Corniculatisporites psilatus (Kimyai, 1966, p.470, p.2, fig.12) comb. nov. Cenomanian; formerly *Naviculaformipites*.

Corniculatisporites sancti-paulii (Thiergart, 1954, p.549, pl.2, fig.1, 12) comb. nov. Cenomanian; formerly *Cicatricososporites*.

Corniculatisporites simplex (Deak, 1963a, p.406, fig.1-3) comb. nov. non Kuvaeva, 1972, p.23 nomen nudum. Kuvaeva (1972) failed to cite page, plate and figure numbers of original description contrary to Article 33.2, ICBN. It is corrected herein. Aptian; formerly *Welwetschiapites*.

Corniculatisporites striatus (Deak, 1963, p.408, fig.5-6) Kuvaeva, 1972, p.24-25. Aptian; formerly *Welwitschiapites*.

Corniculatisporites tudaricus Kuvaeva, 1972, p.23, 25 nomen nudum. Orthographic error for *Corniculatisporites tudariensis*.

Corniculatisporite tudariensis Kuvaeva, 1972, p.25, Table 1, fig.8-10. Cenomanian.

Corniculatisporites virgatus (Deak, 1963a, p.408, pl.1, fig.1-2) Juhasz, 1977, p.21 non Kuvaeva, 1972, p.23 nomen nudum. Kuvaeva (1972) failed to cite page, plate and figure numbers of original description contrary to Article 33.2, ICBN. Aptian; formerly *Welwitschiapites*.

COSTATOPERFOROSPORITES Deak, 1962, p.230, 233. Wingate (1980) does not consider the difference between *Costatoperforosporites* and *Appendicisporites* (alias *Plicatella)* "sufficient for the establishment of a separate genus". This is rejected since he transferred illegitimately only one atypical species leaving the rest in a hollow genus.

Costatoperforosporites cristatus var. *fenestratus* (Markova *in* Ivanova and Markova, 1961, p.70, Table 20, fig.2a-b) Deak and Combaz, 1968, p.73 nomen nudum. Deak and Combaz (1968) failed to quote the year of publication and did not transfer the type *Costatoperforosporites cristatus*. This subspecies is raised to specific status below on the basis of their concepts.
NOW *Costatoperforosporites fenestratus*.

Costatoperforosporites difoveolatus (Paden Phillips and Felix, 1971, p.299, pl.2, fig.12) comb. nov. novum nomen subst. pro. *Cicatricosisporites fistulosus* which is a junior homonym to *Costatoperforosporites fistulosus* Deak. Cenomanian.

Costatoperforosporites ethmos (Delcourt and Sprumont, 1959, p.40-41, pl.5, fig.19) comb. nov. non Deak and Combaz, 1968 nomen nudum. Deak and Combaz failed to cite original page, plate and figure numbers contrary to Article 33.2, ICBN. Early Cretaceous (Wealden); formerly *Appendicisporites, Cicatricosisporites, Plicatella*.

Costatoperforosporites fenestratus (Markova *in* Ivanova and Markova, 1961, p.79, pl.20, fig.2a-b) comb. nov. stat. nov. Senonian; formerly *Anemia cristata fenestrata*.

Costatoperforosporites fistulosus Deak, 1962, p.230-231, 233-234, pl.27, fig.1-3. Aptian. Type species.

Costatoperforosporites foveolatus Deak, 1962, p.231-232, 234, pl.27, fig.4-6. Aptian; formerly *Appendicisporites*.

Costatoperforosporites markovae (Markova *in* Ivanova and Markova, 1961, p.85, Table 22, fig.1a-b) nom. nov. subst. pro. *Costatoperforosporites perforatus* (Markova *in* Ivanova and Markova) Deak and Combaz. Cenomanian; formerly *Anemia, Cicatricosisporites.*

Costatoperforosporites nemkovae Deak and Combaz, 1968, p.8 nomen nudum, nom. subst. pro. *Mohria perforata* (Baronova *et al.)* Deak and Combaz failed to cite page, plate and figure number or the original authors of the species contrary to Article 33.2, ICBN.
NOW *Costatoperforosporites perforatus.*

Costatoperforosporites ornatus (Srivastava, 1972a, p.9, pl.5, fig. 3-11; pl.6, fig.1-4) comb. nov. Maastrichtian; formerly *Cicatricosisporites.*

Costatoperforosporites paradorogensis (Krutzsch, 1959a, p.172, pl.32 fig.351-353; pl.35, fig.366-371; pl.36, fig.372-373) comb. nov. Middle Eocene; formerly *Cicatricosisporites.*

Costatoperforosporites perforatus (Baronova, Nemkova and Kondratiev, 1957, p.202, pl.2, fig.22) comb. nov. Senior homonym of *Costatoperforosporites perforatus* (Markova *in* Ivanova and Markova) Deak and Combaz. Cenomanian; formerly *Anemia, Mohria, Cicatricosisporites, Pelleteria, Costatoperforosporites nemkovae.*

Costatoperforosporites perforatus (Markova *in* Ivanova and Markova, 1961, p.85, Table 22, fig.1a-b) Deak and Combaz, 1968, p.75. Junior homonym to *Costatoperforosporites perforatus* Baronova *et al.*
NOW *Costatoperforosporites markovae.*

Costatoperforosporites triangulatus Deak, 1962, p.231, 234, pl.28, fig.7-8. Aptian.

Costatoperforosporites tuberculicostalis (Stel'mak *in* Pokrovskaya and Stel'mak, 1964, p.259, pl.51, fig.6) comb. nov. Aptian-Albian; formerly *Aneimia.*

CRASSITUDISPORITES Hiltmann, 1967, v.17, p.171.

Crassitudisporites problematicus (Couper, 1958, p.146, pl.24, fig. 11) Hiltmann, 1967, p.17. Bajocian; formerly *Cingulatisporites, Contignisporites, Duplexisporites.* Type species.

DISTALRUGULATISPORITES Mathur and Chopra, 1982, p.64. This genus contains proximally costate spores with distal rugulae.

Distalrugulatisporites costatus Mathur and Chopra, 1982, p.64, pl.3, fig.45. Pliocene. Type species.

DISTALTRIANGULISPORITES Singh, 1971, p.88-89.

Distaltriangulisporites costatus Singh, 1971, p.90-91, text-fig.12, pl.12, fig.7-9. Middle Albian.

Distaltriangulisporites irregularis Singh, 1971, p.91-92, text-fig. 13, pl.12, fig.10-13. Middle Albian.

Distaltriangulisporites maximus Singh, 1971, p.92-93, pl.12, fig. 14-16. Middle Albian.

Distaltriangulisporites mutabilis Singh, 1971, p.93-94, pl.13, fig. 1-3. Middle Albian.

Distaltriangulisporites pelliculus Scott, 1976, p.580, pl.8, fig. 1-3. Neocomian.

Distaltriangulisporites perplexus (Singh, 1964, p.55, pl.5, fig.6-9) Singh, 1971, p.89. Middle Albian; formerly *Appendicisporites, Contignisporites.* Type species.

DUPLEXISPORITES Deak, 1962, p.234, emend. Playford and Dettmann, 1965, p.139-141. Jansonius and Hills (1976) suggest that the emended circumcription may not conform to the type species. Another genus, therefore, is required to accomodate the species transferred from *Corrugatisporites. Crassitudisporites* and *Asseretospora* may meet the requirements, but transfer of the species is left until a review is made for all genera on species involved.

Duplexisporites adiantifoliopsis (Kuzichkina, 1962, p.111, pl.4, fig.88) comb. nov. Middle Jurassic; formerly *Aneimia.*

Duplexisporites amplectiformis (Kara-Murza *in* Bolchovitina, 1956, p.58, pl.7, fig.92a-c) Liu *in* Liu, Shang and Li, 1981, p.147; formerly *Onchium, Corrugatisporites, Chomotriletes.*

Duplexisporites anagrammensis (Kara-Murza *in* Bolchovitina, 1956, p.57, pl.6, fig.88) Shugayevskaya, 1969, p.154; formerly *Camptotriletes, Corrugatisporites, Chomotriletes.*

Duplexisporites anogrammensis Kara Murza in Bolchovitina Shugayevskaya, Petrova and Fradkina, 1973, p.8. Orthographic error for *Duplexisporites anagrammensis*.

Duplexisporites anomalus Shugayevskaya, 1969, p.155-166, pl.21, fig. 1-2. Volgian-Valanginian.

Duplexisporites curvus (Bolchovitina, 1956, p.57, pl.6, fig.89) Liu *in* Liu, Shang and Li, 1981, p.147; formerly *Camptotriletes, Corrugatisporites*.

Duplexisporites generaeis Deak *in* Corna, 1972, pl.11, fig.11. Orthographic error for *Duplexisporites generalis*.

Duplexisporites generalis Deak, 1962, p.234, pl.20, fig.9. Aptian. Type species.

Duplexisporites grandis Liu *in* Liu, Shang and Li, 1981, p.147-148, pl.9, fig.14-15. Early Jurassic.

Duplexisporites gyratus Playford and Dettmann, 1965, p.140, pl.13, fig.20-22.
NOW *Asseretospora*.

Duplexisporites klausii (Kavary, 1972, p.91, pl.2, fig.1-2) comb. nov. Carnian: formerly *Corrugatisporites*.

Duplexisporites medosus (Pierce, 1961, p.32, pl.1, fig.29) comb. nov. early Late Cretaceous; formerly *Striatriletes*.

Duplexisporites mortonii (de Jersey) Wiseman and Williams, 1974, p.921 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.

Duplexisporites orbiculatus Deak and Combaz, 1968, p.78, pl.2, fig. 13. Late Albian-Early Cenomanian.

Duplexisporites parvus Li and Shang, 1980, p.211, pl.3, fig.41-42. Early Jurassic.

Duplexisporites problematicus (Couper, 1958) Playford and Dettmann, 1965, p.140. Li and Shang (1980, p.217) recombined this species with *Duplexisporites* illegitamately contrary to Article 33.2, ICBN.
NOW *Crassitudisporites*.

Duplexisporites pseudotuberculatus Shugayevskaya, 1969, p.156, pl.21 fig.13-15. Volgian-Valanginian.

Duplexisporites rotundatus Shugayevskaya, 1969, p.156, 159, pl.21, fig.16-20. Volgian-Valanginian.

Duplexisporites scanicus (Nilsson, 1958, p.43-44, pl.2, fig.15-17) Playford and Dettmann, 1965, p.140, Liassic; formerly *Corrugatisporites*.

Duplexisporites toratus (Weyland and Greifeld, 1953, p.42, pl.11, fig.56-59) Playford and Dettmann, 1965, p.140. NOW *Bikolisporites*.

Duplexisporites triangularis (Brenner, 1963, p.65, pl.7, fig.6) Norris, 1967, p.99. Aptian-Albian; formerly *Lycopodiacidites*.

Duplexisporites wallii (Pocock, 1970, pl.12, fig.17-18) comb. nov. late Late Jurassic (post Kimmeridgian); formerly *Corrugatisporites*.

KRUTZSCHISPORITES Kedves, 1966, p.67. This genus contains trilete distally canaliculate or rugulate spores with one set of proximal muri.

Krutzschisporites transdanubicus Kedves, 1966, p.68, pl.7, fig.9-11. Middle-Late Eocene. Type species.

LIRATOSPORITES Vishnu-Mittre, 1955, p.119 nomen nudum. Potonié (1956) considered this genus to be a junior synonym to *Cicatricosisporites*.

MAGNASTRIATITES Germeraad, Hopping and Müller, 1968, p.288. This genus is similar to *Cicatricosisporites* except fewer coarser striae, the circular proximal ridge, smooth contact area and large size. Four papers have challenged the validity of *Magnastriatites* Germeraad, Hopping and Müller, 1968, namely Kar (1979), Kar and Saxena (1981), Singh and Saxena (1979) and Singh and Tripathi (1983). In 1954 van der Hammen (p.14) described the genus *Striatriletes* without designating a genotype. This predates Article 37 (January 1, 1958, ICBN) which requires that the nomenclatural type be indicated. Potonié (1956) indicated the megaspore species *Striatriletes* (alias *Triletes) sulcatus* (Dijkstra, 1951, p.11, pl.2, fig.3) as the nomenclatural type of *Striatriletes* van der Hammen 1954. During the same year van der Hammen (1956) proposed a new genus *Striatriletes* with the microspore species *S. susannae* van der Hammen 1956 as the nomenclatural type without making a direct reference to the previously published genus *Striatriletes* van der Hammen 1954. This effectively created a junior homonym to

Striatriletes van der Hammen, 1954 ex Potonié 1956. Thus the type of *Striatriletes* must be taken as *S. sulcatus*, the megaspore species. The earliest available name to which the concept of *Striatriletes* van der Hammen 1956 emend. Kar 1979 can be applied is *Magnastriatites* Germeraad, Hopping and Müller, 1968.

Magnastriatites attenuatus (Singh and Tripathi, 1983, p.224-225, pl. 1, fig.36) comb. nov. Late Eocene; formerly *Striatriletes*.

Magnastriatites cauveriensis Venkatachala and Rawat, 1971, p.239, pl.1, fig.5. Oligocene.

Magnastriatites cirae (Kedves and Solé de Porta, 1963, p.60, pl.9, fig.1-9) comb. nov. Miocene; formerly *Magnastriatites*.

Magnastriatites cundinamarcensis (Kedves and Solé de Porta, 1963, p.61, pl.10, fig.4-6) comb. nov. Miocene; formerly *Cicatricosisporites*.

Magnastriatites grandiosus (Kedves and Solé de Porta, 1963, p.59, pl.7, fig.7-8) Duenas, 1980, p.322, 331. Senior synonym to *Magnastriatites howardii* and therefore, the obligate type species of *Magnastriatites* (Duenas, 1980). Miocene; formerly *Cicatricosisporites*. Duenas (1980, p.331) compares these to be "virtually identical to the spore of the recent tropical-subtropical freshwater fern genus *Ceratopteris*."

Magnastriatites howardii Germeraad, Hopping and Müller, 1968, p.288-289, pl.3, fig.1. Junior synonym to *Magnastriatites grandiosus* (Duenas, 1980, p.329-331); former type species.

Magnastriatites jorajanensis (Singh and Saxena, 1979, p.616, pl.1, fig.9-11) comb. nov. Neogene (Late Assam); formerly *Striatriletes jorajanensis*.

Magnastriatites microverrucosus (Kar and Saxena, 1981, p.109, pl.1, fig.19-20) comb. nov. Middle to Late Eocene; formerly *Striatriletes*.

Magnastriatites multicostatus (Kar and Saxena, 1981, p.108, pl.1, fig.15,18) comb. nov. Middle to Late Eocene; formerly *Striatriletes*.

Magnastriatites pseudocostatus (Singh and Tripathi, 1983, p.224, pl.1, fig.2; pl.2, fig.11-12) comb. nov. Late Eocene; formerly *Striatriletes*.

Magnastriatites striatus Salujha, Kindra and Rehman, 1978, p.75, pl. 1, fig.31-32. Tertiary.

Magnastriatites taiwanensis Huang, 1977, p.78-81, fig.1-2. This species was placed simultaneously in *Ceratopteris*, p.44. Miocene; formerly *Ceratopteris*.

Magnastriatites venustus (Salujha *et al.*, 1972a, p.271, pl.1, fig.22-23) Salujha *et al.*, 1972b, p.272. Eocene to Early Miocene; formerly *Cicatricosisporites, Striatriletes*.

Magnastriatites vulgaris Salujha, Kindra and Rehman, 1978, p.75-76, pl.2, fig.33-34. Tertiary.

MECSEKISPORITES Nagy, 1968, p.360. This genus possesses 2 sets of proximal muri running parallel to the equator and strongly verrucate on both sides. Pacltova and Simonscics (1970) relate spores of this genus to the extent genus *Anogramma* from the family gymnogrammaceae. Nagy (1968) states that *Mecsekisporites* exhibits characteristics *Cibotium, Gymnogramma* and *Anogramma*.

Mecsekisporites aequus Nagy, 1968, p.361, pl.2, fig.4-5. Late Helvetian.

Mecsekisporites cerebralis Nagy, 1968, p.362, pl.4, fig.1, 4-5. Helvetian.

Mecsekisporites miocaenicus Nagy, 1968, p.360, pl.2, fig.1-3. Miocene. Type species.

Mecsekisporites zengoevarkonyensis Nagy, 1968, p.361-362, pl.3, fig. 1-4. Late Helvetian.

Mecsekisporites zengoevarkonyensis minor Pacltova and Simoncsics, 1970, p.606, pl.109, fig.7-9; pl.111, fig.1-4. Miocene.

Mecsekisporites zenoevarkonensis zengoevarkonyensis Nagy, 1968, p.361-362, pl.3, fig.1-4 (autonym).

MOHRIAESPORITES Potonié, 1950, p.373, 377 (alias *Mohriae-Sporites)*. A junior synonym to *Cicatricosisporites*.

MOHRIOIDITES Thiergart, 1950, p.84. A junior synonym to *Cicatricosisporites* since it has the same type species.

Mohrioidites dorogensis (Potonié and Gelletich, 1933) Thiergart, 1950, p.84. Type species.
NOW *Cicatricosisporites*.

MOHRIOISPORITES Potonié, 1951, p.114. A junior synonym to *Cicatricosisporites.*

Mohrioisporites australiensis Cookson, 1953, p.470, pl.1, fig.31-34. NOW *Cicatricosisporites.*

Mohrioisporites dorogensis (Potonié and Gelletich, 1933) Potonié, 1951, pl.20, fig,14. Type species.
NOW *Cicatricosisporites.*

MOHRIOSPORITES Cookson, 1954, p.122. An orthographic error for *Mohrioisporites* in the plate explanations; also *in* Baker and Cookson, 1955, p.134. A junior synonym to *Cicatricosisporites.*

Mohriosporites australiensis Cookson, 1953 in Cookson, 1954, p.122. An orthographic error; also *in* Baker and Cookson, 1955, p.134.
NOW *Cicatricosisporites.*

MURICINGULISPORIS Krutzsch, 1959a, p.177. This genus contains trilete, cingulate, costate spores with the distal muri combined into an irregular reticulum.

Muricingulisporis annulatus Archangelsky and Gamerro, 1966a, p.204-205, pl.2, fig.4-8. Cretaceous.

Muricingulisporis muricingulis Krutzsch, 1959a, p.177, pl.37, fig. 383. Lufetian (Middle Eocene). Type species.

Muricingulisporis semimuris Krutzsch, 1959a, p.178, pl.37, fig.385-387. Lufetian (Middle Eocene).

NAVICULAFORMIPITES Kimyai, 1966, p.470. Although originally intended as a striate bisaccate genus, the illustrated specimens appear to conform to *Corniculatisporites,* a striate monolete genus, but may also be trilete referrable to *Plicatella.* The "sacci" are most likely auriculae. Azema *et al.,* 1972, related this genus to *Schizaeoisporites.*

Naviculaformipites atlanticus Kimyai, 1966, p.470, pl.2, fig.11. NOW *?Corniculatisporites.* Type species.

Naviculaformipites psilatus Kimyai, 1966, p.470, pl.2, fig.12. NOW *?Corniculatisporites.*

NEYVELIA Thiergart and Frantz, 1963, p.43. A striate monolete monotypic genus, without a separate description or diagnosis.

Neyvelia riedelii Thiergart and Frantz, 1963, p.43, fig.8. Tertiary (?Miocene). Type species.

NODOSISPORITES Deak, 1964, p.107. A cicatricose-caniculate trilete genus with positive ornament arising from the muri.

Nodosisporites alatus (Wingate, 1980, pl.5, fig.1-2) comb. nov. late Late Albian; formerly *Appendicisporites*.

Nodosisporites babsae (Brenner, 1963, p.56, pl.13, fig.2-3) comb. nov. Late Albian; formerly *Apiculatisporis, Lophotriletes*.

Nodosisporites baculatus (Regali, Uesugui and Santos, 1974, p.264-265, pl.15, fig.2) comb. nov. Oligocene-Miocene; formerly *Cicatricosisporites*.

Nodosisporites costatus Deak, 1964, p.107-108, pl.7, fig.49-51. Aptian. Type species.

Nodosisporites crenimurus (Srivastava, 1972b, p.224-226, pl.1, fig. 3-6; pl.2, fig.1-6; pl.3, fig.1-2) comb. nov. Paleocene; formerly *Appendicisporites*.

Nodosisporites dentimarginatus (Brenner, 1963, p.45, pl.6, fig.2-3) comb. nov. Early Albian; formerly *Appendicisporites*.

Nodosisporites genuinus (Bolchovitina, 1953, p.35, pl.3, fig.25-26) comb. nov. Aptian; formerly *Anemia, Aneimia, Chomotriletes*.

Nodosisporites lusaticus (Krutzsch, 1967, p.86, pl.25, fig.1-9) comb. nov. Middle to Late Tertiary. The species contains spores with undulating to verrucate muri; formerly *Cicatricosisporites*.

Nodosisporites phyllitidiformis (Khlonova, 1960, p.23, pl.2, fig.18) comb. nov. Cenomanian-Turonian; formerly *Anemia, Aneimia, Cicatricosisporites*.

Nodosisporites segmentatus (Brenner, 1963, p.46-47, pl.7, fig.12) comb. nov. latest Albian; formerly *Appendicisporites*.

Nodosisporites spinaestriatus (Krutzsch, 1967, p.88, pl.26, fig.1-5) comb. nov. Middle Oligocene; formerly *Cicatricosisporites*.

Nodosisporites spinosus (Pocock, 1965, p.169-171, pl.4, fig.8-9) comb. nov. Middle Albian; formerly *Appendicisporites*.

Nodosisporites stellantis (Wingate, 1980, p.16-17, pl.5, fig.3-7) comb. nov. late Late Albian; formerly *Appendicisporites*.

Nodosisporites subverrucosus (Nakoman, 1965, p.294, pl.12, fig.10) comb. nov. Oligocene; formerly *Cicatricosisporites*.

Nodosisporites verrucosus Deak, 1964, p.108-109, pl.7, fig.52; pl.8, fig.53-55. Aptian.

PARKERIACEAESPORITES Baski, 1962, p.20 nomen nudum. A description, diagnosis or type species was not given contrary to Article 32.1 and 37.1, ICBN.

PAUTSCHISPORITES (Pautsch, 1971, p.19) nom. nov., nom. subst. pro *Spiralisporites* Pautsch, 1971, p.19.

Pautschisporites insignis (Pautsch, 1971, p.19, pl.5, fig.1) comb. nov. Early Keuper; formerly *Spiralisporites*. Type species.

PLICATELLA Maljavkina, 1949, p.60.

Plicatella was first established by Maljavkina (1949). According to Article 38, ICBN, in order that a fossil taxon published on or after 1 January 1912 be valid it must be accompanied, directly or indirectly, by an illustration or figure in addition to the description or diagnosis. Both were supplied; however, a holotype specimen was not designated. According to Article 37 designation of a holotype was not mandatory until 1 January 1958. In compliance with Articles 7 and 52.1 (ICBN) a lectotype (syntype) was designated by Potonié (1960, p.50) who reillustrated the original sketch. Srivastava (1975b, p.11) rejects *Plicatella* in preference for the genus *Appendicisporites* Weyland and Krieger, 1953 using the reason that the type material of *Plicatella* was not preserved. According to Article 7 (ICBN), the loss of the type material does not invalidate the name but a new lectotype or neotype may be designated. The illustration given by Maljavkina (1949) and Potonié (1960) demonstrates the essential characteristics of the genus contrary to the suggestion of Srivastava.

The original intended circumscription of the genus was for the inclusion of all cicatricose spores whether or not there are appendices as indicated by the content in the specific protologues of *Plicatella incisurata* Maljavkina and *Plicatella triquetra typica;* therefore, the genus was clearly a junior synonym to *Cicaticosisporites* Potonié and Gelletich, 1933 at the time of the publication, but also including the concepts of *Appendicisporites*. According to Article 45, the date of a name or of an epithet is that of its valid publication. When various conditions for valid publication are not simultaneously fulfilled the date is that

on which the last has been fulfilled. Since no holotype was established until 1960 and the diagnosis until then was equivalent to *Cicatricosisporites*, it would seem that *Appendicisporites* would have seniority, if not for Article 37, which allows the validity of *Plicatella* without a type.

In 1953, Weyland and Krieger recognized the need for a cicatricose genus with appendices and proposed *Appendicisporites*. They designated *Appendicisporites tricuspidatus* Weyland and Greifeld, 1953 as the type species. Page, plate and figure numbers for the type species did not accompany the description of the genus, nor any holotype designation. A direct reference to Weyland and Greifeld (1953) was not made in the literature citations. Perhaps Weyland and Krieger (1953) considered it not necessary since the both papers were being published simultaneously in the same journal and volume. Nevertheless, since both Weyland and Krieger (1953) and Weyland and Greifeld (1953) are separate publications, all nomenclature must be sufficient within each paper. *Appendicisporites*, therefore, is equally as invalid as *Plicatella* if not for Article 37. Since *Plicatella* was the earliest available genus for the concept of *Appendicisporites* the former should have priority unless *Appendicisporites* is formally conserved.

Plicatella abaca (Burger, 1966, p.242, pl.7, fig.3) Norris, 1969, p. 591. Middle Valanginian; formerly *Cicatricosisporites*. Dörhöfer (1977) considered this species to be a junior synonym of *Cicatricosisporites sprumonti*. Döring (1965), Hughes and Moody-Stuart (1969) considered *Plicatella abaca* as equivalent to biorecord 4 CICATR AW.

Plicatella aequalis (Levet-Carette, 1966, p.164, pl.15, fig.28-31) comb. nov. Wealden; formerly *Plicatellisporites*.

Plicatella ajatensis (Bolchovitina, 1961, p.54, pl.16, fig.5) Dörhöfer, 1977, p.52. Albian; formerly *Anemia, Aneimia*.

Plicatella appendicifera (Thiergart, 1942, pl.5, fig.1, ex Thiergart, 1949, p.25, pl.4-5, fig.33) comb. nov. Early Senonian; formerly *Sporites, Appendicisporites*.

Plicatella archangelskyi (Archangelsky and Gamerro, 1966b, p.366, pl.2, fig.3-4) comb. nov., nom. nov. subst. pro *Plicatella gigantea*. Early Cretaceous; formerly *Cicatricosisporites*.

Plicatella atricuspidata (Krutzsch, 1959a, p.115) comb. nov. Holotype (alias *A. cf. tricuspidatus)* Weyland and Greifeld, 1953 in Thiergart, 1953, p.5559, pl.14, fig.35. Cenomanian; formerly *Appendicisporites*.

Plicatella aurifera (Verbitskaya, 1962, p.100, pl.7, fig.450; pl.8, fig.45b-e) comb. nov. Barremian-Aptian; formerly *Aneimia, Anemia.*

Plicatella aurita (Agasie, 1969, p.17, pl.1, fig.1-2) comb. nov. Cenomanian; formerly *Appendicisporites, Cicatricosisporites.*

Plicatella baconicus (Deak, 1963b, p.252, pl.2, fig.10-11) comb. nov. Late Aptian; formerly *Cicatricosisporites, Appendicisporites.*

Plicatella baqueroensis (Archangelsky and Gamerro, 1966b, p.367-368 pl.2, fig.1) comb. nov. Early Cretaceous; formerly *Cicatricosisporites.*

Plicatella bella (Markova *in* Ivanova and Markova, 1961, p.70, pl.17, fig.5a-b) comb. nov. Aptian-Albian; formerly *Anemia, Aneimia.*

?Plicatella biauriculata (Markova *in* Ivanova and Markova, 1961, p.68-69, pl.17, fig.3; pl.23 fig.22) comb. nov. The provisional generic assignment is made because appendices are weakly developed. Cenomanian; formerly *Anemia, Aneimia.*

Plicatella bifurcata (Singh, 1964, p.54, pl.5, fig.1-5) Dörhöfer, 1977, p.52. Middle Albian; formerly *Appendicisporites, Anemia.*

Plicatella bilateralis (Singh, 1964, p.56, pl.4, fig.6-8) Dörhöfer, 1977, p.52. Albian; formerly *Appendicisporites.*

Plicatella camura Martynova *in* Pokrovskaya and Stel'mak, 1960, p.117 pl.2, fig.8. Santonian; formerly *Aneimia.*

Plicatella caucasica (Bolchovitina, 1961, pl.17, fig.4a-c) comb. nov. Aptian; formerly *Anemia.*

Plicatella chetensis Kara-Murza, 1954, p.156, pl.7, fig.1-2.
NOW *Cicatricosisporites.*

Plicatella chetensis var. *chetensis* Kara-Murza, 1954, p.156, pl.7, fig.2.
NOW *Cicatricosisporites.*

Plicatella chetensis var. *minor* Kara-Murza, 1954, p.157, pl.7, fig.7-9, 12 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN. Also named simultaneously *Aneimia (Plicatella) sibirica.*

Plicatella chetensis var. *nigra* Kara-Murza, 1954, p.156, pl.7 fig.1 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN. Simultaneously placed in *Aneimia*.

Plicatella clavata (Markova *in* Ivanova and Markova, 1961, p.74, pl.18, fig.4) comb. nov. Aptian-Albian; formerly *Anemia, Appendicisporites*.

Plicatella concentrica (Kemp, 1970, p.99, pl.15, fig.5-8; pl.16, fig.1-3, text-fig.14d-e) comb. nov. latest Barremian-Early Aptian; formerly *Appendicisporites*.

Plicatella crassicarinatus (Harris *in* Kemp and Harris, 1977, p.17-18 pl.2, fig.10-13) comb. nov. Paleocene; formerly *Appendicisporites*.

Plicatella crenimurus (Srivastava, 1972b, p.224, 266, pl.1, fig.3-6; pl.2, fig.1-6; pl.3, fig.1-2) comb. nov. Paleocene; formerly *Appendicisporites*.

Plicatella cretacea (Pocock, 1962, p.70, pl.12, fig.181-182) comb. nov. This species (a fragmented specimen) is probably synonymous with *Plicatella jansonii*. Barremian; formerly *Vittitina*.

Plicatella crickmayii (Pocock, 1965, p.163, pl.3, fig.4) comb. nov. Middle Albian; formerly *Appendicisporites*.

Plicatella crimensis (Bolchovitina, 1961, p.55, pl.15, fig.8) Dörhöfer, 1977, p.50 non Vagvolgyi and Hills, 1969, p.166 (alias *krimensis, krymensis)*. Early Hauterivian. Vagvolgyi and Hills (1969) failed to quote page, plate or figure numbers contrary to Article 33.2, ICBN. Hughes and Moody-Stuart (1969) equate this species to biorecord 8 CICATR C 2; formerly *Anemia, Appendicisporites, Cicatricosisporites, Ceratopteris* and *Chomotriletes*.

Plicatella cristata (Markova *in* Ivanova and Markova, 1961, p.78-79, pl.20, fig.1a-b) comb. nov. Cenomanian-Turonian; formerly *Anemia, Aneimia, Appendicisporites*.

Plicatella cristata cristata (Markova *in* Ivanova and Markova, 1961, p.78-79, pl.20, fig.1a- b) comb. nov. (autonym) Cenomanian-Turonian; formerly *Anemia*.

Plicatella degenerata (Thiergart, 1953, p.55, pl.14, fig.4) comb. nov. non Vagvolgyi and Hills, 1969, p.168 nomen nudum. Vagvolgyi and Hills failed to quote page, plate and figure numbers contrary to Article 33.2, ICBN. Cenomanian; formerly *Appendicisporites, Cicatricosisporites.*

Plicatella distocarinata (Dettmann and Playford, 1968, p.75-76, pl.6 fig.16-18) comb. nov. Cenomanian-Turonian; formerly *Appendicisporites.*

Plicatella dorogenoides (Weyland and Greifeld, 1953, p.43, pl.11, fig.51) comb. nov. Early Senonian; formerly *Appendicisporites.*

Plicatella erdtmannii (Pocock, 1965, p.167-168, pl.3, fig.17) comb. nov. non Van Ameron, p.112 nomen nudum. Van Ameron failed to quote page, plate and figure numbers contrary to Article 33.2, ICBN. Middle Albian; formerly *Appendicisporites.*

Plicatella ethmos (Delcourt and Sprumont, 1959) Zhang, 1965, p.176. NOW *Costatoperforosporites.*

Plicatella exiliformis Li, 1980, p.2-3 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Plicatella expansa (Shugayevskaya, 1966, p.116, pl.1, fig.1) comb. nov. Aptian-Albian; formerly *Appendicisporites, Anemia.*

Plicatella fucosa (Vavrdova, 1964, p.36-37, pl.1, fig.1) comb. nov. Early Cretaceous; formerly *Appendicisporites.*

Plicatella gigantea (Archangelsky and Gamerro, 1966b, p.366-377, pl. 2, fig.3-4) comb. nov. A junior homonym (tautonym) to *Plicatella gigantica* (Groot and Groot, 1962) comb. nov. NOW *Plicatella archangelskyi.*

Plicatella gigantica (Groot and Groot, 1962, p.144, pl.1, fig.3) comb. nov. Cenomanian; formerly *Appendicisporites.*

Plicatella globulifera (Bolchovitina, 1961, p.55, pl.15, fig.10) Dörhöfer, 1977, p.52. Late Cretaceous; formerly *Anemia, Appendicisporites, Cicatricosisporites.*

Plicatella glomerosa (Martynova *in* Pokrovskaya and Stel'mak, 1960, p.117, pl.2, fig.9) comb. nov. Santonian; formerly *Aneimia.*

Plicatella grandis (Pocock, 1965, p.171-172, pl.4, fig.15) comb. nov. Middle Albian; formerly *Appendicisporites*.

Plicatella ingens (Weyland and Krieger, 1953, p.12, pl.3, fig.17-19) comb. nov. Lectotype designated herein as pl.3, fig.17, to conform to Article 37, ICBN. Senonian; formerly *Appendicisporites*.

Plicatella incisurata Maljavkina, 1949, p.60, pl.11, fig.1-2. NOW *Cicatricosisporites*.

Plicatella incisurata exilis Maljavkina, 1949, p.60, pl.11, fig.2. NOW *Cicatricosisporites*.

Plicatella incisurata incisurata Maljavkina, 1949, p.60, pl.11, fig. 1 (autonym); formerly *Plicatella incisurata typica*. NOW *Cicatricosisporites*.

Plicatella incisurata typica Maljavkina, 1949, p.60, pl.11, fig.1. NOW *Cicatricosisporites incisuratus incisuratus*.

Plicatella insignis (Markova *in* Ivanova and Markova, 1961, p.76, pl.19, fig.3a-b) comb. nov. Aptian-Albian; formerly *Anemia, Aneimia, Cicatricosisporites*.

Plicatella insignis insignis (Markova *in* Ivanova and Markova, 1961, p.76, pl.19, fig.3a-b) comb. nov. (autonym) Aptian-Albian; formerly *Anemia*.

Plicatella insignis media (Markova *in* Ivanova and Markova, 1961, p.77, pl.19, fig.4a-b; pl.33, fig.13-14) comb. nov. Cenomanian-Turonian; formerly *Anemia*.

Plicatella insignis minor (Markova *in* Ivanova and Markova, 1961, p.77, pl.19, fig.5a-b) comb. nov. Cenomanian; formerly *Anemia*.

Plicatella irregularis (Pocock, 1965, p.169, pl.4, fig.4-5) comb. nov. Middle Albian; formerly *Appendicisporites, Cicatricosisporites*.

Plicatella jacutica (Fradkina, 1967, pl.1, fig.9; pl.2, fig.1-3) comb. nov. Dörhöfer (1977) considered this species as a junior synonym to *Plicatella pseudomacrorhyza* (Markova) Dörhöfer; formerly *Aneimia, Anemia*.

Plicatella jansonii (Pocock, 1962, p.37, pl.2, fig.23) Dörhöfer, 1977, p.52. Barremian; formerly *Appendicisporites, Cicatricosisporites.* Hughes and Moody-Stuart (1969) consider this species equivalent to biorecord 9 CICATR AP.

Plicatella khlonovae (Khlonova, 1960, p.22, pl.2, fig.15-17) comb. nov., stat. nov., nom. subst.; formerly *Anemia exilioides sibirica.* This species is raised to specific status, recombined as *Plicatella sibirica* which becomes the junior homonym to *Plicatella sibirica* Kara-Murza, 1954 contrary to Article 64, ICBN, therefore must be renamed.

?Plicatella kushmurunica (Romanovskaja, 1963, p.130, pl.13, fig.3) comb. nov. Bajocian; formerly *Aneimites.*

Plicatella limbata Kara-Murza, 1954, p.57, pl.1-7, fig.4-5 nomen nudum. Neither diagnosis nor description was given contrary to Article 33.2, ICBN. Placed simultaneously in *Mohria.*

Plicatella lucifera (Hughes and Moody-Stuart, 1967, p.349, pl.1, fig.A-K, fig.1A-C) comb. nov.; formerly *Cicatricosisporites.* Dörhöfer (1977) considered this species as a junior synonym to *Plicatella pseudomacrorhyza.* Hughes and Moody-Stuart (1969) considered this species as equivalent to biorecord 7 CICATR C 1

Plicatella macalisterii (Pocock, 1965, p.171, pl.4, fig.13-14) comb. nov. Middle Albian; formerly *Appendicisporites.*

Plicatella macrorhyza (Maljavkina, 1949, p.62, pl.12, fig.5) Zhang, 1965, p.176. Early Aptian. Dörhöfer (1977, p.51) also transferred this species to *Plicatella.* Dörhöfer (1977) equated this species to biorecord 24 CICATR C 5; formerly *Chomotriletes, Anemia, Aneimia, Plicatella tricantha macrorhyza.*

Plicatella macrorrhiziformis (Poluchina *in* Pokrovskaya and Stel'mak, 1964, p.223, pl.27, fig.3-4) comb. nov. Hauterivian-Barremian; formerly *Aneimia.*

Plicatella majae Van Ameron, 1965, p.112, pl.6, fig.1a-c. Late Cretaceous.

Plicatella major Li, 1980, p.3 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Plicatella matesovae (Bolchovitina, 1961, p.57, pl.16, fig.5a-c; pl. 18, fig.3; pl.40, fig.15) Dörhöfer, 1977, p.53. Albian; formerly *Anemia, Appendicisporites.*

Plicatella minaciangula (Markova *in* Ivanova and Markova, 1961, p.75, pl.18, fig.5) comb. nov. Cenomanian; formerly *Anemia, Aneimia.*

Plicatella modica (Khlonova, 1960, p.23, pl.2, fig.19) comb. nov. Cenomanian-Turonian; formerly *Aneimia, Anemia.*

Plicatella mohriaesimilis (Thiergart, 1953, p.55, pl.14, fig.2) comb. nov. Cenomanian; formerly *Appendicisporites.*

Plicatella multicornata (Kimyai, 1966, p.467, pl.1, fig.4) comb. nov. Cenomanian; formerly *Appendicisporites.*

Plicatella pachyderma (Stel'mak *in* Pokrovskaya and Stel'mak, 1964, p.259-260, pl.51, fig.7) comb. nov. Aptian-Albian; formerly *Aneimia.*

Plicatella parviangulata (Döring, 1966a, p.109, pl.3, fig.4-6; pl.4, fig.4-6) Dörhöfer, 1977, p.51. Late Barremian-Early Aptian; formerly *Appendicisporites* Dörhöfer (1977) equates this species to biorecord 27 CICATR C 6.

Plicatella perforata (Agasie, 1969, pl.1, fig.5-6) comb. nov. Cenomanian; formerly *Appendicisporites.*

Plicatella potomacensis (Brenner, 1963, p.46, pl.6, fig.4-5) comb. nov. Middle-Late Albian; formerly *Appendicisporites.*

Plicatella praecipia (Verbitskaya, 1962, p.98, pl.7, fig.42a-b) comb. nov. Albian-?Cenomanian; formerly *Appendicisporites, Anemia, Aneimia.*

Plicatella problematica Burger, 1966, p.245, pl.10, fig.3. Lower Wealden (Late Berrasian-Early Valanginian); Dörhöfer (1977) considered this species as a junior synonym to *Plicatella pseudomacrorhyza.*

Plicatella pschekhaensis (Bolchovitina, 1961, p.55, pl.15, fig.9) Dörhöfer, 1977, p.53. Neocomian; formerly *Anemia* and *Appendicisporites.* Hughes and Moody-Stuart (1969) considered this species potentially equivalent to biorecord 13 CICATR C 2 L.

Plicatella pseudaurifera (Bolchovitina, 1953) Reyre, 1966, p.5 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Cicatricosisporites.*

Plicatella pseudocornitatus Krutzsch, 1959a, p.116, comb. nov. (alias *Appendicisporites tricornitatus* Weyland and Greifeld *in* Weyland and Greifeld, 1953, p.12, pl.3, fig.14, 17) Senonian; formerly *Appendicisporites*.

Plicatella pseudomacrorhyza (Markova, 1961, p.67-68, pl.17, fig.2a-b pl.33, fig.10-12) Dörhöfer, 1977, p.51-52. Cenomanian; formerly *Anemia, Aneimia, Appendicisporites*.

Plicatella pullata (Shugayevskaya, 1966, p.116-117, pl.1, fig.5) comb. nov. Aptian-Albian; formerly *Anemia, Cicatricosisporites*.

Plicatella punctatus (Pacltova, 1961, p.60, 89, pl.8, fig.1-3) comb. nov. Senonian; formerly *Appendicisporites*.

Plicatella pyramidina (Maljavkina, 1949, p.61, pl.12, fig.1 ex Martynova *in* Pokrovskaya and Stel'mak, 1964, p. 223) comb. nov. Aptian; formerly *Plicatella trichantha pyramidina, Aneimia, Anemia*.

Plicatella robusta (Kemp, 1970, p.99-101, pl.16, fig.4-8, text-fig. 15a-b) comb. nov. Late Barremian-Early Aptian; formerly *Appendicisporites*.

Plicatella sellingii (Pocock, 1965, p.163-164, pl.3, fig.5-8) comb. nov. Middle Albian; formerly *Appendicisporites*.

Plicatella sibirica Kara-Murza, 1954, pl.7, fig.7-9, 12 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN. Simultaneously placed in *Aneimia* and also named *Plicatella chetensis* var. *minor*.

Plicatella sibirica (Khlonova, 1960, p.22, pl.2, fig.15-17) comb. nov., stat. nov. A homonym to the invalid species *Plicatella sibirica* Kara-Murza, 1954 contrary to Article 64, ICBN. This species is renamed *Plicatella khlonovae*. (See CFSP 41:20 for explanation of nomenclatural complexities); formerly *Anemia exilioides sibirica*.
NOW *Plicatella khlonovae*.

Plicatella silvestris (Bolchovitina, 1961, p.58, pl.17, fig.8a-d) comb. nov. Albian; formerly *Anemia, Appendicisporites, Cicatricosisporites*.

Plicatella singhii (Pocock, 1965, p.170-171, pl.4, fig.11-12) comb. nov. Middle Albian; formerly *Appendicisporites*.

Plicatella striata Naumova *in* Kara-Murza, 1954, p.156 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Cicatricosisporites.*

Plicatella stylosa (Thiergart, 1953, p.549, pl.2, fig.16-17) Busnardo and Tangourdeau, 1964, p.172 nomen nudum. The date, page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.

Plicatella stylosa (Thiergart, 1953, p.549, pl.2, fig.16-17) Dörhöfer, 1979, p.111. Cenomanian; formerly *Cicatricosisporites, Appendicisporites, Cicatricososporites.*

Plicatella subtricornitatus (Sato, 1961, p.86, pl.2, fig.22-26) comb. nov. Late Cretaceous; formerly *Appendicisporites.*

Plicatella symskiensis (Markova *in* Ivanova and Markova, 1961, p.81-82, pl.21, fig.1a-c, 2, 3a-c, 4a-b, 5a-b, 6) comb. nov. Cenomanian; formerly *Anemia, Aneimia.*

Plicatella taiwaniana Huang, 1978b, p.22, pl.5, fig.5-6. Miocene.

Plicatella ticoensis (Archangelsky and Gamerro, 1966b, p.367, pl.1, fig.6-8, 10-11) comb. nov. Early Cretaceous; formerly *Cicatricosisporites.*

Plicatella trianguliformis Maljavkina, 1949, p.61, pl.11, fig.6 *(Plicatella trianguliformis typica).* Early Aptian.

Plicatella triceps (Weyland and Krieger, 1953, p.12, pl.3, fig.15-16) Sung, Li and Li, 1976, p.20. Senonian; formerly *Appendicisporites.*

Plicatella trichacantha Maljavkina, 1949, p.61, pl.11, fig.7; pl.12, fig.1-5. Aptian; formerly *Anemia.* Type species.

Plicatella trichacantha var. *dissecta* (Markova *in* Ivanova and Markova, 1961, p.73, pl.18, fig.3a-c) Vagvolgyi and Hills, 1969, p.164. Albian; formerly *Anemia.*

Plicatella trichacantha subsp. *exiliformis* Maljavkina, 1949, p.61, pl.12, fig.2.
NOW *Cicatricosisporites exilioides.*

Plicatella trichacantha subsp. *imperfecta* Maljavkina, 1949, p.61, pl.12, fig.4.
NOW *Cicatricosisporites imperfectus.*

Plicatella trichacantha subsp. *macrorhyza* Maljavkina, 1949, p.61, pl.12, fig.5.
NOW *Plicatella macrorhyza*.

Plicatella trichacantha subsp. *obducta* Maljavkina, 1949, p.61, pl.12, fig.3. Lower Aptian.

Plicatella trichacantha subps. *pyramidina* Maljavkina, 1949, p.61, pl.12, fig.1.
NOW *Plicatella pyramidina*.

Plicatella trichacantha subsp. *trichacantha* Maljavkina, 1949, p.61, pl.11, fig.7 (autonym). Aptian; formerly *Anemia, Appendicisporites, Plicatella trichacantha typica*.

Plicatella trichacantha subsp. *typica* Maljavkina, 1949, p.61, pl.11, fig.7.
NOW *Plicatella trichacantha trichacantha*.

Plicatella tricornitata (Weyland and Greifeld, 1953, p.43, pl.11, fig.52) Deak and Combaz, 1968, p.76 non Potonié, 1960, p.50. Late Albian-Early Cenomanian. Potonié (1960) failed to cite page, plate and figure numbers contrary to Article 33.2, ICBN. Deak and Combaz (1968) referred this combination to Potonié (1960) with the proper citing. According to Article 46 Deak and Combaz (1968) should have authorship; formerly *Anemia, Appendicisporites*.

Plicatella tricostata (Bolchovitina, 1953, p.38, pl.4, fig.9-12) comb. nov. Aptian; formerly *Anemia, Aneimia, Appendicisporites, Chomotriletes, Cicatricosisporites, Mohria*.

Plicatella tricuspidata (Weyland and Greifeld, 1953, p.12, Table 3, fig.18) comb. nov. Early Senonian; formerly *Appendicisporites, Anemia*.

Plicatella trilobatiformis var. *tersa* Kara-Murza, 1951, p.31, pl.9, fig.11.
NOW *Cicatricosisporites tersus*.

Plicatella tripartita (Bolchovitina, 1953, p.38, pl.4, fig.14-15) comb. nov. non Busnardo and Tangourdeau, 1964, p.172 nomen nudum. Busnardo and Tangourdeau (1964) failed to cite date, page, plate and figure numbers contrary to Article 33.2, ICBN.; formerly *Appendicisporites, Anemia, Aneimia, Chomotriletes*.

Plicatella triquetra rotundiformis Maljavkina, 1949, p.60, pl.11, fig.4-5. Early Aptian.

Plicatella triquetra triquetra Maljavkina, 1949, p.60, pl.11, fig.3 (autonym). Early Aptian; formerly *Plicatella triquetra typica.*

Plicatella triquetra typica Maljavkina, 1949, p.60, pl.11, fig.3. NOW *Plicatella triquetra triquetra.*

Plicatella tuberculata (Döring, 1966a, p.109, pl.3, fig.1-3) comb. nov. Late Barremian to Early Aptian; formerly *Appendicisporites.*

Plicatella undosa (Hedlund, 1966, p.16, pl.4, fig.2a-b) comb. nov. Cenomanian; formerly *Appendicisporites.*

Plicatella unica (Markova *in* Ivanova and Markova, 1961, p.79-80, pl.20, fig.3a-b) Dörhöfer, 1977, p. 53. Cenomanian; formerly *Appendicisporites, Anemia, Aneimia.*

PLICATELLISPORITES (Maljavkina, 1949) Levet-Carette, 1966, p.163 nomen nudum, nom. nov., subst. pro *Plicatella.* This proposal is rejected as it is nomenclaturally superfluous (Article 63, ICBN.)

Plicatellisporites aequalis Levet-Carette, 1966, p.164, pl.15, fig. 28-31.
NOW *Plicatella.*

Plicatellisporites trichacanthus (Maljavkina, 1949) Levet-Carette, 1966, p.163.
NOW *Plicatella.*

Plicatellisporites tricornatus (Weyland and Greifeld, 1953) Levet-Carette, 1966, p.163 nomen nudum. Orthographic error for *P. tricornitatus.*
NOW *Plicatella.*

PTERISPORIS Huang, 1978a, p.48 ex Jansonius and Hills, 1980, card 3754. The lectotype was selected by Jansonius and Hills (1980). This genus contains zonate spores with smooth thin proximal, distal and equatorial ridges.

Pterisporis concavus Huang, 1978a, p.48, pl.19, fig.7. Miocene.

Pterisporis taiwanensis Huang, 1978a, p.49, pl.19, fig.8. Miocene. Type species.

RADIALISPORIS Krutzsch, 1967, p.13, 15. This genus contains cicatricose spores with proximal radiating muri. The genus *Radialisporites* Cookson and Dettmann, 1958, p.103 may possibly be considered a tautonum (Homonym) of *Radialisporis* Krutzsch. *Radialisporites* contains reticulate spores with elongate muri radiating from the laesurae.

Radialisporis multifidiformis (Bolchovitina, 1961, p.58, pl.16, fig. 7) comb. nov. Early-Middle Albian. This transfer is made due to the faint radially patterned ornament; formerly *Anemia*.

Radialisporis radiatus (Krutzsch, 1959b, p.126-127, pl.1, fig.41-42) Krutzsch, 1967, p.13-15. Late Oligocene. Affinities with Anemiaeceae, Genus *Mohria* (Krutzsch, 1967; Châteauneuf, 1980); formerly *Cicatricosisporites, Anemia*. Type species.

ROTINELLA Maljavkina, 1949, p.70 ex Yaroshenko, 1978, p.49. This genus was first published invalidly without a diagnosis or description contrary to Article 41, ICBN and only became validated in 1978, being at that time a junior synonym of *Asseretospora* Schuurman, 1977 (Jansonius and Hills, 1979, card 3607-3608).

Rotinella bulbiferiniformis Maljavkina, 1960, p.266 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.
NOW *Senftenbergiites*.

Rotinella forcipata Maljavkina, 1949, p.70, pl.15, fig.6.
NOW *Senftenbergiites*.

?Rotinella granulosa Semenova, 1970, p.56, pl.11, fig.117.
NOW *Senftenbergiites*.

?Rotinella minor Semenova, 1970, p.55, pl.11, fig.116a. Aalenian.
NOW *Senftenbergiites*.

Rotinella obliqua Maljavkina, 1953, p.129, pl.1, fig.11. Rhaetian.

Rotinella platybulliferina Maljavkina, 1960, p.226 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.
NOW *Senftenbergiites*.

Rotinella trisecta Maljavkina, 1949, p.70, pl.15, fig.7. Early Jurassic. A junior synonym to *Asseretospora gyrata* according to Jansonius and Hills (1978, card 3607-3608). Type species.

SCHIZAEACEAESPORITES Baksi, 1962, p.19. This genus contains costate, possibly monolete spores (Jansonius and Hills, 1976, card 2527) and a junior homonym to *Schizaeaceaesporites* Potonié and Kremp. Nandi (1981) recombined the type species with *Cicatricosisporites* making *Schizaeaceaesporites* an obligate junior synonym.

Schizaeaceaesporites knoxii Baksi, 1962, p.19, pl.3, fig.41. Oligocene. Type species. Mathur and Chopra (1982) interpret *Schizaeaceaesporites knoxii* to be trilete while Nandi (1981) placed this species in *Cicatricosisporites*.
NOW *Cicatricosisporites*.

Schizaeaceaesporites lupicus Mathur and Chopra, 1982, p.63, pl.1-2, fig.29.
NOW *Cicatricosisporites*.

SCHIZAEACEAESPORITES Potonié and Kremp, 1956, p.96 nomen nudum. Invalidly published (Jansonius and Hills, 1976, Card 2526).

Schizaeaceaesporites adriennis (R. Pot. *in* Thiergart, 1940) Potonié and Kremp, 1955, p.96 nomen nudum.

SCHIZAESPORITES in Reyre, 1967, p.140. Orthographic error for *Schizaeaceaesporites*.

Schizaesporites dorogensis Potonié and Gelletich in Reyre, 1967, p.140 nomen nudum.
NOW *Cicatricosisporites*.

SENFTENBERGIITES Maljavkina, 1964, p.73. This genus contains trilete spores with light irregular sculptural elements regularly arranged.

Senftenbergiites articulatiformis Maljavkina, 1964, p.74, pl.14, fig.10. Rhaetian.

Senftenbergiites bulliferina Maljavkina, 1964, p.75, pl.14, fig.11. Middle Keuper.

Senftenbergiites bulliferiniformis (Maljavkina, 1960) ex Maljavkina, 1964, p.75, pl.2, fig.8; pl.14, fig.12-13. Keuper.

Senftenbergiites bulliferiniformis var. *bulliferiniformis* Maljavkina, 1964, p.75, pl.14, fig.12-13 (autonym). Keuper; formerly *Senftenbergiites bulliferiniformis* var. *typica*.

Senftenbergiites bulliferiniformis var. *limbata* Maljavkina, 1964, p.76, pl.2, fig.8. Early Triassic.

Senftenbergiites bulliferiniformis var. *typica* Maljavkina, 1964, pl.14, fig.12-13.
NOW *Senftenbergiites bulliferiniformis* var. *bulliferiniformis*.

Senftenbergiites crispiformis Maljavkina, 1964, p.76, pl.6, fig.26. Middle Triassic.

Senftenbergiites forcipata (Maljavkina, 1949, p.70, pl.15, fig.6) comb. nov. non Maljavkina, 1964, pl.14, fig.27 nomen nudum. Early Jurassic. Maljavkina failed to cite page, plate and figure numbers contrary to Article 33.2, ICBN; formerly *Rotinella*.

Senftenbergiites granulosa (Semenova, 1970, p.55, pl.11, fig.117) comb. nov. Aalenian; formerly *Rotinella*.

Senftenbergiites media Maljavkina, 1964, p.77, pl.6, fig.27. Middle Triassic.

Senftenbergiites minor (Semenova, 1970, p.55, pl.11, fig.116a) comb. nov. Aalenian; formerly *Rotinella*.

Senftenbergiites obliqua (Maljavkina, 1949) Maljavkina, 1964, pl.14, fig.25 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Cicatricosisporites*.

Senftenbergiites partiniformis Maljavkina, 1964, p.77, pl.14, fig. 20-21. Middle Keuper.

Senftenbergiites platybulliferina (Maljavkina, 1960) ex Maljavkina, 1964, p.78, pl.6, fig.28-29. Late Middle Triassic; formerly *Rotinella*.

Senftenbergiites pyramidelliformis Maljavkina, 1964, p.79, pl.2, fig.9. Early Triassic.

Senftenbergiites senftenbergiformis Maljavkina, 1964, p.79, pl.14, fig.18. Middle Triassic. This species has irregular tubercles and appears to be zonate. Type species.

Senftenbergiites triangula Maljavkina, 1964, p.80, pl.14, fig.14-17. Rhaetian.

Senftenbergiites trisecta (Maljavkina, 1949, p.70, pl.15, fig.7-8; pl.14, fig.26) Maljavkina, 1964 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN; formerly *Rotinella*.
NOW *Asseretospora*.

Senftenbergiites tuberiferina Maljavkina, 1964, p.81, pl.6, fig.30; pl.14, fig.19. Early Keuper.

SPIRALISPORITES Pautsch, 1971, p.19. This genus is a junior homonym of *Spiralisporites* Pocock, 1965 and is renamed *Pautschisporites*.

Spiralisporites insignis Pautsch, 1971, p.19, pl.5, fig.1. Type species.
NOW *Pautschisporites*.

STENOCHLAENIDITES Khan, 1976a, p.759.

Stenochlaenidites papuanus (Cookson, 1957, p.44, pl.8, fig.9) Khan, 1976a, p.759. Pliocene. This genus contains discontinuously striate, monolete spores. The Modern species *Stenochlaena tennuifolia* has spores very similar to this species (Khan, 1976a); formerly *Schizaea, Schizaeoisporites*. Type species.

STRIAMONOLETES Mathur, 1966, p.37. *Cicatricososporites* Delcourt and Sprumont (1955) considered the type species to be a junior synonym of *Schizaeoisporites* Potonié, 1951. However, Krutzsch (1959a) considered the latter to be alete not monolete and, therefore, he maintained both genera were maintained. According to Article 75, ICBN, *Cicatricosisporites* Potonié and Gelletich, 1933, and *Cicatricososporites* are homonyms, therefore, the latter is illegitimate and must be treated as junior under Article 64, ICBN. The next possible available genus is *Striamonoletes* Mathur. It is here restricted to only those striate, cicatricose or canuliculate monolete spores without auriculae. Those with auriculae are placed in *Corniculatisporites*.

Striamonoletes auritus (Singh, 1971, p.81-82, pl.10, fig.11-15) comb. nov. Middle Albian; formerly *Cicatricososporites, Cicatricosisporites*.

Striamonoletes cicatricos (Solé de Porta, 1972, p.227, pl.2, fig.5) comb. nov. Campanian; formerly *Schizaeoisporites*.

Striamonoletes columbiae (Solé de Porta, 1972, p.227, pl.1, fig.12) comb. nov. Campanian; formerly *Schizaeoisporites*.

Striamonoletes compactus (Krutzsch and van Hoorne, 1977, p.21, pl.41 fig.1-5) comb. nov. Late Landenian (Early Eocene); formerly *Cicatricososporites*.

Striamonoletes crassimurus (Dutta and Sah, 1970, p.21, pl.3, fig.32-34) comb. nov. Early Eocene; formerly *Schizaeoisporites*.

Striamonoletes delcourtii (Pocock, 1965, p.154, pl.2, fig.6-7) comb. nov. Middle Albian; formerly *Schizaeoisporites*.

Striamonoletes delicatus (Verbitskaya, 1962, p.106, pl.12, fig. 57a-b) comb. nov. Cenomanian; formerly *Schizaea*.

Striamonoletes digitataeformis (Bocharnikova *in* Agranovskaya *et al.*, 1960, p.358, pl.1, fig.9-10) comb. nov. Paleocene; formerly *Schizaea*.

Striamonoletes digitatoides (Cookson, 1957, p.44, pl.9, fig.1-2) comb. nov. Pliocene. These spores resemble those of the modern species *Actynostachys digitata* (Ramanujam, 1972); formerly *Schizaeoisporites, Schizaea*.

?Striamonoletes digitatopsis (Nik. *in* Kuzichkina, 1962, p.110, pl.4, fig.79) comb. nov. Middle Jurassic. Kuzichkina (1962) attributed the authorship of the species to "Nik."; formerly *Schizaea*.

Striamonoletes digitatus (Huang, 1978b, p.25, pl.6, fig.7) comb. nov. Miocene; formerly *Schizaeoisporites*.

Striamonoletes dorogensis (Kedves, 1964, p.196, pl.1, fig.2) comb. nov. Middle Eocene; formerly *Cicatricososporites*.

Striamonoletes drumhellerensis (Srivastava, 1971, p.257-258, pl.1, fig.9) comb. nov. Maastrichtian. Srivastava (1971) compares this species to spores of *Schizaea melansia;* formerly *Cicatricososporites*.

Striamonoletes foveadorogensis (Krutzsch, 1959a, p.225, pl.43, fig. 477-480) comb. nov. Middle Eocene; formerly *Cicatricososporites*.

Striamonoletes ghoshii (Ramanujam, 1966, p.35, fig.28) comb. nov. Miocene; formerly *Schizaeoisporites*.

Striamonoletes gracilis (Planderova, 1966, p.55, 85, pl.5, fig.3) comb. nov. Eocene; formerly *Cicatricososporites*.

Striamonoletes grandiformis (Ramanujam, 1972, p.251, pl.1, fig.10) comb. nov. Miocene-Pliocene; formerly *Schizaeoisporites*.

Striamonoletes grandistriatus (Ramanujam, 1972, p.251, pl.1, fig.11-12) comb. nov. Miocene. This species was originally described with two specimens as the holotypes. The lectotype is here designated as pl.1, fig.11; formerly *Schizaeoisporites*.

Striamonoletes hiliferus (Bolchovitina, 1961, p.26, pl.5, fig.5) comb. nov. Early Cretaceous; formerly *Schizaea*.

Striamonoletes hoegii (Bose, 1959, p.6, pl.1, fig.8-9) comb. nov. Jurassic; formerly *Schizaeoisporites*.

Striamonoletes microestriatus (Solé de Porta, 1972, p.226-227, pl.1, fig.11) comb. nov. Campanian; formerly *Schizaeoisporites*.

Striamonoletes minimus (Ramanujam, 1966, p.35, fig.5, 29) comb. nov. Miocene; formerly *Schizaeoisporites*.

Striamonoletes minor (Pocock, 1965, p.155, pl.2, fig.10) comb. nov. Middle Albian; formerly *Schizaeoisporites*.

Striamonoletes monodorogensis (Krutzsch, 1959a, p.225, pl.43, fig. 481-483) comb. nov. Middle Eocene; formerly *Cicatricososporites*.

Striamonoletes multistriatus (Rao and Ramanujam, 1978, p.409, pl.3, fig.30) comb. nov. Miocene-Pliocene; formerly *Schizaeoisporites*.

Striamonoletes norrissii (Srivastava, 1971, p.257, pl.1, fig.5-8) comb. nov. Maastrichtian. Srivastava (1971) compares this species with the extant species *Schizaea laevigata;* formerly *Cicatricososporites*.

Striamonoletes palanaensis (Sah and Kar, 1974, p.164, pl.1, fig.4-5) Early Tertiary; formerly *Schizaeoisporites*.

Striamonoletes parallatus Mathur, 1966, p.37, pl.1, fig.2. Paleocene. Type species.

Striamonoletes perforatus (Naskar and Baksi, 1976, p.317-318, pl.2, fig.14) comb. nov. Paleocene-Eocene; formerly *Schizaeoisporites*.

Striamonoletes phaseolus (Delcourt and Sprumont, 1955, p.46, fig.13) comb. nov. Wealden; formerly *Cicatricosisporites, Cicatricososporites, Schizaeoisporites, Schizaea.*

Striamonoletes polaris (Bolchovitina, 1961, p.25, pl.5, fig.2a-c; pl.39, fig.14) comb. nov. Albian; formerly *Schizaea.*

Striamonoletes pseudodorogensis Thomson and Pflug, 1953, p.61, pl.4, fig.13 ex Krutzsch, 1959a, p.224. Paleocene; formerly *Cicatricososporites.*

Striamonoletes rectangularis (Solé de Porta, 1972, p.227-228, pl.2, fig.8) comb. nov. Campanian; formerly *Schizaeoisporites.*

Striamonoletes sancti-pauli (Thiergart, 1954, p.549, pl.2, fig.10) comb. nov. Cenomanian; formerly *Cicatricososporites.*

Striamonoletes sarnuensis (Naskar and Baksi, 1976, p.317, pl.2, fig. 12-13) comb. nov. Paleocene-Eocene; formerly *Schizaeoisporites.*

Striamonoletes sinuatus (Ramanujam, 1966, p.35-36, fig.30) comb. nov. Miocene; formerly *Schizaeoisporites.*

Striamonoletes striatus (Sontag, 1957, p.98, fig.5) comb. nov. Late Eocene; formerly *Cicatricososporites.*

Striamonoletes tenuistriatus (Pflanzl, 1956, p.239, pl.16, fig.5 ex Frederiksen, 1980, p.29) comb. nov. Eocene; formerly *Schizaea, Cicatricososporites pseudodorogensis.*

Striamonoletes tiawanensis (Huang, 1978a, p.25, pl.12, fig.2-3) comb. nov. Miocene; formerly *Schizaeoisporites.*

Striamonoletes virgatus (Pflug, 1952, p.120 ex Thomson and Pflug, 1953, p.61, pl.4) comb. nov. Middle Eocene; formerly *Cicatricososporites, Schizaeoisporites.*

STRIASPORIS Kar, 1969, p.106. A genus containing trilete, proximally costate spores.

Striasporis striatus Kar, 1969, p.107, pl.1, fig.5. Permian (Raniganjian). Type species.

STRIATELLA Mädler, 1964b, p.189. This genus contains zonate, distally costate spores.

Striatella jurassica Mädler, 1964b, p.192, pl.3, fig.12. Liassic (alpha 1).

Striatella mosquensis (Bolchovitina, 1961, p.57, pl.16, fig.6-6a; pl.40, fig.18) comb. nov. Campanian; formerly *Anemia, Aneimia.*

Striatella seebergensis Mädler, 1964b, p.189, pl.3, fig.8. Late Rhaetian. Type species.

STRIATISPORIS Krutzsch, 1959a, p.156.

Striatisporis cristatus (Ross, 1949, p.33, pl.1, fig.10-11) Krutzsch, 1959a, p.156. Senonian; formerly *Triletes.* Type species.

Striatisporis dichotoma Kedves, 1961, p.129-130, pl.6, fig.8-10. NOW *Cicatricosisporites.*

Striatisporis leiostriatus Krutzsch, 1959a, p.157, pl.29, fig.323-325. Middle Miocene.

STRIATIZONITES Mädler, 1964a.

Striatizonites kelleri Mädler, 1964a, p.79, pl.5, fig.11. Early Triassic. Type species.

STRIATOTUBERCULATISPORITES Ramanujam, 1957, p.356 nomen nudum. Although this name was designated as a sub-group it was used in a generic sense. The protologue lacked a type species contrary to Article 7.1 and 10.1, ICBN. The illustrations (pl.10, fig. 24-25) would suggest that this name is synonymous with *Asseretospora.*

STRIATRILETES Van der Hammen, 1956b, p.115 emend. Kar, 1979. This genus is considered as a junior synonym to *Magnastriatites.*

Striatriletes attenuatus Singh and Tripathi, 1983, p.224-225, pl.1, fig.36.
NOW *Magnastriatites.*

Striatriletes bifurcus Pierce, 1961, p.31, pl.1, fig.26.
NOW *Cicatricosisporites.*

Striatriletes coronarius Pierce, 1961, p.32, pl.1, fig.27. This species posesses a cingulum and a distal ring with radiating striae.
NOW *Coronotriletes.*

Striatriletes jorajanensis Singh and Saxena, 1979, p.616, pl.1, fig.9-11.
NOW *Magnastriatites.*

Striatriletes microverrucosus Kar and Saxena, 1981, p.109, pl.1, fig.19-20.
NOW *Magnastriatites*.

Striatriletes mohrioides (Delcourt and Sprumont, 1955) Rueda-Gaxiola 1967, p.203.
NOW *Cicatricosisporites*.

Striatriletes multicostatus Kar and Saxena, 1981, p.108, pl.1, fig.15, 18.
NOW *Magnastriatites*.

Striatriletes nigeriensis Puri, 1963, p.42, pl.5, fig.118-119 nomen nudum. A holotype was not designated contrary to Article 37, ICBN.
NOW *Cicatricosisporites*.

Striatriletes nodosus Pierce, 1961, p.32, pl.1, fig.29.
NOW *Duplexisporites*.

Striatriletes pseudocostatus Singh and Tripathi, 1983, p.224, pl.1, fig.2; pl.2, fig.11-12.
NOW *Magnastriatites*.

Striatriletes striatus Pierce, 1961, p.31, pl.1, fig.24-25.
NOW *Cicatricosisporites*.

Striatriletes susannae Van der Hammen, 1956b, p.115, fig.5.
Middle to Early Oligocene. Germeraad, Hopping and Müller (1968) consider this species as a junior synonym to *Cicatricosisporites dorogensis*. Type species.
NOW *Cicatricosisporites*.

Striatriletes tetrajugatus Pierce, 1961, p.32, pl.1, fig.28.
Cenomanian-Turonian.
NOW *Taurocusporites*.

Striatriletes venustus Salujha *et al.*, 1972a, p.271, pl.1, fig.22-23.
NOW *Magnastriatites*.

Striatriletes venustus (Deak, 1963) Rueda-Gaxiola, 1967, p.202.
NOW *Cicatricosisporites*.

TIGRINISPORA Chang in Li, 1974, p.365. This genus contains species with interradial thickening along the equator and three groups of striae on the distal side.

Tigrinispora elegans Chang in Li, 1974, p.195, fig.14. Late Triassic (Keuper). Type species.

TORICINGULATISPORITES Simoncsics, 1964, p.100. This genus contains zonate, trilete spores with prominent muri.

Toricingulatisporites margitensis Simoncsics, 1964, p.100, pl.2, fig.2-8. Miocene. Type species.

Toricingulatisporites sapnensis Ercegovac, 1972, p.128, pl.2, fig. 11-12. Eocene.

Toricingulatisporites taiwanensis Huang, 1978a, p.49, pl.20, fig.1-3 Miocene.

TRILATERINA Maljavkina, 1949, p.30. Potonié (1960) considered this genus to be a junior synonym to *Cicatricosisporites*.

Trilaterina obliqua Maljavkina, 1949, p.48, pl.7, fig.1-2. NOW *Cicatricosisporites*. Type species.

Trilaterina obliqua var. *obliqua* Maljavkina, 1949, p.48, pl.7, fig.1. An autonym of *Trilaterina obliqua typus* (CFSP 40:52).
NOW *Cicatricosisporites*.

Trilaterina obliqua var. *stricta* Maljavkina, 1949, p.48, pl.7, fig.2.
NOW *Cicatricosisporites*.

Trilaterina obliqua var. *typus* Maljavkina, 1949, p.48, pl.7, fig.1.
NOW *Cicatricosisporites obliqua obliqua*.

Trilaterina velaria Maljavkina, 1956, p.344, pl.1, fig.5-6 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

TRIPLEXISPORITES Foster, 1979, p.239.

Triplexisporites playfordii (de Jersey and Hamilton, 1967, p.10, pl. 5, fig.5-6) Foster, 1979, p.240, pl.42, fig.1. Triassic; formerly *Tigrisporites*. Type species.

SECTION B

RETICULATE AND RELATED MONOLETE SPORES

The following index includes fossil, punctate to reticulate, monolete spores that have probable affinities to the schizaeacean genera *Microschizaea, Schizaea* and *Lophodium.*

CUDDALORIA Thiergart and Frantz, 1963, p.43. This monotypic genus lacks a separate diagnosis for the type species. Potonié (1966) considered this as a junior synonym of *Microfoveolatosporis.*

Cuddaloria polyaperturata Thiergart and Frantz, 1963, p.43, pl.1, fig.1. Miocene; formerly *Microfoveolatosporis.* Type species.

EXTRAPUNCTATOSPORIS Krutzsch, 1959a, p.199

Extrapunctatosporis agralii (Agrali and Akyol, 1967, p.5, pl.1, fig. 20) comb. nov. nom. nov. subst. pro. *Extrapunctatosporites ovalis;* Late Permian.

Extrapunctatosporis alveolatus (Couper, 1960, p.40, pl.1, fig.12-13) Krutzsch, 1967, p. 163. Middle Oligocene; formerly *Zonomonoletes, Belchum.*

Extrapunctatosporis brachylobatus (Bolchovitina, 1953, p.59, pl.9, fig.12) Krutzsch, 1959a, p.200. Cretaceous; formerly *Blechnum.*

Extrapunctatosporis extrapunctoides Krutzsch, 1959a, p.200, pl.40, fig.439. Middle Eocene; formerly *Extrapunctatosporites.* Type species.

Extrapunctatosporis fabaeformis (Agrali and Akyol, 1967, p.5, pl.1, fig.19) Alpern and Doubinger, 1973, p.96. Late Permian; formerly *Extrapunctatosporites.*

Extrapunctatosporis goersbachensis Krutzsch, 1967, p.158, pl.57, fig.8-12. Pliocene.

Extrapunctatosporis hungaricus Kedves, 1973, p.64, pl.21, fig.7-8. Paleogene.

Extrapunctatosporis inflatius Krutzsch, 1959a, p.202, pl.40, fig. 441-442. Middle Eocene.

Extrapunctatosporis iniguus Krutzsch, 1959a, p.202-203, pl.40, fig. 443. Tertiary; formerly *Extrapunctatosporites.*

Extrapunctatosporis intrainaegualis Krutzsch, 1959a, p.203, pl.40, fig.444-445. Middle Eocene.

Extrapunctatosporis maximus Krutzsch, 1967, p.160, pl.58, fig.1-3. Pliocene.

Extrapunctatosporis megapunctos Krutzsch, 1959a, p.200-201, pl.40, fig.437-438. Middle Eocene.

Extrapunctatosporis microalvaeolatus Krutzsch, 1967, p.163, pl.59, fig.9-12. Late Oligocene.

Extrapunctatosporis microtuberosus (Agrali and Akyol, 1967, p.5, pl.1, fig.21) Alpern and Doubinger, 1973, p.97. Late Permian; formerly *Extrapunctatosporites*.

Extrapunctatosporis minimus Krutzsch, 1967, p.164, pl.59, fig.21-25. Pliocene-Pleistocene.

Extrapunctatosporis miocaenicus Krutzsch, 1967, p.162, pl.59, fig. 1-4. Miocene.

Extrapunctatosporis oblongioides Krutzsch, 1967, p.160, pl.57, fig. 13-16. Pliocene.

Extrapunctatosporis oblongius Krutzsch, 1959a, p.201-202, pl.40, fig.440. Middle Eocene; formerly *Extrapunctatosporites*.

Extrapunctatosporis ovalis (Bolchovitina, 1961, p.27, pl.5, fig.8) comb. nov. Hauterivian; formerly *Schizaea*.

Extrapunctatosporis pliocaenicus Krutzsch, 1967, p.162, pl.58, fig. 6-8. Pliocene.

Extrapunctatosporis pseudofoveolatus (Nakoman, 1966, p.66a, pl.6, fig.6) comb. nov. Oligocene; formerly *Extrapunctatosporites*.

Extrapunctatosporis seydaensis Krutzsch, 1967, p.163, pl.59, fig.13-20. Middle Oligocene.

Extrapunctatosporis taiwanensis Huang, 1978a, p.9, pl.1, fig.1-2. Miocene.

Extrapunctatosporis unduletes (Nakoman, 1966a, p.66-67, pl.6, fig.7) comb. nov. Sannoisian; formerly *Extrapunctatosporites*.

EXTRAPUNCTATOSPORITES (Krutzsch) Nakoman, 1966a, p.66. This name was substituted for *Extrapunctatosporis* Krutzsch by Nakoman, 1966a. No reason was given; therefore, it is considered nomenclaturally superfluous and must be rejected according to Article 63, ICBN. All species are returned to *Extrapunctasporis*.

Extrapunctatosporites extrapunctoides (Krutzsch, 1959a) Nakoman, 1966a, p.66 nomen nudum. Type Species.
NOW *Extrapunctatosporis*.

Extrapunctatosporites fabaeformis Agrali and Akyol, 1967, p.5, pl.1, fig.19 nomen nudum.
NOW *Extrapunctatosporis*.

Extrapunctatosporites iniguus (Krutzsch, 1959a) Nakoman, 1966a, p.66 nomen nudum. Nakoman failed to cite page, plate and figure numbers of the original description contrary to Article 33, ICBN.
NOW *Extrapunctatosporis*.

Extrapunctatosporites microtuberosus Agrali and Akyol, 1967, p.5, pl.1, fig.21 nomen nudum.
NOW *Extrapunctatosporis*.

Extrapunctatosporites oblongius (Krutzsch, 1959a) Nakoman, 1966a, p. 66 nomen nudum. Nakoman failed to cite page, plate and figure numbers of the original description contrary to Article 33, ICBN.
NOW *Extrapunctatosporis*.

Extrapunctatosporites ovalis Agrali and Akyol, 1967, p.5, pl.1, fig. 20 nomen nudum. Junior homonym to *Extrapunctatosporis ovalis* (Bolchovitina, 1961).
NOW *Extrapunctatosporis agralii*.

Extrapunctatosporites pseudofoveolatus Nakoman, 1966a, p.66, pl.6, fig.6 nomen nudum.
NOW *Extrapunctatosporis*.

Extrapunctatosporites unduletes Nakoman, 1966a, p.66-67, pl.6, fig.7 nomen nudum.
NOW *Extrapunctatosporis*.

FOVEOMONOLETES Van der Hammen, 1954, p.14 ex Mathur, 1966, p.37. Potonié (1970) considered this genus to be a junior synonym of *Microfoveolatosporis*.

Foveomomoletes bolchovitinae Ramanujam, 1966, p.34, fig.2, 22.
NOW *Neyvelisporites*.

Foveomonoletes breviletes Mathur, 1966, p.37, pl.1, fig.1. Paleocene. Type species.

Foveomonoletes cooksonae Ramanujam, 1966, p.34, fig,23.
NOW *Neyvelisporites*.

Foveomonoletes jacobii Ramanujam, 1966, p.35, fig.3-4, 24.
NOW *Neyvelisporites*.

Foveomonoletes minutissimus Salujha, Srivastava and Rawat, 1967, p.30, pl.3, fig.3-4.
NOW *Microfoveolafosporis*.

HAZARIA Srivastava, 1971, p.258. *Hazaria* is distinguished from *Microfoveolatosporis* by possessing supratectal processes, thin muri and large lamina.

Hazaria canadiana Srivastava, 1971, p.260-261, pl.2, fig.5. Maastrichtian.

Hazaria sheopiari Srivastava, 1971, p.258-260, pl.2, fig.1-4. Maastrichtian. Type species.

INTRAPUNCTATOSPORIS Krutzsch, 1959a, p.197. Exine of the type species was originally interpreted to be structured with psilate ornament but subsequently shown to be microfoveolate (Jansonius and Hills, 1976, card 1339). This genus is thus considered a junior synonym of *Microfoveolatosporis*. The original generic concept is now encompassed by *Intrapunctosporis* (Krutzsch, 1967).

Intrapunctatosporis ellipsoideus (Pflug *in* Thomson and Pflug) Krutzsch, 1959a, p.197.
NOW *Microfoveolatosporis*. Type species.

Intrapunctatosporis semipunctus Krutzsch, 1959a, p.197-198, pl.39, fig.433.
NOW *Intrapunctosporis*.

INTRAPUNCTOSPORIS Krutzsch, 1967, p.24. This genus contains spores with a smooth, internally structured exine similar to that of *Lophidium* spores.

Intrapunctosporis lusaticus Krutzsch, 1967, p.156, pl.56, fig.3-4. Miocene.

Intrapunctosporis pliocaenicus Krutzsch, 1967, p.156, pl.55, fig. 13-15. Pliocene. Type species.

Intrapunctosporis reticuloides Pacltova and Simoncsics, 1970, p.607, pl.106, fig.3-8; pl.107, fig.4-11. Miocene.

Intrapunctosporis rhenanus Krutzsch, 1967, p.156, pl.56, fig.1-2. Late Tertiary?

Intrapunctosporis semipunctus (Krutzsch, 1959a, p.197-198, pl.39, fig.433) Krutzsch, 1967, p.24. Lutetian (Eocene); formerly *Extrapunctatosporis, Intrapunctatosporis.*

Intrapunctosporis taiwanensis Huang, 1978a, p.10, pl.1, fig.3-4. Miocene.

MICROFOVEOLATOSPORIS Krutzsch, 1959a, p.211 emend. Potonié, 1966, p.103. Srivastava (1971, p.261) synonomized *Reticulosporis* Krutzsch, 1954, *Retimonoletes* Pierce, 1961, *Cuddaloria* Thiergart and Frantz, 1963 with *Microfoveolatosporis.* These spores are comparable to "various species of *Schizaea,* e.g. *S. pusilla, S. pectinata, S. tenella* and *S. pennula*" (Srivastava, 1971, p.261). However, after Potonié (1966) proposed to amalgamate *Reticulosporis* with *Microfoveolatosporis,* Krutzsch (1970, p.318) emphatically rejected the proposal: "It is in no way possible to agree with the attitude of Potonié (1966, Synopsis IV, p.103) who ascribes to the spore genus a considerably wider morphological range by extending it to large-mesh reticulate and complex-reticulate forms like *Reticulosporis.* Such a procedure must be declined, even though, as in the concrete case at hand, it cannot be decided with absolute certainty in 2-3 species where the accurate boundary line between *Reticulosporis* and *Microfoveolatosporis* has to be drawn". It appears prudent to maintain these genera until a full review of all species is made.

Microfoveolatosporis afavus (Krutzsch, 1959a, p.209-210, pl.41, fig. 461-462) Krutzsch, 1959a, p.168. Middle Eocene; formerly *Verrucatosporites, Polypodiidites.*

Microfoveolatosporis baconicus Juhasz, 1977, p.25, pl.2, fig.5-7. Late Albian.

Microfoveolatosporis canaliculatus Dettmann, 1963, p.8, pl.19, fig. 15-21. Albian.

Microfoveolatosporis crassus (Nagy, 1963, p.404, pl.2, fig.4-6) comb. nov. Early Miocene; formerly *Reticulatosporis.*

Microfoveolatosporis csaszari Juhasz, 1977, p.28, pl.2, fig.15-16. Middle Albian.

Microfoveolatosporis ellipsoideus (Pflug *in* Thomson and Pflug, 1953, p.60, pl.3, fig.45) Krutzsch, 1967, p.170. Paleocene; formerly *Punctatosporites, Intrapunctatosporis.*

Microfoveolatosporis foveolatus (Pierce, 1961, p.33, pl.1, fig.32) comb. nov. early Late Cretaceous; formerly *Reticulosporis, Retimonoletes.*

Microfoveolatosporis fromensis (Cookson, 1957, p.43, pl.8, fig.3) Harris, 1965, p.84. Eocene; formerly *Reticulosporis, Microfoveolatosporites, Schizaea.*

Microfoveolatosporis gallicus (Deak and Combaz, 1968, p.80, pl.1, fig.22) Juhasz, 1977, p.26. Albian-Cenomanian; formerly *Reticulatosporis.*

Microfoveolatosporis garumniensis Haseldonckyx, 1973, p.149, pl.1, fig.4. Thanetian (Middle Paleocene).

Microfoveolatosporis granuloides (Krutzsch, 1959a, p.217-218, pl.44, fig.485) Krutzsch, 1967, p.170-171. Middle Eocene; formerly *Reticuloidosporites.*

Microfoveolatosporis jacobsonii (Puri, 1963, p.39-40, pl.4, fig.102-105) comb. nov. Santonian; formerly *Retimonoletes.*

Microfoveolatosporis kekere (Puri, 1963, p.40-41, pl.4, fig.112-115) comb. nov. Senonian; formerly *Retimonoletes.*

Microfoveolatosporis lunatus Huang, 1978a, p.19, pl.1, fig.5-7. Miocene.

Microfoveolatosporis minutissimus (Salujha, Srivastava and Rawat, 1967, p.30, pl.3, fig.3-4) comb. nov. Eocene; formerly *Foveomonoletes.*

Microfoveolatosporis neogranuloides Krutzsch, 1967, p.172, pl.63, fig.1-9. Miocene.

Microfoveolatosporis oebisfeldensis (Krutzsch) Srivastava, 1971, p. 262 nomen nudum. Srivastava failed to quote the year, page, plate and figure numbers contrary to Article 33.2, ICBN. NOW *Reticulosporis.*

Microfoveolatosporis oblongo-ellipticus Huang, 1978a, p.19, pl.1, fig.8. Miocene.

?Microfoveolatosporis pennulopsis (Nik. *in* Kuzichkina, 1962, p.111, pl.4, fig.77-78) comb. nov. Middle Jurassic; formerly *Schizaea.*

Microfoveolatosporis plextilis (Stanley, 1965, p.261, pl.34, fig. 1-3) comb. nov. Paleocene; formerly *Schizaea.*

Microfoveolatosporis polyaperturatus (Thiergart and Frantz, 1963, p.43, pl.1, fig.1-2) Potonié, 1966, p.101 in Ramanujam, 1966, p.250 nomen nudum. The page, plate and figure numbers were not cited in Ramanujam (1966) contrary to Article 33.2, ICBN. Potonié (1966) only implied the synonomy; he did not validly transfer the species according to Article 33.1, ICBN. NOW *Cuddaloria*.

Microfoveolatosporis pseudodentatus Krutzsch, 1959, p.212, pl.41, fig.463-465. Kedves (1961) and Kedves and Pardutz (1973) suggest that this species belongs to the family *Psilotaceae*. Type species.

Microfoveolatosporis pseudoreticulatus (Hedlund, 1966, p.21, pl.5, fig.7a-b) Singh, 1983, p.49. Cenomanian; formerly *Verrucatosporites*.

Microfoveolatosporis psilotiformis Khan, 1976a, p.759, fig.12. Pliocene.

Microfoveolatosporis retis (Nakoman, 1966b, p.71, pl.1, fig.12) comb. nov. Eocene; formerly *Microfoveolatosporites*.

Microfoveolatosporis sellingi Krutzsch, 1967, p.170, pl.62, fig.2-5. Miocene; formerly *Microfoveolatosporites*.

Microfoveolatosporis seyitomerensis Nakoman, 1968, p.524, pl.1, fig. 7. Late Miocene.

Microfoveolatosporis skottsbergii (Selling, 1946, pl.5, fig.48-51). Srivastava, 1971, p.261-262. Late Quaternary; formerly *Reticulosporis, Schizaea*.

Microfoveolatosporis skottsbergii var. *mauiensis* (Selling, 1946, p.73, pl.5, fig.52-56) comb. nov. Late Quaternary; formerly *Microschizaea*.

Microfoveolatosporis skottsbergii var. *skottsbergii* (Selling, 1946, p.71-72, pl.5, fig.48-51) Srivastava, 1971, p.261-261. Late Quaternary; formerly *Schizaea* and *Microschizaea*.

Microfoveolatosporis surensis Juhasz, 1977, p.25, pl.2, fig.8-11. Middle Albian.

Microfoveolatosporis taiwanensis Huang, 1978a, p.19, pl.1, fig.9. Miocene.

Microfoveolatosporis titobii (Puri, 1963, p.40, pl.4, fig.107-111) comb. nov. Senonian; formerly *Retimonoletes*.

Microfoveolatosporis triangulus (Stanley, 1965, p.262, pl.35, fig. 4-9) comb. nov. Paleocene; formerly *Schizaea.*

MICROFOVEOLATOSPORITES (Krutzsch, 1959a) Nakoman, 1966a, p.68. This name was substituted for *Microfoveolatosporis* Krutzsch by Nakoman, 1966a. No reason was given; therefore, it is rejected.

Microfoveolatosporites fromensis (Cookson, 1957) Harris, 1971, p.78 nomen nudum. The page, plate, figure numbers and date were not cited contrary to Article 33.2, ICBN.
NOW *Microfoveolatosporis.*

Microfoveolatosporites pseudodentatus (Krutzsch, 1959a) Nakoman, 1966a, p.68. Type species.
NOW *Microfoveolatosporis.*

Microfoveolatosporites retis Nakoman, 1966b, p.71, pl.1, fig.12.
NOW *Microfoveolatosporis.*

Microfoveolatosporites sellingii (Krutzsch, 1967) Nagy, 1971, p.245 nomen nudum. The page, plate, figure numbers and date were not cited contrary to Article 33.2, ICBN.
NOW *Microfoveolatosporis.*

NEYVELISPORITES Ramanujam, 1972, p.249 nomen subt. pro. *Foveomonoletes* Van der Hammen, 1954 nomen nudum. *Neyvelisporites* was suggested by Ramanujam (1972) as a subsitute for *Foveomonoletes,* which was considered an invalid genus by Potonié (1956).

Neyvelisporites bolchovitinae (Ramanujam, 1966, p.34, fig.2, 22) Ramanujam, 1972, p.250. Miocene; formerly *Foveomonoletes.* Type species.

Neyvelisporites cooksonae (Ramanujam, 1966, p.34-35, fig.23) Ramanujam, 1972, p.250, fig.23-24; formerly *Foveomonoletes.*

Neyvelisporites jacobii (Ramanujam, 1966, p.35, fig.3-4, 24) Ramanujam, 1972, p.250. Miocene; formerly *Foveomonoletes.*

RETICULOSPORIS Krutzsch, 1959a, p.228.

Reticulosporis albertonensis (Cookson, 1957, p.43, pl.8, fig.4). Krutzsch, 1959c, p.43, Table 1. Early Ecocene; formerly *Schizaea.*

Reticulosporis bohemicus Pacltova and Krutzsch, 1970, p.574, pl.100, fig.4-5. Santonian.

Reticulosporis candidus (Bolchovitina, 1953, p.58, pl.9, fig.10) Krutzsch, 1959a, p.229. Pliocene; formerly *Davillia* and *Azonomonoletes*.

Reticulosporis crassus Nagy, 1963, p.404, pl.2, fig.4-6.
NOW *Microfoveolatosporis*.

Reticulosporis cretacius Pacltova and Krutzsch, 1970, p.574, pl.100, fig.1-3, text-fig.1. Late Cenomanian.

Reticulosporis foveolatus (Pierce, 1961) Skarby, 1978, p.122.
NOW *Microfoveolatosporis*.

Reticulosporis fromensis (Cookson, 1957, p.43, pl.8, fig.3) Krutzsch, 1959c, p.43, Table 1.
NOW *Microfoveolatosporis*.

Reticulosporis gallicus Deak and Combaz, 1968, p.80, pl.1, fig.22.
NOW *Microfoveolatosporis*.

Reticulosporis gracilis Krutzsch, 1967, p.208, pl.80, fig.1-10.
Miocene.

Reticulosporis irregularis Pacltova and Krutzsch, 1970, p.575, pl. 100, fig.6-11.
NOW *Microfoveolatosporis*.

Reticulosporis levireticulatus Krutzsch, 1962, p.268, pl.1, fig. 13-15.

Reticulosporis mauiensis (Selling, 1944) Krutzsch, 1959a, in Krutzsch, 1959c, p.43 nomen nudum. Pliocene. Although this combination is referred to Krutzsch 1959a in Krutzsch, 1959c it is not found in the former. Since the page, plate and figure numbers were not cited in Krutzsch (1959c) contrary to Article 33.2, ICBN, this combination is invalid.

Reticulosporis minimus Haseldonckyx, 1973, p.149, pl.1, fig.9-10.
Cuisian-Lutetian (Early-Late Eocene).

Reticulosporis miocenicus (Selling, 1946, p.68, pl.4, fig.46-47) Krutzsch, 1959a, p.228-229. Early Miocene; formerly *Schizaea, Microschizaea*. Type species.

Reticulosporis nagyi Krutzsch, 1959c, p.216-218, pl.1, fig.1-10.
Pliocene.

Reticulosporis oebisfeldensis Krutzsch, 1961, p.104, pl.15, fig.1-8.
Late Campanian-Maastrichtian.

Reticulosporis oligocaenicus Krutzsch, 1967, p.214, pl.83, fig.1-5. Middle Oligocene.

Reticulosporis polonicus Doktorowicz-Hrebnicka, 1954, p.266, fig.3 ex Krutzsch, 1959a, p.229. Oligocene.

Reticulosporis punctatus (Cookson, 1957, p.43, pl.8, fig.5-7) Krutzsch, 1959b, p.43, Table 1. Pliocene.

Reticulosporis reductus Krutzsch, 1961b, p.105, pl.15, fig.9-17. Late Campanian-Maastrichtian.

Reticulosporis reticulatus (Cookson, 1957, p.42, pl.8, fig.1-2) Krutzsch, 1959c, p.43, Table 1. Paleocene; formerly *Schizaea.*

Reticulosporis rueterbergensis Krutzsch, 1959c, p.47, pl.2, fig.1-8. Pliocene.

Reticulosporis scanicus Skarby, 1978, p.122, fig.1A-I, 4A-B. Late Cretaceous.

Reticulosporis semireticulatus Krutzsch, 1967, p.206, pl.79, fig.1-9 Miocene.

Reticulosporis skottsbergii (Selling, 1946) Krutzsch, 1959a, p.229. NOW *Microfoveolatosporis.*

Reticulosporis skottsbergii var. *mauviensis* (Selling, 1944) Krutzsch, 1959a, p.229. NOW *Microfoveolatosporis.*

Reticulosporis skottsbergii var. *skottsbergii* (Selling, 1944) Krutzsch, 1959a, p.229. NOW *Microfoveolatosporis.*

Reticulosporis wehningensis Krutzsch, 1959c, p.47-48, pl.3, fig.1-3. Pliocene.

RETIMONOLETES Pierce, 1961, p.21. Junior synonym of *Microfoveolatosporis.*

Retimonoletes foveolatus Pierce, 1961, p.33, pl.1, fig.32. NOW *Microfoveolatosporis.* Type species.

Retimonoletes jacobsonii Puri, 1963, p.39-40, pl.4, fig.102-105. NOW *Microfoveolatosporis.*

Retimonoletes kekere Puri, 1963, p.40-41, pl.4, fig.112-115.
NOW *Microfoveolatosporis*.

Retimonoletes titobii Puri, 1963, p.40, pl.4, fig.107-111.
NOW *Microfoveolatosporis*.

SECTION C

BIORECORDS.

Since no holotypes were designated the ages that are given are full taxon ranges derived from original papers.

BIORECORDS CRET 23 CB SPOR Hughes and Moody-Stuart, 1969, p.87. Lower Wealden.

1 CICATR *AT* Hughes and Moody-Stuart, 1969, p.89, pl.13, fig.1-12. Wealden. Hughes and Moody-Stuart (1969) consider *Cicatricosisporites recticicatricosus* and *Cicatricosisporites sprumontii* as synonymous with this biorecord.

2 CICATR *AF* Hughes and Moody-Stuart, 1969, p.89-90, pl.14, fig. 1-12. Lower Wealden.

3 CICATR *AR* Hughes and Moody-Stuart, 1969, p.90-91, pl.15, fig. 1-3. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Cicatricosisporites sibirica* as synonymous with this biorecord.

4 CICATR *AW* Hughes and Moody-Stuart, 1969, p.91-92, pl.16, fig. 1-12. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Cicatricosisporites abacus* Burger, 1966, as synonymous with this biorecord. Dörhöfer (1977) considered *Cicatricosisporites sprumontii* as synonymous.

5 CICATR *A2* Hughes and Moody-Stuart, 1969, p.92-93, pl.17, fig. 1-11. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Cicatricosisporites crassistriatus* as synonymous with this biorecord.

6 CICATR *B5* Hughes and Moody-Stuart, 1969, p.93, pl.18, fig.1-8. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Cicatricosisporites grabowensis* as potentially synonymous with this biorecord.

7 CICATR *C1* Hughes and Moody-Stuart, 1969, p.93-94. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Plicatella lucifera* as synonymous with this biorecord.

8 CICATR *C2* Hughes and Moody-Stuart, 1969, pl.19, fig.1-11. Early Valanginian. Hughes and Moody-Stuart (1969) considered *Plicatella crimensis* as synonymous with this biorecord.

9 CICATR *AP* Hughes and Moody-Stuart, 1969, p.95, pl.20, fig.1-7. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Plicatella jansonii* as synonymous with this biorecord.

10 CICATR *A5S* Hughes and Moody-Stuart, 1969, p.95-96, pl.21, fig. 1-12. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Cicatricosisporites myrtellii* as synonymous with this biorecord.

11 CICATR *AWW* Hughes and Moody-Stuart, 1969, p.97 - uncompleted. Lower Wealden. Hughes and Moody-Stuart (1969) considered *Cicatricosisporites globusus* Döring, 1965, as synonymous with this biorecord.

12 CICATR *APP* Hughes and Moody-Stuart, 1969, p.97 - uncompleted. Lower Wealden. Hughes and Moody-Stuart (1969) considered the spores of *Pelletieria valdensis* to be identical.

13 CICATR *C2L* Hughes and Moody-Stuart, 1969, p.97 - uncompleted. Lower Wealden. Hughes and Moody-Stuart (1969) considered that *Plicatella pschekhaensis* may be potentially synonymous with this biorecord.

14 CICATR *48H* Hughes and Moody-Stuart, 1969, p.96-97, pl.22, fig. 1-12. Lower Wealden.

15 CICATR *A3* Hughes and Moody-Stuart, 1969, p.97 - uncompleted. Lower Wealden.

16 CICATR *A5H* Hughes and Moody-Stuart, 1969, p.97 - uncompleted. Lower Wealden.

17 CICATR *B20* Hughes and Croxton, 1973, p.568, pl.66, fig.1-12. Valanginian-Aptian.

18 CICATR *C3* Hughes and Croxton, 1973, p.570, pl.67, fig.1-10. Valanginian-Aptian.

19 CICATR *A6* Hughes and Croxton, 1973, p.574, pl.68, fig.1-10. Late Valanginian to Aptian.

20 CICATR *DD* Hughes and Croxton, 1973, p.574, pl.69, fig.1-10. Hauterivian.

21 CICATR *C4* Hughes and Croxton, 1973, p.574, pl.70, fig.1-10. Late Valanginian/Hauterivian-Aptian.

22 CICATR *DB* Hughes and Croxton, 1973, p.580, pl.71, fig.1-7. Late Valanginian/Early Hauterivian-Aptian.

23 CICATR *DCE* Hughes and Croxton, 1973, p.580, pl.72, fig.1-10. Hauterivian-Barremian.

24 CICATR *C5* Hughes and Croxton, 1973, p.580, pl.73, fig.1-11.
Late Valanginian/Early Hauterivian-Aptian.

25 CICATR *B21* Hughes and Croxton, 1973, p.586, pl.74, fig.1-12.
Late Valanginian-Aptian.

26 CICATR *A5T* Hughes and Croxton, 1973, p.586, pl.75, fig.1-12.
Late Valanginian-Aptian.

27 CICATR *C6* Hughes and Croxton, 1973, p.586, pl.76, fig.1-12.
Late Valanginian-Aptian.

28 CICATR *DG* Hughes and Croxton, 1973, p.59, pl.77, fig.1-12.
Barremian-Aptian.

SECTION D

NON-COSTATE OR NON-MICRORETICULATE MONOLETE SPORE AND POLLEN GENERA AND SPECIES THAT ARE IMPLICATED BY TRANSFERS

This section is not meant to be a comprehensive assessment of these genera. Generally, only those species that have been included in genera dealt with in the sections A and B are included.

APPENDICISPORITES Saad and Ghazaly, 1976, p.420. A junior homonym to *Appendicisporites* Weyland and Krieger.

Appendicisporites aegyptiaca Saad and Ghazaly, 1976, p.420, pl.2, fig.10.
NOW *Trilobosporites*.

APICULATISPORIS Potonié and Kremp, 1956, p.94.

Apiculatisporis babsae Brenner, 1963, p.56-57, pl.13, fig.2-3.
NOW *Nodosisporites*.

CAMPTOTRILETES Naumova, 1939, p.355 ex Potonié and Kremp, 1954, p.142.

Camptotriletes anagrammensis Kara-Murza *in* Bolchovitina, 1956, p.57, pl.6, fig.88.
NOW *Duplexisporites*.

Camptotriletes corrugatus (Ibrahim, 1933, p.35, pl.5, fig.11) Potonié and Kremp, 1955, p.104. Westphalian B-C. This species has long irregular branching rugulae. Type species.

Camptotriletes curvus Bolchovitina, 1956, p.57, pl.6, fig.89.
NOW *Duplexisporites*.

Camptotriletes schizaeiformis Kara-Murza, 1954, p.178, pl.18, fig.18 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN.

CARDIOANGULINA Maljavkina, 1949, p.33.

Cardioangulina cardioliformis plicatellaeformis Maljavkina, 1949, p.33, 37, pl.2, fig.10. Lower Cretaceous.
NOW *Cicatricosisporites plicatellaeformis*.

CHOMOTRILETES Naumova, 1953, p.39 emend. Stover, 1962. A comprehensive discussion of this genus may be found in Shugayevskaja (1969a).

Chomotriletes almegrensis Pocock, 1962, p.38, pl.2, fig.27-29.
NOW *Cicatricosisporites*.

Chomotriletes anagrammensis Kara-Murza *in* Bolchovitina, 1956, p.57.
NOW *Duplexisporites*.

Chomotriletes angarammensis Ercegovac and Andelkovic, 1972, p.104 nomen nudum. Orthographic error for *Chomotriletes anagrammensis*.

Chomotriletes anogrammensis Kara-Murza in Il'Ina, 1964, p.128, 133, 139 nomen nudum. Orthographic error for *Chomotriletes anagrammensis*.
NOW *Duplexisporites*.

Chomotriletes cardioformis Kara-Murza, 1954, p.58-59, pl.7, fig.15.
NOW *Cicatricosisporites*.

Chomotriletes exilioides (Maljavkina, 1949) Bolchovitina, 1953, p.37
Placed simultaneously in *Aneimia*.
NOW *Cicatricosisporites*.

Chomotriletes genuinus Bolchovitina, 1953, p.35, pl.3, fig.25-26.
NOW *Nodosisporites*.

Chomotriletes imperfectus (Maljavkina, 1949) Bolchovitina, 1953, p.35. Placed simultaneously in *Anagramma*.
NOW *Cicatricosisporites*.

Chomotriletes jurassicus Kara-Murza, 1954, p.114, pl.18, fig.13-16.
NOW *Cicatricosisporites*.

Chomotriletes krymensis Bolchovitina, 1953, p.36, pl.3, fig.29.
Placed simultaneously in *Ceratopteris*.
NOW *Plicatella crimensis*.

Chomotriletes laevigatiformis Kara-Murza, 1954, p.156, pl.7, fig.16 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN. Simultaneously placed in *Schizaea*.

Chomotriletes macrorhyzus (Maljavkina, 1949) Bolchovitina, 1953.
Placed simultaneously in *Aneimia*.
NOW *Plicatella*.

Chomotriletes minor (Kedves, 1961, p.129, pl.16, fig.11-12) Pocock, 1970, p.61. Early Eocene (Sparacian); formerly *Schizaeoisporites*.

Chomotriletes mitriforminus Korgenevskaja *in* Verbitskaya, 1962, p.100, pl.19, fig.46a-f.
NOW *Contignisporites*.

Chomotriletes mutabilis Bolchovitina, 1953, p.36, pl.4, fig.6.
NOW *Cicatricosisporites*.

Chomotriletes pseudauriferus Bolchovitina, 1953, p.38, pl.4, fig.13.
Placed simultaneously in *Aneimia*.
NOW *Cicatricosisporites*.

Chomotriletes striatus Naumova *in* Bolchovitina, 1953, p.36, pl.4, fig.1-5. Placed simultaneously in *Mohria*.
NOW *Cicatricosisporites*.

Chomotriletes tersus Kara-Murza, 1954, p.57, pl.7, fig.14.
NOW *Cicatricosisporites*.

Chomotriletes tricostatus Bolchovitina, 1953, p.38, pl.4, fig.9-12.
Placed simultaneously in *Aneimia*.
NOW *Plicatella*.

Chomotriletes tripartitus Bolchovitina, 1953, p.38, pl.4, fig.14-15.
Placed simultaneously in *Aneimia*.
NOW *Plicatella*.

Chomotriletes trisectus (Maljavkina, 1949, p.70, pl.13, fig.7-8) Romanovskaja *in* Pokrovskaya, 1966, v.1, p.177.
NOW *Asseretospora*.

CINGULATISPORITES Thomson in Thomson and Pflug, 1953, p.58 emend. Hiltman, 1967, p.172.

Cingulatisporites problematicus Couper, 1958, p.146, pl.24, fig. 11-73.
NOW *Crassitudisporites*.

CORCULINA Maljavkina, 1949, p.38.

Corculina elatior plicatellaeformis Maljavkina, 1949, p.39, pl.3, fig.6. Considered a junior synonym of *Cicatricosisporites striatus* (Naumova) comb. nov. by Khlonova (1960).
NOW *Cicatricosisporites striatus*.

CORRUGATISPORITES Thomson and Pflug, 1953, p.55. Jansonius and Hills (1976) have outlined the historical background for the nomenclatural predicament surrounding this genus. They concluded that there are two concepts for the genus, one in the sense of *Lygodioisporites* Potonié, 1951 ex Delcourt and Sprumont, 1955, to which *Corrugatisporites* is the senior synonym; and the other in sense of *Duplexisporites* Deak, 1962 emend. Playford and Dettmann, 1965. Those species in the second group that have not been transferred are transferred

herein. Jansonius and Hills (1976) indicated that the generic circumscription of *Duplexisporites* suggested by Playford and Dettmann (1965) does not conform to the type *D. generalis* Deak.

Corrugatisporites amlectiformis author obscure in Birkelund, Thusu and Vigran, 1978 p.47 nomen nudum. Orthographic error for *C. amplectiformis*.

Corrugatisporites amplectiformis (Kara-Murza *in* Bolchovitina, 1956, p.58, pl.7, fig.92a-c) Pocock, 1970, p.59.
NOW *Duplexisporites*.

Corrugatisporites anagrammensis (Kara-Murza *in* Bolchovitina, 1956, p.57, pl.6, fig.88) Pocock, 1970, p.60.
NOW *Duplexisporites*.

Corrugatisporites curvus (Bolchovitina, 1956, p.57, pl.6, fig.89) Pocock, 1970, p.60.
NOW *Duplexisporites*.

Corrugatisporites klausii Kavary, 1972, p.91, pl.2, fig.1-2.
NOW *Duplexisporites*.

Corrugatisporites scanicus Nilsson, 1958, p.43-44, pl.2, fig.15-47.
NOW *Duplexisporites*.

Corrugatisporites toratus Weyland and Greifeld, 1953, p.42, pl.11, fig.56-59 nomen nudum. Lectotype designated herein (Weyland and Greifeld, 1953, pl.11, fig.57).
NOW *Duplexisporites*.

Corrugatisporites wallii Pocock, 1970, pl.12, fig.17-18.
NOW *Duplexisporites*.

EPHEDRIPITES Bolchovitina, 1953, p.60 ex Potonié, 1958, p.88.

Ephedripites mediolobatus Bolchovitina, 1953, p.60, pl.9, fig.15 ex Potonié, 1958, p.88. Hauterivian; formerly *Azonomonoletes, Schizaea, Schizaeoisporites*. Type species.

Ephedripites nemanicensis Pacltova, 1961, p.63,pl.9, fig.1-3.
NOW *Corniculatisporites*.

LOPHOTRILETES Naumova, 1939, p.355 ex Ishchenko, 1952, p.30.

Lophotriletes babsae (Brenner, 1963) Singh, 1971, p.127.
NOW *Nodosisporites*.

MACULATISPORITES Döring, 1964b, p.1099.

Maculatisporites glabrata (Bolchovitina, 1961, p.58, pl.16, fig. 8a-b) comb. nov. Early-Middle Albian. A punctate-granulate, trilete species; formerly *Anemia*.

PILOSISPORITES Delcourt and Sprumont, 1955, p.34-35.

Pilosisporites brevipapillosus Couper, 1958, p.144, pl.22, fig.11-12
NOW *Anemiidites*.

PLICATELLA Lyuber, 1939, p.90 nomen nudum in Jansonius and Hills, 1976, card 2038. This genus, although the senior synonym to *Plicatella* Maljavkina, was never validly published (Jansonius and Hills, 1976, card 2039). Neither description nor diagnosis was given by Lyuber (1939) contrary to Article 38, ICBN.

Plicatella oblongata Lyuber, 1939, p.90, pl.A, fig.1d‴,3 in Jansonius and Hills, 1976, card 2039 nomen nudum. Neither description nor diagnosis was given by Lyuber (1939) contrary to Article 38, ICBN.

POLYPODIIDITES Ross, 1949, p.33.

Polypodiidites afavus (Krutzsch) Krutzsch, 1963, p.227.
NOW *Microfoveolatosporis*.

PSEUDOPLICATELLA Maljavkina, 1949, p.130. An ephedroid, alete, costate, pollen genus which is included here since the name implies affinities to the Schizaeales.

Pseudoplicatella normalis Maljavkina, 1949, p.130, pl.50, fig.5. Early Cretaceous. Type species.

PUNCTATOSPORITES Ibrahim, 1933, p.21.

Punctatosporites ellipsoideus Pflug *in* Thomson and Pflug, 1953, p.60 pl.3, fig.45.
NOW *Microfoveolatosporis*.

RETICULOIDOSPORITES Pflug *in* Thomson and Pflug, 1953, p.60.

Reticuloidosporites granuloides Krutzsch, 1959a, p.217-218, pl.44, fig.485.
NOW *Microfoveolatosporis*.

RUGUTRILETES Pierce, 1961, p.21, 30, pl.1, fig.19. This genus was erected to replace *Rugutriletes* Van der Hammen, 1956b nomen nudum. Krutzsch (1963, p.21) considers this genus to be a junior synonym of *Camarozonosporites*.

Rugutriletes toratus Pierce, 1961, p.30, pl.1, fig.22.
NOW *Cicatricosisporites*.

SCHIZAEACITES Romanovskaja, 1963, p.131. This genus contains alete, costate spores of ephedroid affinities and is included here because its name is misleading by indicating affinities to *Schizaea*.

Schizaeacites costatus Romanovskaja, 1963, p.131, pl.13, fig.5. Lower Triassic. Type species.

SCHIZAEOISPORITES (Potonié, 1951, p.144) ex Delcourt and Sprumont, 1955, p.46. Potonié (1956) considered this genus to be a senior synonym to *Cicatricososporites*. Krutzsch (1959c) considered the type to be alete not monolete, therefore, distinct from *Cicatricososporites* or *Striamonoletes*. and not related to *Schizaea*.

Schizaeoisporites certus (Bolchovitina, 1956, p.60, pl.7, fig.96a-c) Sung and Zheng *in* Sung, Li and Li, 1976. Early Cretaceous. An ephedroid, alete, costate species; formerly *Schizaea, Schizaites*.

Schizaeoisporites cicatricos Solé de Porta, 1972, p.227, pl.2, fig.5
NOW *Striamonoletes*.

Schizaeoisporites columbiae Solé de Porta, 1972, p.227, pl.1, fig.12
NOW *Striamonoletes*.

Schizaeoisporites crassimurus Dutta and Sah, 1970, p.24, pl.3, fig. 32-34.
NOW *Striamonoletes*.

Schizaeoisporites cretacius (Weyland and Greifeld, 1953, p.43, pl.11 fig.48-50, 53 ex Krutzsch, 1954, p.260) Potonié, 1956, p.81. Early Senonian. An ephedroid, alete, costate species; formerly *Cicatricososporites*.

Schizaeoisporites delcourtii Pocock, 1965, p.154, pl.2, fig.6-7.
NOW *Striamonoletes*.

Schizaeoisporites digitatoides (Cookson, 1957) Potonié, 1960, p.70.
NOW *Striamonoletes*.

Schizaeoisporites digitatus Huang, 1978b, p.23, pl.6, fig.1.
NOW *Striamonoletes*.

Schizaeoisporites disertus (Bolchovitina, 1961, p.26, pl.5, fig.3). comb. nov. Neocomian-Aptian. An ephedroid, alete, costate species; formerly *Schizaea*.

Schizaeoisporites dorogensis (Khlonova, 1960, p.26, pl.2, fig.26-30) comb. nov.; formerly *Schizaea*.

Schizaeoisporites ellipsoideus (Takahashi, 1964, p.220, pl.31, fig. 6-9) comb. nov. Campanian. An ephedroid, alete, costate species; formerly *Cicatricososporites*.

Schizaeoisporites eocaenicus (Selling, 1944, p.66, fig.44) Potonié, 1956, p.81; formerly *Schizaea* and *Actinostachys*.

Schizaeoisporites evidens (Bolchovitina, 1961, p.30, pl.6, fig.2a-d) Sung and Zheng in Sung, Li and Li, 1976, p.22. Neocomian. An ephedroid, alete, costate species; formerly *Schizaea*.

Schizaeoisporites ghoshi Ramanujam, 1966, p.35, fig.28.
NOW *Striamonoletes*.

Schizaeoisporites grandiformis Ramanujam, 1972, p.251, pl.1, fig.10.
NOW *Striamonoletes*.

Schizaeoisporites grandistriatus Ramanujam, 1972, p.251, pl.1, fig. 11-12 (lectotype herein designate as Ramanujam, 1972, pl.2, fig.11).
NOW *Striamonoletes*.

Schizaeoisporites heintzii Bose, 1959 in Birklund *et al.*, 1978, p.39 nomen nudum. Orthographic error for *Schizaeoisporites hoegii*.

Schizaeoisporites hoegii Bose, 1959, p.6, pl.1, fig.8-9.
NOW *Striamonoletes*.

Schizaeoisporites kuklandyensis (Bolchovitina, 1961, p.31, pl.6, fig.3a-k; pl.39, fig.13) Sung and Zheng *in* Sung, Li and Li, 1976, p.21. Early to Middle Albian. An ephedroid, alete, costate species; formerly *Schizaea*.

Schizaeoisporites laevigatiformis (Bolchovitina, 1961, p.29, pl.6, fig.1a-e; pl.39, fig.12) Sung and Zheng *in* Sung, Li and Li, 1976, p.23. Senonian; formerly *Cicatricososporites, Schizaea*.

Schizaeoisporites mediolobatus (Bolchovitina, 1953) Krutzsch, 1959a, p.227. An ephedroid, alete, costate species.
NOW *Ephedripites*.

Schizaeoisporites microestriatus Solé de Porta, 1972, p.226-227, pl. 7, fig.11.
NOW *Striamonoletes*.

Schizaeoisporites minimus Ramanujam, 1966, p.35, fig.5, 29.
NOW *Striamonoletes*.

Schizaeoisporites minor Kedves, 1961, p.129, pl.6, fig.11-16. A senior homonym of *Schizaeoisporites minor* Pocock, 1964. However, Pocock (1970) consider this species a senior synonym to *Chomotriletes fragilis* Pocock, 1962, and effected the transfer.
NOW *Chomotriletes*.

Schizaeoisporites minor Pocock, 1965, p.155, pl.2, fig.10. A junior homonym to *Schizaeoisporites minor* Kedves, 1961.
NOW *Striamonoletes*.

Schizaeoisporites multistriatus Rao and Ramanujam, 1978, p.409, pl.3 fig.30.
NOW *Striamonoletes*.

Schizaeoisporites palaeocenicus (Selling, 1944, p.64, pl.4, fig. 42-43) Potonié, 1956, p.82. Paleocene. An ephedroid, alete, costate species; formerly *Actinostachys, Schizaea, Cicatricososporites*.

Schizaeoisporites palanaensis Sah and Kar, 1974, p.164, pl.1, fig. 4-5.
NOW *Striamonoletes*.

Schizaeoisporites papuana (Cookson, 1957) Potonié, 1960, p.70.
NOW *Striamonoletes*.

Schizaeoisporites perforatus Naskar and Baksi, 1976, p.317-318, pl.2 fig.14.
NOW *Striamonoletes*.

Schizaeoisporites phaseolus Delcourt and Sprumont, 1955, p.46, fig. 13.
NOW *Striamonoletes*.

Schizaeoisporites praeclarus (Khlonova, 1961, p.46, pl.3, fig.23) Sung and Zheng *in* Sung, Li and Li, 1976, p.23. Late Cretaceous. An ephedroid, alete, costate species; formerly *Schizaea*.

Schizaeoisporites pseudodorogensis Thiergart, 1950, p.84 ex Potonié, 1951, p.135, 144, pl.20, fig.19. Type species; formerly *Cicatricosisporites, Cicatricososporites, Sporites, Schizaeosporites, Welwitschiapites.*

Schizaeoisporites rectangularis Solé de Porta, 1972, p.227-228, pl.2 fig.8.
NOW *Striamonoletes.*

Schizaeoisporites sinuatus Ramanujam, 1966, p.35-36, fig.30.
NOW *Striamonoletes.*

Schizaeoisporites taiwanensis Huang, 1978a, p.25, pl.12, fig.2-3.
NOW *Striamonoletes.*

Schizaeoisporites virgatus (Pflug, 1952, p.120 ex Thomson and Pflug, 1953, p.61, pl.14) Potonié, 1956, p.81.
NOW *Striamonoletes.*

SCHIZAEOSPORITES Danzé and Laveine, 1963, p.62. An obligate junior synonym and tautonym of *Schizaeoisporites* Potonié, 1951 (Jansonius and Hills, 1976, card 253).

Schizaeosporites pseudodorogensis (Potonié, 1951) Danzé and Laveine, 1963, p.62. Type species.
NOW *Schizaeoisporites.*

SCHIZAITES Bolchovitina, 1956, p.60. Although the genus was defined as containing oval, elongate spores with longitudinal muri and implied to have an indistinct monolete slit, the type specimen appears to be alete and therefore ephedroid. This genus is probably a junior synonym of *Schizaeoisporites* (Jansonius and Hills, 1976, card 2529).

Schizaites certa Bolchovitina, 1956, p.60, pl.7, fig.96a-c.
NOW *Schizaeoisporites.* Type species.

SPIRALISPORITES Pocock, 1965, p.176. This genus contains forms whose morphology more closely resembles ephedroid pollen than schizaeacean spores. It is the senior homonym of *Spiralisporites* Pautsch.

Spiralisporites stoveri Pocock, 1965, p.176, pl.4, fig.19. Albian. Type species.

SPORITES H. Potonié, 1893, p.185 emend. Schopf, 1938, p.50.

Sporites appendicifera Thiergart, 1949, p.25, pl.4-5, fig.33.
Holotype not formally designated.
NOW *Plicatella.*

Sporites dorogensis (Potonié and Gelletich, 1933) Potonié, 1934, p.40.
NOW *Cicatricosisporites*.

Sporites echinosporis Potonié, 1934, p.45, pl.1, fig.33; pl.6, fig.6
NOW *Anemiidites*.

STRIATRISPORITES Danzé and Laveine, 1963, p.83. A megaspore genus. Danzé and Laveine give the name as a "new combination" of van der Hammen's subgenus *Striatriletes* (van der Hammen, 1954); however, the latter was validated by van der Hammen (1956b) with the type species *Striatriletes susannae*. However, Potonié (1956) already had validated the name as a megaspore genus, with type species *Striatriletes sulcatus* (Dijkstra) Potonié. Thus, *Striatrisporites* is an obilgate junior synonym of the latter (Jansonius and Hills, 1976, card 2785).

Striatrisporites sulcatus (Dijkstra, 1951) Danzé and Laveine, 1963, p.83. Type species.
NOW *Radialisporis*.

TAUROCUSPORITES Stover, 1962, p.55 emend. Playford and Dettmann, 1965, p.146. A genus containing trilete, zonate spores with two or three distal, thickened rings.

Taurocusporites tetrajugatus (Pierce, 1961, p.32, pl.1, fig.38) early Late Cretaceous; formerly *Striatriletes*.

Taurocusporites tschulymensis (Bolchovitina, 1961, p.56-57, pl.1, fig.2; pl.40, fig.6) comb. nov. Upper Cretaceous; formerly *Anemia, Aneimia*.

TIGRISPORITES Klaus, 1960, p.140. A genus containing trilete, distally (radially aligned) rugulate spores with distal crassitude.

Tigrisporites playfordii de Jersey and Hamilton, 1967, p.10, pl.5, fig.5-6.
NOW *Triplexisporites*.

TRILITES Cookson, 1947, p.136 ex Couper, 1953, p.29.

Trilites sulcatus Dijkstra, 1951, p.11, pl.2, fig.3.
NOW *Radialisporis*.

Trilites toratus (Weyland and Greifeld, 1963) Juhasz, 1972, p.48.
NOW *Bikolisporites*.

Trilites cicatricos Boltenhagen, 1965, pl.4, fig.13
nomen nudum. Neither description nor diagnosis were given by Boltenhagen (1965) contrary to Article 38, ICBN. Jan du Chene *et al.*, 1978, consider this species to be a junior synonym to *Cicatricosisporites potomacensis*.

TRILITES (BIKOLISPORITES) Juhasz, 1972, p.48. Subgenus raised generic status.

TRILOBOSPORITES Pant, 1954, p.50 ex Potonié, 1956, p.55.

Trilobosporites aegyptiaca (Saad and Ghazaly, 1976, p.420, pl.2, fig.10) comb. nov. Early Cretaceous; formerly *Appendicisporites*.

VERRUCATOSPORITES Pflug *in* Thomson and Pflug, 1953, p.59. A genus containing monolete, verrucate spores.

Verrucatosporites afavus Krutzsch, 1959a, p.209-210, pl.41, fig. 461-462.
NOW *Microfoveolatosporis*.

Verrucatosporites pseudoreticulatus Hedlund, 1966, p.21, pl.5, fig. 7a-b.
NOW *Microfoveolatosporis*.

VITTATINA Samoilovich, 1953 ex Wilson, 1962, p.24. A striate pollen genus.

Vittatina cretacea Pocock, 1962, p.70, pl.12, fig.181-182.
NOW *Plicatella*.

WELWITCHIAPITES Deak *in* Corna, 1972, p. 149. Orthographic error for *Welsitschiapites*.

WELWITSCHIAPITES Bolchovitina, 1953, p.61 ex Potonié, 1958, p.89.
A genus containing ephedroid, alete, costate pollen (Jansonius and Hills, 1976, card 3239).
See *Corniculatisporites* for further explanation.

Welwitschiapites alekhinii Bolchovitina, 1953, p.61, pl.9, fig.20.
Also spelled *Welwitchiapites* by Corna, 1972, pl.15, fig. 20.
NOW *Corniculatisporites*.

Welwitschiapites magniolobatus Bolchovitina, 1953, p.61, pl.9, fig. 18. An ephedroid pollen type.

Welwitschiapites (alias *Welwitchiapites) pseudodorogensis* (Weyland and Greifeld) Corna, 1972, p.149, pl.15, fig.21 nomen nudum. The page, plate and figure numbers were not given contrary to Article 33.2, ICBN.

Welwitschiapites simplex Deak, 1963a, p.406, fig.1-3 (alias *Welwitchiapites* in Corna, 1972, pl.15, fig.19).
NOW *Corniculatisporites.*

Welwitschiapites striatus Bolchovitina, 1953, Table 9, fig.18 ex Potonié, 1958, p.123. Hauterivian. An ephedroid, alete, costate species. Type species.

Welwitschiapites striatus Deak, 1963a, p.408, fig.5-6. A junior homonym to *Welwitschiapites striatus* Bolchovitina.
NOW *Corniculatisporites.*

Welwitschiapites virgutus Deak, 1963a, p.408, pl.1, fig.1-2.
NOW *Corniculatisporites.*

SECTION E

RECENT AND MACROFOSSIL GENERA AND SPECIES

Recent and macrofossil genera and species possessing cicatricose-caniculate spores. A number of species names have been referred to by various authors without fully referencing the author of the species. Such names have not been verified and are listed here for completeness.

ACROSTICHOPTERIS Fontaine, 1889, p. 106. A macrofossil genus related to *Pelleteria* and *Schizaeopsis* in the Family Acrostichopteridaceae Reed (Reed, 1947). Reed (1947) inferred that the spores are striate, although it was not well documented.

Acrostichopteris adiantifolia (Fontaine, 1889, p.211, pl.92, fig.8-9 pl.93, fig.1-3; pl.94, fig.2-3) Berry, 1910, p.629. Aptian-Albian; formerly *Baieropsis*.

Acrostichopteris cuneifida (Saporta, 1894, p.69, 127, pl.16, fig.11; pl.23, fig.5) Reed, 1947, p.114. Urgonian-Aptian; formerly *Sphenopteris*.

Acrostichopteris cyclopteroides Fontaine, 1889, p.109, pl.94, fig.8. Early Cretaceous.

Acrostichopteris debilior (Saporta, 1894, p.161, pl.28, fig.5-5a) Reed, 1947, p.113. Albian; formerly *Stenopteris*.

Acrostichopteris dissectiformis (Saporta, 1894, p.68, pl.15, fig.18; pl.16, fig.12-13) Reed, 1947, p.114. Aptian; formerly *Sphenopteris*.

Acrostichopteris expansa (Fontaine, 1889, p.207, pl.89, fig.3;pl.90, fig.2; pl.92, fig.5) Berry, 1911b, p.229. Albian; formerly *Baieropsis*.

Acrostichopteris fimbriata Knowlton, 1908, p.110, pl.11, fig.3-3a. Early Cretaceous.

Acrostichopteris flabellina (Saporta, 1894, p.160, pl.28, fig.3, 6) Reed, 1947, p.113. Lower Cretaceous; formerly *Sphenopteris*.

Acrostichopteris flabellisecta (Saporta, 1894, p.69, pl.15, fig. 14-15) Reed, 1947, p.114. Aptian; formerly *Sphenopteris*.

Acrostichopteris foliosa (Fontaine, 1889, p.209, pl.93, fig.4-6) Berry, 1956, p.69. Aptian-Early Albian; formerly *Baieropsis*.

Acrostichopteris longipennis Fontaine, 1889, p.107, pl.107, fig.10; pl.171, fig.1, 5, 7. Lower Cretaceous. Type species.

Acrostichopteris parvifolia Fontaine, 1889, p.108, pl.94, fig.5, 9-10, 12; pl.171, fig.3-4; pl.172, fig.4. Early Cretaceous.

Acrostichopteris pluripartita (Fontaine, 1889, p.208, pl.89, fig.4; pl.90, fig.2-5; pl.91, fig.1, 3-4,7; pl.102, fig.1-2, 6) Berry, 1910, p.631. Early Cretaceous; formerly *Baieropsis*.

Acrostichopteris ruffordii Seward, 1894, p.61, pl.6, fig.3. Wealden (Early Cretaceous).

Acrostichopteris tenellisecta (Saporta, 1894, p.25, pl.13, fig.1) Reed, 1947, p.114. Late Jurassic; formerly *Sphenopteris*.

Acrostichopteris temifissa (Saporta, 1894, p.161, pl.28, fig.4) Reed, 1947, p.114. Albian; formerly *Sphenopteris*.

Acrostichopteris usseriensis Prynada in Shtempel, 1958, p.270. Cretaceous.

ACTINOSTACHYS Wallich, 1828 ex Hooker, 1842, p.111. recent genus with striate monolete spores. This genus was subdivided into sections and subsections by Reed (1947, p.130-133) based in part on spore morphology.

Actinostachys balansae (Fournier, 1873, p.353) Reed, 1947, p.131. A recent species with smooth to scabrate, monolete spores (Selling, 1946; Reed, 1947); formerly *Schizaea*.

Actinostachys confusa (Selling, 1947, p.432-434, fig.1-13) Reed, 1947, p.173. A recent species with canaliculate, monolete (aberrantly trilete) spores, illustrated by Selling, 1947.

Actinostachys digitata (Linnaeus) Wallich, 1828 ex Reed, 1947, p.130 A recent species with cicatricose, monolete spores (Reed, 1947; Pokrovskaya, 1950; Bolchovitina, 1959b, 1961; Juhasz, 1977; Holltum, 1959); formerly *Schizaea*.

Actinostachys eocenica (Selling) Reed, 1947, p.131. NOW *Schizaeoisporites*.

Actinostachys germani Fée, 1866, p.123, pl.29, fig.3. A recent species with delicately, maculate, monolete spores (Selling, 1947) formerly *Schizaea*.

Actinostachys inopinata (Selling, 1946, p.274, fig.1-7) Reed, 1947, p.130. A recent species with striate, monolete spores (Reed, 1947; Holltum, 1959); formerly *Schizaea*.

Actinostachys intermedia (Mettenius, 1861, p.86) Reed, 1947, p.31. A recent species with canaliculate, monolete spores (Reed, 1947; illustrated by Bolchovitina, 1959b, 1961); formerly *Schizaea*.

Actinostachys laevigata (Mettenius, 1861, p.85) Reed, 1947, p.130. A recent species with canaliculate, monolete spores (illustrated by Selling, 1946; Samoilovich, 1953; Bolchovitina, 1959b, 1961; Mtchedlishvili and Shakhmoundes, 1973); formerly *Schizaea*.

Actinostachys macrofunda Bierhorst, 1971, p.58, fig.37-58. A recent species with foveolate monolete spores.

Actinostachys melanesica (Selling, 1944, p.207-225) Reed, 1947, p.131. A recent species with anastomotically cicatricose, monolete spores (illustrated by Bolchovitina, 1959b, 1961; Selling, 1944, 1946); formerly *Schizaea*.

Actinostachys oligostachys Bierhorst, 1968, p.92, 94, fig.19-33, 56. A recent species with large striate monolete spores (porcatae).

Actinostachys orbicularis (Baker, 1881, p.208) Reed, 1947, p.132. A recent species with punctate, rarely striate spores (Reed, 1947); formerly *Schizaea* and *Schizaea digitata* var. *orbicularis* Baker.

Actinostachys palaeocenica (Selling) Reed, 1947, p.131. NOW *Schizaeoisporites*.

Actinostachys penicillata (Humboldt and Bonpland ex Willdenow) Maxon, 1933, p.139. A recent species with anastomotically cicatricose, monolete spores (Selling, 1946; Reed, 1947; Bolchovitina, 1959b, 1961); formerly *Schizaea*.

Actinostachys pennula (Swartz, 1806, p.329) Hooker, 1842, pl.111a. A recent species with maculate (punctate) monolete spores with rare longitudinal striae (Selling, 1946; Reed, 1947). Bolchovitina (1959b) and Bierhorst (1971) illustrated a foveo-reliculate monolete spore for this species; formerly *Schizaea*.

Actinostachys plana (Fournier, 1873, p.353) Reed, 1947, p.131. A recent species with laevigate, monolete spores (Selling, 1946; Reed, 1947); formerly *Schizaea*.

Actinostachys spirophylla (Troll, 1933, p.343) Reed, 1947, p.131. A recent species with striate, monolete spores (Troll, 1933; Selling, 1946; Reed, 1947); formerly *Schizaea*.

Actinostachys tenuis (Fournier, 1873, p.353) Reed, 1947, p.131. A recent species with laevigate, monolete spores (Selling, 1946; Reed, 1947); formerly *Schizaea*.

Actinostachys wagneri (Selling, 1946, p.278, fig.8-11) Reed, 1947, p.21, p.131. A recent species; formerly *Schizaea*.

ADIANTITES Goeppert, 1836, p.227. A macrofossil genus.

Adiantites gracillimus Lesquereux, 1883, p.137, pl.21, fig.8.
NOW *Protormithopteris*.

ANAGRAMMA Link *in* Pokrovskaya and Stel'mak, 1964, p.313.
Orthographic error for *Anogramma*.

Anagramma imperfecta (Maljavkina, 1949) Bolchovitina, 1953, p.35, pl.3, fig.27-28. Placed simultaneously in *Chomotriletes*.
NOW *Cicatricosisporites*.

ANEIMIA Swartz ex Kaulfuss, 1824, p.51. A junior tautonym of *Anemia* Swartz.

Aneimia acuta (Brongniart, 1829, p.205, pl.57, fig.5) Ettinghausen, 1865, p. 242. A macrofossil species not yet verified and thus not transferred to a fossil genus; formerly *Sphenopteris*.

Aneimia adiantifoliopsis Kuzichkina, 1962, p.111, pl.4, fig.88.
NOW *Duplexisporites*.

Aneimia anthriscifolia Schrader *in* Lindman, 1903, p.257.
NOW *Hemianemia*.

Aneimia anthriscifolia forma *nana* Lindman, 1903, p.258.
NOW *Hemianemia*.

Aneimia anthriscifolia var. *rotundata* Lindman, 1903, p.258, pl.12, fig.1.
NOW *Hemianemia*.

Aneimia aurifera Verbitskaya, 1958, p.317, pl.2, fig.39 nomen nudum. Later validated by Verbitskaya (1962) as *Anemia aurifera*.
NOW *Plicatella*.

Aneimia aurita Swartz *in* Planderova, 1975, p.66.
NOW *Anemia*.

Aneimia camura Martynova *in* Pokrovskaya and Stel'mak, 1960, p.117, pl.2, fig.8.
NOW *Plicatella*.

Aneimia cardioformis Kara-Murza, 1954, p.58-59, pl.7, fig.15. This species was placed simultaneously in *Chomotriletes*.
NOW *Cicatricosisporites*.

Aneimia cardioliniformis Maljavkina, 1958, p.45-46, pl.1, fig.14.
NOW *Cicatricosisporites*.

Aneimia cenomanensis Crié, 1878, p.23, pl.1(A), fig.6-7. Eocene. A macrofossil species not yet verified.

Aneimia centralis Swartz *in* Planderova, 1975, p.68.
Authorship obscure.
NOW *Anemia*.

Aneimia chetensis Kara-Murza, 1954, p.56, pl.7, fig.2. This species was simultaneously placed in *Aneimia, Chomotriletes* and *Plicatella* by Kara-Murza (1954).
NOW *Cicatricosisporites*.

Aneimia chetensis var. *chetensis* Kara-Murza, 1954, p.57, pl.7, fig. 2.
NOW *Cicatricosisporites*.

Aneimia chetensis var. *nigra* Kara-Murza, 1954, p.57, pl.7, fig.1 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN.

Aneimia ciliata Presl *in* Lindman, 1903, p.259.
NOW *Anemia*.

Aneimia ciliata var. *tenera* (Pohl) Prantl, 1881, p.108.
NOW *Anemia tenera*.

Aneimia collina Raddi in Planderova, 1975, p.64.
NOW *Anemia*.

Aneimia colwellensis Chandler, 1955 in Chandler, 1963, p.334.
NOW *Protornithopteris*.

Aneimia delicatula Brown, 1929, p.281, pl.70, fig.1-2. A macrofossil species not yet verified and therefore not transferred to a fossil genus.

Aneimia dissecta Presl *in* Lindman, 1903, p.260.
NOW *Anemia*.

Aneimia dissociata Saporta *in* Crié, 1878, p.22, pl.1(A), fig. 4. Eocene. A macrofossil not yet verified and therefore not transferred to a fossil genus.

Aneimia dorsostriata Bolchovitina, 1956, p.60, pl.7, fig.95a-b.
NOW *Contignisporites*.

Aneimia eocenica Berry, 1916 in Jongmans, 1957, p.214.
NOW *Protornithopteris*.

Aneimia elongata (Newberry) Knowlton in Jongmans, 1957, p.214.
NOW *Protornithopteris*.

Aneimia exiliformis (Maljavkina, 1949) Filippova, 1957.
NOW *Cicatricosisporites exilioides*.

Aneimia exilioides (al. *Anemia)* (Maljavkina, 1949) Bolchovitina, 1953, p.37. Placed simultaneously in *Chomotriletes*.
NOW *Cicatricosisporites*.

Aneimia exilioides forma *sibirica* Khlonova, 1960, p.22, pl.2, fig.15-17.
NOW *Plicatella trichacantha sibirica*.

Aneimia fanensis Nik. in Kuzichkina, 1962, p.14, pl.86 nomen nudum. A fossil spore species attributed to the author "Nik." who remains obscure.

Aneimia flexuosa var. *genuina* Prantl, 1881 in Lindman, 1903, p.256.
NOW *Hemianemia*.

Aneimia flexuosa var. *oblonga* (Sturm) Prantl, 1881 in Lindman, 1903, p.256.
NOW *Hemianemia tomentosa*..

Aneimia flexuosa var. *villosa* (W.) Prantl, 1881 in Lindman, 1903, p.257.

Aneimia fraxinifolia Raddi in Planderova, 1975, p.63.
NOW *Anemia*.

Aneimia fremonti Knowlton, 1917 in Jongmans, 1957, p.214.
NOW *Protornithopteris*.

Aneimia fulva (Cavanilles, 1801) Swartz, 1806, p.156 in Lindman, 1903, p.257.
NOW *Hemianemia*.

Aneimia genuina (Bolchovitina) Bolchovitina, 1959 in Pokrovskaya and Stel'mak, 1964, p.159.
NOW *Nodosisporites*.

Aneimia glomerosa Martynova *in* Pokrovskaya and Stel'mak, 1960, p.117 pl.2, fig.9.
NOW *Plicatella*.

Aneimia ?gracillima (Lesquereux) Cockerell, 1908 in Jongmans, 1957, p.215.
NOW *Protornithopteris*.

Aneimia grandifolia Knowlton, 1924 in Jongmans and Dijkstra, 1967, p.3733.
NOW *Protornithopteris*.

Aneimia haydenii (Lesquereux) Cokerell, 1909 in Jongmans, 1957, p.215.
NOW *Anemia*.

Aneimia hesperia Knowlton, 1916 in Jongmans, 1957, p.214.
NOW *Protornithopteris*.

Aneimia hirsuta (Linnaeus) Swartz, 1806 in Lindman, 1903, p.259.
NOW *Anemia*.

Aneimia hirta Swartz in Planderova, 1975, p.67.
NOW *Anemia*.

Aneimia humilis (Cavanilles, 1801) Swartz, 1806 in Zauer and Mchedlishvili, 1954.
NOW *Anemia*.

Aneimia imbricata Sturman, 1858 in Knox, 1938, pl.33, fig.41.
NOW *Anemia*.

Aneimia kaulfussii (Heer) Crié, 1878 in Jongmans, 1957, p.214.
Jongmans (1957) rejects the transfer to *Lygodium*.
NOW *Lygodium*.

Aneimia lanceolata Knowlton, 1930 in Jongmans, 1957, p.215.
NOW *Protornithopteris*.

Aneimia latifolia (Bongniart, 1829, p.205, pl.57, fig.1-6) Ettinghausen, 1865, p.242. A macrofossil species not yet verified; formerly *Sphenopteris*.

Aneimia laxa Lindman, 1903, p.261, pl.13.
NOW *Anemia*.

Aneimia longicornuta Bolchovitina *in* Boytsova, 1964, p.63 nomen nudum. Possibly orthographic error of *Anemia longispicula*.

Aneimia macrorhyza (Maljavkina, 1949) Bolchovitina, 1953, p.39. Placed simultaneously in *Chomotriletes*. Also spelled A. *macrorrhiza* in Boytsova, 1964, p.63.
NOW *Plicatella*.

Aneimia macrorrhiziformis Poluchina in Pokrovskaya and Stel'mak, 1964, p.223, pl.27, fig.3-4.
NOW *Plicatella*.

Aneimia mandioccana Raddi, 1819 in Pokrovskaya, 1950, p.142.
NOW *Anemia*.

Aneimia mandioccaniformis Khlonova, 1960, p.24, pl.2, fig.21.
NOW *Cicatricosisporites*.

Aneimia markaensis Nik. in Kuzichkina, 1962, p.113, pl.4, fig.84-85 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN. A fossil spore species attributed to the author "Nik." who remains obscure.

Aneimia microphylla Swartz and Fée in Planderova, 1975, p.67. Authorship obscure.
NOW *Anemia*.

Aneimia mitriformina Korgenevskaja *in* Verbitskaya, 1958, pl.2, fig.37-37a nomen nudum. Later validated by Verbitskaya (1962) as *Anemia mitriformina*.
NOW *Contignisporites*.

Aneimia modica Khlonova, 1960, p.23, pl.2, fig.19.
NOW *Plicatella*.

Aneimia mosbyensis Knowlton, 1918 in Jongmans, 1957, p.215.
NOW *Protornithopteris*.

Aneimia occidentalis Knowlton, 1918 in Jongmans, 1957, p.216.
NOW *Protornithopteris*.

Aneimia pachyderma (Stel'mak *in* Pokrovskaya and Stel'mak, 1964, p.259-260, pl.51, fig.7).
NOW *Plicatella*.

Aneimia pacifica Garetzkiy, 1957, p.35, Table 4 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.
NOW *Cicatricosisporites*.

Aneimia palaeogea Saporta and Marion, 1873, p.29, pl.1, fig.1. Eocene. A macrofossil not yet verified and therefore not transferred to a fossil genus.

Aneimia pallida Gardner, 1844 in Lindman, 1903, p.261.
NOW *Anemia*.

Aneimia palmarum Lindman, 1903, p.261-262.
NOW *Anemia*.

Aneimia pastinacaria Moritz ex Prantl, 1881 in Bolchovitina, 1953, p.153.
NOW *Anemia*.

Aneimia phyllitidiformis Khlonova, 1960, p.23, pl.2, fig.18.
NOW *Nodosisporites*.

Aneimia phyllitidis (Linnaeus) Swartz, 1806 in Lindman, 1903, p.262. Type species.
NOW *Anemia*.

Aneimia piskranensis Baikovskaja, 1956 in Jongmans, 1957, p.216.
NOW *Anemia*.

Aneimia poolensis Chandler, 1955 in Jongmans and Dijkstra, 1967, p.3733.
NOW *Protornithopteris*.

Aneimia praecipia Verbitskaya, 1958, pl.2, fig.34 nomen nudum. Later validated by Verbitskaya (1962) as *Anemia praecipia*.
NOW *Plicatella*.

Aneimia presliana Prantl *in* Lindman, 1903, p.259.
NOW *Anemia*.

Aneimia pseudaurifera Bolchovitina, 1951, p.36 ex Bolchovitina, 1953, p.38, pl.4, fig.13. Placed simultaneously in *Chomotriletes*.
NOW *Cicatricosisporites*.

Aneimia pseudaurifera sibirica Khlonova, 1960, p.24, pl.2, fig.20.
NOW *Cicatricosisporites*.

Aneimia pyramidina (Maljavkina) Filippova, 1957, pl.65, fig.18 nomen nudum ex Martynova *in* Pokrovskaya and Stel'mak, 1964, p.223.
NOW *Plicatella*.

Aneimia radicans Raddi, 1819 in Lindman, 1903, p.261.
NOW *Anemia*.

Aneimia remissa Bolchovitina, 1956, p.58, pl.7, fig.92a-c.
NOW *Cicatricosisporites*.

Aneimia robusta Hollick, 1902 in Jongmans, 1957, p.216.
NOW *Protornithopteris*.

Aneimia rotundifolia Schrader *in* Planderova, 1975, p.66.
NOW *Anemia*.

Aneimia sachrae mortae Christ *in* Planderova, 1975, p.62.
NOW *Anemia*.

Aneimia schraderiana Martius, 1834 in Lindman, 1903, p.262.
NOW *Anemia*.

Aneimia sepulta Squinabol, 1891, p.6, pl.14. Miocene. A macrofossil species not yet verified and therefore not transferred to a fossil genus.

Aneimia sibirica Kara-Murza, 1954, pl.7, fig.7-9, 12 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN. Simultaneously placed in *Plicatella*.
NOW *Cicatricosisporites*.

Aneimia striata (Naumova) Bolchovitina *in* Kara-Murza, 1958 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Aneimia stricta Newberry, 1859, p.38, pl.3, fig.1-2 in Jongmans, 1957, p.217. A macrofossil species not yet verified.

Aneimia subcretacea (Saporta) Gardner and Ettinghausen, 1880 in Jongmans, 1957, p.217.
NOW *Protornithopteris*.

Aneimia subelegantior Shtempel, 1958, p.269. A macrofossil species not yet verified and therefore not transferred to a fossil genus.

Aneimia supercretacea Hollick, 1902 in Jongmans, 1957, p.218.
NOW *Protornithopteris*.

Aneimia supercretacea var. *conformis* Hollick, 1930 in Jongmans, 1957, p.218.
NOW *Protornithopteris*.

Aneimia tchulymensis Bolchovitina, 1959b in Boytsova, 1964, p.63.
NOW *Taurocusporites*.

Aneimia tenella (Cavanilles) Swartz, 1806 in Lindman, 1903, p.260.
NOW *Anemia*.

Aneimia tenera Pohl *in* Lindman, 1903, p.260.
NOW *Anemia*.

Aneimia tomentosa (Savigny) Swartz, 1806 in Lindman, 1903, p.257.
NOW *Hemianemia*.

Aneimia trichacantha Maljavkina, 1949 in Filippova, 1957, pl.69, fig.14 nomen nudum.
NOW *Plicatella*.

Aneimia tricostata Bolchovitina, 1953 in Verbitskaya, 1958, p.317.
NOW *Plicatella*.

Aneimia trigona (Maljavkina) Kara-Murza in Pokrovskaya and Stel'mak, 1964, p.83.
NOW *Anemia*.

Aneimia trinitatis Ball, 1931, p.146, pl.23, fig.3-4. A macrofossil species not yet verified and therefore not transferred to a fossil genus.

Aneimia tripartina Bolchovitina in Filippova, 1957, pl.66, fig.1.
Orthographic error for *Aneimia tripartita*.

Aneimia tripartita Bolchovitina, 1951, p.36 ex Bolchovitina, 1953, p.38, pl.10, fig.14-15. Placed simultaneously in *Chomotriletes*.
NOW *Plicatella*.

Aneimia triquetriformis Maljavkina, 1958, p.46, pl.5, fig.8.
NOW *Cicatricosisporites*.

Aneimia tschermakii Ettinghausen, 1860, p.104, fig.14; pl.7, fig.2.
A macrofossil species not yet verified and therefore not transferred to a fossil genus.

Aneimia tschulymensis Bolchovitina,1961 in Pokrovskaya and Stel'mak, 1964, p.159.
NOW *Taurocusporites*.

Aneimia tuberculicostalis Stel'mak *in* Pokrovskaya and Stel'mak, 1964, p.259, pl.51, fig.6.
NOW *Costatoperforosporites*.

Aneimia undata Nik. *in* Kuzichkina, 1962, p.113, pl.4, fig.87
nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN. A fossil spore species which has been attributed to the author "Nik." who remains obscure.

Aneimia warmingiana Prantl, 1881 in Lindman, 1903, p.261.
NOW *Anemia warmingii*.

ANEIMIA (TROCHOPTERIS) (Gardner, 1842) Prantl, 1881, p.86.
NOW *Hemianemia (Trochopteris)*.

ANEIMIAEBOTRYS (Fée, 1869a, p.267) Reed, 1947, p.156-157. A recent subgenus of *Hemianemia* containing species with striate, trilete spores (Reed, 1947); formerly the genus *Anemiaebotrys* and *Anemia (Coptophyllum)* Section *Anemiaebotrys*.

Aneimiaebotrys aspéra Fée, 1869, p.267, pl.78, fig.2.
NOW *Hemianemia*.

ANEIMIDIUM Schimper, 1869, p.485. A fossil genus containing fern frond fragments with supposed similarity to *Anemia* (Saporta, 1894; Andrews, 1955).

Aneimidium klipsteini (Dunker, 1848, p.11, pl.9, fig.6-7) Schimper, 1869, p.486. Wealden; formerly *Cyclopteris*.

Aneimidium lobulatum Saporta, 1894, p.129, pl.26, fig.23.
Valanginian.

Aneimidium mantelli (Dunker, 1848, p.10,. pl.9, fig.4-5) Schimper, 1869, p.485-486. Wealden; formerly *Cyclopteris*. Type species.

Aneimidium minutulum Saporta, 1894, p.130, pl.26, fig.13.
Valanginian.

Aneimidium schimperi Heer, 1874, p.36, pl.2, fig.19; pl.15, fig.5c. Cretaceous.

Aneimidium tenerum Saporta, 1894, p.130, pl.25, fig.25. Valanginian.

ANEIMITES (Dawson, 1860, p.461) Ettinghausen, 1865, p.249. A macrofossil genus. Mississippian to Permian. The senior homonym to *Aneimites* Kara-Murza and Romanovskaja.

ANEMIA Swartz, 1806, p.155 nom. conc. emend. Reed, 1947, p.162-172 See Reed, 1947, p.162-163 for synonomy. A recent genus with striate, echinate, trilete spores with echinate striae. The genus can be subdivided into the sections *Oblongifoliae, Hirsutae, Collinae* and *Phyllitides* having spores with increasingly spinate muri, respectively (Reed, 1947).

Anemia abbottii Maxon, 1922, p.48.
NOW *Ornithopteris*.

Anemia adiantifolia (Linnaeus, 1753) Swartz, 1806, p.156.
NOW *Ornithopteris*.

Anemia aethiopica Pichi-Sermolli, 1954, p.654, fig.5. A recent species with anastomising cicatricose, trilete spores (illustrated by Mickel, 1962; Pichi-Sermolli, 1954).

Anemia affinis Baker, 1874, p.525. A recent species in the section Oblongifoliae with caniculate, auriculate spores (illustrated by Reed, 1947). Chandler (1955) reported that this species has large, spinate spores.

Anemia ahenorbarba Christ *in* Schwacke, 1900, p.37.
NOW *Hemianemia*.

Anemia ajatensis (al. *Aneimia)* Bolchovitina, 1959b, p.126, pl. 9, fig.15 ex Bolchovitina, 1961, p.54, pl.15, fig.6a-b; pl.40, fig.14.
NOW *Plicatella*.

Anemia angolensis Alson, 1954, p.9, pl.2-3a. A recent species with canaliculate, conspicuously auriculate, trilete spores (Mickel, 1962); formerly *A. schimperiana* var. *angustiloba*.

Anemia anthriscifolia Schrader, 1824, p.875.
NOW *Hemianemia*.

Anemia anthriscifolia var. *anthriscifolia* Schrader, 1824, p.875. Autonym.
NOW *Hemianemia*.

Anemia anthriscifolia var. *rotundata* Lindman, 1903, p.258, pl.12, fig.1.
NOW *Hemianemia*.

Anemia anthriscifolia var. *simplicior* Christ, 1909, p.351.
NOW *Anemia simplicior*.

Anemia aspera (Fée, 1869, p.267, pl.78, fig.2) Baker, 1873, p.27.
NOW *Hemianemia*.

Anemia asplenifolia Swartz *in* Hooker, 1862, p.16. This species was considered as a variety of *A. adiantifolia* by Hooker and Baker (1868).

Anemia auriculata Bayrich in Bolchovitina, 1961, p.39. A recent species with strongly spinate-baculate, cicatricose, trilete spores (illustrated by Bolchovitina, 1961; Markova, 1964).

Anemia aurifera Verbitskaya, 1962, p.100, pl.7, fig.45a; pl.8, fig.45b-e.
NOW *Plicatella*.

Anemia aurita Swartz, 1806, p.157. A recent species with tuberculately or granulately canaliculate spores (Chandler, 1955) or smoothly canaliculate, auriculate spores (illustrated by Bolchovitina, 1953; Atkinson, 1962 and Planderova, 1975); formerly *Aneimia*.

Anemia barbatula Christ, 1908, p.48. A recent species in the section *Hirsutae* (Reed, 1947).

Anemia bartlettii Mickel, 1962, p.420, pl.26, fig.B. A recent species with auriculate, canaliculate, trilete spores (Mickel, 1962).

Anemia bella Markova *in* Ivanova and Markova, 1961, p.70, pl.17, fig.5a-b.
NOW *Plicatella*.

Anemia biauriculata Markova *in* Ivanova and Markova, 1961, p.68-69, pl.17, fig.3; pl.23, fig.22.
NOW *Plicatella*.

Anemia bifurcata (Singh, 1964) Markova, 1966, p.220 nomen nudum. Page, plate and figures were not cited contrary to Article 33.2, ICBN.
NOW *Plicatella*.

Anemia bipinnata (Linneaus) Mood in Hooker and Baker, 1868, p.432. A recent species not yet verified; formerly *Osmunda*.

Anemia blechnoides Brade, 1951, p.33, pl.12. A recent species with auriculate, canaliculate, trilete spores (Mickel, 1962).

Anemia brandegeea Davenport, 1905, p.20.
NOW *Hemianemia*.

Anemia breateliana Presl in Hooker and Baker, 1868, p.432. A recent species with spinate, cicatricose, trilete spores (illustrated by Bolchovitina, 1961).

Anemia budugica Kuvaeva, 1970, p.43, pl.1, fig.3.
NOW *Cicatricosisporites*.

Anemia buniifolia (Gardner, 1842b) Moore, 1857, p.64.
NOW *Hemianemia*.

Anemia cardiformis Kara-Murza, 1954, p.58, pl.7, fig.15. Possibly a homonym (tautonym) to *A. cardioliformis* Maljavkina, 1958.
NOW *Cicatricosisporites*.

Anemia cardioliniformis Maljavkina, 1958, p.44, pl.1, fig.14. Possibly a tautonym to *Aneimia cardioliformis* Kara-Murza, 1954.
NOW *Cicatricosisporites*.

Anemia caruifolia Presl *in* Hooker and Baker, 1868, p.434. A recent species not yet verified. This species was considered by Hooker and Baker (1868) as a junior synonym to *A. adiantifolia*.

Anemia caucasica Bolchovitina, 1961, pl.15, fig.5a-c; pl.17, fig. 4a-c.
NOW *Plicatella*.

Anemia caudata Kaulfuss. A recent species not yet verified in Hooker and Baker, 1868, p.432.

Anemia (alias *Aneimia) centralis* Swartz in Planderova, 1966, p.68 authorship obscure. This species has irregularly cicatricose spores (illustrated by Planderova, 1975) similar to those of the fossil spore genus *Crassitudisporites*.

Anemia chetaensis Kara-Murza, 1954 in Bolchovitina, 1961, p.53. Orthographic error for *chetensis*.
NOW *Cicatricosisporites*.

Anemia chilifera Bolchovitina in Orlava-Turchina, 1966, p.92. A fossil spore species not yet verified and therefore not transferred to a fossil genus.

Anemia cicutatia Kunze, 1827, p.31.
NOW *Ornithopteris*.

Anemia ciliata Presl in Hooker and Baker, 1868, p.433. A recent species not yet verified; formerly *Aneimia*.

Anemia clavata Markova *in* Ivanova and Markova, 1961, p.74, pl.18, fig.4.
NOW *Plicatella*.

Anemia colimensis Mickel, 1962, p.434, pl.32, fig.B. A recent species.

Anemia collina Raddi, 1819, p.282. A recent species with spinate, baculate, caniculate, trilete spores in the section *Collinae* (illustrated by Bolchovitina, 1959b, 1961; Reed, 1947; Laboiriau, 1949; Planderova, 1975); formerly *Aneimia*.

Anemia colwellensis Chandler, 1955, p.304-306, pl.35, fig.49-53; pl.36, fig.59-64, text-fig.2 I.
NOW *Protormithopteris*.

Anemia cooksonae (Balme, 1957) Bolchovitina, 1961, p.59.
NOW *Contignisporites*.

Anemia cornacea Griseb., 1866, p.272.
NOW *Ornithopteris*.

Anemia cornea Prantl, 1881, p.104. A recent species in the section *Oblongifoliae*.

Anemia crimensis Bolchovitina, 1961, p.55, pl.15, fig.8; pl.17, fig. 7; pl.40, fig.13.
NOW *Plicatella*.

Anemia cristata Markova *in* Ivanova and Markova, 1961, p.78-79, pl.20, fig.1a-b.
NOW *Plicatella*.

Anemia cristata cristata Markova *in* Ivanova and Markova, 1961, p.78-79, pl.20, fig.1a-b. Autonym.
NOW *Plicatella*.

Anemia cristata fenestrata Markova *in* Ivanova and Markova, 1961, p.79, pl.20, fig.2a-b.
NOW *Costatoperforosporites*.

Anemia cugabensis Boug in Bolchovitina, 1961, p.39, 48. A recent species with baculate, cicatricose, trilete spores (illustrated by Bolchovitina, 1961). The author Boug is obscure.

Anemia cuneata Kunze, 1827, p.32.
NOW *Ornithopteris*.

Anemia damazii Christ, 1907, p.792. A recent species in the section Hirsutae.

Anemia delicata Pohl in Bolchovitina, 1961, p.39,48. A recent species with verrucate, trilete spores (illustrated by Bolchovitina, 1961).

Anemia deltoidea Swartz in Hooker and Baker, 1868, p.433. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. tomentosa*.

Anemia densa Radd in Hooker and Baker, 1868, p.435. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. phyllitidis*.

Anemia dentata Gardner in Hooker and Baker, 1868, p.431. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. filiformis*.

Anemia dichotoma Gardner ex Presl, 1845, p.80. A recent species considered as a junior synonym to *Hemianemia buniifolia* by Mickel (1962).

Anemia dimorphostachys Baker, 1893, p.522.
NOW *Hemianemia*.

Anemia dissecta Presl, 1830, pl.11, fig.4. A recent species; formerly *Aneimia*.

Anemia diversifolia Schrader, 1824, p.864. A recent species in the section *Collinae* (Reed, 1947).

Anemia domesii Christ in Bolchovitina, 1961, p.38. A recent species with obscure authorship.

Anemia donnell-smithii Maxon, 1909, p.43. A recent species in the section *Oblongifoliae* (Reed, 1947).

Anemia dorsostriata Bolchovitina, 1956, p.60, pl.7, fig.97a-b.
NOW *Contignisporites*.

Anemia dregeana Kunze, 1836, p.493. A recent species in the section Oblongifoliae (Reed, 1947) with scallopped cicatricose, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961; Nayar, 1964). Nayar (1964, 1968) indicated that there are hemispherical to peg-like verrucae on the muri.

Anemia elegans Gardner, 1842a, p.74, pl.4.
NOW *Hemianemia*.

Anemia elongata (Newberry) in Bolchovitina, 1961, p.36 nomen nudum. The year, page, plate, and figure number were not cited contrary to Article 33, ICBN.
NOW *Protornithopteris*.

Anemia eocenica Berry, 1916, p.164, pl.9, fig.7; pl.10, fig.2; pl.11 fig.1-2.
NOW *Protornithopteris*.

Anemia exiliformis Bolchovitina in Khlonova, 1971, p.87 nomen nudum. Possibly misattributed authorship for *Aneimia exiliformis* (Maljavkina) Fillipova.
NOW *Cicatricosisporites exilioides*.

Anemia exiolioides (Maljavkina, 1949) Bolchovitina, 1953, p.37, pl.4 fig.7-8 in Bolchovitina, 1959b, p.125.
NOW *Cicatricosisporites*.

Anemia exilioides forma *exilioides* (Maljavkina, 1949) Bolchovitina, 1953, p.37, pl.4, fig.7-8 (autonym).
NOW *Cicatricosisporites*.

Anemia exilioides forma *sibirica* Khlonova, 1960, p.22, pl.2, fig.15-17.
NOW *Plicatella khlonovae*.

Anemia eximia Taubert, 1896, p.422.
NOW *Hemianemia*.

Anemia expansa Shugayevskaja, 1966, p.116, pl.1, fig.1.
NOW *Plicatella*.

Anemia ferruginea Humboldt, Bonpland and Kunth, 1815, p.32. A recent species with auriculate, canaliculate, trilete spores (Mickel, 1962).

Anemia ferruginea var. *ferruginea* Humboldt, Bonpland and Kunth, 1815, p.32 (autonym).

Anemia ferruginea var. *ahenobarba* (Christ *in* Schwacke, 1900, p.37) Mickel, 1962, p.430-431.

Anemia filiformis (Savigny *in* Lamarck, 1797, p.652) Swartz, 1806, p.156. A recent species in the section *Hirsutae* with cicatricose, reduced auriculate, trilete spores (illustrated by Bolchovitina, 1961); formerly *Osmunda*.

Anemia flexuosa (Savigny) Swartz, 1806, p.156.
NOW *Hemianemia*.

Anemia flexuosa forma *flexuosa* (Savigny) Swartz, 1806, p.156.
NOW *Hemianemia*.

Anemia flexuosa forma *genuina* Hieron, 1909, p.290.
NOW *Hemianemia*.

Anemia flexuosa forma *transitoria* Rosenstock, 1907, p.158.
NOW *Hemianemia*.

Anemia (alias *Aneimia) fraxinifolia* Raddi in Planderova, 1975, p.63. A recent species with spinate, cicatricose, trilete spores (illustrated by Bolchovitina, 1961; Planderova, 1975). Authorship obscure; formerly *Aneimia*.

Anemia fremontii Knowlton, 1917, p.84-85, pl.31, fig.6; pl.32, fig. 1-3.
NOW *Protornithopteris*.

Anemia fremontii forma *fertilis* Andrews *in* Andrews and Pearsall, 1941, p.168, pl.1, fig.105; pl.2, fig.6-12; pl.5, fig.33; pl.6, fig.36-38.
NOW *Protornithopteris*.

Anemia fremontii forma *fremontii* Knowlton, 1917, p.84-85, pl. 31, fig.6; pl.32, fig.1-3. Autonym.
NOW *Protornithopteris*.

Anemia frentonii Knowlton *in* Bolchovitina, 1961, p.36. Orthographic error for *Anemia fremontii*.

Anemia fulva (Cavanilles, 1801) Swartz, 1806, p.156.
NOW *Hemianemia*.

Anemia fulva var. *fulva* (Cavanilles, 1801) Swartz, 1806, p.156
Autonym.
NOW *Hemianemia*.

Anemia fulva var. *mexicana* Presl, 1845, p.85.
NOW *Hemianemia (?Ornithopteris)*.

Anemia gardneri Hooker, 1837, p.190.
NOW *Hemianemia*.

Anemia gardneriana Presl in Hooker and Baker, 1868, p.432. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym to *A. glarosa*.

Anemia genuina (Bolchovitina, 1953, p.35, pl.3, fig.25-26)
Bolchovitina, 1961, p.56. Bolchovitina, 1959b, p.126, invalidly recombined the species name.
NOW *Nodosisporites*.

Anemia glabrata Bolchovitina, 1961, p.58, pl.16, fig.8a-b.
Punctate-granulate spore. Bolchovitina (1961) compared it to *Anemia poolensis* Chandler (1955).
NOW *Maculatisporites*.

Anemia glareosa Gardner, 1844, p.70.
NOW *Hemianemia*.

Anemia glaziovii Fée, 1869, p.207, pl.74, fig.2. A recent species considered as a junior synonym to *Hemianemia gardneri* (Mickel, 1962).

Anemia globulifera Bolchovitina, 1961, p.55, pl.15, fig.10.
NOW *Plicatella*.

Anemia glomerata in Hooker and Baker, 1868, p.460. A recent species not yet verified.

Anemia gomesii Christ, 1907, p.791. A recent species in the section Oblongifoliae (Reed, 1947) considered as a junior synonym to *Hemianemia lunuaginosa* by Mickel (1962).

Anemia gracilis Schrader in Hooker and Baker, 1868, p.433. A recent species not yet verified. Hooker and Baker (1868) considered this species as a form of *A. hirsuta*.

Anemia gracillima (Lesquereux, 1883, p.137, pl.21, fig.8) Cockerell, 1908, p.76. Miocene; formerly *Adiantites*. A macrofossil species.
NOW *Protornithopteris*.

Anemia grandifolia Knowlton, 1924, p.78, pl.5.
NOW *Protornithopteris*.

Anemia guatemalensis Maxon, 1909, p.46.
NOW *Hemianemia*.

Anemia haydenii (Lesquereuz, 1878, p.59, pl.5, fig.13) Cockerell, 1909, p.142. A macrofossil species not yet verified and therefore not transferred to a fossil genus; formerly *Aneimia, Gymnogramma*.

Anemia herzogii Rosenstock, 1913, p.24. A recent species in the section *Collinae* (Reed, 1947).

Anemia hesperia Knowlton, 1916, p.332.
NOW *Protornithopteris*.

Anemia heterodoxa Christ, 1899, p.45.
NOW *Hemianemia*.

Anemia hilifera Bolchovitina, 1961, p.51, pl.14, fig.3.
NOW *Contignisporites*.

Anemia hirsuta (Linnaeus, 1753, p.1064) Swartz, 1806, p.156. A recent species in the section *Hirsutae* with cicatricose, slightly auriculate, trilete spores (illustrated by Reed, 1947; Atkinson, 1962; Bierhorst, 1980). Bolchovitina (1961) illustrated a densely spinate, cicatricose, trilete spore for this species. Tschudy and Tschudy (1965) illustrated a cicatrose spore with verrucate to scalloped muri. Devi and Nayar (1969) indicated that the muri have smooth surfaces. Planderova (1975) illustrated cicatricose spores with finely papillate muri. This variability suggests that either this species has great variation in spore ornament or that more than one taxon has been examined by the various authors; formerly *Aneimia, Osmunda*.

Anemia hirsuta var. *hirsuta* (Linnaeus, 1753, p.1064) Swartz, 1806, p.156 (autonym).

Anemia hirsuta var. *humboltjana* Hieron, 1905, p.566.

Anemia hirsuta var. *schwackeana* Christ, 1902, p.695.

Anemia hirsuta var. *subfiliformis* Christ, 1902, p.695.

Anemia hirta (Linnaeus, 1753, p.1064) Swartz, 1806, p.155. A recent species in the section *Collinae* with spinate, canaliculate, trilete spores (illustrated by Bolchovitina, 1961; Planderova, 1975); formerly *Aneimia*.

Anemia hispida Kunze *in* Hooker and Baker, 1868, p.433. A recent species not yet verified.

Anemia humilis (Cavanilles, 1801, p.69, pl.592, fig.3) Swartz, 1806, p.156. A recent species in the section *Oblongifoliae* with canaliculate, auriculate spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Osmunda, Aneimia*.

Anemia imbricata Sturm, 1859, p.205. A recent species with canaliculate, auriculate, trilete spores (illustrated by Knox, 1938; Pokrovskaya, 1950; Bolchovitina, 1961); formerly *Aneimia*.

Anemia imperfecta (Maljavkina, 1949) Bolchovitina, 1961, p.56.
NOW *Cicatricosisporites*.

Anemia incisa Schrader in Hooker and Baker, 1868, p.433. A recent species not yet verified.

Anemia insignis Markova *in* Ivanova and Markova, 1961, p.76, pl.19, fig.3a-b.
NOW *Plicatella*.

Anemia insignis insignis Markova *in* Ivanova and Markova, 1961, p.76, pl.19, fig.3a-b (autonym).
NOW *Plicatella*.

Anemia insignis media Markova *in* Ivanova and Markova, 1961, p.77, pl.19, fig.4a-b; pl.33, fig.13-14.
NOW *Plicatella*.

Anemia insignis minor Markova *in* Ivanova and Markova, 1961, p.77, pl.19, fig.5a-b.
NOW *Plicatella*.

Anemia intermedia Copeland ex Jones, 1929, p.123.
NOW *Hemianemia*.

Anemia jacutica (alias *Aneimia)* Fradkina, 1967, pl.1,fig. 9; pl. 2, fig.1-3.
NOW *Plicatella.*

Anemia jaliskana Maxon, 1909, p.44. A recent species in the section Hirsutae with cicatricose, auriculate, trilete spores (illustrated by Bolchovitina, 1961).

Anemia karuinskyana Presl, 1845, p.83.
NOW *Hemianemia.*

Anemia kaulfussii (Heer, 1861, p.409, pl.8, fig.21; pl.9, fig.1) Crié, 1878, p.22. This macrofossil species was temporarily placed in *Anemia* by Crié (1878) and then replaced in *Lygodium* by Gardner and Ettinghausen, 1880, p.47. Jongmans, 1957, p.215 retained it in *Aneimia.*

Anemia krimensis Bolchovitina, 1959b, p.126, pl.9, fig.14 nomen nudum. Hauterivian. This species lacks a diagnosis or description contrary to Article 32, ICBN. A synonym and/or tautonym to *Anemia crimensis.*

Anemia laciniata Link, 1933. A recent species with spinate, cicatricose, trilete spores (illustrated by Bolchovitina, 1961; Popov and Kupchinskaya, 1960).

Anemia lancea Christ, 1907, p.791. A recent species in the section *Phyllitidae* (Reed, 1947).

Anemia lanceolata Knowlton, 1930, p.29, pl.8, fig.10.
NOW *Protornithopteris.*

Anemia langsdorffiana Presl, 1845, p.89.
NOW *Anemia phyllitidis.*

Anemia lanipes Christensen, 1931, p.65 ex Christensen, 1932, p.177, pl.71, fig.1-3.
NOW *Hemianemia.*

Anemia lanuginosa Bongard ex Sturm, 1859, p.210.
NOW *Hemianemia.*

Anemia laxa Lindman, 1903, p.261, pl.13. A recent species in the section *Hirsutae* (Reed, 1947); formerly *Aneimia.*

Anemia longifolia Raddi, 1825, p.69, pl.8.
NOW *Anemia phyllitidis.*

Anemia longispicula Bolchovitina, 1959b, p.126, pl.9, fig.11 nomen nudum. Albian-Cenomanian. Neither diagnosis nor description was given contrary to Article 38, ICBN.

Anemia longistipes (Liebm., 1849, p.301) Christ, 1905, p.53. A recent species with spinate, cicatricose, trilete spores (illustrated by Bolchovitina, 1961; Planderova, 1975). Reed (1947) considers this species as the junior synonym to *Anemia pastinacaria;* formerly *Anemia pilosa longistipes.*

Anemia luetzelburgii Rosenstock, 1924, p.94.
NOW *Hemianemia.*

Anemia macrophylla Sturm in Hooker and Baker, 1868, p.435. A recent species not yet verified.

Anemia macrorhyza (Maljavkina, 1949) Bolchovitina, 1953, p.39, pl.4, fig.16 Bolchovitina, 1959b, p.128. Verbitskaya (1962, p.97) spelled this species name as *macrorhysa,* while Romanovskaja (1966, p.155) spelled it as *macrorrhyza.*
NOW *Plicatella.*

Anemia madagascariensis Christensen, 1928, p.216 ex Christensen, 1932, p.177, pl.72, fig.1-4.
NOW *Hemianemia.*

Anemia makrinii Maxon, 1918, p.199.
NOW *Ornithopteris.*

Anemia mandioccana Raddi, 1819, p.282. A recent species in the section *Collinae* with spinate, baculate, cicatricose, trilete spores (illustrated by Pokrovskaya, 1950; Leschik, 1955; Bolchovitina, 1961).

Anemia mandioccaniformis (alias *Aneimia)* Khlonova, 1960, p.24, pl.2, fig.21.
NOW *Cicatricosisporites.*

Anemia matesovae Bolchovitina, 1959b, p.126, pl.9, fig.16 ex Bolchovitina, 1961, p.57, pl.16, fig.5a-c; pl.18, fig.3; pl.40, fig.15.
NOW *Plicatella.*

Anemia mexicana Klotzsch, 1844, p.520.
NOW *Ornithopteris.*

Anemia (alias *Aneimia) microphylla* Swartz and Fée *in* Planderova, 1975, p.67. Authorship obscure. This species has finely spinate, cicatricose spores; formerly *Aneimia.*

Anemia millefolia (Gardner, 1842b) Presl, 1845, p.80.
NOW *Hemianemia.*

Anemia milticostata Verbitskaya *in* Bolchovitina and Kotova, 1963, p. 81 nomen nudum. Orthographic error for *Anemia multicostata.*

Anemia minaciangula Markova, 1961, p.75, pl.18, fig.5.
NOW *Plicatella.*

Anemia mitriformina Korgenevskaja *in* Verbitskaya, 1962, p.100, pl.9, fig.46a-f.
NOW *Contignisporites.*

Anemia modica (alias *Aneimia)* Khlonova, 1960, p.23, pl.2, fig. 19.
NOW *Plicatella.*

Anemia mosbyensis Knowlton, 1918, p.28, pl.8, fig.9.
NOW *Protornithopteris.*

Anemia mosquensis Bolchovitina, 1959b, p.126, pl.9, fig.19 ex Bolchovitina, 1961, p.57, pl.16, fig.6a-b; pl.40, fig.18.
NOW *Striatella.*

Anemia multifida B. author obscure in Bolchovitina, 1961, p.39,49. A recent species with canaliculate, trilete spores (illustrated by Bolchovitina, 1961).

Anemia multifidiformis Bolchovitina, 1961, p.58, pl.16, fig.7.
NOW *Radialisporis.*

Anemia multiformina Verbitskaya *in* Khlonova, p.86 nomen nudum. Orthographic error for *Anemia mitriformina.*

Anemia munchii Christ, 1907, p.792. A recent species in the section *Phyllitides* (Reed, 1947) with spinate cicatricose, trilete spores illustrated (Bierhorst, 1980).

Anemia myriophylla Christ, 1907, p.793.
NOW *Hemianemia*.

Anemia nana Baker, 1893, p.522.
NOW *Hemianemia*.

Anemia nankingensis Zhang, 1962, p.261, pl.2, fig.17a-c.
NOW *Cicatricosisporites*.

Anemia nervosa Pohl *in* Sturm, 1859, p.193.
NOW *Anemia phyllitidis*.

Anemia nigerica Alston, 1956, p.6. A recent species having spores with muri with irregular sides and foveolate surfaces (Nayar, 1964, 1968; Devi and Nayar, 1969). Devi (1975) and Nayar (1964) illustrated spores that are canaliculate and auriculate for this species.

Anemia nipeensis Benedict, 1911, p.41, pl.2.
NOW *Ornithopteris*.

Anemia obliqua Schrader, 1824, p.864.
NOW *Anemia phyllitidis*.

Anemia oblonga Sturm, 1859, p.206.
NOW *Hemianemia tomentosa*.

Anemia oblongifolia (Cavanilles, 1801, p.69, pl.592, fig.3) Swartz, 1806, p.156. A recent species in the section *Oblongifoliae* with large spinately, cicatricose, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961; Tschudy and Tschudy, 1965); formerly *Osmunda*.

Anemia oblongifolia var. *oblongifolia* (Cavanilles, 1801, p.64, pl.592, fig.2) Swartz, 1806, p.156 (autonym).

Anemia oblongifolia var. *presliana* (Prantl, 1881, p.104) Farwell, 1931, p.306; formerly *Anemia presliana*.

Anemia obovata (Underwood) Maxon, 1909, p.42. A recent species in the section *Hirsutae* (Reed, 1947).

Anemia occidentalis Knowlton, 1918, p.285, pl.54, fig.2.
NOW *Protornithopteris*.

Anemia organensis Rosenstock, 1924, p.95. A recent species in the section *Oblongifoliae* (Reed, 1947) with auriculate, canaliculate spores (Mickel, 1962).

Anemia ouroptretana Christ *in* Schwacke, 1900, p.36. A recent species in the section *Collinae*.

Anemia pacifica Bolchovitina, 1958, p.109-112, fig.8 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN. This species may be the same as *Pelletiera pacifica* described by Bolchovitina (1961).
NOW *Cicatricosisporites*.

Anemia pallida Gardner, 1844, pl.70. A recent species in the section *Hirsutae;* formerly *Aneimia*.

Anemia palmarum Lindman, 1903, p.261-262, pl.14. A recent species in the section *Collinae;* formerly *Aneimia*.

Anemia paradoxa Bolchovitina, 1961, p.57, pl.16, fig.4.
NOW *Cicatricosisporites*.

Anemia pastinacaria Moritz ex Prantl, 1881, p.110. A recent species in the section *Hirsutae* with spinate, cicatricose, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1959b, 1961; Tschudy and Tschudy, 1965). Smoothly caniculate, auriculate spores are illustrated by Bolchovitina (1953); formerly *Aneimia*.

Anemia perforata Markova, 1961, p.82-83, pl.22, fig.1a-b. Junior homonym to *Anemia perforata* Baronova *et al.*, 1957.
NOW *Costatoperforosporites markovae*.

Anemia perforata Baronova, Nemkova and Kondratiev, 1957, p.202, pl.2 fig.22. Senior homonym to *Anemia perforata* Markova, 1957.

Anemia perplexa Hollick *in* Newberry, 1898, p.3, pl.15, fig.1a; pl.16, fig.3; pl.63, fig.14. Cretaceous. A macrofossil species not yet verified and therefore not transferred to a fossil genus.

Anemia perrieriana Christensen, 1932, p.178, pl.72, fig.5-6.
NOW *Hemianemia*.

Anemia phyllitidiformis (alias *Aneimia)* Khlonova, 1960, p.23, pl.2, fig.18. Antonescu, 1973, pl.7, fig.6 simultaneously placed this species in *Anemia* and *Cicatricosisporites*.
NOW *Nodosisporites*.

Anemia phyllitidis (alias *Aneimia)* (Linnaeus, 1753, p.1064) Swartz, 1806, p.155. A recent species in the section *Phyllitides* with densely spinate, cicatricose spores which compare closely to *Nodosisporites spinosus* while some specimens lack the spines (illustrated by Radforth, 1938; Reed, 1947; Couper, 1958; Atkinson, 1962; Tschudy and Tschudy, 1965; Devi, 1975; Nayar, 1964, 1968; Kremp and Kawasaki, 1972; Planderova, 1975); formerly *Osmunda, Aneimia.* Type species.

Anemia phyllitidis forma *aurito-lobata* Rosenstock, 1907, p.159

Anemia phyllitidis var. *carytoidea* Christ, 1902, p.692.

Anemia phyllitidis var. *langsdorffiana* (Presl, 1845, p.89) Christ, 1905, p.53-54; formerly *Anemia langsdorffiana.*

Anemia phyllitidis var. *longifolia* (Raddi, 1825, p.69, pl.8) Lansd. et Fiscch. *in* Hieron., 1897, p.411; formerly *Anemia longifolia.*

Anemia phyllitidis forma *minor* Rosenstock ex Hassl., 1928, p.85.

Anemia phyllitidis var. *nervosa* (Pohl *in* Sturm, 1859, p.193) Christ, 1908, p.52; formerly *Anemia nervosa.*

Anemia phyllitidis var. *obliqua* (Schrader, 1824, p.864) Krug, 1897, p.145; formerly *Anemia obliqua.*

Anemia phyllitidis var. *phyllitidis* (Linnaeus, 1753, p.1064) Swartz, 1806, p.155 (autonym).

Anemia phyllitidis var. *pygmaea* Christ, 1908, p.52, pl.7.

Anemia phyllitidis forma *subtripinnatifida* Rosenstock, 1904, p.233.

Anemia phyllitidis forma *transiens* Rosenstock ex Hassl., 1928, p.85.

Anemia phyllitidis forma *transitoria* Rosenstock, 1907, p.159.

Anemia phyllitidis var. *tweedieana* (Hooker, 1854, pl.906) Hassl., 1928, p.85; formerly *Anemia tweediana.*

Anemia pilosa Presl in Hooker and Baker, 1868, p.431. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. oblongifolia.*

Anemia pilosa longistipes Liebm., 1849, p.301 in Reed, 1947, p.165. A recent species and subspecies not yet verified.

Anemia piskranensis Baikovskaja, 1956, p.73,75,109 in Jongmans, *1957, p.216. Late Cretaceous. A macrofossil species not yet verified; formerly Aneimia.*

Anemia pohliana Sturm, 1859, p.195. A recent species in the section Collinae (Reed, 1947).

Anemia poolensis Chandler, 1955, p.295-305, pl.32, fig.1-10; pl.33, *fig.14-22, 24-31; pl.34; pl.35, fig.41; pl.36, fig.54-58, text-fig.1A-H, 2A-H.*
NOW Protornithopteris.

Anemia portoricensis Maxon, 1909, p.48.
NOW *Ornithopteris.*

Anemia praecipia Verbitskaya, 1962, p.98, pl.7, fig.42a-b.
NOW *Plicatella.*

Anemia presliana Prantl. A recent species not yet verified; formerly *Aneimia.*

Anemia proxima Christensen, 1936, p.86, pl.20, fig.1-2. A recent species in the section *Hirsutae.*

Anemia pschekhaensis Bolchovitina, 1961, p.55, pl.15, fig.9.
NOW *Plicatella.*

Anemia pseudaurifera Bolchovitina, 1953, p.38, pl.4, fig.13 in Bolchovitina, 1959b, p.126.
NOW *Cicatricosisporites.*

Anemia pseudaurifera forma *pseudaurifera* Bolchovitina, 1953, p.38, pl.4, fig.13 (autonym).
NOW *Cicatricosisporites.*

Anemia pseudaurifera forma *siberica* Khlonova, 1960, p.24, pl. 2, fig.20.
NOW *Cicatricosisporites.*

Anemia pseudoaurifera Bolchovitina *in* Ercegovac and Andelkovic, 1972 p.103 nomen nudum. Orthographic error for *Anemia pseudaurifera*.

Anemia pseudomacrorhyza Markova *in* Ivanova and Markova, 1961, p.67-68, pl.17, fig.2a-b.
NOW *Plicatella*.

Anemia pseudotripartita Bolchovitina, 1961, p.53, pl.15, fig.3a-c.
NOW *Cicatricosisporites*.

Anemia pulchra Pohl *in* Prantl, 1881, p.109. A recent species in the section *Hirsutae*.

Anemia pullata Shugayevskaja, 1966, p.116-117, pl.1, fig.5.
NOW *Plicatella*.

Anemia pumila Klotzsch *in* Hooker and Baker, 8186, p.431. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. oblongifolia* with canaliculate, auriculate, trilete spores (illustrated by Bolchovitina, 1961).

Anemia pyramidina (alias *Aneimia)* Maljavkina *in* Filippova, 1957, pl.65, fig.18; also in Komarova, 1973, p.123. Komarova (1973) attributes the authorship to "(Mal.) Mart".
NOW *Plicatella*.

Anemia pyrenaea Taubert, 1896, p.422.
NOW *Hemianemia*.

Anemia raddiana Link, 1833, p.144. A recent species with auriculate slightly verrucate, canaliculate, trilete spores (Mickel, 1962) formerly *Aneimia*.

Anemia radiata (Krutzsch, 1959b) Stanley, 1965, p.259.
NOW *Radialisporis*.

Anemia radicans Raddi, 1819, p.282. A recent species in the section *Collinae* with spinate-baculate, cicatricose, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1959b, 1961; Planderova, 1975); formerly *Aneimia*.

Anemia recurva Kara-Murza *in* Bolchovitina, 1961, p.40 nomen nudum. Albian. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Anemia remissa (alias *Aneimia)* Bolchovitina, 1956, p.58, pl.7, fig.92a-c.
NOW *Cicatricosisporites.*

Anemia repens Raddi, 1819, p.282. A recent species in the section *Collinae* (Reed, 1947).

Anemia retrofrexa Brade, 1938, p.9, pl.5.
NOW *Hemianemia.*

Anemia robusta Hollick, 1902, p.145, pl.3, fig.1.
NOW *Protornithopteris.*

Anemia rosei Maxon, 1909, p.46.
NOW *Hemianemia.*

Anemia rotundifolia Schrader, 1824, p.865. A recent species in the section *Collinae* with faint muri bearing clavate or papillose spines (Reed, 1947; Bolchovitina, 1961; Atkinson, 1962; Nayar, 1968; Planderova, 1975) similar to spores of *Nodosisporites* and *Anemiidites;* formerly *Aneimia.*

Anemia rubrostipes Pohl *in* Martius, 1859, p.202. Mickel, 1962 considered this species to be a junior synonym to *Anemia ferruginea* var. *ferruginea.*

Anemia rutaefolia Martius, 1834, p.112, pl.55, fig.1.
NOW *Hemianemia.*

Anemia (alias *Aneimia) sachrae mortae* Christ in Planderova, 1975, p.62. A recent species and subspecies not yet verified. Planderova (1975) illustrated densily spinulated striate spores.

Anemia santae-martae Christ, 1909, p.791. A recent species in the section *Oblongifoliae* with caniculate, auriculate spores (illustrated by Reed, 1947).

Anemia schimperiana Presl, 1845, p.84.
NOW *Hemianemia.*

Anemia schimperiana var. *angustiloba* Bonaparte, 1915, p.133.
NOW *Anemia angolensis.*

Anemia schimperiana var. *schimperiana* Presl, 1845, p.84.
Autonym.
NOW *Hemianemia.*

Anemia schimperiana var. *wightiana* Gardner, 1847, p.10, pl.1.
NOW *Anemia wightiana*.

Anemia schraderiana Martius, 1834, p.58. A recent species; formerly *Aneimia*.

Anemia schwackeana Christ, 1897, p.351. Mickel, 1962 considered this species as a junior synonym to *Hemianemia eximia*.

Anemia seemannii Hooker in Hooker and Baker, 1868, p.431. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym to *A. oblongifolia*.

Anemia sessilis (Jeanpert, 1910, p.403) Christensen, 1911, p.371.
NOW *Hemianemia*.

Anemia sibirica Kara-Murza, 1954 nomen nudum ex Bolchovitina, 1961, p.52, pl.14, fig.6a-b; pl.17, fig.2a-c.
NOW *Cicatricosisporites*.

Anemia silvestris Bolchovitina, 1961, p.58, pl.17, fig.8a-d.
NOW *Plicatella*.

Anemia simii Tardieu, 1951, p.208. A recent species with canaliculate, conspicuously auriculate, trilete spores (Mickel, 1962).

Anemia simii var. *simii* Tardieu, 1951, p.208 (autonym).

Anemia simii var. *argustiloba* (Bonaparte) Pichi-Sermolli, 1954, p.654.
NOW *Anemia angolensis*.

Anemia simplicior (Christ, 1909, p.351) Mickel, 1962, p.418. A recent species with auriculate, subverrucate, canaliculate, trilete spores (Mickel, 1962); formerly *Anemia anthriscifolia* var. *simplicior*, *Hemianemia anthriscifolia* var. *simplicior*.

Anemia smithii Brade, 1929, p.95, pl.3.
NOW *Hemianemia*.

Anemia sorbifolia Schrader in Hooker and Baker, 1868, p.435. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. phyllitidis*.

Anemia speciosa Presl, 1845, p.89.
NOW *Ornithopteris*.

Anemia striosporites Rouse, 1962, p.196, pl.4, fig.3-4.
NOW *Cicatricosisporites*.

Anemia subcretacea (Saporta, 1868) Gardner and Ettinghausen, 1880, p.45-47.
NOW *Protornithopteris*.

Anemia sujfunensis Bolchovitina, 1961, p.59, pl.17, fig.5a-c.
NOW *Contignisporites*.

Anemia supercretacea Hollick, 1902, p.145, pl.3, fig.6-7.
NOW *Protornithopteris*.

Anemia supercretacea var. *conformis* Hollick, 1930, p.40, pl.1, fig.6-7.
NOW *Protornithopteris*.

Anemia supercretacea var. *supercretacea* Hollick, 1902, p.145, pl.3, fig.6-7 (autonym).

Anemia symskiensis Markova *in* Ivanova and Markova, 1961, p.81-82, pl.21, fig.1a-c, 2, 3a-c, 4a-b, 5a-b, 6.
NOW *Plicatella*.

Anemia tenella (Cavanilles, 1801, p.69, pl.592, fig.1) Swartz, 1806, p.156. A recent species in the section *Hirsutae* with cicatricose, auriculate, trilete spores as illustrated by Bolchovitina (1961). Baculately cicatrose spores are illustrated by Lindman (1903); formerly *Aneimia*.

Anemia tenera Pohl. A recent species not yet verified; formerly *Anemia ciliata tenera*, *Aneimia*.

Anemia tenuifolia Presl, 1848, p.327.
NOW *Hemianemia buniifolia* var. *tenuifolia*.

Anemia tomentosa (Savigny) Swartz, 1806, p.157.
NOW *Hemianemia*.

Anemia tomentosa var. *anthriscifolia* (Schrader) Mickel, 1962, p.424.
NOW *Hemianemia anthriscifolia*.

Anemia tomentosa var. *australis* Mickel, 1962, p.426, pl.29, fig.A.

Anemia tomentosa var. *mexicana* (Presl, 1845, p.84) Mickel, 1962, p.427.
NOW *Hemianemia*.

Anemia tomentosa var. *sessilis* Jeanpert, 1910, p.403.
NOW *Hemianemia sessilis*.

Anemia tomentosa var. *subsimplex* Christ, 1902, p.675.
NOW *Hemianemia*.

Anemia tomentosa var. *tomentosa* (Savigny *in* Lamarck, 1797) Swartz, 1806, p.157 (autonym).

Anemia trichacantha (Maljavkina, 1949) Markova *in* Ivanova and Markova, 1961, p.73. Markova did not transfer all infraspecific taxa.
NOW *Plicatella*.

Anemia trichacantha var. *dissecta* Markova *in* Ivanova and Markova, 1961, p.73, pl.18, fig.3a-c.
NOW *Plicatella*.

Anemia trichorhiza Gardner *in* Hooker, 1852, p.876.
NOW *Hemianemia*.

Anemia trichorhiza var. *paraguariensis* Hassl, 1928, p.83.
NOW *Hemianemia*.

Anemia trichorhiza var. *trichorhiza* Gardner *in* Hooker, 1852, p.83 (autonym).
NOW *Hemianemia*.

Anemia tricornitata (Weyland and Greifeld, 1953) Stanley, 1965, p.259.
NOW *Plicatella*.

Anemia tricostata Bolchovitina, 1953, p.38, pl.4, fig.9-12.
NOW *Plicatella*.

Anemia tricuspidata (Weyland and Krieger, 1953) Bolchovitina *in* Bolchovitina, 1961, p.39, fig.6.
NOW *Plicatella*.

Anemia trigona (alias *Aneimia)* (Maljavkina) Kara-Murza in Pokrovskaya, 1966, v.2, p.204. A fossil spore species not yet verified and therefore not transferred to a fossil genus.

Anemia tripartita Bolchovitina, 1953, p.38, pl.4, fig.14-15.
NOW *Plicatella*.

Anemia tripinnata Copeland, 1932, p.24, pl.1.
NOW *Hemianemia*.

Anemia tschulymensis Bolchovitina, 1959b, p.126, pl.9, fig.6 ex Bolchovitina, 1961, p.56-57, pl.16, fig.2; pl.40, fig.6.
NOW *Taurocusporites*.

Anemia tweediana Hooker, 1854, pl.906.
NOW *Anemia phyllitidis*.

Anemia ulei Christ *in* Schwacke, 1900, p.36. A recent species in the section *Collinae*.

Anemia underwoodiana Maxon in Atkinson, 1962, p.264. A recent species not yet verified with spinate, cicatricose spores. Similar to *Nodosisporites* (illustrated by Atkinson, 1962).

Anemia unica Markova *in* Ivanova and Markova, 1961, p.79-80, pl.20, fig.3a-b.
NOW *Plicatella*.

Anemia vellea Schrader in Hooker and Baker, 1868, p.432. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. collina*.

Anemia vespertilio Schrader in Hooker and Baker, 1868, p.432. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *A. schraderiana*.

Anemia villosa Humbolt and Bonpland ex Willdenow, 1810, p.92.
NOW *Hemianemia*.

Anemia warmingii Prantl, 1881, p.113. A recent species in the section *Collinae;* formerly *Aneimia warmingiana*.

Anemia wettsteinii Christ, 1908, p.48, pl.9, fig.3-6. A recent species in the section *Hirsutae* with verrucate, caniculate, trilete spores (illustrated by Reed, 1947).

Anemia wightiana Gardner, 1847, p.10, pl.1. A recent species with canaliculate, auriculate, trilete spores (Mickel, 1962); formerly *Hemianemia schimperiana, Anemia schimperiana*.

Anemia wrightii Baker, 1868, p.435.
NOW *Ornithopteris*.

ANEMIA (ANEMIORRHIZA) (Smith, 1854) Mickel, 1962, p.351, 388.
Subgenus of *Anemia*.

ANEMIA (COPTOPHYLLUM) (Gardner, 1842b) Presl, 1845, p.79; formerly the recent genus *Coptophyllum*.
NOW *Hemianemia (Coptophyllum)*.

ANEMIA (TROCHOPTERIS) (Gardner, 1842a) Sturm, 1859, p.187.
Subgenus of *Anemia*, considered by Reed (1947) as a *subgenus of Hemianemia;* formerly the genus *Trochopteris*.
NOW *Hemianemia (Trochopteris)*.

ANEMIAEBOTRYS Fée, 1869, p.267. A recent genus.
NOW *Hemianemia (Anemiaebotrys)*.

Anemiaebotrys asperaw Fée, 1869, p.267, pl.78, fig.2.
NOW *Hemianemia*. Type species.

ANEMIDICTYON Smith *in* Hooker, 1842, pl.103. An obligate junior synonym of the recent genus *Anemia*.

Anemidictyon phyllitidis (Linnaeus, 1753) Smith *in* Hooker, 1842, p.103. This species is the same as the type species of *Anemia*.
NOW *Anemia*. Type species.

ANEMIRORHIZA Smith, 1854, p.243. A junior synonym of the recent genus *Ornithopteris* (Reed, 1947).

Anemirorhiza adiantifolia (Linnaeus, 1753) Smith, 1854, p.243.
NOW *Ornithopteris*. Type species.

ANOGRAMMA Link, 1841, p.137. A recent genus.

Anogramma leptophylla (Linnaeus) Link, 1841, p.137. A recent species with striate trilete spores (illustrated by Kremp and Kawasaki, 1972) similar to some members of *Cicatricosisporites;* formerly *Polypodium*.

ASPLENIUM

Asplenium subcretacea Saporta, 1868, p.315, pl.23, fig.4.
NOW *Protornithopteris*.

BAIEROPSIS Fontaine, 1889, p.207. This fossil genus was erected to contain ginkophyte foliage (Andrews, 1955); however, Berry (1911b) transferred the type to *Acrostichopteris*.

Baieropsis adiantifolia Fontaine, 1889, p.211, pl.92, fig.8-9.
NOW *Acrostichopteris*.

Baieropsis expansa Fontaine, 1889, p.207, pl.89, fig.3; pl.90, fig. 2; pl.92, fig.5.
NOW *Acrostichopteris*. Type species.

Baieropsis foliosa Fontaine, 1889, p.209, pl.93, fig.4-6.
NOW *Acrostichopteris*.

Baieropsis pluripartita Fontaine, 1889, p.208, pl.89, fig.4, pl.90, fig.2-5; pl.91, fig.1,3-4,7; pl.102, fig.1-2,6.
NOW *Acrostichopteris*.

BLECHNUM Linnaeus, 1753, p.1077. A recent genus.

Blechnum brachylobatus Bolchovitina, 1953, p.59, pl.9, fig.12.
Placed simultaneously in *Zonomonoletes*.
NOW *Extrapunctatosporis*.

CERATOPTERIS Brongniart, 1821, p.186. A recent water fern genus producing trilete, costate spores.

Ceratopteris cornuta (Beauro.) Lepr. Author obscure in Nayar, 1968. A recent species with very large (135-165 μm) pitted canaliculate, trilete spores (Nayar, 1968).

Ceratopteris krymensis Bolchovitina, 1951, p.37 ex Bolchovitina, 1953, p.36, pl.3, fig.29. This species was simultaneously placed in the genus *Chomotriletes* and later published as *Anemia crimensis* Bolchovitina, 1961.
NOW *Plicatella crimensis*.

Ceratopteris macrocostata Biswas *in* Baksi, p.20, pl.4, fig.53.
NOW *Cicatricosisporites*.

Ceratopteris pteridoides (Hooker, 1825, pl.147) in Copeland, 1947, p.83. A recent species not yet verified with canaliculate, trilete spores (illustrated by Nayar, 1964); formerly *Parkeria*.

Ceratopteris siliquosa (Linnaeus) Copeland in Copeland, 1944, p.83. A Modern species not yet verified with finely pitted canaliculate, trilete spores (Nayar, 1968).

Ceratopteris taiwanensis Huang, 1977, p.78-81, fig.1-2. Placed simmultaneously in *Magnastriatites*.
NOW *Magnastriatites*.

Ceratopteris thalictroides (Linnaeus) Brongniart, 1821, p.186. A Modern species with spores similar to those of *Plicatella* (illustrated by Bolchovitina, 1953; Hires, 1965; Javalgekar, 1960; Kremp and Kawasaki, 1972; Pokrovskaya, 1950). Huang and Huang (1977) illustrated spores identical to those of *Magnastriatites*. Type species.

CIBOTIUM Kaulfuss, 1820. Some species of this recent genus in the family Dickoniaceae have striate spores similar to *Asseretospora* and *Pterisporis*.

Cibotium barometz (Linnaeus) Smith. A recent species with cingulate, distally striate spores similar to *Asseretospora* (illustrated by Liew and Wang, 1976).

Cibotium chamissoi author obscure in Kremp and Kawasaki, 1972. A recent species with sets of striations parallel to the amb. Type species.

CLADOPHLEBIS Brongniart, 1849, p.107.

Cladophlebis (Klukia) dunkeri Schimper. This macrofossil species has been reported to have coarsely striate spores (Radforth and Rouse, 1954).

COLINA Greene, 1893, p.247. A junior synonym of the recent genus *Mohria* suggested as a substitute name by Greene, 1893 and rejected later by Copeland (1947, p.25).

COPTOPHYLLUM Gardner, 1842b, p.133.
NOW the recent subgenus *Hemianemia (Coptophyllum)*.

Coptophyllum bunifolium Gardner, 1842b, p.133. Type species.
NOW *Hemianemia*.

Coptophyllum millefolia Gardner, 1842b, p.133.
NOW *Hemianemia*.

ELLEBOCARPUS Kaulfuss, 1824, p.147. A recent genus, junior synonym of *Ceratopteris* (Copeland, 1947).

FURCARIA Desvaux, 1827, p.292. A recent genus, junior synonym of *Ceratopteris* (Copeland, 1947).

GYMNOGRAMMA A recent fern genus.

Gymnogramma haydenii Lesquereux, 1878, p.59, pl.5, fig.1-3.
NOW *Anemia.*

HEMIANEMIA (Prantl, 1881, p.86, 90) Reed, 1947, p.154-162. A recent genus; formerly a subgenus of *Anemia.* Reed (1947) subdivided this genus into four subgenera *Trochopteris, Aneimiaebotrys, Coptophyllum* and *Hemianemia.*

Hemianemia ahenobarba (Christ *in* Schwacke, 1900, p.37) Reed, 1947, p.161. A recent species in the subgenus *Hemianemia;* formerly *Anemia.*

Hemianemia anthriscifolia (Schrader, 1824, p.865) Reed, 1947 p.161. A recent species in the subgenus *Hemianemia* with canaliculate, auriculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961; Planderova, 1975). Chandler (1955) reports psilate to minutely echinate spores; formerly *Aneimia, Anemia.* Considered to be a subspecies of *Hemianemia* (alias *Anemia) tomentosa* by Mickel (1962).

Hemianemia anthriscifolia var. *anthriscifolia* (Schrader, 1824, p.865) Reed, 1947, p.161 (autonym); formerly *Anemia.*

Hemianemia anthriscifolia forma *nana* (Lindman, 1903, p.258) Reed, 1947, p.258; formerly *Aneimia, Anemia.*

Hemianemia anthriscifolia var. *rotundata* (Lindman, 1903), p.258, pl.12, fig.1) Reed, 1947, p.161; formerly *Aneimia, Anemia.*

Hemianemia anthriscifolia var. *simplicior* (Christ, 1909, p.351) Reed, 1947, p.161.
NOW *Anemia simplicior.*

Hemianemia aspera (Fée, 1869, p.267, pl.78, fig.2) Reed, 1947, p.157 A recent species belonging to the subgenus *Aneimiaebotrys* with canaliculate, auriculate, trilete spores (Mickel, 1962); formerly *Anemiaebotrys.*

Hemianemia brandegeea (Davenport, 1905, p.20) Reed, 1947, p.157. A recent species within the subgenus *Aneimiaebotrys* with canaliculate, auriculate, trilete spores (Mickel, 1962); formerly *Anemia.*

Hemianemia buniifolia (Gardner, 1842b, p.133) Reed, 1947, p.158. A recent species and type of the subgenus *Coptophyllum* with slightly auriculate, canaliculate spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Coptophyllum, Anemia, Mohria.*

Hemianemia buniifolie var. *buniifolia* (Gardner, 1842b, p.133) Reed, 1947, p.158 (autonym); formerly *Anemia.*

Hemianemia buniifolia var. *tenuifolia* (Presl, 1848, p.327) Reed, 1947, p.158; formerly *Anemia tenuifolia.*

Hemianemia dimorphostachys (Baker, 1893, p.522) Reed, 1947, p.159. A recent species in the subgenus *Coptophyllum* (Reed, 1947) with canaliculate, trilete spores (illustrated by Bolchovitina, 1961); formerly *Anemia.*

Hemianemia elegans (Gardner, 1842a, p.74, pl.4) Reed, 1947, p.156. A recent species belonging to the subgenus *Trochopteris* with canaliculate, auriculate, trilete spores (Reed, 1947; Bolchovitina, 1961; Mickel, 1962); formerly *Anemia.*

Hemianemia eximia (Taubert, 1896, p.422) Reed, 1947, p.156. A recent species belonging to the subgenus *Trochopteris* (Reed, 1947) with canaliculate, auriculate, trilete spores (Mickel, 1962); formerly *Anemia.*

Hemianemia flexuosa (Savigny *in* Lamarck, 1797, p.652) Reed, 1947, p.161. A recent species in the subgenus *Hemianemia* with canaliculate, auriculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961; Mickel, 1962); formerly *Osmunda, Aneimia, Anemia.*

Hemianemia flexuosa forma *flexuosa* (Savigny *in* Lamarck, 1797, p.652) Reed, 1947, p.161-162 (autonym); formerly *Anemia.*

Hemianemia flexuosa forma *genuina* (Hieron, 1909, p.290) Reed, 1947, p.161; formerly *Aneimia, Anemia.*

Hemianemia flexuosa forma *transitoria* (Rosenstock, 1907, p.158) Reed, 1947, p.162; formerly *Anemia.*

Hemianemia fulva (Cavanilles, 1801, p.70, pl.593, fig.2) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia* (Reed, 1947) with canaliculate, auriculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Anemia, Osmunda.*

Hemianemia gardneri (Hooker, 1837, pl.190) Reed, 1947, p.160. A recent species in the subgenus *Hemianemia* with canaliculate, trilete spores (Mickel, 1962), however, conspicuously, contiguously tuberculate spores have been reported (Chandler, 1955); formerly *Anemia*.

Hemianemia glareosa (Gardner, 1844, pl.70) Reed, 1947, p.160. A recent species in the subgenus *Hemianemia* with canaliculate, auriculate, trilete spores (illustrated by Bolchovitina, 1959b, 1961); formerly *Anemia*.

Hemianemia guatamalensis (Maxon, 1909, p.46) Reed, 1947, p.161. A recent species in the subgenus *Hemianemia* with subverrucate, canaliculate, trilete spores (illustrated by Reed, 1947; Mickel, 1962); formerly *Anemia*.

Hemianemia heterodoxa (Christ, 1899, p.45) Reed, 1947, p.159. A recent species in the subgenus *Coptophyllum*.

Hemianemia intermedia (Copeland ex Jones, 1929, p.123) Reed, 1947, p.157. A recent species in the subgenus *Aneimiaebotrys;* formerly *Anemia*.

Hemianemia karwinskyana (Presl, 1845, p.83) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia* with slightly auriculate, subverrucate-canaliculate, trilete spores (illustrated by Mickel, 1962); formerly *Anemia*.

Hemianemia lanipes (Christensen, 1931, p.65 ex Christensen, 1932, p. 177, pl.71, fig.1-3) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia* with slightly auriculate, trilete spores (Mickel, 1962) having sharp and thin muri (Chandler, 1955); formerly *Anemia*.

Hemianemia lanuginosa (Bongard ex Sturm *in* Martius, 1859, p.210) Reed, 1947, p.160. A recent species in the subgenus *Hemianemia* with canaliculate, trilete spores with aspiculate perine (Mickel, 1962); formerly *Anemia*.

Hemianemia luetzelburgii (Rosenstock, 1924, p.94) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia;* formerly *Anemia*.

Hemianemia madagascariensis (Christensen, 1928, p.216 ex Christensen, 1932, p.177, pl.72, fig.1-4) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia* with canaliculate, trilete spores (Mickel, 1962); formerly *Anemia*.

Hemianemia millefolia (Gardner, 1842b, p.133) Reed, 1947, p.158. A recent species with canaliculate, slightly auriculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Coptophyllum* and *Anemia*.

Hemianemia myrophylla (Christ, 1907, p.793) Reed, 1947, p.157. A recent species in the subgenus *Aneimiaebotrys* with auriculate, subverrucate-canaliculate, trilete spores (Mickel, 1962); formerly *Anemia*.

Hemianemia nana (Baker, 1893, p.522) Reed, 1947, p.159. A recent species in the subgenus *Coptophyllum*; formerly *Anemia*.

Hemianemia perrieriana (Christ, 1932, p.178, pl.72, fig.5-6) Reed, 1947, p.157. A recent species belonging to the subgenus *Aneimiaebotrys* with slightly auriculate, coarsely canaliculate, trilete spores (Mickel, 1962; Chandler, 1955); formerly *Anemia*.

Hemianemia pyrenaea (Taubert, 1896, p.422) Reed, 1947, p.158. A recent species in the subgenus *Coptophyllum;* formerly *Anemia*.

Hemianemia retroflexa (Brade, 1938, p.9, pl.5) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia* with canaliculate, auriculate, trilete spores (Mickel, 1962); formerly *Anemia*.

Hemianemia rosei (Maxon, 1909, p.46) Reed, 1947, p.161. A recent species in the subgenus *Hemianemia*; formerly *Anemia*.

Hemianemia rutaefolia (Martius, 1834, p.112, pl.55, fig.1) Reed, 1947, p.159. A recent species in the subgenus *Coptophyllum* with canaliculate, auriculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Anemia*.

Hemianemia schimperiana (Presl, 1845, p.84) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia* with prominantly pitted, canaliculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1959b; Nayar, 1968; Devi and Nayar, 1969; Planderova, 1975) similar to *Costatoperforosporites;* however, costate, auriculate spores have been reported (Chandler, 1955); formerly *Anemia*.

Hemianemia schimperiana var. *angustiloba* (Bonaparte, 1915, p.133) Reed, 1947, p.162.
NOW *Anemia angolensis*.

Hemianemia schimperiana var. *schimperiana* (Presl, 1845, p.84) Reed, 1947, p.162 (autonym); formerly *Anemia*.

Hemianemia schimperiana var. *wightiana* (Gardner, 1847, p.10, pl.1) Reed, 1947, p.162.
NOW *Anemia wightiana*.

Hemianemia sessilis (Jeanpert, 1910, p.403) Reed, 1947, p.157. A recent species with canaliculate, trilete spores belonging to the subgenus *Aneimiaebotrys*. Muri are densely pitted (Mickel, 1962; Devi and Nayar, 1967; Nayar, 1968); formerly *Anemia* and *Anemia tomentosa* var. *sessilis*.

Hemianemia smithii (Brade, 1929, p.95, pl.3) Reed, 1947, p.157. A recent species in the subgenus *Aneimiaebotrys* with canaliculate, auriculate, trilete spores (Mickel, 1962); formerly *Anemia*.

Hemianemia tomentosa (Savigny *in* Lamarck, 1797, p.652) Reed, 1947, p.160-161. A recent species with perforate, canaliculate, auriculate spores similar to *Costatoperforatosporites* (illustrated by Pokrovskaya, 1950; Bolchovitina, 1953, 1961; Atkinson, 1962; Mickel, 1962). Illustrations in Knox (1938, pl.33, fig.43) indicate the presence of a cingulum (Potonié, 1956). *Ruffordia goeppertii* has spores similar to those of this species (Delcourt and Sprumont, 1955); formerly Anemia, *Aneimia, Osmunda*. Type species.

Hemianemia tomentosa var. *australis* (Mickel, 1962, p.426, pl.29, fig.A) comb. nov. A recent variety with auriculate, subverrucate, canaliculate, trilete spores (illustrated by Mickel, 1962); formerly *Anemia*.

Hemianemia tomentosa var. *mexicana* (Presl, 1845, p.84) comb. nov. A recent variety with auriculate, subverrucate, canaliculate, trilete spores (Mickel, 1962); formerly *Anemia*.

Hemianemia tomentosa var. *oblonga* (Sturm, 1859, p.206) Reed, 1947, p.161; formerly *Anemia oblonga, Anemia flexuosa oblonga, Aneimia flexuosa oblonga*.

Hemianemia tomentosa var. *subsimplex* (Christ, 1902, p.695) Reed, 1947, p.161. A recent variety with auriculate, subverrucate, canaliculate, trilete spores (Mickel, 1962); formerly *Anemia*.

Hemianemia tomentosa var. *tomentosa* (Savigny *in* Lamarck, 1797, p.652) Reed, 1947, p.160-161 (autonym); formerly *Anemia*.

Hemianemia trichorhiza (Gardner *in* Hooker, 1852, p.876) Reed, 1947, p.157. A recent species with perinate, slightly auriculate, canaliculate, laevigate, trilete spores (Bolchovitina, 1959b, 1961; Mickel, 1962) in the subgenus *Aneimiaebotrys;* formerly *Anemia.*

Hemianemia trichoriza var. *paraguariensis* (Hassl, 1928, p.83) Reed, 1947, p.157; formerly *Anemia.*

Hemianemia trichorhiza var. *trichorhiza* (Gardner *in* Hooker, 1852, p.83) Reed, 1947, p.157 (autonym); formerly *Anemia.*

Hemianemia tripinnata (Copeland, 1932, p.24, pl.1) Reed, 1947, p.161 A recent species in the subgenus *Hemianemia* with canaliculate, auriculate, trilete spores (illustrated by Reed, 1947); formerly *Anemia.*

Hemianemia villosa (Humboldt and Bonpland ex Willdenow, 1810, p.92) Reed, 1947, p.162. A recent species in the subgenus *Hemianemia* with canaliculate, auriculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961; Atkinson, 1962; Mickel, 1962; Tschudy and Tschudy, 1965); formerly *Anemia.*

HEMIANEMIA (ANEIMIAEBOTRYS) (Fée, 1869, p.267) Reed, 1947, p.156. A recent subgenus containing species with trilete, globose, canaliculate spores (Reed, 1947; Mickel, 1962); formerly the genus *Aneimiaebotrys* and the subgenus *Anemia (Aneimiaebotrys).*

HEMIANEMIA (COPTOPHYLLUM) (Gardner, 1842b, p.133) Reed, 1947, p.157-159. A recent subgenus containing species with canaliculate, trilete spores (Reed, 1947; Mickel, 1962); formerly the genus *Coptophyllum* and the subgenus *Anemia (Coptophyllum).*

HEMIANEMIA (HEMIANEMIA) (Prantl, 1881, p.86, 90) Reed, 1947, p.159 A recent subgenus containing species with trilete, canaliculate spores (Reed, 1947); formerly *Anemia (Hemianemia.)*

HEMIANEMIA (TROCHOPTERIS) (Gardner, 1842a, p.74) Reed, 1947, p.156 A recent subgenus containing species with trilete, canaliculate, scabrellous spores (Reed, 1947); formerly the genus *Trochopteris* and the subgenus *Aneimia (Trochopteris).*

LOPHIDIUM Richter, 1792, p.114. A recent genus. Reed (1947, p.119-120) considered this genus as a subgenus of *Schizaea.* Type species: *Schizaea (Lophidium) elegans.*

LYGODIUM Swartz *in* Schrader, p.106 nom. cons.

Lygodium reticulosporites Rouse, 1962, p.197, pl.3, fig.27-28.
NOW *Cicatricosisporites*.

MICROSCHIZAEA Reed, 1947, p.130. A recent genus, having species with large subglobuse, alveolate to laevigate, monolete spores. Reed (1947) separated this genus into sections according to the spore morphology.

Microschizaea australis (Gaud, 1825, p.98) Reed, 1947, p.134. A recent species with laevigate, monolete spores (Reed, 1947); formerly *Schizaea*.

Microschizaea fistulosa (Labillardière, 1806, p.103, pl.250, fig.3) Reed, 1947, p.134. A recent species with large smooth to scabrate, monolete spores (Selling, 1946; Harris, 1955, Bolchovitina, 1959b); formerly *Schizaea*. Type species.

Microschizaea hallieri (Richter, 1916, p.24, pl.1-5) Reed, 1947, p.134. A recent species with laevigate, monolete spores (Selling, 1946; Reed, 1947); formerly *Schizaea*.

Microschizaea malaccana (Baker *in* Hooker and Baker, 1868, p.428) Reed, 1947, p.134. A recent species with psilate, monolete spores; formerly *Schizaea*.

Microschizaea miocenica (Selling, 1946) Reed, 1947, p.134-135.
NOW *Reticulosporis*.

Microschizaea pusilla (Pursh, 1814, p.657) Reed, 1947. A recent species with foveoreticulate, tectate, monolete spores comparable to the fossil genus *Hazaria* (illustrated by Selling, 1946, Bolchovitina, 1959b); formerly *Schizaea*.

Microschizaea robusta (Baker *in* Hooker and Baker, 1868, p.429) Reed, 1947, p.134. A recent species with laevigate to scabrate, monolete spores (Selling, 1946; Reed, 1947); formerly *Schizaea, Schizaea australis robustus*.

Microschizaea rupestris (Brown, 1810, p.162) Reed, 1947, p.134. A recent species with laevigate to scabrate, monolete spores (Selling, 1946; Reed, 1947); formerly *Schizaea*.

Microschizaea skottsbergii (Selling, 1946) Reed, 1947, p.135.
NOW *Reticulosporis*.

Microschizaea skottsbergii var. *mauiensis* (Selling, 1946) Reed, 1947, p.135.
NOW *Reticulosporis*.

Microschizaea skottbergii var. *skottsbergii* (Selling, 1946) Reed, 1947, p.135 (autonym).
NOW *Reticulosporis*.

Microschizaea tenella (Kaulfman, 1824, p.50, pl.1, fig.7) Reed, 1947, p.134. A recent species with laevigate to scabrate, monolete spores (Reed, 1947; illustrated by Bolchovitina, 1959b); formerly *Schizaea*.

MOHRIA Swartz, 1806, p.159. A recent genus containing species with canaliculate, trilete spores. Kotova (1963) distinguished *Mohria* from *Anemia* by the former possessing intracostal canals in the spores.

Mohria achilleaefolia Lowe in Hooker and Baker, 1868, p.436. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *M. caffrorum*.

Mohria buniifolia (Gardner, 1842b) Smith, 1843, p.388
NOW *Hemianemia*.

Mohria caffrorites Markova, 1961, p.87-88, pl.22, fig.5.
NOW *Cicatricosisporites*.

Mohria caffrorum (Linnaeus, 1771, p.307) Desvaux, 1827, p.198. A recent species with canaliculate, trilete spores (illustrated by Atkinson, 1961; Bierhorst, 1980; Bolchovitina, 1961; Kotova, 1963; Kremp and Kawasaki, 1972; Nayar, 1964). Nayar (1964) indicated foveolate muri were present. *Ruffordia goeppertii* has very similar spores (Delcourt and Sprumont, 1955); formerly *Polypodium*.

Mohria caffrorum var. *caffrorum* (Linnaeus, 1771, p.307) Desvaux, 1827, p.198 (autonym).

Mohria caffrorum var. *multinguamosa* Bonaparte, 1917, p.85.

Mohria chetaensis (Krutzsch, 1961) Khlonova, 1971. Orthographic error for *chattensis* or incorrectly cited the author for *Aneimia chetensis* Kara-Murza.
NOW *Cicatricosisporites*.

Mohria chetensis K.-M. in Pokrovskaya, 1960, p.19. Possibly K.-M, refers to Kara-Murza, 1954 and may be a synonym-tautonym of *Aneimia chetensis* and *Mohria chetaensis*.

Mohria clara Bolchovitina, 1959a, p.94, pl.2, fig.1.
NOW *Cicatricosisporites*.

Mohria dorogensis (Potonié and Gelletich, 1933) Markova *in* Ivanova and Markova, 1961, p.86.
NOW *Cicatricosisporites*.

Mohria exilis (Maljavkina, 1949, p.60, pl.11, fig.2) Bolchovitina, 1959b, p.94.
NOW *Cicatricosisporites*.

Mohria imbricata Markova *in* Ivanova and Markova, 1961, p.88-89, pl.22, fig.6.
NOW *Cicatricosisporites*.

Mohria lepigera Baker, 1891, p.498. A recent species with canaliculate, trilete spores (illustrated by Bolchovitina, 1959b, 1961; Kotova, 1963).

Mohria limbata Kara-Murza, 1954, p.57, pl.7, fig.4-5 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN. Placed simultaneously in *Plicatella*.

Mohria limita Kara-Murza in Kara-Murza, 1957, p.68 nomen nudum. Orthographic error for *M. limbata*.

Mohria mediostriata Bolchovitina, 1959b, p.126, pl.7, fig.18 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN. Later validated by Bolchovitina (1961) as *Pelletieria mediostriata*.
NOW *Cicatricosisporites*.

Mohria millefolia (Gardner, 1842b) Smith, 1843, p.388.
NOW *Hemianemia*.

Mohria minor Bolchovitina, 1959a, p.94, pl.2, fig.31.
NOW *Cicatricosisporites*.

Mohria multicostata Verbitskaya, 1958, p.317, pl.2, fig.31 nomen nudum ex Verbitskaya 1962, p.94-95, pl.4, fig.36.
NOW *Cicatricosisporites*.

Mohria mutabila Bolchovitina, 1953, p.36-37, pl.4, fig.6. Placed simultaneously in *Chomotriletes*. Also spelled *Mohria mutabilis* in Pokrovskaya, 1966, vol.2, p.189.
NOW *Cicatricosisporites*.

Mohria namziensis Bolchovitina, 1959b, p.126, pl.7, fig.20 nomen nudum. Barremian-Aptian. Neither diagnosis nor description was given contrary to Article 38, ICBN.

Mohria perforata (Baronova *et al.*, 1957) Markova *in* Ivanova and Markova, 1961, p.85.
NOW *Costatoperforosporites*.

Mohria sciona Chiovenda, 1940, p.66.
NOW *Negripteris*.

Mohria striata Naumova in Bolchovitina, 1951, p.36 ex Bolchovitina, 1953, p.36, pl.4, fig.1-5. This species was placed simultaneously in *Chromotriletes* by Bolchovitina, 1953 and also simultaneously in *Plicatella* by Kara-Murza, 1954, p.156.
NOW *Cicatricosisporites*.

Mohria tersa Kara-Murza, 1954, p.57, pl.7, fig.14. Kara-Murza (1954) raised *Plicatella trilobatiformis* var. *tersa* to specific status and simultaneously placed the species in *Mohria* and *Chomotriletes*.
NOW *Cicatricosisporites*.

Mohria thurifragra Swartz in Hooker and Baker, 1868, p.436. A recent Species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *M. caffrorum*.

Mohria tricostata (Bolchovitina, 1953) Boytsova, 1964, p.61 nomen nudum. Page, plate, figure number and year were not cited contrary to Article 33.2, ICBN.
NOW *Plicatella*.

Mohria vestita Baker, 1887, p.355. A recent species.

Mohria volgensis Bolchovitina, 1959b, p.126, pl.7, fig.22 nomen nudum. Campanian. Neither diagnosis nor description was given contrary to Article 38, ICBN.

MOHRIOPSIS Appert, 1973, p.15. A macrofossil genus with affinities to the recent genus *Mohria*. Spore morphology is not known.

Mohriopsis plastica Appert, 1973, p.15-19, pl.9-15, fig.1-7. Late Jurassic.

NAKTONGIA Oishi, 1939, p.310. A fossil genus containing fertile frond foliage. Spore morphology is not known. It is tentatively included as having affinities with schizaealean ferns (Bolchovitina, 1961).

Naktongia yabei Oishi, 1939, p.310, pl.35, fig.3. Late Jurassic.

NEGRIPTERIS Pichi-Sermolli, 1946, p.130. This genus has been considered "to fill one of those gaps between the schizaeaceous ferns and the cheilandthoid ferns" (Reed, 1947, p.173). The detailed morphology of the spores is not well known.

Negripteris scioana (Chiovenda, 1940, p.66) Pichi-Sermolli, 1946, p. 131. A recent species with large, rough, trilete spores (Pichi-Sermolli, 1946; Reed, 1947); formerly *Mohria*.

NORIMBERGIA Gothan, 1914, p.19. A fossil genus containing fertile fronds of schizaealean affinities (Andrews, 1955). Spore morphology is not known.

Norimbergia braunii (Goeppert) Gothan, 1914, p.19, pl.18, fig.6-8. Rhaetian.

ONYCHIUM Kaulfuss, 1820, p.45. A Modern genus.

Onychium amplectiformis Kara-Murza *in* Bolchovitina, 1956, p.58, pl.6, fig.90a-b.
NOW *Duplexisporites*.

Onychium auratum author obscure in Kremp and Kawasaki, 1972. A recent species with striate trilete spores similar to those of *Asseretospora* (Kremp and Kawasaki, 1972).

ORNITHOPTERIS Bernhardi, 1806, p.40. See Reed (1947, p.152) for synonomy.

Ornithopteris abbottii (Maxon, 1922, p.48) Reed, 1947, p.154. A recent species.

Ornithopteris adiantifolia (Linnaeus, 1753, p.1065) Bernhardi, 1806, p.50, pl.3, fig.15a-b. A recent species with undulatingly striate, trilete spores (illustrated by Bolchovitina, 1961; Atkinson, 1962). Nayar (1964) suggested that the muri are smooth. Nayar (1968) and Devi and Nayar (1969) indicated that

there are faint verrucae on the muri and the muri connect at the apices to form concentric triangles around the distal pole. Chandler (1955) reported auriculate spores with smooth muri; formerly *Anemirhiza, Anemia* and *Osmunda.* Type species.

Ornithopteris aurita (Swartz, 1806, p.157) Reed, 1947, p.154. A recent species with canaliculate, trilete spores (illustrated by Reed, 1947; Atkinson, 1962); formerly *Anemia.*

Ornithopteris cicutaria (Kunze, 1827, p.31) Underwood, 1902, p.15. A recent species with undulating, cicatricose, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Anemia.*

Ornithopteris coriacea (Grisebach, 1866, p.272) Reed, 1947, p.153. A recent species with striate, verrucate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Anemia.*

Ornithopteris cuneata (Kunze, 1827, p.32) Reed, 1947, p.153. A recent species with verrucate, trilete spores (Bolchovitina, 1959b, 1961; Rouse, 1962); formerly *Anemia.*

Ornithopteris makrinii (Maxon, 1918, p.199) Reed, 1947, p.53. A recent species with caniculate, trilete spores (illustrated by Reed, 1947); formerly *Anemia.*

Ornithopteris mexicana (Klotzsch, 1844, p.526) Underwood, 1900, p.76 A recent species with canaliculate, trilete spores (illustrated by Reed, 1947; Bolchovitina, 1961); formerly *Anemia.*

Ornithopteris nipeensis (Benedict, 1911, p.41, pl.2) Reed, 1947, p. 154. A recent species.

Ornithopteris portoricensis (Maxon, 1909, p.48) Reed, 1947, p.154. A recent species.

Ornithopteris speciosa (Presl, 1845, p.89) Reed, 1947, p.153. A recent species with canaliculate, trilete spores (illustrated by Reed, 1947); formerly *Anemia.*

Ornithopteris wrightii (Baker, 1868, p.435) Millsp., 1903, p.1(14). A recent species with cicatricose, trilete spores (illustrated by Reed, 1947).

PARKERIA Hooker, 1825, pl.147. A junior synonym to the recent genus *Ceratopteris* (Copeland, 1947).

Parkeria pteridoides Hooker, 1825, pl.147.
NOW *Ceratopteris*.

PELLETERIA Seward, 1913, p.91. A fossil sporangia genus defined by the type of spores contained.
ALSO spelled *Pelletieria* (in Reed, 1947).

Pelleteria clandestinocostata Fradkina and Kornilova in Khlonova, 1971, p.121. This species has not yet been verified.

Pelleteria clara (Bolchovitina, 1953) Bolchovitina, 1961, p.67-68.
NOW *Cicatricosisporites*.

Pelleteria dorogensis (Potonié and Gelletich, 1933) Markova, 1966, p.222 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33, ICBN.
NOW *Cicatricosisporites*.

Pelleteria exilis (Khlonova) Bolchovitina in Khlonova, 1971, p.86 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW possible *Cicatricosisporites*.

Pelleteria mediostriata Bolchovitina, 1961, p.66, pl.19, fig.3a-b; pl.21, fig.1a-c. Originally published as *Mohria mediostriata* Bolchovitina, 1959b nomen nudum.
NOW *Cicatricosisporites*.

Pelleteria minor (Bolchovitina, 1959a) Bolchovitina, 1961, p.68.
NOW *Cicatricosisporites*.

Pelleteria minuta Markova, 1966, p.222 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN.

Pelleteria minutaestriata Bolchovitina, 1961, p.68, pl.20, fig.1a-f; pl.21, fig.3a-d.
NOW *Cicatricosisporites*.

Pelleteria minutaestriatiformis Fradkina and Kornilova in Khlonova, 1971, p.111. This species has not yet been verified.

Pelleteria multicostata Bolchovitina in Khlonova, 1971, p.86 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Cicatricosisporites*.

Pelleteria mutabile (Bolchovitina, 1953) Bolchovitina, 1961, p.67.
NOW *Cicatricosisporites.*

Pelleteria pacifica Bolchovitina, 1961, p.69, pl.22, fig.2a-g; pl.23 fig.2a-d.
NOW *Cicatricosisporites.*

Pelleteria perforata (Baronova, Nemkova and Kondratiev, 1957) Fradkina, 1967, pl.9, fig.7-8 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Costatoperforosporites.*

Pelleteria striata Bolchovitina in Bityjtskaya *et al.*, 1973, p.88, pl.3, fig.9; p.96, pl.7, fig.3; p.102, pl.10, fig.5 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Cicatricosisporites.*

Pelleteria tersa (Kara-Murza, 1951a) Bolchovitina, 1961, p.66.
NOW *Cicatricosisporites.*

Pelleteria valdensis Seward, 1913, p.91, pl.12, fig.12a-b; pl.14, fig.5, text-fig.2B, 3-4. Early Cretaceous (Wealden). Hughes and Moody-Stuart (1969) considered the spores of this species to be equivalent to the biorecord 12 CICATR *APP.* Couper (1958) relates this species to *Cicatricosisporites dorogensis* (Type species of *Cicatricosisporites).* The specimens illustrated by Hughes and Moody-Stuart (1966) clearly demonstrate affinity to *Plicatella.* Type species.

Pelleteria volgensis Bolchovitina, 1961, p.68, pl.19, fig.7a-b.
NOW *Cicatricosisporites.*

PROTORNITHOPTERIS Reed, 1947, p.149-152. A macrofossil genus erected for species with anemiacean affinities.

Protornithopteris colwellensis (Chandler, 1955, p.304-306, pl.35, fig.39-53; pl.36, fig.59-64, text-fig.2 I) comb. nov. Eocene. Couper (1958) compares the finely cicatricose, trilete spores (illustrated by Chandler, 1955) of this macrofossil species to *Cicatricosisporites dorogensis;* formerly *Anemia, Aneimia.*

Protornithopteris elongata (Newberry, 1863, p.511) Reed, 1947, p.149-150. Cretaceous. A macrofossil species; formerly *Aneimia, Anemia* and *Sphenopteris.*

Protornithopteris eocenica (Berry, 1916, p.164, pl.9, fig.7; pl.10, fig.2; pl.11, fig.1-2) Reed, 1947, p.150. Eocene. A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris fremontii (Knowlton, 1917, p.84-85, pl.31, fig.6; pl.32, fig.1-3) Reed, 1947, p.150. Cenomanian-Turonian (Frontier Formation). A macrofossil species; formerly *Anemia, Aneimia.* Type species.

Protornithopteris fremontii forma *fertilis* (Andrews *in* Andrews and Pearsall, 1941, p.169, pl.1, fig.1-5; pl.2, fig. 6-12; pl.5, fig.33; pl.6, fig.36-38. Cenomanian to Turonian (Frontier Formation). This species possessed cicatricose spores very similar to *Cicatricosisporites venustus* (illustrated by Andrews and Pearsall, 1941, pl.2, fig.6-12); formerly *Anemia.*

Protornithopteris fremontii forma *fremontii* (Knowlton, 1917, p.84-85, pl.31, fig.6; pl.32, fig.1-3) Reed, 1947, p.150. Cenomanian to Turonian (Frontier Formation) (autonym); formerly *Anemia.*

Protornithopteris gracillima (Lesquereux, 1883, p.137, pl.21, fig.8) Reed, 1947, p.150. Miocene. A macrofossil species; formerly *Adiantites, Aneimia, Anemia.*

Protornithopteris grandifolia (Knowlton, 1924, p.78, pl.5) Reed, 1947, p.150. Late Cretaceous-Paleocene (Animas Formation). A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris hesperia (Knowlton, 1916, p.332, pl.84, fig.3) Reed, 1947, p.150. Late Cretaceous (Fruitland Formation). A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris lanceolata (Knowlton, 1930, p.29, pl.8, fig.10) Reed, 1947, p.150. Late Cretaceous-Paleocene (Middle Park Formation). A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris mosbyensis (Knowlton, 1930, p.28, pl.8, fig.9) Reed, 1947, p.150. Late Cretaceous-Paleocene (Dawson Arkose). A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris occidentalis (Knowlton, 1918, p.285, pl.54, fig.2) Reed, 1947, p.150. Eocene. A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris poolensis (Chandler, 1955, p.295-305, pl.32, fig. 1-10; pl.33, fig.14-22, 24-31; pl.34; pl.35, fig.41; pl.36, fig.54-58, text-fig.1 A-H, 2 A-H) comb. nov. Eocene. A macrofossil species with laevigate, trilete spores (illustrated by Chandler, 1955; Couper, 1958; Bolchovitina, 1959b; Pocock, 1965); formerly *Anemia, Aneimia.*

Protornithopteris robusta (Hollick, 1902, p.145, pl.3, fig.1) Reed, 1947, p.150. Late Cretaceous (Vermejo Formation). A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris subcretacea (Saporta, 1868, p.315, pl.23, fig.4) comb. nov. Tertiary. A macrofossil species; formerly *Anemia, Aneimia, Asplenium.*

Protornithopteris supercretacea (Hollick, 1902, p.145, pl.3, fig. 6-7) Reed, 1947, p.150-151. Late Cretaceous. A macrofossil species; formerly *Anemia, Aneimia.*

Protornithopteris supercretacea var. *conformis* (Hollick, 1930, p.40, pl.1, fig.6-7) comb. nov. Late Cretaceous; formerly *Aneimia, Anemia.*

Protornithopteris supercretacea var. *supercretacea* (Hollick, 1902, p.145, pl.3, fig.6-7) Reed, 1947, p.150-151. Autonym. Late Cretaceous; formerly *Anemia, Aneimia.*

PSILOTUM Swartz. A recent psilotalean fern genus.

Psilotum nudum (Linnaeus) Griebach author obscure in Harris (1955). Harris (1955) illustrates a microfoveolate, monolete spore similar to those of Schizaeaceae.

RIPIDIUM Bernhardi, 1801, p.127. A junior synonym to the recent genus *Schizaea.*

RUFFORDIA Seward, 1894, p.76. A fossil genus for fertile foliage with characteristic schizaealean sporangia and cicatricose spores (Halle, 1922).

Ruffordia acrodentata (Fontaine, 1889, p.90, pl.34, fig.4) Berry, 1911a, p.230, pl.23, fig.5-6. Early Cretaceous. A macrofossil species; formerly *Sphenopteris.*

Ruffordia aralica Bolchovitina, 1961, p.13, pl.17, fig.9f-h. NOW *Cicatricosisporites.*

Ruffordia goeppertii (Dunker, 1844, p.6) Seward, 1894, p.76-77, pl.3 fig.5-6; pl.4, fig.5; pl.5, fig.1-2; pl.6, fig.1. Early Cretaceous. A macrofossil species. Spores from Seward's type slide appear to be very similar to *C. australiensis* (illustrated by Couper, 1958; Krassilova, 1966; Halle, 1922); formerly *Cicatricosisporites, Cheilanthites, Sphenopteris.* Type species.

RUFLORINA Archangelsky, 1963, p.55 emend. Archangelsky, 1964, p.225. A macrofossil genus.

Ruflorina pilifera Archangelsky, 1964, p.221-222, pl.1, fig.1-5; pl.2, fig.1-5. Early Cretaceous. A macrofossil species.

Ruflorina sierra Archangelsky, 1963, p.55-59, pl.2, fig.8-9; pl.5, fig.21, Text-fig.17-20, 24. A macrofossil species.

?Ruflorina thoriana Archangelsky, 1967, p.154, pl.1, fig.3-4; pl.2, fig.3-5 nomen nudum. This species was attributed to *Sphenopteris* simultaneously.
NOW *Sphenopteris.*

SACCOLMA Kaulfuss, 1820. A recent fern genus in the family Polypodiaceae.

Saccolma germana Poluchina in Pokrovskaya and Stel'mak, 1964, p.216, pl.25, fig.7.
NOW *Cicatricosisporites.*

SCHIZAEA Smith, 1793, p.419 nom. cons. A recent genus.

Schizaea albertonensis Cookson, 1957, p.43, pl.8, fig.4.
NOW *Reticulosporis.*

Schizaea asperula Wokefield. Author obscure in Bolchovitina, 1961, p.20. A recent species with granulate to verrucate, monolete spores (illustrated by Bolchovitina, 1961).

Schizaea attenuata Beyr in Hooker and Baker, 1868, p.430. A recent species, not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *S. dichotoma.*

Schizaea australis Gaud, 1825, p.825, p.98.
NOW *Microshizaea.*

Schizaea australis var. *australis* Gaud, 1825, p.825, p.98 (autonym).

Schizaea australis var. *robusta* (Baker *in* Hooker and Baker, 1868, p.429) Luerssen, 1875, p.419.
NOW *Microschizaea robusta*.

Schizaea balansae Fournier, 1873, p.353.
NOW *Actinostachys*.

Schizaea bifida Willdenow, 1802, p.30, pl.3, fig.3. In the subgenus *Paraschizaea* (Reed, 1947, p.121). A recent species with minutely tuberculate to murinate, monolete spores (Selling, 1946; Harris, 1955; Bolchovitina, 1959b).

Schizaea biroi Richter, 1911, p.1083, pl.1-4. In the subgenus *Lophidium* (Reed, 1947, p.120). A recent species with granulate, monolete spores (Richter, 1911 in Selling, 1946; Juhasz, 1977).

Schizaea certa (Bolchovitina, 1956) Bolchovitina, 1961, p.26.
NOW *Schizaeoisporites*.

Schizaea confusa Selling, 1947, p.432-434, fig.1-13.
NOW *Actinostachys*.

Schizaea copelandica Richter, 1911, p.1084, pl.1-4. In the subgenus *Lophidium* (Reed, 1947, p.120). A recent species.

Schizaea cristata Willdenow, 1810, p.88. A recent species in the subgenus *Lophidium* (Reed, 1947, p.120).

Schizaea delicata Verbitskaya, 1962, p.106, pl.12, fig.57a-b.
NOW *Striamonoletes*.

Schizaea dichotoma (Linnaeus, 1753, p.1068) Smith, 1793, p.422, pl.9 fig.9. A recent species placed in the subgenus *Eu-Schizaea* by Reed (1947, p.119). Selling (1944) found some trilete spores among monolete, bean-shaped, smooth to scabrate spores (illustrated by Harris, 1955; Bolchovitina, 1961; Kremp and Kawasaki, 1972). Type species; formerly *Acrostichum*.

Schizaea digitata (Linnaeus, 1753, p.1068) Swartz, 1806, p.150, 380.
NOW *Actinostachys*.

Schizaea digitataeformis Bocharnikova *in* Agranovskay *et al.*, 1960, p.358, pl.1, fig.9-10.
NOW *Striamonoletes*.

Schizaea digitatoides Cookson, 1957, p.44, pl.9, fig.12.
NOW *Striamonoletes*.

Schizaea digitatopsis Nik. *in* Kuzichkina, 1962, p.110, pl.4, fig.79. NOW *Striamonoletes*.

Schizaea diserta Bolchovitina, 1961, p.26, pl.5, fig.3. NOW *Schizaeoisporites*.

Schizaea diversispora Bierhorst, 1971, p.638, fig.16-30. A recent natural hybrid species with microreticulate, monolete spores.

Schizaea dorogensis Khlonova, 1960, p.26, pl.2, fig.26-30. NOW *Schizaeoisporites*.

Schizaea elegans (Vahl, 1791, p.104, pl.50) Swartz, 1801, p.103. Placed in the subgenus *Lophidium* (Reed, 1947, p.120). A recent species with granulate, monolete spores (illustrated by Selling, 1946; Bolchovitina, 1961); formerly *Acrostichum*.

Schizaea elliptica Kara-Murza, 1954, p.156, pl.7, fig.11 nomen nudum Neither diagnosis nor description was given contrary to Article 38, ICBN.

Schizaea eocaenica Selling, 1944, p.66, pl.4, fig.44-45. NOW *Schizaeoisporites*.

Schizaea evidens Bolchovitina, 1961, p.30, pl.6, fig.2a-d. NOW *Schizaeoisporites*.

Schizaea fistulosa Labillardière, 1806, p.103, pl.250, fig.3. NOW *Microschizaea*.

Schizaea flabellum Martius in Hooker and Baker, 1868, p.430. A recent species, not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *S. elegans*.

Schizaea fluminensis Miers ex Sturm, 1859, p.184, pl.15, fig.2. A recent species placed in the subgenus *Lophidium* (Reed, 1947, p.120) with granulate, monolete spores (illustrated by Selling, 1946; Bolchovitina, 1959b).

Schizaea forestri Sprengel, 1804, p.157. A recent species placed in the subgenus *Lophidium* (Reed, 1947, p.120).

Schizaea fromensis Cookson, 1957, p.43, pl.8, fig.3. NOW *Microfoveolatosporis*.

Schizaea germanii Fée, 1866, p.123, pl.29, fig.3. NOW *Actinostachys*.

Schizaea hallieri Richter, 1916, p.24, pl.1-5.
NOW *Microschizaea*.

Schizaea hilifera Bolchovitina, 1961, p.26, pl.5, fig.5.
NOW *Striamonoletes*.

Schizaea incurvata Schkuhr, 1809, p.138, pl.137. A recent species in the subgenus *Paraschizaea* (Reed, 1947, p.121) with coalescent verrucose, monolete spores (Selling, 1946).

Schizaea inopinata Selling, 1946, p.274, fig.1-7.
NOW *Actinostachys*.

Schizaea intermedia Mettenius, 1861, p.86.
NOW *Actinostachys*.

Schizaea kashmiriensis Lukose, 1964, p.566-567, fig.1 nomen nudum. No holotype was designated, contrary to Article 37, ICBN. Late Mesozoic. A striate monolete fossil spore.

Schizaea kikuzatonis Ogata, 1935, p.36, fig.6. A recent species in the subgenus *Paraschizaea* (Reed, 1947, p.121).

Schizaea kulandyensis Bolchovitina, 1959b, p.124, pl.8, fig.13 ex Bolchovitina, 1961, p.31, pl.6, fig.3a-k; pl.39, fig.13.
NOW *Schizaeoisporites*.

Schizaea laevigata Mettenius, 1861, p.85.
NOW *Actinostachys*.

Schizaea laevigataeformis Bolchovitina, 1961, p.29, pl.6, fig.1a-e; pl.39, fig.12. A tautonym of *S. laevigatiformis* Kara-Murza.
NOW *Schizaeoisporites*.

Schizaea laevigatiformis Kara-Murza, 1954, p.156, pl.7, fig.16 nomen nudum. Neither diagnosis nor description was given contrary to Article 38, ICBN. Simultaneously placed in *Chomotriletes*.

Schizaea latifolia Richter in Hooker and Baker, 1868, p.430. A recent species not yet verified. Hooker and Baker (1868) considered this species a junior synonym of *S. elegans*.

Schizaea malaccana Baker in Hooker and Baker, 1868, p.428.
NOW *Microschizaea*.

Schizaea mediolobata (Bolchovitina, 1953) Bolchovitina, 1959b, p.124 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Ephedripites*.

Schizaea melanesca Selling, 1944, p.207-225.
NOW *Actinostachys*.

Schizaea microtuberculata Nik. *in* Kuzichkina, 1962, p.110, pl.4, fig.81 nomen nudum. Neither description nor diagnosis was provided contrary to Article 38, ICBN. A verrucate granulate fossil spore species which has been attributed to the author "Nik." but not yet verified.

Schizaea miocenica Selling, 1946, p.68, pl.4, fig.46-47.
NOW *Hazaria*.

Schizaea munsteriana Ettinghausen, 1865, p.242. A macrofossil species. Liassic.

Schizaea occidentalis Grisebach in Hooker and Baker, 1868, p.430. A recent species not yet verified. Hooker and Baker (1868) considered this species a junior synonym of *S. dichotoma*.

Schizaea orbicularis (Baker, 1881) Christ, 1906, p.617.
NOW *Actinostachys*.

Schizaea ovalis Bolchovitina, 1961, p.27, pl.5, fig.8. This species name was first published by Yaroshenko (1960, p.234) who attributed it to himself.
NOW *Extrapunctatosporis*.

Schizaea pacificans Martius, 1831, p.116, pl.56, fig.1. A recent species in the subgenus *Lophidium* (Reed, 1947, p.120). with reticulate, monolete spores (Martius, 1831 in Selling, 1946).

Schizaea ?palaeocenica Selling, 1944, p.64, pl.4, fig.42-43.
NOW *Schizaeoisporites*.

Schizaea papuana Cookson, 1957, p.44, pl.8, fig.8-12.
NOW *Stenochlaenidites*.

Schizaea paucijuga Holttum, 1947, p.267. Holttum (1959, p.44) considers this as a junior synonym to *Actinostachys wagneri*.

Schizaea pectinata (Linnaeus, 1753, p.1068) Swartz, 1801, p.102. A recent species in the subgenus *Paraschizaea* (Reed, 1947, p.121) with psilate, foveolate to areolate, monolete spores (Bolchovitina, 1961; Juhasz, 1977); formerly *Acrostichum*.

Schizaea penicillata Humboldt and Bonpland ex Willdenow. Authors obscure. A recent species with bifurcatingly, anastomosically cicatricose, monolete spores (illustrated by Selling, 1946; Bolchovitina, 1961; Mtchedlishvili and Shakhmoundes, 1973).

Schizaea pennula Swartz, 1806, p.379.
NOW *Actinostachys*.

Schizaea pennulopsis Nik. *in* Kuzichkina, 1962, p.111, pl.4, fig.77-78.
NOW *Microfoveolatosporis*.

Schizaea phaseola (Delcourt and Sprumont, 1955) Markova, 1966 nomen nudum. The page, plate and figure numbers were not cited contrary to Article 33.2, ICBN.
NOW *Striamonoletes*.

Schizaea plana Fournier, 1873, p.353.
NOW *Actinostachys*.

Schizaea plectilis Stanley, 1965, p.261, pl.34, fig.1-3.
NOW *Microfoveolatosporis*.

Schizaea poeppigiana Sturm, 1859, p.181. A recent species placed in the subgenus *Eu-Schizaea* by Reed (1947, p.119) with granulate, monolete spores (illustrated by Selling, 1946; Bolchovitina, 1961).

Schizaea polaris Bolchovitina, 1959b, p.124, pl.8, fig.14 ex Bolchovitina, 1961, p.25, pl.5, fig.2a-c; pl.39, fig.14. Early Cretaceous.
NOW *Caniculatosporites*.

Schizaea ponapensis Hosokawa, 1941, p.39. A junior synonym to Schizaea spirophylla (Holttum, 1959, p.42).

Schizaea poppigiana Sturm, p.430. A recent species.

Schizaea praeclara Khlonova, 1961, p.46, pl.3, fig.23.
NOW *Schizaeoisporites*.

Schizaea propinqua Presl in Hooker and Baker, 1868, p.428-429. A recent species not yet verified.

Schizaea pseudodichotoma Bierhorst, 1971, p.634, fig.1-15,29,36. A recent species with microfoveolate, monolete spores.

Schizaea punctata Cookson, 1957, p.43-44, pl.8, fig.5-7.
NOW *Microfoveolatosporis*.

Schizaea pusilla Pursh, 1814, p.657.
NOW *Microschizaea*.

Schizaea reticulata Cookson, 1957, p.42, pl.8, fig.1-2.
NOW *Reticulosporis*.

Schizaea rhacoindusiata Bierhorst, 1971, p.638, fig.21-28,34. A recent species with microfoveolate, monolete spores.

Schizaea robusta Baker *in* Hooker and Baker, 1868, p.429.
NOW *Microschizaea*.

Schizaea rupestris Brown, 1810, p.162.
NOW *Microschizaea*.

Schizaea skottsbergii Selling, 1946, p.71, pl.5, fig.48-56.
NOW *Microreticulatosporis*.

Schizaea skottsbergii var. *mauiensis* Selling, 1946, p.73, pl.5 fig.52-56.
NOW *Microreticulatosporis*.

Schizaea skottsbergii var. *skottsbergii* Selling, 1946, p.71-72 pl.5, fig.48-51 (autonym).
NOW *Microreticulatosporis*.

Schizaea spectabilis Martius ex Sturm, 1859, p.14. A recent species considered to be a junior synonym of *S. elegans* by Hooker and Baker, 1868.

Schizaea spirophylla Troll, 1937, p.343, fig.1-6.
NOW *Actinostachys*.

Schizaea sprucei Hooker, 1862 ex Baker *in* Hooker and Baker, 1867, p.1016. In the subgenus *Lophidium* (Reed, 1947, p.120). A recent species with laevigate to granulate, monolete spores (illustrated by Selling, 1946; Bolchovitina, 1961; Juhasz, 1977).

Schizaea subtrijuga Martius in Hooker and Baker, 1868, p.430. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *S. pennula*.

Schizaea tenella Kaulfman, 1824, p.50, pl.1, fig.7.
NOW *Microschizaea.*

Schizaea tenuis Fournier, 1873, p.353. A recent species.

Schizaea tenuistriata (Pflanzl, 1956, p.239, pl.16, fig.5) Frederiksen, 1980, p.29.
NOW *Striamonoletes.*

Schizaea triangula Stanley, 1965, p.262, pl.35, fig.4-9.
NOW *Microfoveolatosporis.*

Schizaea trilateralis Schkuhr *in* Hooker and Grenville in Hooker and Baker, 1868, p.430. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *S. pennula.*

Schizaea tuberculata Nik. *in* Kuzichkina, 1962, p.110, pl.4, fig.80 nomen nudum. Neither description nor diagnosis was given contrary to Article 38, ICBN. A verrucate, fossil spore species which has been attributed to the author "Nik." but not yet verified.

Schizaea valdiviana Phil in Hooker and Baker, 1868, p.429. A recent species not yet verified. Hooker and Baker (1868) considered this species as a junior synonym of *S. fistulosa.*

Schizaea wagneri Selling, 1946, p.278, fig.8-11. A recent species.
NOW *Actinostachys.*

SCHIZAEA (PARASCHIZAEA) Reed, 1947, p.120-121. A recent subgenus.

SCHIZAEA (SCHIZAEA) Smith, 1793, p.419 (autonym). A recent subgenus.

SCHIZAEITES Potonié, 1893, p.161. A fossil genus containing fern leaf fragments (Andrews, 1955).

Schizaeites angustus Potonié, 1893, p.161, pl.20, fig.4. Permian.

SCHIZAEOPSIS Berry, 1911b, p.216. A macrofossil genus.

Schizaeopsis americana Berry, 1911b, p.216, pl.22, fig.4-9. Neocomian. A macrofossil species. Couper (1958) compares the spores of this species to *Cicatricosisporites brevilaesuratus.* Hughes and Moody-Stuart (1969) illustrate specimens that have finer striations than *Cicatricosisporites brevilaesuratus.*

Schizaeopsis expansa (Fontaine, 1889, p.207) Berry, 1911a, p.194, pl.12. A macrofossil species. Early Cretaceous; formerly *Baieropsis*.

SCHIZAEOPTERIS Stopes and Fujii, 1910, p.10. A fossil genus containing sporangia with schizaealean affinities.

Schizaeopteris mesozoica Stopes and Fujii, 1910, p.10, pl.2, fig.1. Sporangia closely related to *Anemia* with trilete spores (Selling, 1946). Late Cretaceous.

SCHIZEA Regali, Uesugui and Silva Santos, 1974, p.268-269. Orthographic error for *Schizaea*.

Schizea certa Regali, Uesugui and Silva Santos, 1974, p.268-269 nomen nudum. Orthographic error for *Schizaea certa*.
NOW *Schizaeiosporites*.

SCHIZOPTERIS Brongniart, 1828a, p.63. A genus containing fossil fern fronds comparable to those of the recent genera *Schizaea* and *Asplenium* (Andrews, 1955).

Schizopteris anomala Brongniart, 1828a, p.63 (see also Brongniart, 1828b, p.384, pl.135). Carboniferous.

SPHENOPTERIS (Brongniart, 1822) Sternberg, 1825, p.15. A macrofossil genus for gleicheniaceous fern-like foliage in which a number of anemiacean species were placed. Also previously spelled *Sphaenopteris*.

Sphenopteris acrodentata Fontaine, 1889, p.90, pl.34, fig.4.
NOW *Ruffordia*.

Sphenopteris acuta Brongniart, 1829, p.205, pl.57, fig.5.
NOW *Aneimia*.

Sphenopteris baqueroensis Archangelsky, 1967, p.153-154, pl.2, fig. 1-2. Early Cretaceous. A macrofossil species (frond).

Sphenopteris cuneifida Saporta, 1894, p.69, 127, pl.16, fig.11; pl. 23, fig.5.
NOW *Acrostichopteris*.

Sphenopteris debilior Saporta, 1894, p.161, pl.28, fig.5-5a.
NOW *Acrostichopteris*.

Sphenopteris dissectiformis Saporta, 1894, p.68, pl.15, fig.18; pl. 16, fig.12-13.
NOW *Acrostichopteris*.

Sphenopteris elongata Newberry, 1863, p.511.
NOW *Protornithopteris.*

Sphenopteris flabellina Saporta, 1894, p.160, pl.28, fig.3, 6.
NOW *Acrostichopteris.*

Sphenopteris flabellisecta Saporta, 1894, p.69, pl.15, fig.14-15.
NOW *Acrostichopteris.*

Sphenopteris goeppertii Dunker, 1844, p.6.
NOW *Ruffordia.*

Sphenopteris latifolia Brongniart, 1829, p.205, pl.57, fig.1-6.
NOW *Aneimia.*

Sphenopteris tenellisecta Saporta, 1894, p.25, pl.13, fig.1.
NOW *Acrostichopteris.*

Sphenopteris tenuifissa Saporta, 1894, p.161, pl.28, fig.4.
NOW *Acrostichopteris.*

Sphenopteris thoriana Archangelsky, 1967, p.154, pl.1, fig.3-4; pl.2 fig.3-5. Early Cretaceous. This species was questionably attributed simultaneously to the genus *Ruflorina* by the original author.

TEILHARDIA Seward, 1913, p.96. A macrofossil genus. Reed, 1947 includes this genus in the family Acrostichopteridaceae by the presence of what appear to be sori on each side of the midrib.

Teilhardia valdensis Seward, 1913, p.96, pl.11, fig.7a-9b. Wealden (Early Cretaceous). A macrofossil species.

TROCHOPTERIS (Gardner, 1842a, p.74) Reed, 1947, p.154-155. A recent subgenus of *Hemianemia;* formerly the genus *Trochopteris.*

Trochopteris elegans Gardner, 1842a, p.74, pl.4.
NOW *Hemianemia.*

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