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SOME SPORES AND POLLEN FROM APTIAN-ALBIAN OF WEST CARPATHIANS

(Plate I–VIII, Fig. 1)

Abstract: The locality Stupné (West Carpathians) was studied for microfossils resistant to different strong acids (HCl, HF, HNO₃). As a result we obtained very rich material: spores, pollen, microplankton, cuticles and some microforaminifera. Now we are studying spores and pollen (50 genera) and 80 species, which are characteristic for Aptian-Albian sediments. Microspores assemblages discovered in the Aptian-Albian sediments at Stupné has abundant spores of the family *Schizaceae* and pollen *Coniferae*. In the systematic part microfloras are classified in the morphological systematic and only several species are described and given as new species.

Introduction

In the last years our attention has been concentrated on stratigraphic palynology in the West Carpathians. A good result was received by Slovak and Czech palynologists in Tertiary and Quaternary stratigraphy. But Mesozoic sediments have not yet been duly studied. Our material (8 samples) came from a locality at Stupné in the West Carpathians. They are dark grey, carbonaceous shales from the sphaerosiderite marine beds. According to paleontologic data these units are considered to be Upper Aptian — Lower and Middle Albian with a well developed microfauna and well established stratigraphy by fossil evidence.

Acknowledgments

The author wishes to express her sincere gratitude to Dr. Marjorie Muir, who kindly gave her the possibility to study single grains from her doctorate theses and personally discussed with her many palynologic problems. Grateful acknowledgment is made to Dr. N. F. Hughes, who made allowed accessible the material by R. A. Couper and M. E. Dettmann for study purposes. She also wishes to express her acknowledgment to Professor W. Klaus from Wien for many advices and systematically borrowed literature, to Dr. E. Krippel (Bratislava) and to Doc. Dr. B. Pačtová (Prague) for their assistance.

The whole palynological research work was accomplished in the palynologic laboratory of Geological Institute of Slovak Academy of Sciences by the author, who expresses her gratefulness to Professor B. Cambel and Professor D. Andrusov for encouraging and providing with everything necessary for her work.

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Geologic and Stratigraphic Situation

The Stupné locality lies in the south-west from the small town Bytča near the village Stupné on the left bank of the small river Papradňanka (fig. 1). It is a 25 km long incovering lithologically characteristic with gray-green shales and marles, from which the material was taken for palynologic investigation. Generally speaking they are sphaerosiderite units considered as Manin series. Marl usually alternates with thin layers of gray carbonate midstones and they form together feiner rhythmical flysch. Here are found pelosiderite concretions of elipsoidal form with bluish-greish insides and braunish surface with rests of ammonites in the concretions. In these units were found following macrofaunas: *Inoceramus* sp., *Neohibolites minimus*, *Phylloceras* sp., *Kosmatella* sp., *Hypacanthoplites milletianus*, *Puzosia majoriana*, *Puzosia sharpei*, *Turrilites* sp., *Lechites* sp. (D. Andrusov 1959).

In the lower part of the section were found bentic microforaminiferas and lesser planctonic forms. Bentic specimens are as follows: *Ammodiscus tenuissimus* (Gümbel), *Haplophragmoides chapmani* Cressin, *Ammobaculites subcretaceous* Cushman et Alexander, *Verneuillinoides subfiliiformis* Bartenstein, *Gyroidina infracretacea* Morosova, *Epistomina spinulifera polypoides* (Eichenberg) etc. (O. Jendřejáková 1968).

Bentic forms are also present here.

In the upper part of the section have been some *Gaudryina inflata* Jendr., *Conorboides umiatensis* (Tappan), *Ramulina laevis* Jones, *Pleurostomella baroisi* Berthelin, *Pleurostomella obtusa* Berthelin, *Gyroidina infracretacea* Morosova, *Epistomina spinulifera polypoides* (Eichenberg) and *Ticinella multiloculata* (Morrow) start begin to appear in the upper part of this profile.

These data give generally evidence of the Upper Aptian — Lower-Middle Albian age of the studied sediments.

We have taken 8 samples (2 from lower part and 6 from upper part of this section).

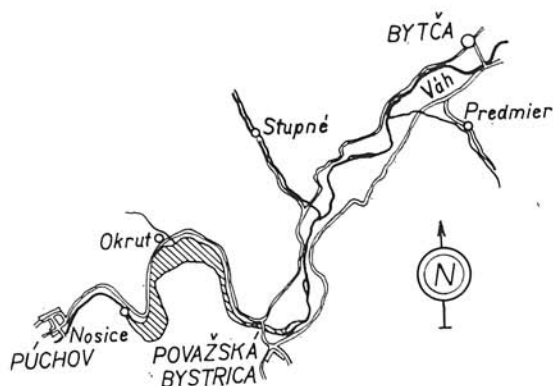


Fig. 1.

Research Method

The samples were obtained from a locality at Stupné. It was a fresh opening and the material was not weathered and could be used surface samples. All material was macerated by the author, who used a well known method by treatment HCl, HF, HNO₃ and heavy liquid CdJ, seldomly alkali cleaning.

The slide mounts are jelly-glycerin (3 preparate for every sample), some part of residue was used for preparing the single grains. The mounting medium for single grains is glycerin-jelly and paraffin. This method has been demonstrated to me by Dr. M. Muir from the Imperial College, London. The remaining material has been preserved in glycerin.

Each slide was studied under Zeiss microscope. Every single grain was photographed, covered preparates were scanned for statistical evidence, the results of which will be given after concentrating more material from other Aptian-Albian sediments in West Carpathians.

Each slide has a preparation and slide number with name of locality and year. Each preparate of single grain has a morphological name of specimen and name of locality.

All the material used in this study is placed at the palynological laboratory of the Geological Institut of the Slovak Academy of Sciences. Every specimen illustrated in this paper is preserved as single grain.

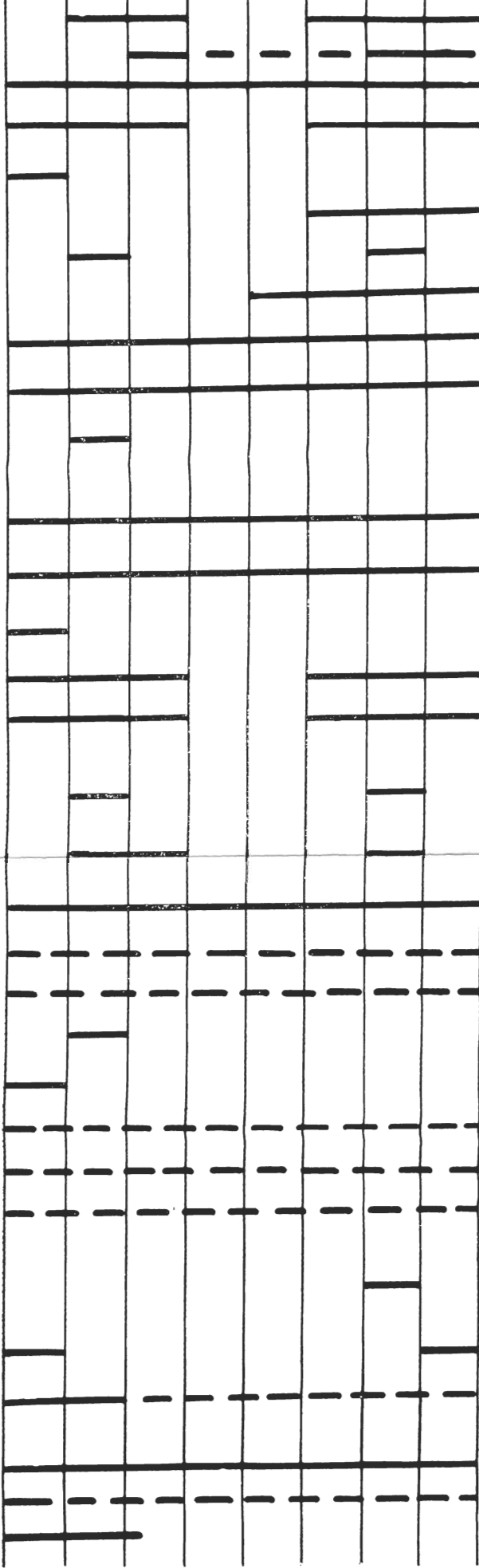
Results of Palynological Investigation

Eighty species were noted and classified in a morphological system from the Aptian-Albian sediment at Stupné (tab. 1, 2). The classification used by the author is that of R. Potonié (1956, 1958, 1960) which was revised by M. E. Dettmann (1963). The affinity of species has been taken from previous papers by R. A. Couper (1958), S. A. J. Pockock (1962), M. E. Dettmann (1963), C. Singh (1964) and noted as one list (tab. 2). All forms of spores and pollen, which are found in the Aptian-Albian sediments at Stupné are shown on the table 1 in the taxonomic order.

Some of these species are represented by single specimens or rare occurrences, but some spores and pollen are abundant and range throughout the whole section, for instance some spores of family *Schizaeaceae* and family *Gleicheniaceae*. The quantitative ratio of spores and pollen with microplankton is as follows: the microplankton is represented by only single specimens and only eight species. But this material is very rich on spores and cuticles. The dissacate grains are the next group in quantitative importance in the section at Stupné. The conclusion which we can draw to palynologic results can generally be paralleled with stratigraphic and ecologic conclusions based on foraminiferal results. May be that microplankton is not so richly represented because the part of sea in question was not so abyssal. Spores restricted to Upper Aptian-Albian include abundant spores of family *Schizaeaceae*, *Gleicheniaceae*, *Osmundaceae*, *Cyathea-ceae*, especially in the lower part of section (samples 1, 2) and *Coniferae* pollen

Tab. 1.

I	II	III	IV	V	VI	VII	VIII	
								<i>Laevigati</i>
								<i>Cyathides australis</i>
								<i>Cyathides minor</i>
								<i>Deltoidospora hallii</i>
								<i>Deltoidospora</i> sp. 1.
								<i>Deltoidospora</i> sp.
								<i>Todisporites minor</i>
								<i>Todisporites major</i>
								<i>Undulatisporites</i> sp.
								<i>Stereisporites antiquasporites</i>
								<i>Biretisporites potonicaci</i>
								<i>Apiculati</i>
								<i>Osmundacidites wellmanii</i>
								<i>Baculatisporites comanicensis</i>
								<i>Acanthotriletes varispinosus</i> Murornati
								<i>Mirornati</i>
								<i>Klukisporites pseudoreticulatus</i>
								<i>Klukisporites variegatus</i>
								<i>Foveotriletes subtriangularis</i>
								<i>Corrugatisporites toratus</i>
								<i>Cicatricosisporites</i> sp.
								<i>Cicatricosisporites melanostratus</i>
								<i>Cicatricosisporites hughesi</i>
								<i>Cicatricosisporites venustus</i>
								<i>Cicatricosisporites potomacensis</i>
								<i>Cicatricosisporites</i> sp. 1.
								<i>Costatoperforosporites fistulosus</i>
								<i>Auriculati</i>
								<i>Appendicisporites irregularis</i>
								<i>Appendicisporites matesovae</i>
								<i>Appendicisporites</i> sp. 1
								<i>Appendicisporites tricostratus</i>
								<i>Appendicisporites</i> sp.
								<i>Matonisporites</i> sp.
								<i>Tricrasati</i>
								<i>Gleichenioidites senonicus</i>
								<i>Gleichenioidites cercinidites</i>
								<i>Gleichenioidites carinatus</i>
								<i>Gleichenioidites rasilis</i>
								<i>Gleichenioidites</i> sp.
								<i>Plicifera</i> sp.
								<i>Clavifera</i> sp.
								<i>Cingulati</i>
								<i>Contignisporites</i> sp.
								<i>Perinotriletes</i>
								<i>Densoisporites velatus</i>
								<i>Nigrina</i> sp.
								<i>Saccizonati</i>
								<i>Tsugaepollenites undulatus</i>
								<i>Tsugaepollenites mesozoicus</i>
								<i>Disaccites</i>
								<i>Pityosporites</i> sp.



Mispurites grandis

Mispurites bisaccus

Cedripites sp.

Cedripites sp.

Podocarpidites crassiformis

Podocarpites sp.

Triassic pollen

Lueckisporites sp.

Ovalipollis sp.

Parvisaccites radiatus

Metes

Azonales

Inaperturopollenites flavus

Araucariacites australis

Araucariacites hungaricus

Spheripollenites psaltus

Inaperturopollenites sp.

Praecolpates

Eucommiidites minor

Polyplacates

Welwitschiapites simplex

Welwitschiapites striatus

Monocolpates

Ginkgoecycadophytes nitidus

Ginkgoecycadophytes sp.

Cycadopites fragilis

Clavatipollenites sp. Porosus

Classopollis torosus

Classopollis major

Classopollis sp.

Trypityches

Tricolpites sp.

Jugates-Tetradites

Riccisporites sp.

Incertae sedis

Annullopollis carpaticensis

Microplankton

Hystichosphaeridium truncigerum

Hystichosphaera ciugulata

Hystichosphaera sp.

Table 2. Botanical Relationships of the Microflora from Stupné

Bryophyta	<i>Undulatisporites</i> sp.
Musci	<i>Foveotriletes subtriangularis</i>
<i>Stereisporites antiquasporites</i>	Cycadophyta
Pteridophyta	Cycadales or Bennettitales
Lycopodiales	<i>Cycadophites fragilis</i>
Family Selaginellaceae	<i>Ginkgocycadophytes nitidus</i>
<i>Acanthotriletes varispinosus</i>	Coniferophyta
Filicales	Coniferales
Family Osmundaceae	Family Araucaceae
<i>Todisporites major</i>	<i>Araucariacites australis</i>
<i>Todisporites minor</i>	<i>Araucariacites hungaricus</i>
<i>Biretisporites potonieai</i>	Family Taxodiaceae
<i>Osmundacidites wellmanii</i>	<i>Inaperturopollenites flavus</i>
<i>Baculatisporites comauensis</i>	Family Podocarpaceae
Family Schizaeaceae	<i>Podocarpidites crassiformis</i>
<i>Klukisporites pseudoreticulatus</i>	<i>Podocarpidites</i> sp.
<i>Klukisporites variegatus</i>	<i>Parvisaccites radiatus</i>
<i>Cicatricosisporites venustus</i>	Family Pinaceae
<i>Cicatricosisporites hughesi</i>	<i>Tsugaepollenites undulatus</i>
<i>Cicatricosisporites</i> sp.	<i>Tsugaepollenites mesozoicus</i>
<i>Cicatricosisporites potomacaensis</i>	<i>Alisporites grandis</i>
<i>Cicatricosisporites</i> sp. I	<i>Alisporites</i> cf. <i>bisaccus</i>
<i>Costatoperforosporites fistulosus</i>	<i>Cedripites</i> sp. I
<i>Appendicisporites irregularis</i>	<i>Cedripites</i> sp.
<i>Appendicisporites matesovae</i>	Coniferophyta — Incertae sedis
<i>Appendicisporites tricostatus</i>	<i>Classopollis torosus</i>
<i>Appendicisporites</i> sp.	<i>Classopollis major</i>
<i>Contignisporites</i> sp.	<i>Classopollis</i> sp.
Family Gleicheniaceae	<i>Spheripollenites psilatus</i>
<i>Gleichenioidites senonicus</i>	<i>Eucommioidites minor</i>
<i>Gleichenioidites</i> cf. <i>G. cercinidites</i>	
<i>Gleichenioidites carinatus</i>	Gnetales
<i>Gleichenioidites rasilis</i>	Family Ephedraceae
<i>Gleichenioidites</i> sp.	<i>Welwitschiapites simplex</i>
<i>Plicifera delicata</i>	<i>Welwitschiapites striatus</i>
<i>Clavifera</i> sp.	Microspores — Incertae sedis
Family Cyatheaceae or Dicksoniaceae	<i>Inaperturopollenites</i> sp.
<i>Cyathidites australis</i>	<i>Ricciisporites tuberculatus</i>
<i>Cyathidites minor</i>	
Pteridophyta — Inceratae sedis	
<i>Deltoidospora halii</i>	
<i>Deltoidospora</i> sp. I	
<i>Deltoidospora</i> sp.	

Schisosporeis reticulatus
Annulopollis carpatiensis
 Angiospermae

Dicotyledoneae — Incertae sedis
Tricolpites sp.

(disaccate pollen in major part of this group) and many different specimens commonly similar to group *Inaperturopollenites* (small and bigger specimens).

On table 1 is shown the distribution of species through every eight samples from the locality at Stupné (1 — lower part, 8 — upper part).

Special interest is the question the constant and abundant presence of triassic pollen in every sample (see plate 6). Fluorescent method has not been used for the differentiation of redeposition pollen from autochthon material. At that time no maceration of Triassic samples took place in the laboratory. Near locality at Stupné any Triassic sediments on the surface are not known until. Triassic pollen has seen Professor Dr. W. Klaus (Wien).

The Triassic specimens are follows: *Lueckisporites* sp., *Ovalipollis* sp., *Paracirculinae* sp., *Platysaccus* sp., *Potonieisporites* sp.

Systematic Part

Anteturma *Sporites* Potonié

Turma *Triletes* Reinsch emend. Dettmann 1963

Suprasubturma *Acavatitriletes* Dettmann 1963

Subturma *Azonotriletes* Lubér emend. Dettmann 1963

Infraturma *Laevigati* Bennie and Kindston emend. Potonié 1956

Genus *Cyathidites* Couper 1953

Type species: *Cyathidites australis* Couper 1953

Cyathidites australis Couper 1953

(Pl. I, fig. 1)

1953 *Cyathidites australis* Couper, p. 27, pl. 2, figs. 11, 12.

1961 *Lygodiumsporites adriennis* Potonié and Gellertich — N. A. Bolkhovitina, p. 104—105 m pl. 31, fig. 3a.

More completely synonymy see in M. E. Dettmann (1963).

Example: single grain, pr. 17.

Occurrence: Commonly the whole section at Stupné (Aptian-Albian).

Cyathidites minor Couper 1953

(Pl. I, fig. 2)

1953 *Cyathidites minor* Couper, p. 28, pl. 2, fig. 13.

Complete synonymy see M. E. Dettmann (1963).

Example: single grain, pr. 19.

Occurrence: Often in the whole section at Stupné.

Genus *Deltoidospora* Miner emend. Potonié 1956

Type species: *Deltoidospora hallii* Miner 1935

Deltoidospora hallii Miner 1935

(Pl. I, fig. 3)

1935 *Deltoidospora hallii* Miner, p. 618, pl. 24, fig. 7.

Example: single grain, pr. 21.

Occurrence: common in whole section at Stupné.

Deltoidospora sp.

(Pl. I, fig. 4)

Example: single grain, pr. 22.

Occurrence: often in section at Stupné.

Deltoidospora sp. I

(Pl. I, fig. 5)

Example: single grain, pr. 27.

Occurrence: often in section at Stupné.

Genus *Todisporites* Couper 1958

Type species: *Todisporites minor* Couper 1958

Todisporites major Couper 1958

(Pl. I, fig. 8, 9)

1958 *Todisporites major* Couper, p. 134, pl. 16, figs 6–8.

Example: single grain, pr. 34 (illustrated specimen has exine finally scabrate).

Occurrence: often in section at Stupné.

Todisporites minor Couper 1958

(Pl. I, fig. 10)

1958 *Todisporites minor* Couper, p. 135, pl. 16, figs. 9–10.

Example: single grain, pr. 28.

Occurrence: often in the section at Stupné.

Genus *Undulatisporites* Pflug in Thomson and Pflug 1953

Type species: *Undulatisporites microculis* Pflug in Thomson and Pflug 1953.

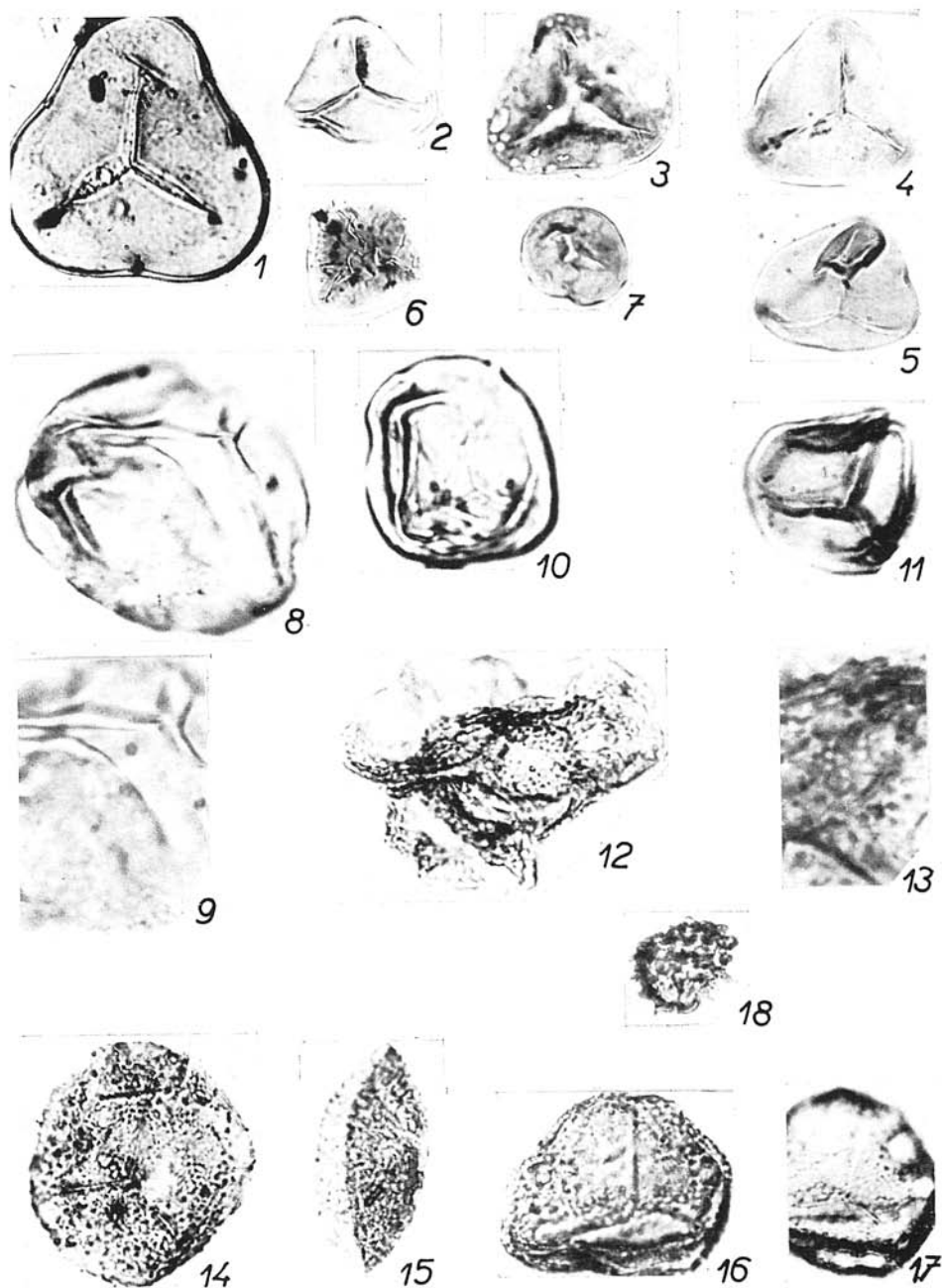


Plate 1

Fig. 1. *Cyathidites australis* Couper. — Fig. 2. *Cyathidites minor* Couper. — Fig. 3. *Delloidospora hallii* Miner. — Fig. 4. *Deltoispora* sp. 1. — Fig. 6. *Undulatisporites* sp. — Fig. 7. *Stereisporites antiquasporites* (Wilson and Webster) Dettmann. — Fig. 8, 9. *Todisporites major* Couper. — Fig. 10. *Todisporites minor* Couper. — Fig. 11. *Biretisporites potonicai* Delcourt and Sprumont. — Fig. 12, 13. *Osmundacidites wellmanii* Couper. — Fig. 14, 15. *Osmundacidites wellmanii* Couper. — Fig. 16, 17. *Baculatisporites comaunensis* (Cookson) Potonié. — Fig. 18. *Acanthotrilites varispinosus* Pocock Magn., fig. 1–8, 10–11, 14–18 — 650 $\times$, fig. 9 — 1000 $\times$, fig. 12 — 150 $\times$, fig. 13 — 1200 $\times$, locality Stupné Photo by O. Corná.

Undulatisporites sp.
(Pl. I, fig. 6)

Example: single grain, pr. 136.

Occurrence: rare in the section at Stupné.

Genus *Stereisporites* Pflug 1953

Type species: *Stereisporites stereoides* (Potonié and Venitz) Pflug 1953

Stereisporites antiquasporites (Wilson and Webster) Dettmann 1963
(Pl. I, fig. 7)

1964 *Sphagnum antiquasporites* Wilson and Webster, p. 273, fig. 2.

More complete synonymy see in M. E. Dettmann (1963).

Example: single grain, pr. 66.

Occurrence: not so often in the section at Stupné.

Genus *Biretisporites* Delcourt and Sprumont emend. Delcourt,
Dettmann, Hughes 1963

Type species: *Biretisporites potonieai* Delcourt and Sprumont 1955

Biretisporites potonieai Delcourt and Sprumont 1955
(Pl. I, fig. 11)

Synonymy: see A. Delcourt, M. E. Dettmann, N. F. Hughes
(1963, p. 283).

Example: single grain, pr. 36.

Occurrence: 6 exemplars in the whole section at Stupné.

Infraturma *Apiculati* Bennie and Kindston emend. Potonié 1956

Genus *Osmundacidites* Couper 1953

Type species: *Osmundacidites wellmanii* Couper 1953

Osmundacidites wellmanii Couper 1953
(Pl. I, figs. 12–14)

1953 *Osmundacidites wellmanii* Couper, p. 20, pl. 1, fig. 5.

Example: every illustrated specimen — single grain, 12 — pr. 34, 14 —
pr. 41.

Occurrence: quite often in the section at Stupné, more in the lower part
(sample 1, 2).

Genus *Baculatisporites* Thomson and Pflug 1953

Type species: *Baculatisporites primarius* (Wolf) Thomson and Pflug 1953

Baculatisporites comaumensis (Cookson) Potonié 1956
(Pl. I, figs. 16–17)

1953 *Trilites comaumensis* Cookson, p. 470, pl. 2, figs. 27–28.

1960 *Baculatisporites comaumensis* (Cookson) Potonié — W. Klaus, p. 125, pl. 29,
fig. 13.

More complete synonymy see G. Norris (1967).

Example: single grain, pr. 41.

Occurrence: rare in the section at Stupné.

Genus *Acanthotriletes* Naumova emend. Potonié and Kremp 1956
Type species: *Acanthotriletes ciliatus* Knox Potonié and Kremp 1956.

Acanthotriletes varispinosus Pocock 1962
(Pl. I, fig. 18)

1962 *Acanthotriletes varispinosus* Pocock, p. 36, pl. 1, figs. 18–19.

Example: single grain, pr. 21.

Occurrence: rare in the section at Stupné.

Infraturma *Murornati* Potonié and Kremp 1954

Genus *Klukisporites* Couper 1958

Type species: *Klukisporites variegatus* Couper 1958

Klukisporites pseudoreticulatus Couper 1958
(Pl. II, fig. 1)

1958 *Klukisporites pseudoreticulatus* Couper, p. 138, pl. 19, figs. 8–10.

Example: single grain, pr. 31.

Occurrence: five specimens in whole section at Stupné (quite rare).

Klukisporites variegatus Couper 1958
(Pl. II, figs. 2–3)

Example: both single grain, 2 — pr. 40, 3 — pr. 57.

Occurrence: noted only 4 specimens in upper part (Albian).

Genus *Foveotriletes* van der Hammen and Potonié 1950

Type species: *Foveotriletes scorbiculatus* (Ross) Potonié 1950.

Foveotriletes subtriangularis Brenner 1963
(Pl. II, figs. 4–5)

Example: both single grain, pr. 27, pr. 32.

Occurrence: often in the lower part section at Stupné, lesser in upper part.

Genus *Corrugatisporites* Weyland and Griefeld 1953

Type species: *Corrugatisporites toratus* Weyl. and Greif. 1953.

Corrugatisporites toratus Weyl. and Grief. 1953
(Pl. II, figs. 6–10)

1953 *Corrugatisporites toratus* Weyland and Griefeld, p. 42, pl. 11, figs. 57–60.

Example: single grain, pr. 58, 61, 73, 75, 43.

Occurrence: common in the section at Stupné.

Genus *Cicatricosisporites* Potonié and Gellertich 1933

Type species: *Cicatricosisporites dorogensis* Potonié and Gellertich 1933

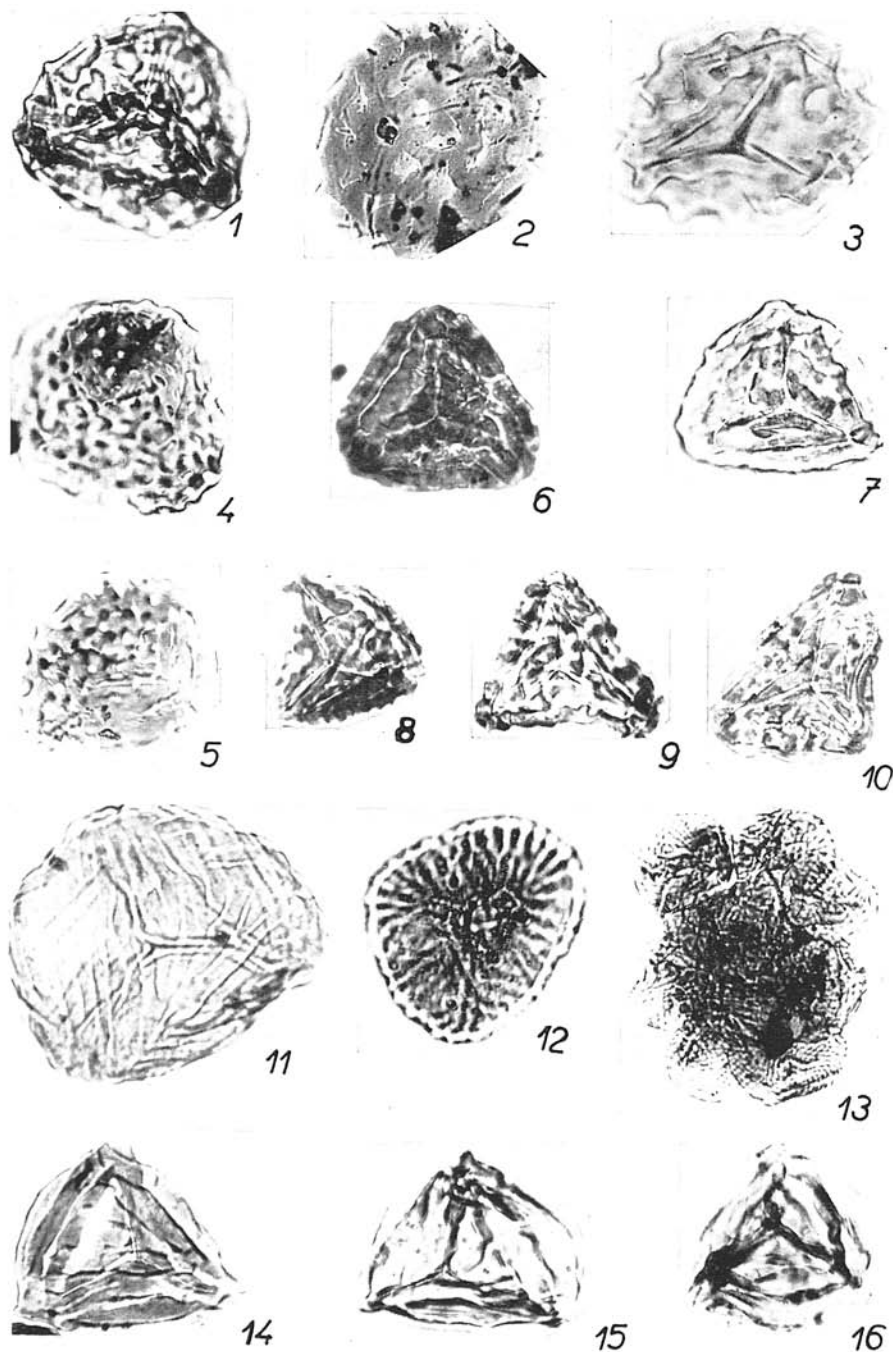


Plate II

Fig. 1. *Klukisporites pseudotericulatus* Couper. — Fig. 2. *Klukisporites variegatus* Couper. — Fig. 3. *Klukisporites variegatus* Couper (distal face). — Fig. 4, 5. *Foveotrilites subtriangularis* Brenner. — Fig. 6–10. *Corrugatisporites toratus* Weyland and Greifeld. — Fig. 11. *Cicatricosisporites* sp. — Fig. 12. *Cicatricosisporites venustus* Déak. — Fig. 13. *Cicatricosisporites mediostriatus* Pocock. — Fig. 14–16. *Cicatricosisporites hughesi* Dettmann Magn., fig. 1–12, 14–16 — 650 $\times$, fig. 13 — 150 $\times$, locality Stupné. Photo by O. Čorná.

Cicatricosisporites sp.

(Pl. III, fig. 11)

Example: single grain, pr. 35.

Occurrence: quite often in the whole section at Stupné, more in the lower part.

Cicatricosisporites venustus Déak 1964

(Pl. III, fig. 12)

Example: single grain, pr. 38.

Occurrence: rare in the section at Stupné.

Cicatricosisporites mediotriatus (Bolkh.) Pocock 1964

(Pl. III, fig. 13)

1961 *Pelletieria mediotriata* Bolkh., p. 66, pl. 29, figs. 3a-b, pl. 21, figs. 1a-c.1964 *Cicatricosisporites mediotriatus* (Bolkh.) Pocock, p. 157, pl. 2, figs. 14-16.

Example: single grain, pr. 53

Occurrence: quite often in the section at Stupné.

Cicatricosporites hughesi Dettmann 1963

(Pl. II, fig. 14-16)

1964 *Cicatricosporites hughesi* Dettmann, p. 55, pl. 10, figs. 6-16, fig. 4r.

Example: single grain, 15 — pr. 68, 16 — pr. 43.

Occurrence: common in the whole section at Stupné.

Cicatricosisporites potomacaensis Brenner 1963

(Pl. III, fig. 1-3)

Example: many single grains, pr. 36 — fig. 1, 2, pr. 39 — fig. 3.

Occurrence: commonly in the section at Stupné.

Discussion: These spores are specially abundant in our material, often folded, mostly specimens have maximum diameter 70-85-90-100 micr., muri 1-2mi wide, laesurae trilete, $\frac{2}{3}$ radius of spores.

Cicatricosisporites sp. I.

(Pl. III, fig. 4, 5)

Example: single grain, pr. 93.

Occurrence: single specimen in the some samples from the whole profile.

Comments: Forms like as *Schizaeopsis americana* Berry but laesurae is long (some times it destroys equatorial outline).

Genus *Costatoperforosporites* Déak 1962Type species: *Costatoperforatus fistulosus* Déak 1962

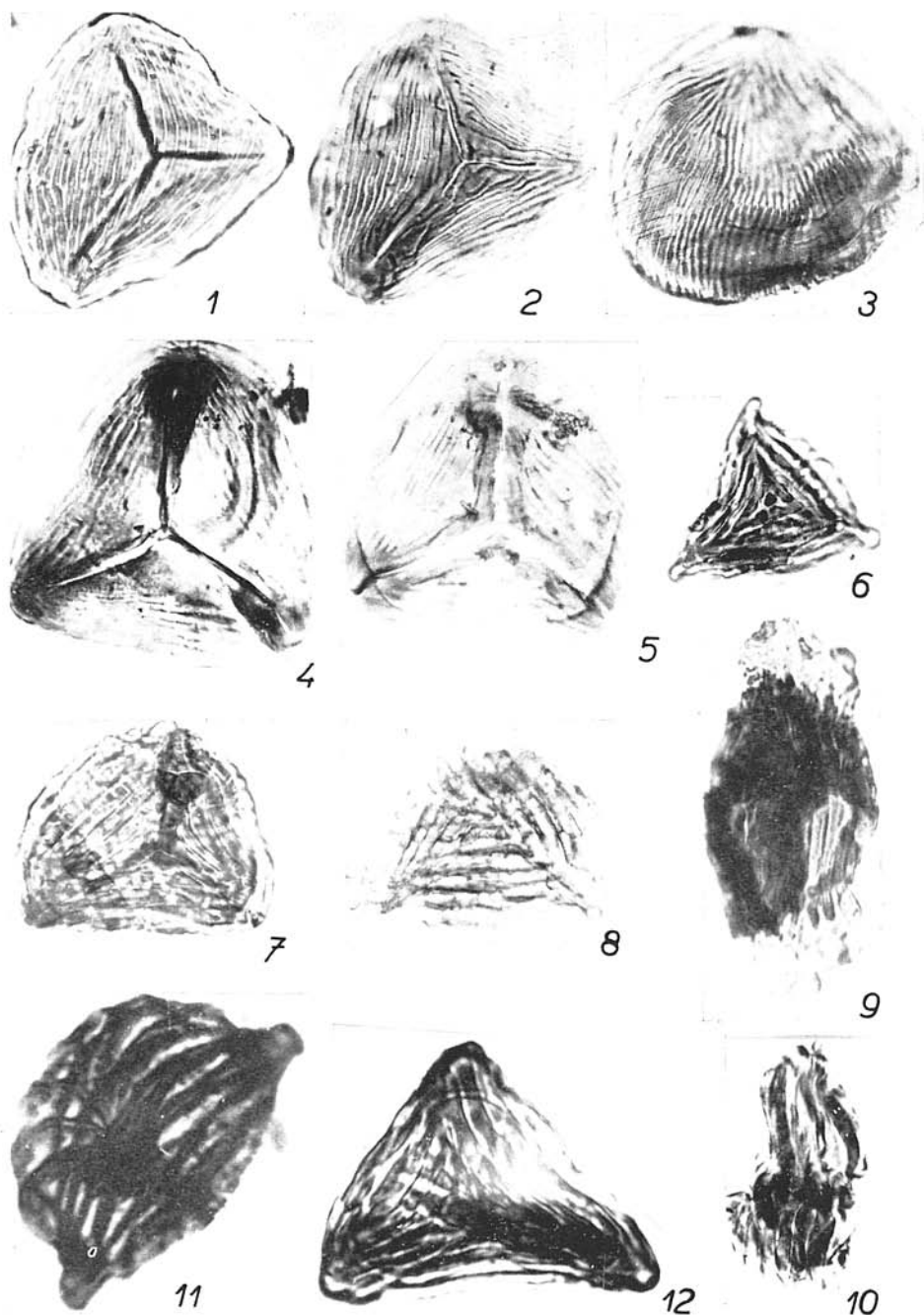


Plate III

Fig. 1-3, *Cicatricosisporites potomacensis* Brenner. — Fig. 4, *Cicatricosisporites* sp. 1. — Fig. 5, *Appendicisporites* sp. — Fig. 6, *Appendicisporites irregularis* Pocock. — Fig. 7, *Constatoperfosporites fistulosus* Deák. — Fig. 8, *Appendicisporites* sp. — Fig. 9-10, *Appendicisporites matesovae* Bolchovitina) Norris. — Fig. 11-12, *Appendicisporites tricostatus* (Bolchovitina) Pocock. Magn. 650 $\times$. locality Stupné. Photo by O. Čorná.

Costatoperforatus fistulosus Déak 1962

(Pl. III, fig. 7)

Example: single grain, pr. 98.

Occurrence: only 2 exemplars in the lower part of section.

Subturma *Zonotriletes* Waltz 1941Infraturma *Auriculati* Schopf emend. Dettmann 1963Genus *Appendicisporites* Weyland and Kreiger 1953Type species: *Appendicisporites tricuspidatus* Weyland and Kreiger 1953*Appendicisporites matesovae* (Bolchovitina) Norris 1967

(Pl. III, fig. 9—10)

1961 *Anemia matesovai* Bolchovitina, p. 57, pl. 16, fig. 5a-c, pl. 18, fig. 3.1967 *Appendicisporites matesovae* Bolchovitina — G. Norris, pl. 12, figs. 11, 13—14, p. 94.

Example: single grain, pr. 93.

Occurrence: only one specimen in the upper part of section at Stupné.

Appendicisporites irregularis Pocock 1964

(Pl. III, fig. 6)

1964 *Appendicisporites irregularis* Pocock, p. 169, pl. 4, figs. 4—5.

Example: single grain, pr. 69.

Occurrence: only two specimens in the upper part of profile at Stupné.

Appendicisporites sp.

(Pl. III, fig. 8)

Example: single grain, pr. 58.

Occurrence: only one specimen in the sample 7.

Comments: Sekzina thick with the coarse ornamentation on the muri.

Appendicisporites tricostatus (Bolchovitina) Pocock 1964

(Pl. III, fig. 11—12)

1953 *Anemia tricostata* Bolchovitina, p. 37, pl. 4, figs. 9—12.1964 *Appendicisporites tricostatus* (Bolchovitina) — S. A. J. Pocock, p. 166, pl. 3, figs. 15—16.

Example: single grain, pr. 108.

Occurrence: quite often in our material.

Genus *Matonisporites* Couper emend. Dettmann 1964Type species: *Matonisporites phlebopteroides* Couper 1958*Matonisporites* sp.

(Pl. IV, fig. 1)

Example: single grain, pr. 52.

Occurrence: often in the material from Stupné special in the lower part.

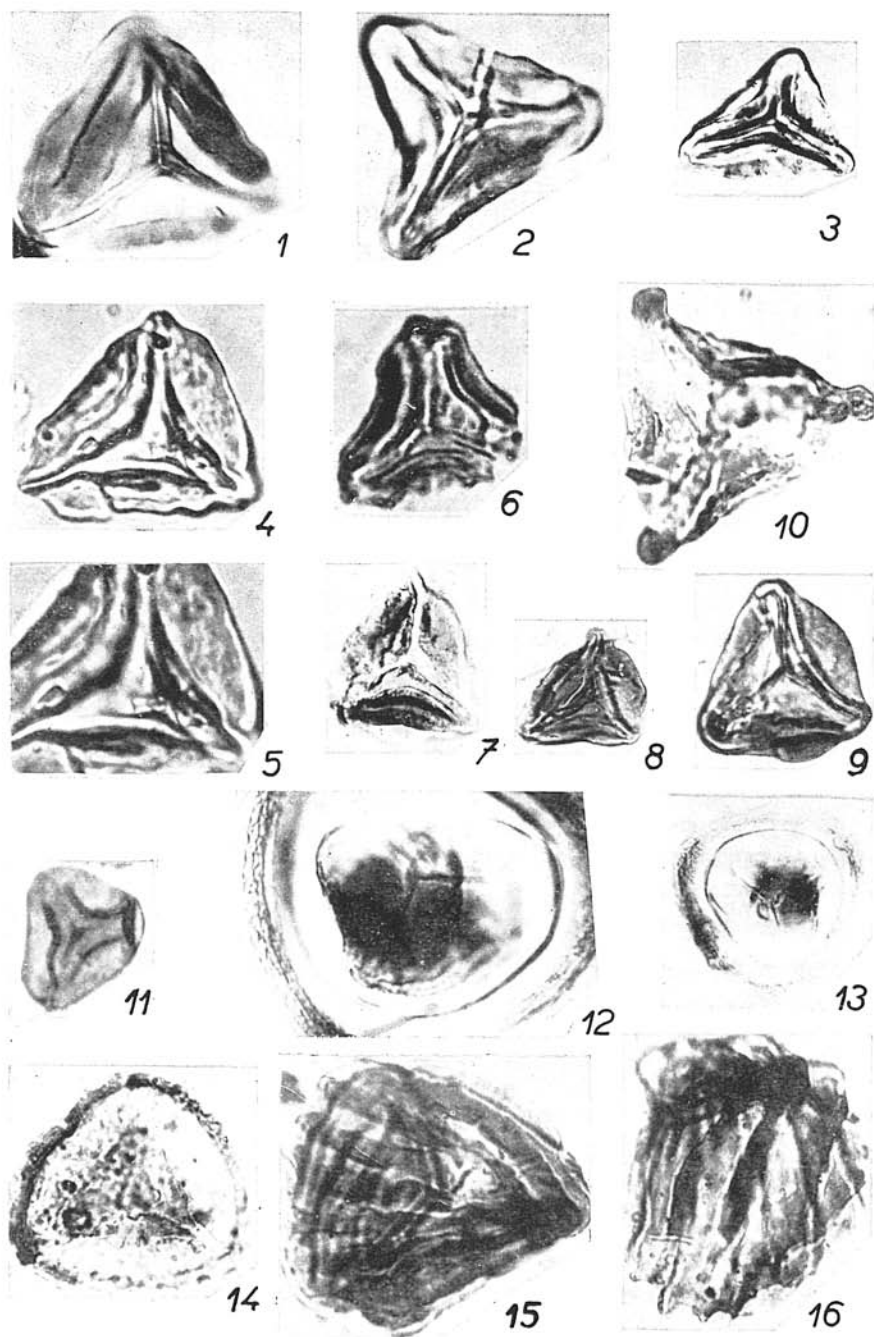


Plate IV

Fig. 1. *Matonisporites* sp. — Fig. 2, 3. *Gleichenioidites senonicus* Ross. — Fig. 4–5. *Gleichenioidites carinatus* (Bolchovitina) Bolchovitina. — Fig. 6. *Gleichenioidites* cf. *G. cercinioides* (Cookson) Dettmann. — Fig. 7, 8. *Gleichenioidites* sp. — Fig. 9. *Gleichenioidites rasilis* (Bolchovitina) Bolchovitina. — Fig. 10. *Clavifera* sp. — Fig. 11. *Plicifera delicata* (Bolchovitina) Bolchovitina. — Fig. 12, 13. *Densoisporites velatus* Weyland and Krieger. — Fig. 14. *Nigrina* sp. — Fig. 15, 16. *Contignisporites* sp. Magn. 650 $\times$, fig. 12–1200 $\times$, locality Stupné. Photo by O. Čorná.

Intraturma *Tricrassati* Dettmann 1964

Genus *Gleicheniüdites* Ross ex Delcourt and Sprumont emend.
Dettmann 1964

Type species: *Gleicheniüdites senonicus* Ross 1949

Gleicheniüdites senonicus Ross 1949

(Pl. IV, fig. 2—3)

1949 *Gleicheniüdites senonicus* Ross, p. 31, pl. 1, fig. 3.

Example: single grain, pr. 19.

Occurrence: common in the lower part of section at Stupné, often in the upper part of section.

Gleicheniüdites cf. *G. cercinidites* (Cookson) Dettmann 1964

(Pl. IV, fig. 6)

1953 *Gleichenia cercinidites* Cookson, p. 464, pl. 1, figs. 5—6.

1957 *Gleichenia* cf. *G. cercinidites* Cookson — B. E. Balme, p. 23, pl. 3, figs. 42—44.

1963 *Gleicheniüdites* cf. *G. cercinidites* (Cookson) — M. E. Dettmann, p. 65, pl. XIII, figs. 42—44.

Example: single grain, pr. 74.

Occurrence: quite often in the whole section, specially in the lower part.

Gleicheniüdites carinatus (Bolchovitina) Bolchovitina 1966

(Pl. IV, fig. 4—5)

1953 *Gleichenia carinata* Bolchovitina, p. 53, pl. 7, figs. 14—15.

1959 *Gleichenia carinata* Bolchovitina, p. 99, pl. III, fig. 45.

1961 *Gleichenia carinata* Bolchovitina — S. R. Samojlovich, p. 53, pl. 14, fig. 10a, b, pl. 15, fig. 1a, b.

1966 *Gleicheniüdites carinatus* (Bolchovitina) — N. A. Bolchovitina, p. 68.

Example: single grain, pr. 59.

Occurrence: quite often in the whole profil at Stupné.

Gleicheniüdites rasilis (Bolchovitina) Bolchovitina 1966

(Pl. IV, fig. 9)

1953 *Gleichenia rasilis* Bolchovitina, p. 53, pl. 7, fig. 16, 17, 18.

1966 *Gleicheniüdites rasilis* (Bolchovitina) — N. A. Bolchovitina, p. 68.

Example: single grain, pr. 78

Occurrence: quite often in the material from Stupné.

Gleicheniüdites sp.

(Pl. IV, fig. 7—8)

Example: single grain, pr. 68, pr. 54.

Occurrence: often in the our material.

Genus *Plicifera* Bolchovitina 1966

Type species: *Plicifera delicata* (= *Gleichenia delicata*) Bolchovitina 1953

Plicifera delicata Bolchovitina 1966

(Pl. IV, fig. 11)

1953 *Gleichenia delicata* Bolchovitina, p. 22, pl. II, figs. 1-4.

1966 *Plicifera delicata* (Bolchovitina) — N. A. Bolchovitina, p. 68, pl. I, fig. 3a-b.

Example: single grain, pr. 69.

Occurrence: rare in the section at Stupné.

Genus *Clavifera* Bolchovitina 1965

Type species: *Clavifera triplex* (= *Gleichenia triplex*) Bolchovitina 1963

Clavifera cf. *triplex* Bolchovitina 1965

(Pl. IV, fig. 10)

1953 *Gleichenia triplex* Bolchovitina, p. 54, pl. VIII, figs. 10-13.

1966 *Clavifera triplex* Bolchovitina — N. A. Bolchovitina, p. 68, pl. I, fig. 6a-c.

Example: single grain, pr. 81

Occurrence: only one specimen.

Comments: spore like as *Clavifera triplex* Bolchovitina in generally features, but corroded.

Infraturma *Cingulati* Potonié and Klaus emend. Dettmann 1963

Genus *Contignisporites* Dettmann 1963

Type species: *Contignisporites glebulentus* Dettmann 1963

Contignisporites sp.

(Pl. IV, fig. 15-16)

Example: single grain, pr. 112, pr. 76.

Occurrence: often in the material from Stupné.

Suprasubturma *Perinotriletes* Erdtman emend. Dettmann 1963

Genus *Densoisporites* Weyland and Krieger emend. Dettmann 1963

Type species: *Densoisporites velatus* Weyland and Krieger 1953

Densoisporites velatus Weyland and Krieger emend. Krasnova 1961

(Pl. IV, figs. 12-13)

1953 *Densoisporites velatus* Weyland and Krieger, p. 12, pl. 4, figs. 12-14.

1958 *Densoisporites perinatus* Couper, p. 145, pl. 23, figs. 6-9.

1961 *Selaginella velata* (Weyland and Krieger) Krasnova — in: R. S. Samojlovitch et al., p. 35-36, pl. 7, fig. 5-6.

Example: single grain, pr. 89.

Occurrence: only one specimen in the sample 7.

Genus *Nigrina* Maljavkina 1949

Type species: *Nigrina maxima* Maljavkina 1949

Nigrina sp.

(Pl. IV, fig. 14)

Example: single grain, pr. 86.

Occurrence: rare in the our material. Specimen 14 — corroded.

Anteturma *Pollenites* Potonié 1931

Turma *Saccites* Erdtman 1947

Subturma *Monosaccites* Chitaley emend. Potonié and Kemp 1954

Infraturma *Saccizonati* Bhadrwaj 1957

Genus *Tsugaepollenites* Potonié emend. Potonié 1958

Type species: *Tsugaepollenites igniculus* (Potonié) Potonié and Venitz 1934

Tsugaepollenites undulatus (Weyland and Greifeld) Dettmann 1963
(Pl. V, fig. 4)

1953 *Inaperturopollenites undulatus* Weyland and Greifeld, p. 44, pl. 13, figs. 89, 90.

1963 *Tsugaepollenites undulatus* (Weyland and Greifeld) — M. E. Dettmann, p. 99.

Example: single grain, pr. 74.

Occurrence: several specimens in the samples 2, 5, 7.

Tsugaepollenites mesozoicus Couper 1958

(Pl. V, figs. 2—3)

1954 cf. *Pollenites macroverrucosus* Rogalska, p. 20, pl. 9, fig. 5—6.

1958 *Tsugaepollenites mesozoicus* Couper, p. 55, pl. 30, figs. 8—10.

1958 *Cerebropollenites mesozoicus* Couper Nilsson, p. 72, pl. 6, figs. 10—12.

Example: single grain, pr. 91, pr. 120.

Occurrence: abundant in the lower part (samples 2—4), lesser in the upper part of the section at Stupné.

Subturma *Disaccites* Couper 1947

Genus *Pityosporites* Seward emend. Manum 1960

Type species: *Pityosporites antarcticus* Seward 1914

Pityosporites constrictus Singh 1964

(Pl. V, fig. 4)

1964 *Pityosporites constrictus* Singh, p. 122, pl. 16, figs. 8, 9.

Example: single grain, pr. 69.

Occurrence: often in the material from Stupné.

Genus *Alisporites* Daugherty 1941

Type species: *Alisporites oppii* Daugherty 1941

Alisporites grandis (Cookson) Dettmann 1963

(Pl. V, figs. 5—6)

1953 *Disaccites grandis* Cookson, p. 471, pl. 2, fig. 41.

1957 *Pityosporites grandis* Cookson — B. E. Balme, p. 36, pl. 10, figs. 110, 111.

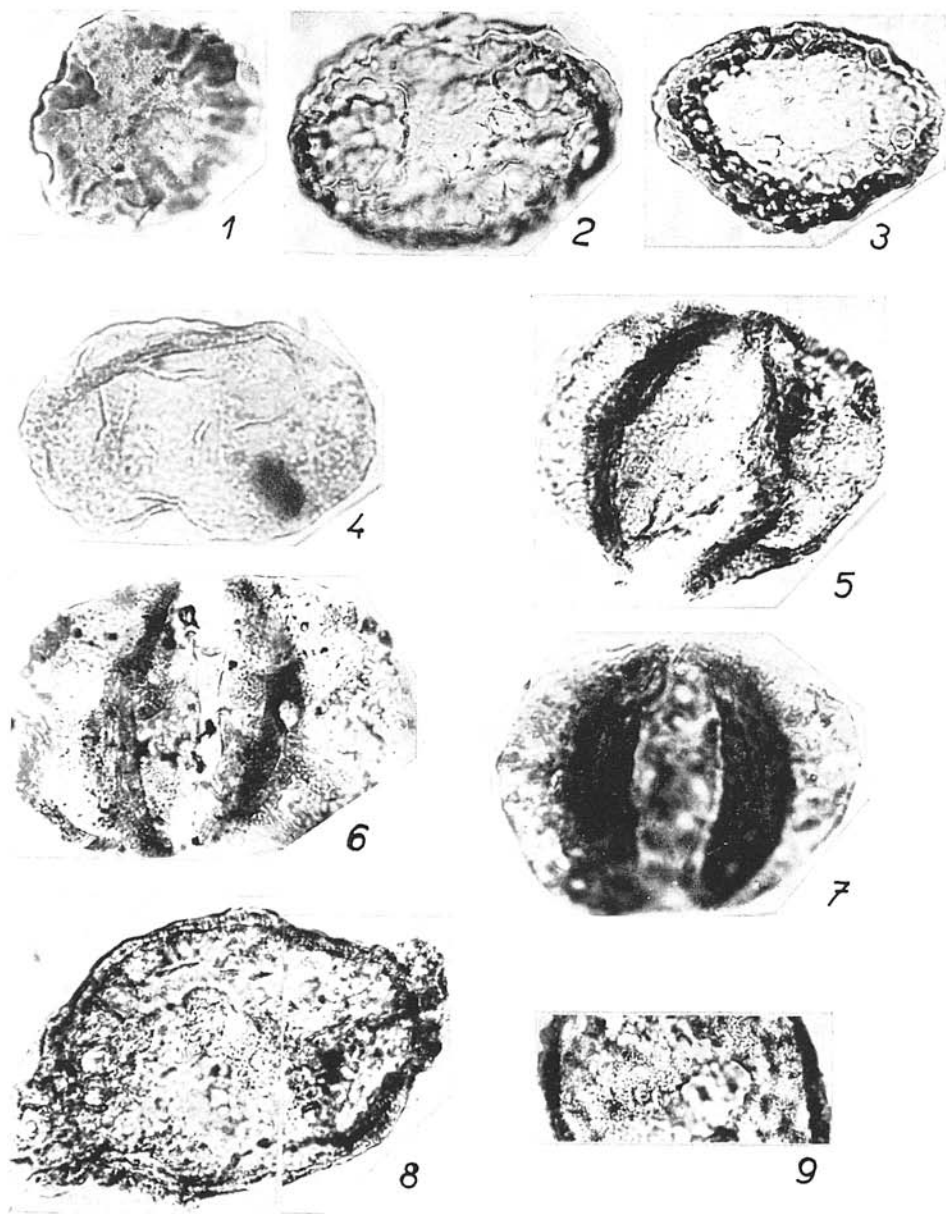


Plate V

Fig. 1. *Tsugaepollenites undulatus* (Weyland and Greifeld) Dettmann. — Fig. 2, 3. *Tsugaepollenites mesozoicus* Couper. — Fig. 4. *Pityosporites constrictus* Singh. — Fig. 5, 6. *Alisporites grandis* (Cookson) Dettmann. — Fig. 7. *Alisporites cf. bisaccus* Rouse. — Fig. 8, 9. *Cedripites* sp. Magn. 650 $\times$, locality Stupné, Photo by O. Čorná.

1959 *Alisporites rotundus* Rouse, p. 316, pl. 1, fig. 15—16.

1963 *Alisporites grandis* (Cookson) — M. E. Dettmann, p. 102, pl. XXV, figs. 1—4.

Example: single grain, pr. 62, pr. 81.

Occurrence: the species is quite common in the every samples.

Alisporites cf. *bisaccus* Rouse 1959

(Pl. V, fig. 7)

1959 *Alisporites bisaccus* Rouse, p. 316, pl. 1, figs. 13—14.

Example: single grain, pr. 19.

Occurrence: often in the material from Stupné.

Genus *Cedripites* Wodehouse 1933

Type species: *Cedripites eocenicus* Wodehouse 1933

Cedripites (microsaccus) sp. I

(Pl. V, figs. 8—9)

Example: single grain, pr. 13.

Occurrence: only one specimen in the sample 2 from Stupné.

Discussion: Bisaccate pollen; outline oval, marginal crest well visible, bladders very small, 20—30 microns, body in equatorial outline oval, 80—95 microns in the length, 45 microns breadth. Exina of the body and bladders granulate.

Cedripites sp.

(Pl. VI, fig. 3)

Example: single grain, sp. 2 — pr. 81, sp. 3 — pr. 95.

Occurrence: different specimen like as *Cedripites* quite often in the section at Stupné.

Genus *Podocarpidites* Cookson ex Couper 1958

Type species: *Podocarpidites ellipticus* Cookson 1947

Podocarpidites crassiformis n. sp.

(Pl. VI, figs. 1—2)

Type specimen: The holotype figured on plate VI, fig. 1, 2 and deposited as single grain in the collection of Cetaceous spores in the Geological Institut of Slovak Academy of Sciences in Bratislava (pr. 162).

Distribution and locality: Lower-Middle Albian (sample 6, 7), section at Stupné, Slovakia, West Carpathians.

Material: 3 specimens.

Size range: Length of bladders 55—70 microns.

Breadth of bladders 40 (45) 60 microns.

Length of central body 45 (60) 75 microns.

Total breadth of grain 90 (110) 135 microns.

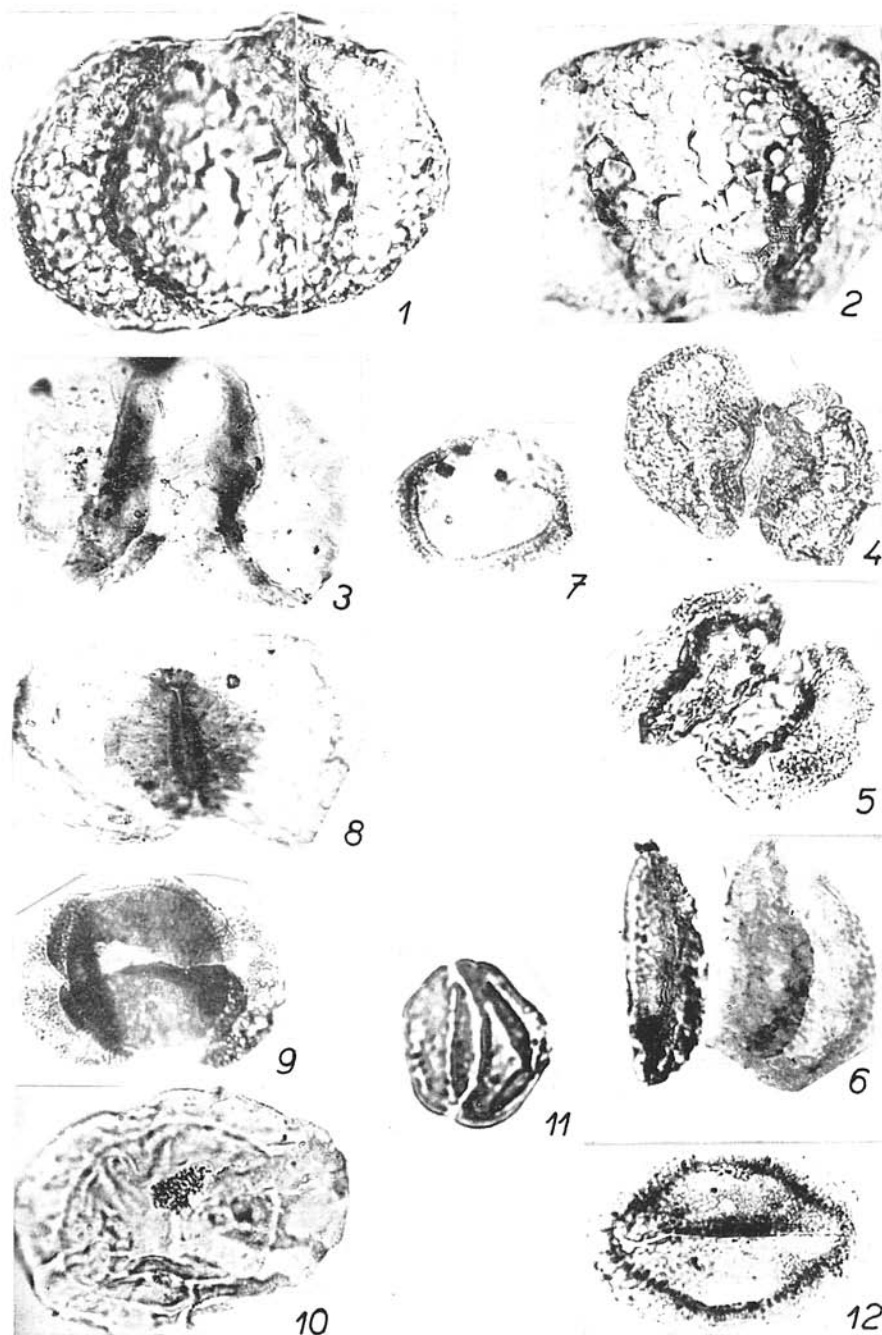


Plate VI

Fig. 1, 2. *Podocarpidites crassiformis* n. sp. — Fig. 3. *Cedripites* sp. — Fig. 4–6. *Podocarpites* sp. — Fig. 7. *Parvisaccites radiatus* Couper. — Fig. 8. *Platysaccus* sp. — Fig. 9. *Luëckisporites* sp. — Fig. 10. *Potoniaisporites* sp. — Fig. 11. *Paracirculinae* sp. — Fig. 12. *Ovalipollis* sp. Magn. 650 $\times$, locality Stupně. Photo by O. Čorná.

Breadth of central body 45 (60) 80 microns.

Width of elements of reticulation of bladders 2 (3.5) 5 microns.

Width of elements of reticulation of body 3 (7) microns.

Description: Bisaccate pollen; central body subcircular in the equatorial outline; marginal crest visible, sacchi a little longer than central body; distal furrow scabrate with somewhat thickened, well marked, concave lips; ornamentation of bladders — reticulate, ornamentation of body — coarse reticulum, muri of reticulum with spines, lumina big and deep, irregular form.

Discussion: These species have special sculpture on the body, very coarse and complicated, with the author did not meet in any another described species of *Podocarpidites*.

Podocarpidites sp.

(Pl. VI, figs. 4—6)

Example: single grain, pr. 89, pr. 64, pr. 73.

Occurrence: different specimens like as *Podocarpidites* often in the material from Stupné.

Genus *Parvisaccites* Couper 1958

Type species: *Parvisaccites radiatus* Couper 1958

Parvisaccites radiatus Couper 1958

(Pl. VI, fig. 7)

1958 *Parvisaccites radiatus* Couper, p. 80, pl. 29, fig. 58.

Example: single grain, pr. 118.

Occurrence: rare in the material from Stupné.

Turma *Aletes* Ibrahim 1933

Subturma *Azonaletes* Luberehend, Potonié and Kremp 1954

Infraturma *Psilonapiti* Erdtman 1947

Genus *Inaperturopollenites* Pflug ex Thomson and Pflug emend.
Potonié 1960

Type species: *Inaperturopollenites dubius* (Potonié and Venitz) Thomson and Pflug 1953

Inaperturopollenites flavus (Leschik) Nilsson 1958

(Pl. VII, figs. 1—2)

1955 *Punctatisporites flavus* Leschik, p. 31, pl. 4, fig. 2.

1958 *Inaperturopollenites flavus* Leschik — T. Nilsson, p. 68, pl. 6, fig. 1.

Example: single grain, pr. 69, pr. 115.

Occurrence: common in the section at Stupné.

Inaperturopollenites sp.

(Pl. VII, fig. 6)

Example: single grain, pr. 114.

Occurrence: quite often in this profile.

Remarks: Small inaperturate pollen, folded, ekzina smooth.

Infraturma *Granulonapiti* Cookson 1947

Genus *Araucariacites* Cookson ex Cooper 1958

Type species: *Araucariacites australis* Cookson 1947

Araucariacites australis Cookson 1947

(Pl. VII, fig. 3)

1947 *Araucariacites australis* Cookson, p. 130, pl. 13, figs. 1-4.

Example: single grain, pr. 53.

Occurrence: often in the material from Stupné.

Araucariacites hungaricus Déak 1964

(Pl. VII, fig. 4)

1964 *Araucariacites hungaricus* Déak, p. 32, pl. XIII, figs. 1-7.

Example: single grain, pr. 97.

Occurrence: quite often in the lower part of profile.

Genus *Spheripollenites* Couper 1958

Type species: *Spheripollenites scabratus* Couper 1958

Spheripollenites psilatus Couper 1958

(Pl. VII, fig. 6)

Example: single grain, pr. 37.

Occurrence: quite often in our material.

Turma *Plicates* Naumova emend. Potonié 1960

Subturma *Praecolpates* Potonié and Kemp 1954

Genus *Eucommiidites* Erdtman emend. Hughes 1961

Type species: *Eucommiidites troedssonii* Erdtman 1948

Eucommiidites minor Groot and Penny 1960

(Pl. VII, fig. 7)

1960 *Eucommiidites minor* Groot and Penny, p. 234, pl. 2, fig. 14.

Example: single grain, pr. 87.

Occurrence: rare in the upper part of section.

Subturma *Polyplicates* Erdtman 1952

Genus *Welwitschiapites* Bolchovitina 1953 ex Potonié 1958

Type species: *Welwitschiapites magniolobatus* Bolchovitina 1953

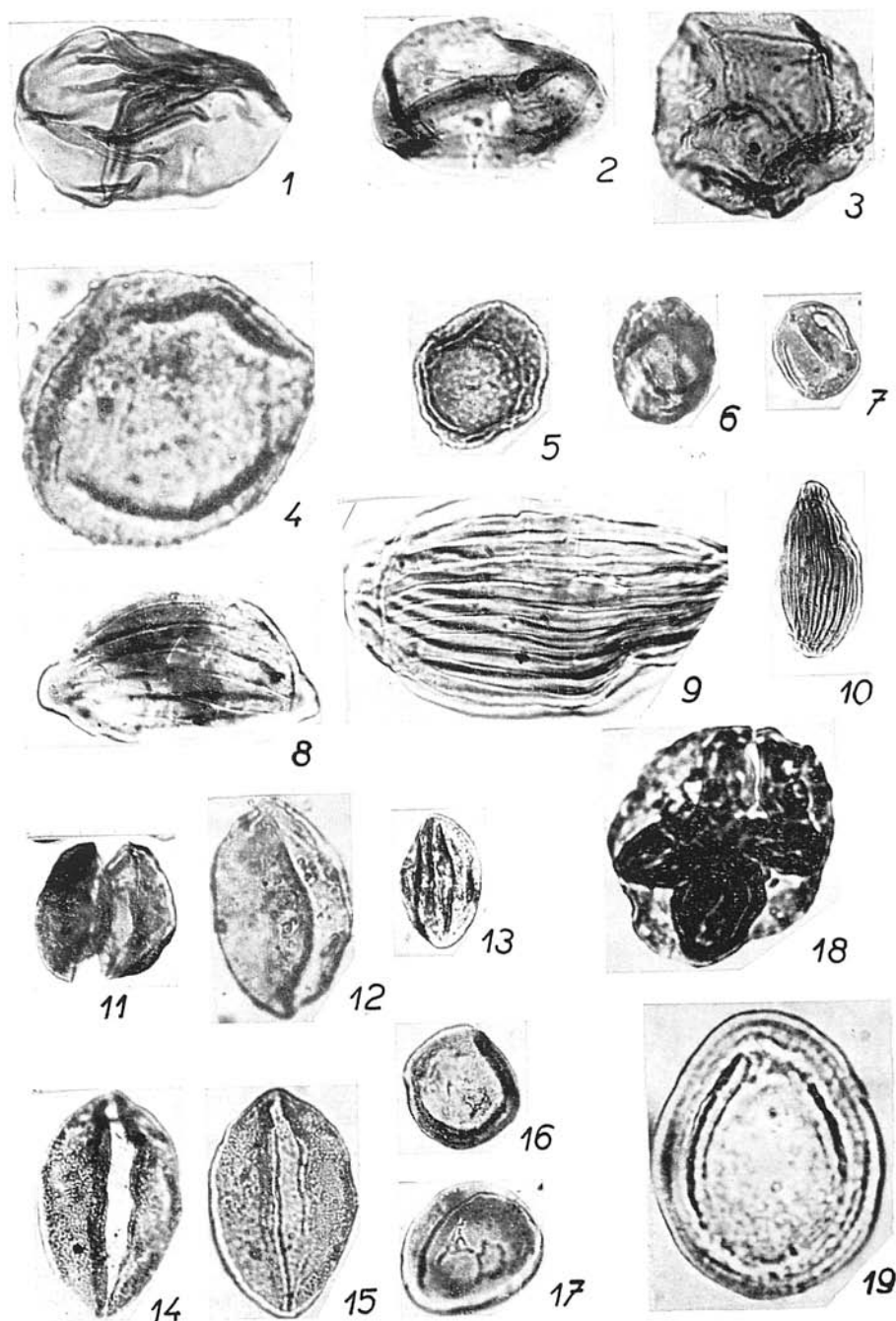


Plate VII

Fig. 1, 2. *Inaperturopollenites flavus* (Leschik, Nilsson. — Fig. 3. *Araucariacites australis* Couper. — Fig. 4. *Araucariacites hungaricus* Deák. — Fig. 5. *Spheripollenites psilatus* Couper. Fig. 6. *Inaperturopollenites* sp. — Fig. 7. *Eucommiidites minor* Groot and Penny. — Fig. 8. *Welwitschiapites similis* Deák. — Fig. 9–10. *Welwitschiapites striatus* Deák. — Fig. 11, 12. *Ginkgoecycadophytus nitidus* (Balme) de Jersey. — Fig. 13. *Clavatipollenites* sp. — Fig. 14, 15. *Cycadophytes fragilis* Singh. — Fig. 16, 17. *Classopollis torosus* (Reisinger) Balme. — Fig. 18. Tetrad of *Classopollis* sp. — Fig. 19. *Classopollis major* Groot and Groot. Magn. 650×, fig. 10 – 250×, fig. 19 – 1000×, locality Stupné. Photo by O. Corná.

Welwitschiapites simplex Déak 1963

(Pl. VIII, fig. 8)

1964 *Welwitschiapites simplex* Déak, p. 34, pl. XIII, figs. 8—9, 11—12.

Example: single grain, pr. 58.

Occurrence: quite often in the lower part of section.

Welwitschiapites striatus Déak 1964

(Pl. VII, figs. 9—10)

1964 *Welwitschiapites striatus* Déak, p. 34, pl. XIV, figs. 2, 5.

Example: single grain, pr. 123.

Occurrence: often in the material from Stupné.

Subturma *Monosulcates* Iversen and Troels-Smith 1939Genus *Cycadopites* Wodehouse ex Wilson and Webster 1957Type species: *Cycadopites follicularis* Wilson et Webster 1957*Cycadopites fragilis* Singh 1964

(Pl. VII, figs. 14—15)

1962 *Monosulcites minimus* Pocock, p. 77, pl. 13, figs. 206—208.1964 *Cycadopites fragilis* Singh, p. 103, pl. 14, fig. 2.

Example: single grain, pr. 131.

Occurrence: rare in the section at Stupné.

Genus *Ginkgocycadophytus* Samojlovitch 1953Type species: *Ginkgocycadophytus caperatus* (Luber) Samojlovitch 1953*Ginkgocycadophytus nitidus* (Balme) de Jersey 1952

(Pl. VII, figs. 11, 12)

1957 *Entylissa nitidus* Balme, p. 30, pl. 6, figs. 8, 9.1962 *Ginkgocycadophytus nitidus* (Balme) — N. J. de Jersey, p. 12, pl. 5, figs. 1—3.

Example: single grains, pr. 125, pr. 49.

Occurrence: quite often in the lower part of the section at Stupné.

Genus *Clavatipollenites* Couper 1958Type species: *Clavatipollenites hughesii* Couper 1958*Clavatipollenites* sp.

(Pl. VII, fig. 13)

Example: single grain, pr. 87.

Occurrence: rare in the material from Stupné.

Subturma *Tryptyches* Naumova emend. Potonié 1960

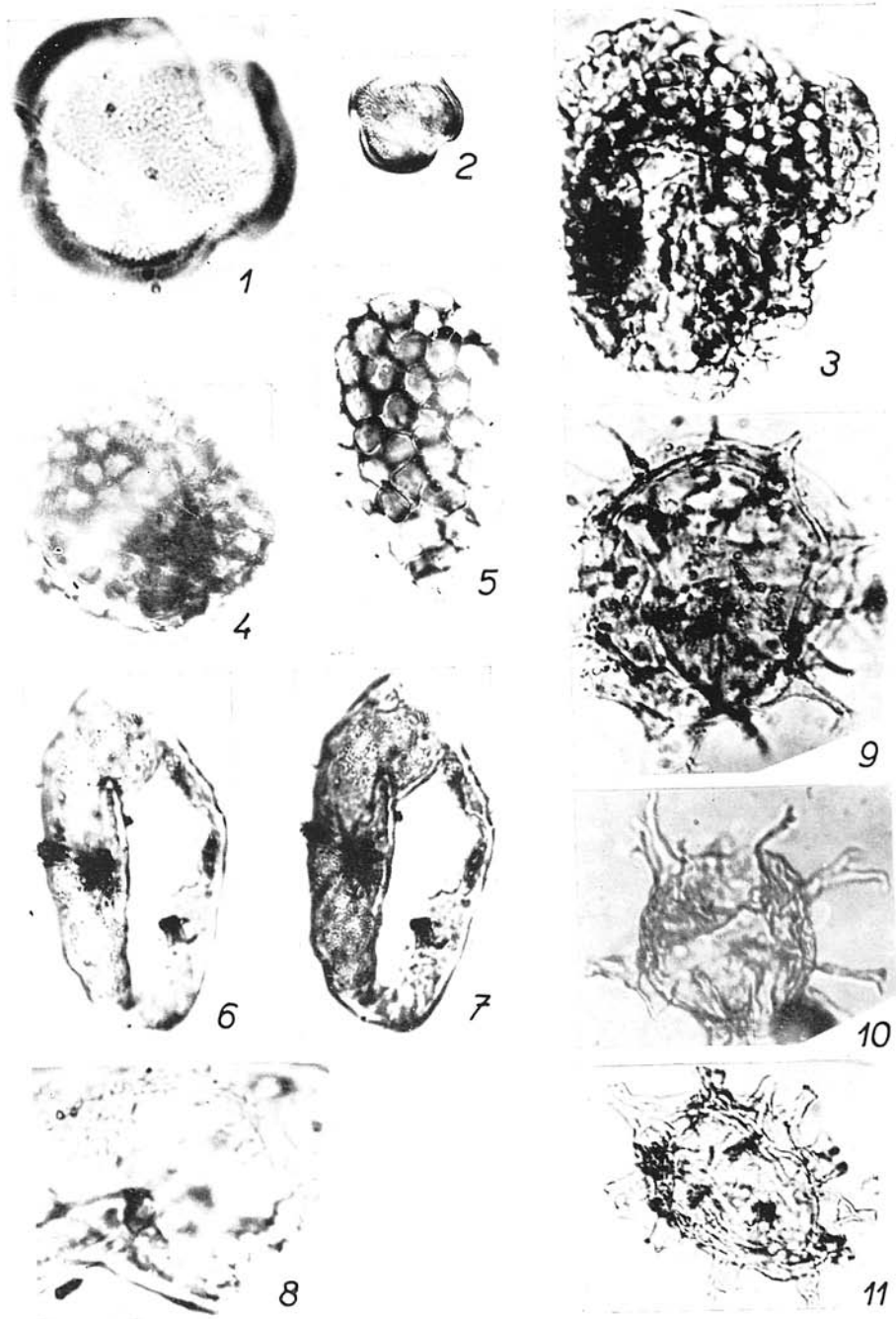


Plate VIII

Fig. 1, 2. *Tricolpites* sp. — Fig. 3. *Ricciisporites tuberculatus* Lundblad. — Fig. 4–5. *Schizosporis reticulatus* Cookson and Dettmann. — Fig. 6–8. *Annupollis carpaticensis* sp. nov. — Fig. 9. *Hystri- chosphaera cingulata* (O. Wetzel) Deflandre. — Fig. 10. *Hystri- chosphaera* sp. — Fig. 11. *Hystri- chosphaeridium truncigerum* Deflandre. Magn. 650 $\times$, fig. 1, 8–1500 $\times$, locality Stupn . Photo by O. Corn .

Genus *Tricolpites* Cookson ex Couper emend. Potonié 1960

Type species: *Tricolpites reticulatus* Cookson 1958

Tricoplites sp.

(Pl. VII, fig. 1—2)

Example: single grain, pr. 145.

Occurrence: only one specimen in the sample 7.

Turma *Poroses* Naumova emend. Potonié 1960

Subturma *Circumpolles* Pflug emend. Klaus 1960

Genus *Classopollis* Pflug emend. Pocock and Jansonius 1961

Type species: *Classopollis classoides* Pflug emend. Pocock and Jansonius 1961

Classopollis torosus (Reisinger) Balme 1957

(Pl. VII, figs. 1617)

1950 *Pollenites torosus* Reisinger, p. 115, pl. 14, fig. 20.

1957 *Classopollis torosus* Reisinger Balme, p. 37.

Example: single grain, pr. 86.

Occurrence: often in the section at Stupné.

Classopollis major Groot and Groot 1962

(Pl. VII, figs. 16, 17)

Example: single grain, pr. 71.

Occurrence: rare in the our material.

Classopollis sp.

(Pl. VII, fig. 18)

Example: single grain, pr. 92.

Occurrence: Tetrads of *Classopollis* are quite often in our material.

Turma *Jugates* (— *Jugata* Erdtman 1943, Pant 1954) Potonié 1960

Subturma *Tetradites* Cookson 1947 (Pant 1954, van der Hammen 1954, 1956)

Genus *Riciisporites* Lundblad 1954

Type species: *Riciisporites tuberculatus* Lundblad 1954

Riciisporites tuberculatus Lundblad 1954

(Pl. VII, fig. 3)

1954 *Riciisporites tuberculatus* Lundblad, p. 401, pl. 4, fig. 8.

Example: single grain, pr. 143.

Occurrence: only two specimen in the lower part of section.

Microspores incertae sedis

Genus *Schizosporis* Cookson and Dettmann 1959

Type species: *Schizosporis reticulatus* Cookson and Dettmann 1959

Schizosporis reticulatus Cookson and Dettmann 1959

(Pl. VIII, figs. 4—5)

Example: single grain, pr. 81, pr. 103.

Occurrence: rare in the profile from Stupné.

Genus *Annulopollis* gen. nov.

Type species: *Annulopollis carpatiensis* sp. nov.

Diagnosis: Microspores annularis, inside empty, (ring broad 15—25 microns), exina finely granulate.

Annulopollis carpatiensis sp. nov.

(Pl. VIII, figs. 6—8)

Diagnosis: Microspores annuloformis, exina of ring finely granulate, inside empty (may be secondary changes?), outline of microspores mainly oval.

Dimensions: 75—80 microns in maximum diameter, breadth of ring 25—30 microns.

Holotype: Preparation 156, preserved as single grain.

Locus typicus: West Carpathians, Slovakia, locality Stupné.

Discussion: The author meet some time in the Aptian-Albian material from different localities some microspores like as *Annulopollis*. In some localities (Podbiel) we have very much so specimens. We had not decide now, pollen or plancton forms is it.

Occurrence: rare in the material from Stupné.

Material: 5 exemplares.

Microplankton

Family *Hystriospheraeaceae* O. Wetzel 1933 emend. Evitt 1963

Genus *Hystriosphera* O. Wetzel ex Deflandre 1937

Hystriosphera cingulata (O. Wetzel) Deflandre 1954

(Pl. VIII, fig. 9)

Example: single grain, pr. 36.

Occurrence: quite rare in the material from Stupné.

Hystriosphera sp.

(Pl. VIII, fig. 10)

Example: single grain, pr. 134.

Occurrence: only two sepcimens in the lower part of section at Stupné.

Family *Hystriospheridiaceae* Evitt 1963

Genus *Hystriospheridium* Deflandre 1937

Hystriosphæroidium truncigerum Deflandre 1937

(Pl. VIII, fig. 11)

Example: single grain, pr. 114.

Occurrence: common in the whole section at Stupné.

Remarks: It is only one specimen which was noticed in every prepare from Stupné.

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