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DR. NAGY ESZTER: A MAGYARORSZÁGI NEOGÉN SPOROMORPHÁI
MRS. DR. ESZTER NAGY: SPOROMORPHS OF THE NEOGENE IN HUNGARY

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BEVEZETÉS

A magyarországi neogén képződmények részletes és összefoglaló földtani kutatásához kapcsolódnak a palynológiai vizsgálatok. A kisebb-nagyobb területegységekre vonatkozó vizsgálati adatok egy része nyomtatásban is megjelent. Ezek a munkák főleg a szerző (1957, 1958, 1962, 1963, 1965, 1967, 1969, 1973, 1979) és DR. SIMONCSICS PÁL (1959, 1960, 1964) kutatási eredményeit adták közre. Kísérletet tettem az ország neogén palynológiai adatainak átfogó értékelésére is, így paleoflóra-kapcsolatok, paleoflorisztikai egységek areális elkülönítésére (NAGY, 1971), valamint a neogén folyamán történő flóraváltozások rögzítésére (NAGY, 1976).

A neogén alapflóra egész országra kiterjedő leírására csak most került sor. Az összefoglaló munka létrejöttét DR. HÁMOR GÉZA, a Magyar Állami Földtani Intézet igazgatója segítségének köszönhetem, aki fúrási anyagainak átadásával, földtani szakmai irányításával biztosította kutatómunkám feltételeit.

Köszönetemet kell kifejeznem továbbá azoknak, akikkel a szakmai — főleg botanikai vonatkozású — kérdéseket megbeszélhettem, elsősorban MME M. VAN CAMPONAK és munkatársainak (Montpellier), MME D. LOBREAU-CALLENNEK (Chevreteux); nevezéktani kérdéseket illetően DR. SIMON TIBOR, DR. BODA JENŐ és DR. HEGEDŰS GYULA kollégáknak. A technikai segítségért munkatársamnak, MÓCZA INGEBORGNAK, a fényképek elkészítéséért DR. PELLÉRDY LÁSZLÓNÉNAK és KÁRPÁTI ANNÁNAK, a scan felvételekért TAKÁCS BARNÁNÉNAK, a gépelési munkákért SIGMOND JÁNOSNÉNAK, s mindazon intézeti dolgozóknak, akik bármilyen módon segítséget nyújtottak a munka létrejötté során.

A magyarországi neogén palynológiai kutatási anyag legnagyobb része a geológusok által rendelkezésemre bocsátott fúrások mintáiból való. A palynológiai vizsgálatok főleg HÁMOR G. és munkatársainak térképezési munkálataihoz kapcsolódnak, s általában a fúrások rétegsorának teljes neogén szelvényét képviselik mind a Mecsek-hegység, mind Észak-Magyarország területéről.

HÁMOR G.-n kívül JÁMBOR Á., HALMAI J., KORPÁSNÉ HÓDI M., KORPÁS L., KÓKAY J., RADÓCZ GY., SOLTI G., GROSSZ Á., CHIKÁN G., BIHARI D., JANKOVICS I., RÁKOSI L., PANTÓ G., ILKEYNÉ PERLAKI E., PENTELENYI L., BARTHA F., FODOR T.-NÉ és még sok más intézeti és Intézeten kívüli kutató számára végeztem vizsgálatokat.

A Keleti-Mecsek területén kívül a Nyugati-Mecsekből, Somogy és Zala megyéből, a Bakony-hegységből és annak É-i és D-i peremterületeiről, a Kisalföldről, a Dunántúli dombvidékről, az Alföld Ny-i és ÉK-i szegélyéről, továbbá a Jászságból, a Börzsöny-, Cserhát-, Mátra- és Bükk-hegységből, a Nógrádi dombvidékről, a Mátraaljáról, a Salgótarjáni medencéből, a Cserehát-ról, a Szerencsi dombvidékről és a Tokaji-hegységből kerültek ki vizsgálati anyagaim.

A nagyobb fúrások szelvényein kívül rövidebb fúrásszakaszok, néha egyes minták is palynológiai analízisre kerültek — a geológiai kutatás érdekében. Ezek mellett bányavágatok (Hidasbánya, Petőfibánya) szelvényei, valamint felszíni feltárások mintái (Szászvár, Magyaregregy, Nógrád, Salgótarján, Eger — a holosztatotípus szelvénye — stb.) egészítik ki a vizsgálati anyagot.

R é t e g t a n i l a g az oligo—miocén egri emelettől kezdődően a neogén egésze (miocén, pliocén, sőt pleisztocén) képviselve van a feldolgozott anyagban. A jelentősebb szelvények:

Egri emelet: Eger, Wind-féle téglagyári fúrás 0,0—46,6 m
Eger, Wind-féle téglagyári feltárás „x” „k” „u” rétegek
Fót 1. sz. f. 193,4—373,0 m
Tata (TVG) 27. sz. f. 32,1—74,7 m

Eggenburgi emelet: Fót 1. sz. f. 132,5—193,4 m
Püspökhatvan 4. sz. f. 185,0—302,0 m
Nógrádmegyer 1. sz. f. 50,3—51,1 m
Nógrádsípek 1. sz. f. 104,8—114,0 m
Egyházasszerge 1. sz. f. 181,4—209,3 m
Kazár I. sz. alapszelvény
Ipolytarnóc környéki feltárások
Budajenő 2. sz. f. 544,4—575,9 m
Nagygörbő 1. sz. f. 1023,0—1069,0 m
Várpalota 133. sz. f. 208,3—226,3 m
Pápa 2. sz. f. 192,8—337,5 m
Szászvár 8. sz. f. 26,0—428,2 m
Tekeres 1. sz. f. 995,0—1094,8 m

Ottományi emelet: Pusztakisfalva VI. sz. f. 5,2—51,8 m
Zengővárkony 45. sz. f. 16,0—21,2 m
Nagygörbő 1. sz. f. 923,0—1023,0 m
Várpalota 133. sz. f. 175,6—208,3 m
Rákoskeresztúr I. sz. f. 398,0—537,0 m
Gyulakeszi, alapszelvények (I—II—III)
Kazár 514. sz. f. 7,8—103,0 m
Mátraverebély 79. sz. f. 175,0—324,0 m
Tar 32. sz. f. 324,0—350,0 m
Alsóvadász 1. sz. f. 875,0—1059,0 m

Kárpáti emelet: Hidas 53. sz. f. 763,3—830,0 m
Komló 120. sz. f. 6,0—386,8 m
Zengővárkony 59. sz. f. 56,0—83,0 m
Magyaregregy környéki feltárások
Nagygörbő 1. sz. f. 706,0—923,0 m
Várpalota 133. sz. f. 161,0—167,7 m
Tengelic 2. sz. f. 861,8—863,6 m

Rákoskeresztúr I. sz. f. 148,0—354,0 m
Fót 1. sz. f. 75,4—132,5 m
Püspökhatvan 4. sz. f. 124,0—185,0 m
Garáb 1. sz. f. 0,0—318,0 m
Litke 17. sz. f. 22,0—265,0 m
Piliny 8. sz. f. 33,3—138,5 m
Nógrádszakál 2. sz. f. 213,0—290,0 m

Bádeni emelet: Hidas 53. sz. f. 558,0—763,3 m
Hidas 88. sz. f. 248,0—333,5 m
Hidas 39. sz. f. 266,5—317,1 m
Hidas 91. sz. f. 284,0—325,0 m
Hidas 105. sz. f. 311,0—356,8 m
Hidas, barnakőszénbánya, II., IV., V., VI. telep
Zengővárkony 59. sz. f. 24,9—44,7 m
Nagyörbő 1. sz. f. 344,0—892,0 m
Tengelic 2. sz. f. 726,4—853,3 m
Szokolya 2. sz. f. 2,8—106,4 m
Szokolya 3. sz. f. 21,0—77,4 m
Szokolya 11. sz. f. 26,0 m
Nógrádszakál 2. sz. f. 23,7—213,0 m
Tar 34. sz. f. 500,0—641,0 m
Alsóvadász 1. sz. f. 730,4—875,0 m
Balaton 26. sz. f. 3,0—332,6 m

Szarmata emelet: Hidas 53. sz. f. 417,0—554,3 m
Vajta, vízkutató f. 724,0—728,0 m
Nagyörbő 1. sz. f. 322,0—350,7 m
Lajoskomárom 1. sz. f. 671,0—718,0 m
Cserhátszentiván 1. sz. f. 13,2—200,0 m
Tar 34. sz. f. 348,8—500,0 m
Alsóvadász 1. sz. f. 240,4—709,5 m

Alsó-pannóniai emelet: Hidas 53. sz. f. 258,5—417,0 m
Tata térképező 26. sz. f. 4,5—50,0 m
Tata (TVG) 26. sz. f. 18,3—39,0 m
Tata (TVG) 27. sz. f. 8,5—32,1 m
Pápa 2. sz. f. 71,1—192,8 m
Naszály 1. sz. f. 106,0—150,0 m
Tököl 1. sz. f. 688,5—747,2 m
Alsóvadász 1. sz. f. 156,8—240,0 m
Megyaszó 1. sz. f. 52,0—206,0 m

Felső-pannóniai emelet: Hidas 53. sz. f. 73,3—258,5 m
Pápa 2. sz. f. 3,0—71,1 m
Pula 3. sz. f. 6,0—36,5 m
Gérce 1. sz. f. 8,0—130,8 m
Várkesző 1. sz. f. 2,0—42,0 m
Petőfibánya, vágatszelvények
Megyaszó 1. sz. f. 17,0—52,0 m

A miocén formációk egy részét — HÁMOR G. felkérésére — palynológiai adatokkal jellemeztem az előző években (1978—1980). A megvizsgált anyagok a legfontosabb formációkat is képviselik. Palynológiai szempontból természetesen legkevésbé jellemzőek a vulkanogén üledékek. A formáció-beosztás HÁMOR G., ill. JÁMBOR Á., KORPÁSNÉ HÓDI M. és HALMAI J. adatai alapján történt. A vizsgált anyagok a következő formációkat képviselik:

Egri formáció: Eger, Wind-féle téglagyári fúrás és feltárás; BÁLDI T. (1975)

Törökbálinti Formáció: Fót 1. sz. f. 160,0—373,0 m

Becskei Formáció: Fót 1. sz. f. 144,0—160,0 m

Putnoki Slír Formáció: Püspökhatvan 4. sz. f. 182,4—306,0 m

Zagyvapálfalvai Tarkaagyag Formáció: Kazár I. sz. alapszelvény; Nagybatony; Szorospaták; Zagyvapálfalva homokbánya; Kazár homokbánya; Kazár kavicsbánya; Sóshartyán-Kapcástető kavicsbánya; Kisterenye-Aranyhegyi szelvény, Egyházasgerge 1. sz. f. 181,4—209,3 m; Nógrádmegyer 1. sz. f. 50,3—51,1 m; Nógrádsipek 1. sz. f. 104,8—114,0 m

Szászvári Formáció: Szászvár bányatelep, É—D-i fővölgy; Szászvár 8. sz. f. 26,0—428,2 m; Kisbattyán 1. sz. f. 459,0—462,0 m; Máza 15. sz. f. 92,0—97,0 m; Pusztakisfalu VI. sz. f. 5,2—51,8 m; Zengővárkony 45. sz. f. 16,0—21,2 m

Salgótarjáni Barnakőszéntelepes Formáció: Gyulakeszi alapszelvény; Kazár 514. sz. f. 7,8—103,0 m; Mátraverebély 79. sz. f. 175,0—261,0 m; Tar 32. sz. f. 324,0—350,0 m; Egyházasgerge 1. sz. f. 146,0—178,0 m; Nógrádmegyer 1. sz. f. 50,3—51,1 m

Egyházasgergei Homokkő Formáció: Rákoskeresztúr I. sz. f. 228,5—382,5 m és 408,3—559,4 m

Budafui Formáció: Komló 120. sz. f. 6,0—178,0 m

- Garábi Slőr Formáció:* Garáb 1. sz. f. 0,0—318,0 m; Litke 1. sz. f. 37,6—265,0 m; Piliny 8. sz. f. 33,3—138,0 m; Nógrádszakál 2. sz. f. 213,0—290,0 m; Rákoskeresztúr I. sz. f. 164,9—228,6 m és 382,5—408,0 m; Püspökhatvan 4. sz. f. 120,4—176,7 m; Fót 1. sz. f. 142,8—144,0 m
- Fői Formáció:* Fót 1. sz. f. 25,5—34,6 m, 35,1—37,0 m és 38,0—45,0 m; Püspökhatvan 4. sz. f. 58,7—120,4 m; Rákoskeresztúr I. sz. f. 162,5—163,5 m
- Tari Dácittufa Formáció:* Tengelic 2. sz. f. 853,3—863,3 m
- Nógrádszakáli Formáció:* Nógrádszakál 2. sz. f. 108,0—213,0 m
- Pécsszabolcsi Formáció:* Pécsszabolcs I. sz. f. 38,8—48,4 m
- Sámszonházai Formáció:* Nógrádszakál 2. sz. f. 78,0—108,0 m
- Bádeni Agyag Formáció:* Szokolya 2. sz. f. 2,8—118,3 m; Szokolya 3. sz. f. 21,0—37,0 m; Szokolya 11. sz. f. 26,0 m
- Hidasi Barnakőszén Formáció:* Hidasi barnakőszénbánya II., IV., V. és VI. telepe; Hidas 53. sz. f. 590,2—672,5 m; Hidas 88. sz. f. 233,3—333,5 m; Hidas 89. sz. f. 267,0—323,2 m; Hidas 91. sz. f. 285,0—325,0 m; Hidas 105. sz. f. 310,0—356,7 m; Pécsvárad XLIV. sz. f. 39,7—49,9 m
- Szilágyi Agyagmárga Formáció:* Hidas 53. sz. f. 554,9—590,2 m; Szilágy 1. sz. f. 228,5—310,0 m; Tengelic 2. sz. f. 723,1—853,3 m
- Sajóvölgyi Formáció:* Cserhátszentiván 1. sz. f. 6,0—200,0 m; Tar 34. sz. f. 15,0—500,0 m
- Kisbéri Kavics Formáció:* Pápa 2. sz. f. 163,5—192,8 m
- Száki Agyagmárga Formáció:* Pápa 2. sz. f. 122,0—163,5 m; Naszály 1. sz. f. 60,0—150,0 m; Tata (TVG) 26. sz. f. 7,0—39,0 m; Tata (TVG) 27. sz. f. 8,5—30,7 m; Tata térképező 26. sz. f. 4,5—50,0 m
- Somlói Formáció:* Pápa 2. sz. f. 44,0—122,0 m; Naszály 1. sz. f. 21,8—60,0 m
- Tihanyi Formáció:* Pápa 2. sz. f. 5,0—44,0 m; Naszály 1. sz. f. 8,0—21,8 m
- Pulai Alginit Formáció:* Pula 1. sz. f. 2,5—11,5 m; Pula 2. sz. f. 38,5—79,1 m; Pula 3. sz. f. 16,0—36,5 m; Gércse 1. sz. f. 0,6—130,8 m; Várkesző 1. sz. f. 2,0—42,0 m
- Bükkaljai Lignit Formáció:* Petőfibánya, altáró; Szücsi 172. sz. f. 40,5—102,9 m; Visonta 91. sz. f. 36,7—70,7 m

A rendszertani leírás alapvető része az őslénytani munkának, egyúttal egyike a legnehezebb feladatoknak is. A már leírt fajok identifikálásához ugyanis pontos leírásra és jó ábrákra lenne szükség, miután a holotypusok újrvizsgálatára — általában — nincs mód. Különösen áll ez sok régi, alapvető holotypusra, amelyeknek sem ábrázolása, sem leírása ma már nem megfelelő.

Nehézségeket okoz továbbá, hogy a holotypus eredeti ábrájához és diagnózisához viszonyítva maga a leíró is változtatta az előzőkben közölt adatait (I. R. POTONIÉ két 1934-es munkáját!). Más szerzők — az eredeti szerzőre hivatkozva — az eredeti leírástól és ábrázolástól eltérő morfológiájú formákat, különböző mérettel közölnek (pl. THOMSON et PFLUG, 1953). Előfordul, hogy szerzők eredeti fajleírásaikat utóbb megváltoztatják, de ahelyett, hogy pontosabbá tennék a leírást, inkább kiterjesztik azt, ami a korábban már jól elkülönített fajok összevonását eredményezi.

Magam azt az eljárást követem, hogy az újonnan előkerült formákat lehetőleg a már leírt taxonokba próbálom besorolni, a fent említett nehézségek ellenére. Az összehasonlítás — lehetőség szerint — a típusok megkeresésével és irodalmi adataik feltüntetésével történik, amelyek minden taxon megítéléséhez alapul szolgálnak. Sok helyen idézek eredeti diagnózist, főleg ahol ellentmondás van különböző szerzőknél. Sokszor ugyanis a már leírt taxonoknál a szerzők nem ragaszkodnak pontosan az eredeti diagnózisokhoz, hanem — saját megtalált formáik alapján, emendálás feltüntetése nélkül — kisebb-nagyobb változtatásokat tesznek azokon.

A hazai formákat az általam készített fényképeken mutatom be, mivel az adatokat úgy kívánom rögzíteni, hogy az utána következő kutatók pontos összehasonlítást tudjanak tenni. A már leírt fajoknál mindig közlöm a basionym adatait és egy olyan szinonim-listát, amelyben csak az átsorolásokat, jelentősebb kombinációkat tüntetem fel. Új taxont csak akkor írok le, ha a kérdéses forma igen eltérő és jellemző morfológiai bélyegekkal rendelkezik. Igyekszem a természetes növényrendszert alkalmazni fajaim besorolásánál; de természetesen sok olyan forma marad, melyet nem lehet határozottan besorolni a ma élő taxonok egyikébe sem.

Sok esetben a kutatók — recens anyag vizsgálata alapján — többféle alternatívát említenek egy-egy faj botanikai besorolásánál. Ennek több oka is lehet:

1. a fosszilis faj kihalt;
2. a ma élő taxonok pollenjeinek, ill. spóráinak finom szerkezete nem kellően ismert (a ma élő fajok leírásakor a botanikusok nem tartják szükségesnek a növény spóráinak, ill. pollenjeinek leírását);
3. még nem ismert a fosszilis faj recens megfelelője (esetleg még le nem írt trópusi-szubtrópusi növényről van szó).

A hazai könyvtárakban fellelhető szakirodalom folyamatos tanulmányozása, a nemzetközi kapcsolatok fenntartásának igyekezete mellett is mindig fennáll az a lehetőség, hogy a ma újnak vélt fajt valaki, valahol már leírta. Le kell tehát szögezni, hogy ez a munka a lezárásáig birtokomba került adatok és ismeretek alapján készült.

A spóra-pollen anyag rendszerezésének alapja Soó REZSŐ: Fejlődéstörténeti növényrendszertan c. munkája volt. A vizsgált anyag négy törzs képviselőit tartalmazta: *Bryophyta*, *Pteridophyta*, *Gymnospermae*, *Angiospermae*. A rendszertani felsorolás mellett e helyen közlöm az egyes taxonok gyakoriságát a neogén emeleteiben. A fajnév után zárójelben szereplő rövidítések magyarázata: EG = egri, EB = eggenburgi, O = ottnangi, K = kárpáti, B = bádeni, Sz = szarmata, AP = alsó-pannóniai, FP = felső-pannóniai, PL = pleisztocén. A példányszám öt fokozatban szerepel: 1–5-ig ritka (r), 6–10-ig kevés (k), 11–20-ig közepes (kö), 21–50-ig gyakori (gy), 50-nél több példány tömeges (t) jelzéssel került feltüntetésre. Az áthalmozott alakok (áth.) megjelölést kaptak.

A rendszertani leírást az angol nyelvű szövegrész tartalmazza teljes részletességgel; itt csupán a leírt taxonok rövid összesítését és az új fajokat közlöm.

A fajok rendszertani megoszlása:

Bryophyta: 9 genus, 38 species; ebből egy genus és két species új.

Saxosporis cf. *gerlachi* W. KR. 1967 (EG r)

— *gracilis* W. KR. et PACLT. 1963 (EB r)

— *hidasensis* NAGY 1968 (FP r)

Rudolphisporis rudolphi (W. KR. et PACLT. 1963) (K, Sz, FP r)

— cf. *rudolphi* (W. KR. 1959) W. KR. et PACLT. 1963 (K r)

— *mecsekensis* NAGY 1968 (K r)

Bohemiasporis vaclavensis (W. KR. et PACLT. 1963) W. KR. et PACLT. 1967 (K r)

Phaecerosporites baranyaensis NAGY 1968 (EG, EB, K, B r)

— *fotensis* n. sp. (EG r)

— *transversus* NAGY 1968 (K, B r)

Ricciaesporites hungaricus NAGY 1968 (K r)

— cf. *neogenicus* (W. KR. et PACLT. 1967) n. c. (FP r)

— *transdanubicus* NAGY 1968 (K r)

Stereisporites sg. *Stereisporites involutus* (DOKT.-HREBN. 1960) W. KR. 1963. ssp. *nochtenensis* W. KR. et SONTAG 1963 (FP r)

— sg. *Stereisporites megastereis* W. KR. 1963 (FP r)

— sg. *Stereisporites minor* (RAATZ 1937) W. KRUTZSCH 1959 ssp. *minor* (EG kö, B, FP r)

— sg. *Stereisporites minor* (RAATZ 1937) W. KR. 1959 ssp. *microstereis* W. KR. et SONTAG 1963 (EB r)

— sg. *Stereisporites pseudopsilatus* W. KR. 1959. ssp. *pseudopsilatus* (FP r)

— sg. *Stereisporites pseudopsilatus* W. KR. 1963 ssp. *validus* (DOKT.-HREBN. 1960) W. KR. 1963 (B, FP r)

— sg. *Stereisporites stereoides* (R. POT. et VENITZ 1934) TH. et PF. 1953 ssp. *stereoides* (AP, FP r)

— sg. *Stereisporites stereoides* (R. POT. et VENITZ 1934) TH. et PF. 1953 ssp. *stereis* (W. KR. 1959) W. KR. 1963 (FP r)

— sg. *Stereisporites stictus* (WOLFF 1934) W. KR. 1963 ssp. *stictus* (AP, FP r)

— sg. *Stereisporites stictus* (WOLFF 1934) W. KR. 1963 ssp. *woelfersheimensis* (W. KR. 1959) W. KR. 1963 (FP r)

— sg. *Stereisporites* cf. *tristereoides* W. KR. 1963 (FP r)

— sg. *Stereigranisporis granulus* W. KR. et SONTAG 1963 (B, FP r)

— sg. *Stereigranisporis semigranuloides* W. KR. 1963 (O r)

— sg. *Stereigranisporis semigranulus* W. KR. 1963 (FP r)

— sg. *Distancoraesporis crassiancoris* W. KR. 1963 (Sz, FP r)

— sg. *Distancoraesporis huenfeldensis* W. KR. 1959 (FP r)

— sg. *Distancoraesporis mecklenburgensis* W. KR. 1963 (AP, FP r)

— sg. *Distancoraesporis punctoides* W. KR. 1963 (B, AP r)

— sg. *Distgranisporis granistereoides* W. KR. et SONTAG 1963 (AP r)

— sg. *Distgranisporis minimoides* W. KR. 1963 (FP r)

— sg. *Distverrusporis cingulatus* W. KR. 1963 ssp. *cingulatus* (Sz, AP r)

— sg. *Distverrusporis* cf. *cingulatus* W. KR. 1963 ssp. *cingulatus* (AP r)

Encalyptaesporites pliocaenicus NAGY 1968 (B, FP r)

Ephemerisporites borsodensis NAGY 1968 (K, Sz, AP, FP r)

Szokoljasporites bryophytoides n. g. n. sp. (B r)

Pteridophyta: 44 genus, 253 species; ebből új genus: 1, új species: 39.

Lycopodiumsporites altranftensis (W. KR. 1963) n. c. (EG r)

— *pseudoclavatus* (W. KR. 1963) n. c. (FP r)

— *reticuloides* (W. KR. 1963) n. c. ssp. *reductoides* W. KR. 1963 (AP, FP r)

— *rueterbergensis* (W. KR. 1963) n. c. ssp. *rueterbergensis* (AP r)

Selagosporis sp. A (B r)

Verrucingulatisporites murireticulatus NAGY 1963 (EB, K k)

Lusatisporis perinatus W. KR. 1963 (O, B, Sz, AP r)

— *punctatus* W. KR. 1963 (O kö)

— *undulosus* NAGY 1973 (O r)

Echinatisporis bockwitzensis W. KR. 1963 (EB r)

— *cserhatensis* n. sp. (Sz r)

— *cycloides* W. KR. 1963 (B, AP r)

— *echinoides* W. KR. et PACLT. 1963 ssp. *echinoides* (EG, EB, B r)

— *fotensis* n. sp. (EG r)

— *hidasensis* NAGY 1969 (EG, K, B, Sz r)

- *longechinus* W. KR. 1959 (EG, EB, B, Sz r)
- *mecsekensis* NAGY 1969 (EG, O, K r)
- *microechinatus* W. KR. 1963 (EB r)
- *microechinoides* W. KR. 1963 (K, Sz, FP r)
- *minimus* n. sp. (EB, B r)
- *miocaenicus* W. KR. et SONTAG 1963 (EG, K, B r)
- *spinusus* n. sp. (B r)
- *szaszvarensis* NAGY 1969 (EB r)
- *variabilis* NAGY 1969 (EG, B r)
- *verruechinus* W. KR. 1959 (EG r)
- *wiesaeënsis* W. KR. 1963 (B r)
- sp. I. (B r)
- sp. III. (FP r)
- Megastachysporites ladanyensis* n. g. n. sp. (PL r)
- Brandenburgisporis beckwitzensis* W. KR. 1967 (B r)
 - *lusaticus* W. KR. 1967 (EG, FP r)
 - *tenera* W. KR. 1962 (EG, K, B, FP r)
 - cf. *toroides* W. KR. 1967 (O r)
 - *treplinensis* W. KR. 1962 (B, Sz r)
- Muerrigerisporis muerrigeri* (PFLANZL 1955) W. KR. 1963 (B r)
- Ophioglossisporites grandis* (COOKSON 1947) NAGY 1969 (K, FP r)
 - *rotundus* NAGY 1969 (O, B r)
- Osmundacidites gemmatus* (W. KR. 1959) NAGY 1969 (EB r)
 - *nanus* (WOLFF 1934) n. c. (EG, B, Sz, FP r)
 - *primarius* (WOLFF 1934) n. c. ssp. *primarius* (O, B, Sz r)
 - *primarius* (WOLFF 1934) n. c. ssp. *crassiprimarius* W. KR. 1967 (EG, K, B r)
 - *primarius* (WOLFF 1934) n. c. ssp. *major* RAATZ 1937 (O, B, FP r)
 - *primarius* (WOLFF 1934) n. c. ssp. *oligocaenicus* W. KR. 1967 (EG, AP r)
 - *quintus* (PF. et TH. 1953) n. c. ssp. *quintus* (AP, FP r)
 - *quintus* (TH. et PF. 1953) n. c. ssp. *microquintus* W. KR. 1967 (B r)
 - *quintus* (TH. et PF. 1953) n. c. ssp. *rhenanus* W. KR. 1967 (B r)
 - *quintus* (TH. et PF. 1953) n. c. ssp. *rugulatooides* W. KR. 1967 (O, FP r)
- Cicatricosisporites chattensis* W. KR. 1961 ssp. *minor* W. KR. 1967 (EG r)
 - *lusaticus* W. KR. 1967 (EG r)
 - *mecsekensis* NAGY 1963 (O, K, B, FP r)
 - *minimus* NAGY 1963 (EB r)
 - *pannonicus* NAGY 1969 asp. *triplanus* (EB r)
- Concavisporites minimodivisus* NAGY 1963 (K r)
 - sp. (EG, EB, O, K, B, AP, FP r)
- Gleichenioidites elegans* NAGY 1963 (EG r)
 - *microstellatus* NAGY 1963 (EG r)
 - *rimosus* n. sp. (K, B r)
 - *umbonatus* (BOLCH. 1953) BOLCH. 1968 f. *minor* NAGY 1969 (EG, EB r)
 - *zengoeënsis* NAGY 1969 emend. (K r)
- Clavifera triplex* (BOLCH. 1953) BOLCH. 1966 f. *minor* NAGY 1969 (EG, EB r)
- Leiotriletes adriennis* (R. POT. et GELL. 1953) W. KR. 1959 ssp. *pseudomaximus* (TH. et PF. 1953) W. KR. 1959 (EG, K r)
 - *apheles* (HUNGER 1952) W. KR. 1959 (B, Sz r)
 - *hidasensis* NAGY 1969 (AP r)
 - *maxoides* W. KR. 1962 ssp. *maxoides* (EG, EB, O, K kō, B, Sz r)
 - *maxoides* W. KR. 1962 ssp. *maximus* (PF. 1953) W. KR. 1959 (EG, EB, O, K, B k)
 - *maxoides* W. KR. 1962 ssp. *minoris* W. KR. 1962 (EG, EB, K, B, Sz, AP, FP r)
 - *microadriennis* W. KR. 1959 (K, Sz, AP r)
 - *microlepidoidites* W. KR. 1962 (EG, EB, K, B, Sz, AP k)
 - *miocaenicus* NAGY 1969 (EG, K, FP k)
 - cf. *neddenioides* W. KR. 1962 (K, AP, FP r)
 - *seidewitzensis* W. KR. 1962 (EG, EB, O, K r)
 - *triangulatooides* W. KR. 1962 (EG, EB k)
 - *triangulus* (MÜRRIGER et PFLUG 1952 ex W. KR. 1959) W. KR. 1962 (EG, K, B, AP kō)
 - *wolffi* W. KR. 1962 ssp. *wolffi* (EG, EB, O, K, B, Sz, AP gy)
 - *wolffi* W. KR. 1962 ssp. *brevis* W. KR. 1962 (EG, EB, O, K, B, Sz, AP, FP gy)
- Monoleiotriletes gracilis* W. KR. 1959 (EG, EB, O r)

- Intrapunctisporis altranftensis* W. KR. 1962 (EB r)
 — *balinkaense* (KEDVES 1973) n. c. (Sz r)
 — *gracilis* W. KR. 1962 (B r)
- Punctatisporites crassiexinus* W. KR. 1962 (EG, EB, B r)
 — *crassimaximus* W. KR. 1962 (EG, K r)
 — *punctatoides* W. KR. 1967 (B r)
 — *tannendorfsensis* W. KR. 1962 (EG r)
- Dictyophyllidites irregularis* (PF. 1953) n. c. (EB, K, B, Sz r)
 — *pessinensis* (W. KR. 1962) n. c. (EG, EB k, K r)
 — cf. *pliocaenicus* (THIERGART 1940) n. c. (EG r)
 — *teupitzensis* (W. KR. 1962) n. c. ssp. *teupitzensis* (K r)
 — *teupitzensis* (W. KR. 1962) n. c. ssp. *medioris* W. KR. 1962 (EG k, B, AP r)
- Undulatisporites convexus* SCHULER et SITTLER 1969 (FP r)
 — cf. *structuratus* W. KR. 1962 (FP r)
- Foveotriletes crassifovearis* W. KR. 1962 ssp. *crassifovearis* (K, FP r)
 — *crassifovearis* W. KR. 1962 ssp. *crassoides* W. KR. 1967 (B r)
 — *crassifovearis* W. KR. 1962 ssp. *microfovearis* W. KR. 1967 (EG, EB, B r)
 — *pessinensis* W. KR. 1967 (EB r)
 — *rueterbergensis* W. KR. 1962 (EB, B r)
 — *semifovearis* W. KR. 1967 (EG, EB, B k)
 — *triangulus* W. KR. 1962 (B r)
 — *verrucatoides* W. KR. 1962 (EG, EB, B r)
- Favoisporis concavus* NAGY 1963 (EG, B r)
- Favoisporites hungaricus* NAGY 1963 (EG r)
 — *trifavus* W. KR. 1959 (EG, EB r)
- Microfoveolatisporis apheloides* W. KR. 1962 (FP r)
 — *tuemmlitzensis* W. KR. 1962 (FP r)
- Verrucatisporites inaequalis* NAGY 1969 (O r)
 — *tekeresensis* n. sp. (EB, Sz, AP, FP r)
- Cibotioidites zonatus* ROSS 1949 (EG, EB, O kö)
- Corrugatisporites asolidus* (W. KR. 1959) n. c. (EB r)
 — *corruvallatus* (W. KR. 1967) n. c. (EG, EB, O, K, B k)
 — *delicatus* n. sp. (B r)
 — *graphicus* n. sp. (EG, EB, O, B r)
 — *hungaricus* (NAGY 1963) n. c. (EG, EB, K r)
 — *limnicus* n. sp. (EB, O, B k)
 — *litkeensis* n. sp. (K r)
 — *microvallatus* (W. KR. 1967, n. c. (EG, B r)
 — *minoris* n. sp. (EB r)
 — *paucivallatus* (PFLUG 1953) n. c. et emend. (EG, EB, O, K, B r)
 — *pseudovallatus* n. sp. (B r)
 — *semivallatus* (W. KR. 1967) n. c. (EG, K, B k)
 — *solidus* (R. POT. 1934) TH. et PF. 1953 (EG, EB gy, O, K, B kö)
 — *tekeresensis* n. sp. (O r)
- Leptolepidites magnipolatus* NAGY 1963 (EB, O, K r)
- Converrucosporites baranyaensis* (NAGY 1963) n. c. (EB, O, FP r)
 — *parvus* (NAGY 1969) n. c. (EG, EB, K r)
- Macroleptolepidites ajkaensis* n. sp. (B r)
 — *duplex* (NAGY 1968) n. c. (K, B, r)
 — *hexagonalis* n. sp. (K r)
 — *krutzschi* NAGY 1961 (EB, O, B, FP r)
- Polypodiaceoisporites acutus* NAGY 1969 (FP r)
 — *boerzsoenyensis* n. sp. (B, Sz r)
 — *corrutoratus* n. sp. (EB, K r, B k, Sz, AP r)
 — *cyclocingulatus* W. KR. 1967 (EG, EB, B, AP r)
 — *gracillimus* NAGY 1963 (EG, EB, K, B k)
 — *hamulatus* NAGY 1969 (EB, K r)
 — *helveticus* NAGY 1969 (EG, EB, O r)
 — *hidasensis* NAGY 1969 (B r)
 — *latigracilis* (W. KR. 1967) n. sta. (B r)
 — cf. *latizonatus* KEDVES 1961 (EG r)
 — *longus* NAGY 1969 emend. (K, B r)

- *lusaticus* W. KR. 1967 (EG, EB, O gy, K, B kö)
- *magdalenae* NAGY 1969 (EG, EB, O, K r)
- *marzheimensis* (MÜRR. et PFLUG 1952) W. KR. 1959 (B r)
- *maximus* NAGY et RÁKOSI 1966 (EG, B r)
- *mecsekensis* NAGY 1969 (EG, EB, O, K, B k)
- *medius* NAGY 1963 (EB, B r)
- *microconcaus* W. KR. 1967 (EB, K r)
- *minutiosus* NAGY 1969 (EB r)
- *minutus* NAGY 1969 (EB, O, K, B r)
- *muricinguliformis* NAGY 1969 (EG, EB, K, B, Sz r)
- *paucioratus* n. sp. (EB, K, B r)
- *paucirugosus* n. sp. (K, B r)
- *pulchellus* n. sp. (O, B r)
- *rectolatus* NAGY 1963 (EB, O, K, B r)
- *saxonicus* W. KR. 1967 (B r)
- *schoenewaldensis* W. KR. 1967 (EG, EB, O, B r)
- *seidewitzensis* W. KR. 1967 (EB, K, B r)
- *semiverrucatus* (W. KR. 1967) n. st. (EG r)
- *simplicatus* (NAGY 1969) n. c. (K, B, Sz r)
- *snopkovae* KEDVES 1973 (EG, EB r)
- *speciosus* (R. POT. 1934) R. POT. 1956 (EG, B, FP r)
- *spiniverrucatus* TREVISAN 1967 (K, B, Sz r)
- *szaszvarensis* NAGY 1969 (EG, EB r)
- *torosus* NAGY 1969 (EB, O, K, B, AP r)
- *triangularis* n. sp. (B, FP r)
- *triangulus* W. KR. 1967 ssp. *triangulus* (EB, B r)
- *triangulus* W. KR. 1967 ssp. *trianguloides* W. KR. 1967 (EG, EB, B r)
- *trioratus* n. sp. (B, Sz r)
- *verrucosus* NAGY 1969 (EG, EB, O r)
- *zengoevarkonyensis* NAGY 1969 (B, Sz r)
- *zolyomi* NAGY 1963 (EB, O, B r)

Verrucingulatisporites elegans NAGY et RÁKOSI 1966 (B r)

- *fotensis* n. sp. (EB r)
- *grandis* n. sp. (EB r)
- *granus* W. KR. 1967 ssp. *granus* (B, AP r)
- *gregussi* NAGY 1963 (B r)
- *heteroverrucatus* SIMONCSICS 1966 (O r)
- *karpadiensis* n. sp. (K r)
- *mecsekensis* NAGY 1969 (EB r, O, B k)
- *miocaenicus* NAGY 1969 (EG, EB, O, K k)
- *nogradensis* n. sp. (K, B r)
- *rugosus* n. sp. (B r)
- *trifoliiformis* NAGY 1969 (O r)
- *undulatus* NAGY 1963 (EG r)
- cf. *varius* W. KR. 1967 (EG, K r)

Gemmatriletes sp. (E r)

Bifacialisporites badenensis n. sp. (B r)

- *goerboeensis* n. sp. (B r)
- *grandis* n. sp. (B r)
- *magnus* NAGY 1969 (B, AP r)
- *mecsekensis* NAGY 1969 (EG, K, B r)
- *medius* NAGY 1969 (EB, K, B, AP k)
- *murensis* NAGY 1963 (K, B k, AP áth.)
- *murensis* NAGY 1963 f. *minor* NAGY 1969 (EG, O, K, B r)
- *nogradensis* n. sp. (B r)
- *oculus* n. sp. (B, Sz k)
- *ornatus* n. sp. (K r)
- *szokolyaënsis* n. sp. (B r)

Mecsekisporites aequus NAGY 1968 (K, B r)

- *cerebralis* NAGY 1968 (K, B r)
- *miocaenicus* NAGY 1968 (K, B r)
- *zengoevarkonyensis* NAGY 1968 (K, B r)

- Laevigatosporites discordatus* PFLUG 1953 (EG, B r)
 — *gracilis* WILSON et WEBSTER 1946 (EG, EB, O, K, B, AP, FP k)
 — *haardti* (R. POT. et VEN. 1934) TH. et PF. 1953 (EG, EB, O, K, B, Sz, AP, FP kő)
 — *major* (COOKSON 1947) W. KR. 1959 (K, B r)
 — *nitidus* (MAMCZAR 1960) W. KR. 1967 (O, K, B r)
 — *pseudodiscordatus* W. KR. 1959 (EG, EB r)
Microfoveolatosporis afavus (W. KR. 1959) W. KR. 1967 (EG, EB r)
 — *alsovadaszensis* NAGY 1973 (EG, EB, O, B k)
 — *canaliculatus* DETTMANN 1963 (EG, B r)
 — *fossulatus* n. sp. (EB r)
 — *neogranuloides* W. KR. 1967 (K, B r)
 — *sellingi* W. KR. 1967 (EG, K, B r)
Perinomonoletes goersbachensis W. KR. 1967 (B r)
 — *pliocenicus* W. KR. 1967 (EG, FP r)
 — *spicatus* NAGY 1973 (EG, EB, K, B, Sz, AP k)
Intrapunctosporis lusaticus W. KR. et SONTAG 1967 (K r)
 — *pliocenicus* W. KR. 1967 (B, AP r)
Extrapunctosporis megapunctus W. KR. 1959 (EG, K, B r)
 — *microalveolatus* W. KR. 1967 (EB r)
 — cf. *miocaenicus* W. KR. 1967 (EG, K r)
Echinosporis echinatus W. KR. 1967 (O, B r)
 — *fortensis* n. sp. (EG, EB, O, B, AP, FP r)
 — *microechinatus* W. KR. 1967 (EG, EB, O r)
Gemmatosporis decoratus n. sp. (EG, O, FP r)
 — *delicatus* n. sp. (O k)
Polypodiisporites sp. A (EB r)
 — *alienus* (R. POT. 1931) NAGY 1973 (EG, EB, O kő, K, B r)
 — *balticus* (W. KR. 1962) NAGY 1973 ssp. *major* W. KR. 1967 (EG, B r)
 — *bockwitzensis* (W. KR. 1967) NAGY 1973 (EG, EB, K, B, AP r)
 — *cerebriformis* (NAGY 1963) n. c. (EG, O, K r)
 — *clatiriformis* (TH. et PF. 1953) NAGY 1973 (E, O, K, B, Sz r)
 — *favus* (R. POT. 1931) R. POT. 1933 (EG, EB, O, K, B kő, Sz, AP r)
 — *gemmatus* (NAGY 1963) n. c. (AP r)
 — *histiopteroides* (W. KR. 1962) NAGY 1973 ssp. *histiopteroides* (EG, EB, O, K, B r)
 — *histiopteroides* (W. KR. 1962) NAGY 1967 ssp. *minor* W. KR. 1967 (EB, O, K, B r)
 — *inangahuensis* (COUPER 1953) NAGY 1973 (O, B, Sz, AP r)
 — *irregularis* (W. KR. 1967) NAGY 1973 (K r)
 — *keszoeensis* n. sp. (AP, FP r)
 — *margaënsis* (W. KR. 1967) NAGY 1973 (EG, B r, AP áth.)
 — *maximus* (NAGY 1969) n. c. (EG, O, K, B, Sz r)
 — *megabalticus* (W. KR. 1967) NAGY 1973 (EG, O, K r)
 — *megafavus* (W. KR. 1967) NAGY 1973 (EG, EB, K, B, AP, FP r)
 — *multiverrucosus* (NAGY 1963) n. c. (EG, EB, O, K r)
 — *poriacus* (W. KR. 1959) NAGY 1973 (K, B, FP r)
 — *potoniei* NAGY 1969 (K, B r)
 — *pseudoalienus* (W. KR. 1967) NAGY 1973 (EG, EB, O, K r)
 — *pseudoregulatus* (W. KR. 1967) NAGY 1973 (EG, O, B r, FP áth.)
 — *repandus* TAKAHASHI 1964 (EB r, B, FP áth.)
 — *secundus* (R. POT. 1934) R. POT. 1956 (EG, EB, O, K, B k, FP áth.)
 — *secundus* (R. POT. 1934) R. POT. 1956 ssp. *parasecundus* W. KR. 1959 (EG, EB r)
Hydrosporis azollaënsis W. KR. 1962 ssp. *azollaënsis* (O r)
 — *miocaenicus* NAGY 1969 emend. (B, FP r)
 — *levis* W. KR. 1962 (K r)
Gymnosperma: 22 genus, 109 species; ebből új genus: 1, új species: 10.
Cycadopites cf. *follicularis* WILSON et WEBSTER 1946 (EG, O, B r)
 — *gracilis* W. KR. 1970 (O, B r)
 — *intrastructus* W. KR. 1970 (B r)
 — *miocaenica* NAGY 1969 (B r)
 — *microsculptus* W. KR. 1970 (B r)
Ginkgoretectina neogenica NAGY 1969 (EG, EB, K, B, Sz, FP r)
Pinuspollenites eocaenicus (W. KR. 1971) n. c. (EG, B r)
 — *labdacus* (R. POT. 1931) R. POT. 1958 (EG, EB gy, O, K, B, Sz, AP, FP gy)

- *labdacus* (R. POT. 1931) R. POT. 1958 ssp. *reticulatus* (DOKT.-HREBN. 1960) W. KR. 1971 (EG, B r)
- *latisaccatus* (TREVISAN 1967) n. c. ssp. *latisaccatus* (EG, K, B, Sz, FP r)
- *latisaccatus* (TREVISAN 1967) n. c. ssp. *medius* TREVISAN 1967 (EG, Sz, FP r)
- *longus* n. sp. (EG, EB, K k, B, Sz r)
- *microinsignis* (W. KR. 1971) n. c. (EG r)
- *minutus* (ZAKL. 1957) n. c. (EG kö)
- *miocaenicus* n. sp. (EG, k, K, B, AP, FP gy)
- *pristinipollinivus* (TRAVERSE 1955) W. KR. 1971 (EG, B r)
- *thunbergiiformis* (NAGY 1969) n. c. (EG, EB, B, FP r)
- *verruculatus* (TREV. 1967) n. c. (EG, B, AP r)
- *zaklinskaiana* (NAGY 1969) n. c. (EG r, K, B kö)
- Abietinaepollenites fotensis* n. sp. (EG, EB k, K, B r)
 - *inclinatus* (NAGY 1969) n. c. (K r)
 - *microalatus* (R. POT. 1931) R. POT. 1951 ex DELC. et SPRUM. 1955 ssp. *microalatus* (EG, EB, O, K, B, AP, FP gy)
 - *microalatus* (R. POT. 1932) R. POT. 1951 f. *major* R. POT. 1951 (EG, EB, O, K, B, Sz, AP, FP gy)
 - *neogenicus* NAGY 1969 (EG, O r, K, B gy, AP r)
 - sp. (K, B, AP r)
- Cathaya gausseii* SIVAK 1976 (B r)
 - *pseudocristatus* (DOKT.-HREBN. 1960) n. c. (B r)
 - *pulaënsis* n. sp. (FP r)
- Tsugaepollenites gracilis* (W. KR. 1971) n. c. (FP r)
 - *helenensis* (W. KR. 1971) n. c. (Sz, FP r)
 - *igniculus* (R. POT. 1934) R. POT. et VEN. 1934 (EG, EB, B, Sz, AP, FP k)
 - *maximus* (RAATZ 1937) n. c. (EB, B, FP r)
 - *minimus* (W. KR. 1971) n. c. (EB, B r)
 - *multispinus* (W. KR. 1971) n. c. (B r)
 - *robustus* (W. KR. 1971) n. c. (FP r)
 - *rueterbergensis* (W. KR. 1971) n. c. (FP r)
 - *spinulosus* (W. KR. 1971) n. c. (EB r)
 - *verrucatus* (W. KR. 1971) n. c. (EG, EB, K, Sz, FP k)
 - *viridifluminiipites* (WODEHOUSE 1933) R. POT. 1958 (EG, O, K, AP, FP k)
- Piceapollenites alatus* (R. POT. 1931) THIERG. 1937 (EG, EB, O, K, B, AP, FP kö)
 - *neogenicus* NAGY 1969 emend. (EG, EB, O, K, B, Sz, AP, FP gy)
 - *planoides* (W. KR. 1971) n. c. (EB, FP r)
 - *sacculiferoides* (W. KR. 1971) n. c. (EG, B, FP r)
 - *tobolicus* (PANOVA 1966) n. c. (FP r)
- Pseudotsugoidites mecsekensis* NAGY 1969 (K r)
- Abiespollenites absolutus* THIERGART 1937 (EG, EB, O, K, B, Sz, AP, FP r)
 - *crassus* NAGY 1969 (EB, K, B, AP, FP r)
 - *maximus* W. KR. 1971 (EB, Sz r, AP, FP k)
 - *sivaki* n. sp. (EG, Sz, AP, FP r)
- Keteleeriaepollenites komlóensis* NAGY 1969 (EG, EB, K, B, Sz, AP, FP kö)
- Laricispollenites gerceënsis* n. g. n. sp. (AP, FP r)
- Cedripites balansaeformis* (NAGY 1969) n. c. (B r)
 - *crassitudulicristatus* (TREVISAN 1967) W. KR. 1971 (EG, EB, O, B, AP, FP k)
 - *crassus* NAGY 1969 (FP r)
 - *deodaraesimilis* (NAGY 1969) nom. nov. (O, K, B, Sz, AP, FP kö)
 - *eocaenicus* WODEHOUSE 1933 (EG, EB, K, Sz k)
 - *grandis* (NAGY 1969) n. c. (K, B r)
 - *hidasensis* n. sp. (EB, K, B, Sz r)
 - *lusaticus* W. KR. 1971 (EG, B r)
 - *maximus* n. sp. (O, K, B, FP r)
 - *szaszvarensis* NAGY 1969 (EG, EB, O, K k)
 - *taxoidiformis* (NAGY 1969) n. c. (B, FP r)
- Taxodiaceapollenites* sp. (EG, EB, O, K, B, AP, FP k, gy—t*)
- Sequoiapollenites gracilis* W. KR. 1971 (EB r)
 - *macropapillatus* (TREVISAN 1967) n. c. (Sz r)

* A szenes fáciesekben fellépése gyakori—tömeges is lehet.

- *major* W. KR. 1971 (EG, B, Sz r)
 - *megaligulus* W. KR. 1971 (EG r)
 - *polyformosus* THIERG. 1938 ex R. POT. 1958 (EG, EB, O, B, Sz kö)
 - *rotundus* W. KR. 1971 (AP, FP k)
 - Cunninghamiapollenites lignitus* NAGY 1969 (K r)
 - Sciadopityospollenites catenatus* (R. POT. 1931) W. KR. 1971 (K, FP r)
 - *quintus* W. KR. 1971 (EG, B r)
 - *serratus* (R. POT. et VEN. 1934) RAATZ 1937 (EB, K, B, Sz, FP k)
 - *tuberculatus* (ZAKL. 1957) W. KR. 1971 (K r)
 - *varius* W. KR. 1971 (K, B r)
 - *verticillatiformis* (SAUER 1960) W. KR. 1971 (K, B r)
 - Cupressacites bockwitzensis* W. KR. 1971 (EG, EB, O, K, B, AP, FP kö)
 - cf. *cuspidataeformis* (ZAKL. 1957) W. KR. 1971 (B r)
 - *insulipapillatus* (TREVISAN 1967) W. KR. 1971 (EB, O, B r)
 - sp. (EG, EB, O, K, B r)
 - Chamaecyparidipollenites flexuosus* NAGY 1969 (Sz, FP r)
 - Podocarpidites acmopyleformis* NAGY 1969 (EG, EB, K, B, Sz r)
 - cf. *gigantus* (ZAKL. 1957) n. c. (K, B r)
 - *libellus* (R. POT. 1932) W. KR. 1971 (EG, EB k, O, K, B, Sz, AP r)
 - *macrophylliformis* NAGY 1969 (EB, K, B, AP, FP r)
 - *microreticuloidata* (COOKSON 1947) NAGY 1969 (EG, O, B, Sz, AP r)
 - *multicristatus* (TREVISAN 1967) n. c. (EG, EB, K r)
 - *nageiaformis* (ZAKL. 1957) W. KR. 1971 (EG, K, B, FP k)
 - *pinierrucatus* W. KR. 1971 (EG r)
 - Dacrycarpidites* cf. *australiensis* COOKSON et PIKE 1953 (K r)
 - Dacrydiumites elegans* n. sp. (EG r)
 - *mawsonii* (COOKSON 1947) COOKSON 1953 (EG, EB, K, B r)
 - Ephedripites* sg. *Ephedripites boersoenyensis* n. sp. (B r)
 - sg. *Ephedripites crassoides* W. KR. 1961 (EG r, FP áth.)
 - sg. *Ephedripites hungaricus* NAGY 1963 (EB, B, FP r)
 - sg. *Ephedripites landenensis* W. KR. 1977 (B r)
 - sg. *Ephedripites mecsekensis* NAGY 1963 (K, B, Sz r)
 - sg. *Ephedripites treplinensis* W. KR. 1961 (EG, B, Sz r)
 - sg. *Ephedripites* cf. *viesenensis* W. KR. 1961 (O, B r)
 - sg. *Ephedripites wolkenbergensis* W. KR. 1961 (EG, K, B r)
 - sg. *Distachyapites bernheidensis* W. KR. 1961 (K, B r)
 - sg. *Distachyapites bicostatus* NAGY 1969 (K, B r)
 - sg. *Distachyapites ellipticus* NAGY 1969 (K, B r)
 - sg. *Distachyapites fusiformis* (SHAKMUNDES 1965) W. KR. 1970 (EG, K r)
 - sg. *Distachyapites mutraënsis* NAGY 1963 (B, FP r)
 - sg. *Distachyapites minimus* NAGY 1969 (EB, O, B, FP r)
 - sg. *Distachyapites miocaenicus* NAGY 1969 (K, B r)
 - sg. *Distachyapites tertiaris* W. KR. 1970 (FP r)
 - sg. *Distachyapites* sp. (B, FP r)
- Angiospermae*: 93 genus, 207 species; ebből új species: 8.
- Magnoliaepollenites simplex* NAGY 1969 (EG, O, B r)
 - Liriodendronpollenites semiverrucatus* (W. KR. 1970) n. c. ssp. *semiverrucatus* (EB, B r)
 - Tetracentracearumpollenites komloënsis* NAGY 1969 (EG, EB, O r, K, B k)
 - *minimus* NAGY 1969 (EG, EB, O gy, B, Sz, AP, FP r)
 - Nupharipollenites kedvesi* NAGY 1969 (K, B, FP r)
 - Nymphaeaepollenites minor* n. sp. (B, Sz, AP, FP r)
 - *pannonicus* (NAGY 1969) n. c. (B, FP kö)
 - Chloranthacearumpollenites dubius* NAGY 1969 (B, Sz r)
 - Liquidambarpollenites formosanaeformis* NAGY 1969 (EG, O, K, B, AP, FP k)
 - *orientaliformis* NAGY 1969 (K, B, FP k)
 - *styracifluaeformis* NAGY 1969 (EG, EB, K, B, Sz, AP, FP kö)
 - Acaciapollenites varpalotaënsis* (NAGY 1962) n. c. (EB, K r)
 - Tricolporopollenites caesalpiniaceaeformis* NAGY 1969 (O r)
 - Slowakipollis cechovici* (PACLT. 1958) W. KR. 1962 (O, B, AP, FP r)
 - *elaeagnoides* W. KR. 1962 (B, Sz, AP, FP k)
 - *mecsekensis* NAGY 1969 (K, B r)
 - *neogenicus* NAGY 1969 (EB, K r)

- Alangiopollis barghoornianum* (TRAVERSE 1955) W. KR. 1962 (EB, K, B, AP, FP r)
 — *simplex* NAGY 1969 (K, B r)
- Nyssapollenites contortus* (PF. et TH. 1953) n. c. (EG, K r, B k, Sz, AP, FP r)
 — *pseudocruciatum* (R. POT. 1931) THIERGART 1937 (EG, O, K, B, Sz, AP, FP k)
- Myrtaceidites mesonesus* COOKS. et PIKE 1954 (B, AP r)
 — *myrtiformis* SIMONCSICS 1964 (EG, O r)
- Jussiaepollenites champlainensis* (TRAVERSE 1955) NAGY 1969 (EB, O, B, AP, FP r)
- Sporotrapoidites erdtmani* (NAGY 1979) n. c. (K t, B k)
 — *hungaricus* NAGY 1969 (K, FP r)
- Myriophyllumpollenites balatonensis* n. sp. (AP, FP r)
 — *minimus* n. sp. (EG, EB, O, B r, AP áth.)
 — *quadratus* NAGY 1969 (EG, EB, B, Sz, AP, FP k)
- Rutacearumpollenites komloënsis* NAGY 1969 (K, B k)
- Polygalacidites miocaenicus* (NAGY 1969) n. c. (O, K, B kö)
- Rhoipites pseudocingulum* (R. POT. 1931) R. POT. 1960 (EG, EB, O, K, B, AP, FP gy)
 — sp. (FP k)
- Aceripollenites reticulatus* NAGY 1969 (EG, EB, K, Sz r)
 — *rotundus* NAGY 1969 (EB, O, K, B, Sz, AP, FP r)
- Hydrocerapollis miocaenicus* NAGY 1962 (K r)
- Ilexpollenites iliacus* (R. POT. 1931) R. POT. 1960 (EG, EB, K, B, Sz, AP, FP k)
 — *margaritatus* (R. POT. 1931) R. POT. 1960 (EG—FP r)
 — *propinquus* (R. POT. 1934) R. POT. 1960 (EG, EB, O, K, B, Sz, AP, FP r)
- Siphonodontipollenites hungaricus* NAGY 1969 (K, B r)
- Spinuliferoidaeipollenites zolyomii* NAGY 1969 (O, B r)
- Cyrillaceapollenites exactus* (R. POT. 1931) R. POT. 1960 (EG, EB gy, O, K, B r)
 — *megaexactus* (R. POT. 1931) R. POT. 1960 (EG, B gy, E, O, Sz r)
- Rhamnaceapollenites triquetrus* THIELE-PFEIFFER 1980 (EG r)
- Araliaceoipollenites edmundi* (R. POT. 1931) R. POT. 1960 (EG, EB, K, B, Sz k)
 — *edmundi* (R. POT. 1931) R. POT. 1960 f. *reticulatus* NAGY 1969 (E, O, K, B, AP r)
 — *euphorii* (R. POT. 1931) R. POT. 1960 (EG gy, EB, K, B, Sz kö)
 — *reticuloides* THIELE-PFEIFFER 1980 (EG, EB k)
- Tricolporopollenites edmundi* (R. POT. 1931) TH. et PF. 1953 f. *major* NAGY 1969 (K, Sz r)
 — *hedwigae* (PFLANZL 1956) n. c. (EG, O, K r, AP áth.)
 — *satzveyensis* PFLUG 1953 (EG, EB, O, K, B r, AP áth.)
- Umbelliferoipollenites nogradensis* n. sp. (B r)
 — *speciosus* n. sp. (B r)
 — *tenuis* n. sp. (EB, B, AP r)
- Rubiaceae pollen* (div. sp.) (B, Sz, P r)
- Caprifoliipites andreanszkyi* NAGY 1969 (EG, O r, K, B gy)
 — *gracilis* NAGY 1969 (EG, O, K, B, Sz gy)
 — *sambucoides* NAGY 1969 (K, B, Sz k)
- Lonicerapollis gallwitzii* W. KR. 1962 (EG, EB, O, K, B, Sz, AP, FP r)
- Dicrivillapollenites megaspinosus* DOKT.-HREBN. 1957 (B, FP r)
- Scabiosaepollenites magnus* NAGY 1969 (K, B, FP r)
 — *minimospinulosus* NAGY 1969 (B, FP r)
- Intratriporopollenites cordataeformis* (WOLFF 1934) MAI 1961 (K, B r, AP, FP t)
 — *insculptus* MAI 1961 (EG, EB, O, K, AP, FP kö)
 — *instructus* (R. POT. 1931) TH. et PF. 1953 ssp. *instructus* (EB, O, K, B, Sz, AP, FP kö)
 — *instructus* (R. POT. 1931) TH. et PF. 1953 ssp. *macroreticulatus* MAI 1961 (EB, K, B, Sz, FP k)
 — *microreticulatus* MAI 1961 (EG, EB r)
 — *minimus* MAI 1961 (EG r)
 — *polonicus* MAI 1961 (B, Sz, AP r)
 — *pseudoinstructus* MAI 1961 (EG, EB gy)
- Malvacearumpollis bakonyensis* NAGY 1962 (EB, B, FP r)
 — *rotundus* NAGY 1969 (EB r, FP áth.)
- Reevesiapollis triangulus* (MAMCZAR 1960) W. KR. 1970 (EG, EB, O, K, B, Sz, FP r)
- Oleidearumpollenites chinensis* NAGY 1969 (EG, K, B, Sz r)
 — *reticulatus* NAGY 1969 (EG, K, P r)
- Manikinipollis tetradoides* W. KR. 1970 (Sz k)
- Calystegiapollis sarmaticus* n. sp. (Sz r)
- Heliotropioidearumpollenites gracilis* NAGY 1969 (EG, EB, K, B r)
 — *rotundus* NAGY 1969 (B kö)

- Utriculariapollenites elegans* NAGY 1969 (EG, EB, O, K, B, Sz, FP k)
Pteracanthopollenites discordatus NAGY 1969 (EB r)
Plantaginacearumpollis miocenicus NAGY 1963 (K, B, Sz, AP r)
 — *sooi* NAGY 1963 (EG, K, AP r)
Droseridites cf. *spinosa* COOKSON 1947 (EB, B r)
Fischeripollis undulatus W. KR. 1970 (FP r)
Cistacearumpollenites macrodurensis (PF. et TH. 1953) NAGY 1969 (EG, K, B, Sz, AP, FP r)
 — *rotundus* NAGY 1969 (EG, O, K, B r)
Lobeliaepollenites erdtmani NAGY 1969 (EG, B, AP r)
Dipterocarpacearumpollenites hidasensis NAGY 1969 (B, Sz, FP r)
 — *spinosus* NAGY 1969 (B r)
Tubulifloridites ambrosiinae NAGY 1969 (B r)
 — *anthemidearum* NAGY 1969 (K, B, Sz r)
 — *grandis* NAGY 1969 (EG, EB, O, K kō)
 — *granulosus* NAGY 1969 (O, B k)
 — *macroechinatus* (TREVISAN 1967) n. c. (B r)
Artemisiaepollenites sellularis NAGY 1969 (EG, EB, B, Sz, AP k)
Cichoreacidites gracilis (NAGY 1969) n. c. (K, B, AP r)
Tricolporopollenites cletraceiformis NAGY 1969 (EG, K, B r)
Ericipites baculatus NAGY 1969 (EG, EB, O, K, B, AP, FP k)
 — *callidus* (R. POT. 1931) W. KR. 1970 (EG, EB, K, B, Sz, AP, FP k)
 — *discretus* (R. POT. 1934) NAGY 1969 (EG, EB, K, Sz, AP, FP k)
 — *ericus* (R. POT. 1931) R. POT. 1960 (EG, K, B, Sz, AP, FP kō)
 — *hidasensis* NAGY 1969 (EB, K, B, AP, FP r)
Spinulaepollis arceuthobioides W. KR. 1962 (EG, EB, K r)
Proteacidites egerensis NAGY 1963 (EG, EB, O, B r)
Caryophyllidites hidasensis NAGY 1969 (B, AP r)
 — *microreticulatus* NAGY 1969 (EG, B r)
 — *rueterbergensis* W. KR. 1966 (B r)
Chenopodipollis maximus NAGY 1969 (B, K k)
 — *multiplex* (WEYL. et PF. 1957) W. KR. 1960 (EG, EB, B, AP, FP r)
 — *neogenicus* NAGY 1969 (B, FP r)
Vaclavipollis sooiana NAGY 1973 (B, AP r)
Sapotaceoidaepollenites abditus (PF. 1953) NAGY 1969 (EG k, K, B, AP áth.)
 — *biconus* (PF. 1953) NAGY 1969 (EG, K, B r)
 — *brevicolpus* (ROCHE 1973) n. c. (EG r)
 — *folliformis* (PF. 1953) n. c. (EG, O, K, B r)
 — *hungaricus* (KEDVES 1965) n. c. (K r)
 — *kirchheimeri* (REISS. 1950) NAGY 1969 (EG, K, B r)
 — *manifestus* (R. POT. 1931) R. POT. 1960 ssp. *contractus* PF. 1953 (EG, B r)
 — cf. *microellipsus* (PF. 1953) n. c. (EG, EB, O, B r)
 — *microrhombus* (PF. 1953) NAGY 1969 (EG, K, B k)
 — *microrhombus* (PF. 1953) NAGY 1969 f. *miocaenica* NAGY 1969 (O, K, B k)
 — *obscurus* (PF. et TH. 1953) NAGY 1969 (EG, EB, O, K, B, Sz, AP gy)
 — *sapotoides* (PF. 1953) R. POT. 1960 (EG, K, B, Sz k)
 — *rotundus* NAGY 1969 (K, B, Sz, AP r)
 — *thomsoni* n. sp. (EB r)
 — *turgidus* NAGY 1969 (EG, EB, K, B r)
Porocolpopollenites hemicolpis PFLUG 1953 (O, B r)
 — *hidasensis* NAGY 1963 (B, Sz r)
 — *latiporis* PF. et TH. 1953 (EB, O, K, B, Sz r)
 — *orbiformis* PF. et TH. 1953 (O, B r)
 — *stereiformis* PFLUG 1963 (EG, K, B r)
 — *triangulus* (R. POT. 1931) TH. et PF. 1953 (EG, B r)
 — *vestibulum* (R. POT. 1931) TH. et PF. 1953 (K, B k)
Persicarioipollis franconicus W. KR. 1962 (AP, FP r)
 — *lusaticus* W. KR. 1962 (EB, K, B, Sz r)
 — *meuseli* W. KR. 1962 (O, K, B r)
 — *welzowense* W. KR. 1962 (K, FP r)
? *Moraceae* pollen (B r)
Triporopollenites urticoides NAGY 1969 (EG, O, B, Sz r)

- Ulmipollenites maculosus* NAGY 1969 (EB, K, B gy)
 — *miocaenicus* NAGY 1969 (EG, EB, K, B kö)
 — *polyangulus* (PF. 1953) n. c. (EG t, EB gy, K, FP áth.)
 — *stillatus* NAGY 1969 (EG, K, B, Sz kö)
 — *undulosus* WOLFF 1934 (EG, EB, O, B kö, AP, FP t)
- Celtipollenites komloënsis* NAGY 1969 (K r, AP, FP k)
- Zelkovaepollenites potoniéi* NAGY 1969 (O, K, B, Sz, AP, FP kö)
 — *thiergarti* NAGY 1969 (EG, EB, K, B k)
- Carpinipites carpinoideus* (PF. 1953) n. c. (EG, EB, O, K, B, Sz, AP, FP k)
- Ostryapollenites rhenanus* (THOMS. 1950) NAGY 1969 (EG, EB, K, B, Sz, AP, FP r)
- Tripoporopollenites coryloides* PF. 1953 (B, Sz, FP r)
- Betulaepollenites betuloides* (PFLUG 1953) NAGY 1969 (EG, EB, O, K, B, Sz, k, AP, FP gy)
- Alnipollenites verus* R. POT. 1934 (EG, EB, O, K, B, Sz, AP, FP r—t)*
- Faguspollenites crassus* NAGY 1969 (EG, EB r, B gy, Sz, AP, FP r)
 — *gemmatus* NAGY 1969 (EG, EB, K, B, Sz, AP, FP r)
 — *minor* NAGY 1969 (EG, EB, O, K, B, Sz, AP, FP kö)
 — *subtilis* NAGY 1969 (K, B, Sz, AP, FP k)
 — *verus* RAATZ 1937 (EG, K, B, Sz, AP, FP kö)
 — *vivus* NAGY 1969 (EG, Sz, AP, FP r, K, B kö)
- Quercopollenites granulatus* NAGY 1969 (EG, EB kö, B, Sz, AP r)
 — *petrea* typus (K, B, Sz r, AP, FP kö)
 — *robur* typus (EG, K, B, Sz r, AP, FP gy)
- Tricolpopollenites liblarensis* (THOMSON 1950) TH. et PF. 1953 ssp. *liblarensis* (EG, EB kö, K, B k)
 — *liblarensis* (TH. 1950) TH. et PF. 1953 ssp. *fallax* (R. POT. 1934) TH. et PF. 1953 (EG t, EB, O, K, B r)
- Tricolporopollenites asper* (TH. et PF. 1953) W. KR. 1961 (EB, K, B r)
 — *cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *fusus* (R. POT. 1934) (EG, EB, O, K, B kö, Sz, AP, FP áth.)
 — *cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *pusillus* (R. POT. 1934) TH. et PF. 1953 (EG, EB, O, K, B k)
 — *cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *oviformis* (R. POT. 1931) TH. et PF. 1953 (EG, EB, O, K, B, Sz k)
 — *henrici* (R. POT. 1931) W. KR. 1961 (O, K, B k)
 — *microhenrici* (R. POT. 1931) W. KR. 1961 (EG, EB, O t, K, B, Sz r)
 — *minimus* NAGY 1969 (EG, EB, K, B, Sz k)
 — *porasper* PFLUG 1953 (EG, EB, K, B k)
 — *villensis* (THOMS. 1950) TH. et PF. 1953 (EG, EB, O, K, B r)
- Juglanspollenites maculosus* (R. POT. 1931) n. c. (EG, B, Sz, AP r)
 — *verus* RAATZ 1937 (EG, EB, O, K, B, Sz, AP r)
- Pterocaryapollenites mecsekensis* NAGY 1969 (B, Sz, AP, FP r)
 — *rotundiformis* NAGY 1969 (B, Sz, AP r)
 — *stellatus* (R. POT. 1931) THIERGART 1937 (EG, EB, O, K, B, Sz, AP, FP k)
- Caryapollenites simplex* (R. POT. 1931) RAATZ 1937 ssp. *simplex* (EG, O, K, B, Sz, AP, FP kö—k)
 — *simplex* (R. POT. 1931) RAATZ 1937 ssp. *triangulus* (EG, EB r)
- Engelhardtoidites microcoryphaeus* (R. POT. 1931) R. POT. 1960 (EG, EB kö, O, K k, B, Sz, AP, FP r)
- Platycaryapollenites miocaenicus* NAGY 1969 em. FREDERIKS. et CHRIST. 1978 (EG, EB k, O, K, B kö, Sz, AP, FP áth.)
- Plicatopollis plicatus* (R. POT. 1934) W. KR. 1962 (EG kö, E, K, B k, AP áth.)
- Momipites punctatus* (R. POT. 1931) NAGY 1969 (EG, EB, O, K, B gy, Sz r, AP, FP áth.)
 — *quietus* (R. POT. 1931) NICHOLS 1973 (EG, EB r)
- Pentapollenites neogenicus* SIMONCSICS 1964 (O, K r)
 — *pentangulus* (PF. 1953) W. KR. 1958 ssp. *pentangulus* (EG, O, B r)
 — *punctoides* W. KR. 1962 (EG, B r)
 — *regulativus* W. KR. 1962 ssp. *regulativus* (EG, K, B r, Sz áth.)
 — *regulativus* W. KR. 1962 ssp. *concaucus* W. KR. 1962 (EG, K, B kö)
- Myricipites bituitus* (R. POT. 1931) NAGY 1969 (EG kö)
 — *myricoides* (KREMP 1950) NAGY 1967 (EG, EB, O, K, B, Sz, AP, FP k)
 — *rurensis* (PF. et TH. 1953) NAGY 1969 (EG gy, EB, K, B, Sz kö)
- Salixipollenites densibaculatus* NAGY 1969 (EG, O, K, B, Sz, AP, FP r)
 — *helveticus* NAGY 1969 (EG, EB, O t, K, B, Sz, AP r)

* Fáciesfüggő, a szenes rétegekben dúsul, itt tömeges is lehet.

Liliacidites ellipticus NAGY 1969 (K r)
Cyperaceapollis neogenicus W. KR. 1960 (B r)
Graminidites crassiglobosus (TREVISAN 1967) W. KR. 1970 (B r)
— *media* (COOKSON 1947) R. POT. 1960 (EG, O, K, B, AP r)
Arecipites chamaedoriformis NAGY 1969 (EG, K, B r)
— *trachycarpoides* NAGY 1969 (EB, K, B r)
Monocolpopollenites tranquillus (R. POT. 1934) TH. et PF. 1953 (EG, EB, O r)
Sabalpollenites papillosus (MÜRR. et PF. 1953) NAGY 1969 (EG, EB r)
— *retareolatus* (PF. 1953) NAGY 1969 (EG, EB, K, B r)
Dicolpopollenites calamoides NAGY 1963 (EG kö, O k)
Sparganiaceapollenites polygonalis THIERGART 1937 (EG, EB, K, B, AP, FP k)
Tetradomonoporites typhoides W. KR. 1970 (AP, FP r)

ŐSLÉNYTANI LEÍRÁS

PHYLUM: BRYOPHYTA

Classis: Anthocerotinae

Ordo: Anthocerotales

Familia: Anthocerotaceae

Genus: *Phaeocerosporites* NAGY 1968

Phaeocerosporites fotensis n. sp.

II. tábla 6—7. ábra

Holotypus: Fót 1. sz. f. 28. sz. minta, 1. lemez, 109×20, II. tábla 6—7. ábra

Locus typicus: Fót 1. sz. f. 241,6—243,2 m

Stratum typicum: Egri, szürke, finomhomokos kőzetliszt

Diagnosis: Poláris helyzetben lekerekített sarkú, háromszög alakú, trilét spóra. Exinéje 4 μ vastag, széle egyenetlen, kissé hullámos lefutású. Mindkét spórafelszín scabrat, granulált. A proximális oldalon a dehiszcencia vonal a vastag exospórumig, vagy csaknem addig ér és a vastag exinének megfelelően tóruszerű megvastagodás kíséri. A disztális oldalán a tórusok 2/3-ának megfelelő távolságig, nagyjából háromszög alakú teret körülvevő kis verrucae-k, ill. grani-k vannak.

Méretek: A holotypus 50 μ .

Differentialis diagnosis: A *Phaeocerosporites fotensis* n. sp. a *Ph. baranyaensis* NAGY és a *Ph. transversus* NAGY fajtól különbözik határozatlanabb körvonalával, a dehiszcencia vonal hosszával és a disztális oldal díszítettségével. Egy példányban fordult elő.

Familia: Incertae sedis

Genus: *Szokolyasporites* n. g.

Generotypus: *Szokolyasporites bryophytoides* n. g. n. sp.

Diagnosis: Kerekded, azonolet, atreme spórák. Ectexinájuk sima, az exine vastag, intrafoveolat.

Differentialis diagnosis: Alakjával, intrafoveolat struktúrájával és a trilét márka hiányával tér el a *Foveotriletes* VAN DER HAMMEN 1954 ex R. POTONIÉ 1956 genustól.

Szokolyasporites bryophytoides n. g. n. sp.

VI. tábla 4—8. ábra

Holotypus: Szokolya 2. sz. f. 87. sz. minta 1. lemez, 110,6×13,5, VI. tábla, 4—8. ábra

Locus typicus: Szokolya 2. sz. f. 82,1—83,9 m

Stratum typicum: Bádani, agyagmárga

Diagnosis: Kerekded, azonolet, atreme spóra. Exinéje vastag, cca. 3 μ , ectexinéje intrafoveolat. Az intrafoveolaris szerkezet sűrűn elhelyezkedő foveolumokból álló, reticulumszerű felszínt ad.

Csíranyílása szakadásszerű, leptoma cca. 14 μ hossz-átmérőjű.

Méretetek: A holotypus átmérője 36 μ .

Differentialis diagnosis: A faj alakja és a csíranyílása az *Ephemerisporites* genusra emlékeztet, de eltér attól az exine szerkezetével.

Botanikai vonatkozásban — morfológiailag — a *Bryophyta* törzsre emlékeztet.

Előfordulás: Egy példányban került eddig elő.

PHYLUM: PTERIDOPHYTA

Classis: Lycopsidea

Ordo: Selaginellales

Familia: Selaginellaceae

Genus: *Echinatisporis* W. KR. 1959

Echinatisporis cserhatensis n. sp.

VIII. tábla 10—13. ábra

Holotypus: Cserhátszentiván 1. sz. f. 68. minta, 1. lemez, 102×13,4, VIII. tábla, 10—11. ábra

Locus typicus: Cserhátszentiván 1. sz. f. 163,0—165,0 m

Stratum typicum: Szarmata, szürke finomhomokos aleurit

Diagnosis: Azonotrilét spóra. Poláris helyzetben háromszög alakú, gyengén konkáv oldalakkal, lekerekített sarkokkal. Mindkét oldala echinusokkal borított. A dehiszcencia vonal mentén tórus van.

Méretetek: A holotypus teljes átmérője 48 μ . A test maximális átmérője 36 μ , az echinusok 3—5 μ hosszúak, a bázisuknál 4—5 μ szélesek, többé-kevésbé tompán kihegyesedők. Az echinusok közötti távolság egyenetlen, kb. 1—4 μ , de egyes esetekben 2—3 egymás melletti echinus alapjainál összenőtt. A proximális oldalon valamivel alacsonyabbak az echinusok. Az echinusok alatt a nexine 1,5—2 μ vastag. A dehiszcencia vonala vékony, csaknem a sarkokig ér. A dehiszcencia vonal sugárainak mindkét oldalát kb. 3 μ -os, lapos, külső oldalán kissé hullámos szélű microverrucat tórus kíséri.

Differentialis diagnosis: Méretre és alakra az *Echinatisporis echinoides* W. KR. 1963 fajhoz és alfajaihoz áll közel (Atlas III. p. 114.). A legfőbb különbség a proximális oldali széles tórusban van. Az echinusok hossza és szélessége is nagyobb, s az egész forma robosztusabb, mint W. KRUTZSCH *E. echinoides* fajja.

Előfordulás: A holotypuson kívül egy 44 μ átmérőjű példány volt található a Cserhátszentiván 1. sz. f. 101,6—104,0 m-ben.

Echinatisporis fotensis n. sp.

VIII. tábla 16—17. ábra

Holotypus: Fót 1. sz. f. 21. minta, 1. lemez, 20,2×111,1, VIII. tábla 16—17. ábra

Locus typicus: Fót 1. sz. f. 294,0—301,0 m

Stratum typicum: Egri, szürke finomhomokos kőzetliszt

Diagnosis: Poláris helyzetben legömbölyített sarkú, trilét spóra, kis méretű echinusokkal. Proximális oldalán vékony dehiszcencia vonala az equatorig ér. Exinéje vékony, 1 μ . A proximális oldalon a kb. 1 μ körüli tüskék (echinusok) sűrűbben állnak, mint a disztális oldalon, ahol az echinusok hossza kb. 2—3 μ ; széles bázisúak (kb. 1,5 μ) hirtelen kihegyesedők.

Méret: A holotypus 28 μ .

Differentialis diagnosis: Az *Echinatisporis fotensis* n. sp. kis testméretével közel áll az *E. miocaenicus* W. KR. et SONTAG 1963 fajhoz (Atlas III. p. 110.), de tüskéi jóval kisebbek, vékonyabbak és ritkábban állnak, mint az *E. miocaenicus* fajéi.

Előfordulás: Egy példányban került eddig elő.

Echinatisporis minimus n. sp.

IX. tábla 16—18. ábra

Holotypus: Szászvár 8. sz. f. 2. minta, 1. lemez, 45,5×102,8, IX. tábla, 16—18. ábra

Locus typicus: Szászvár 8. sz. f. 26,0—27,0 m

Stratum typicum: Eggenburgi, zöldesszürke homokos márga

Diagnosis: Kis méretű, kerekded, azonotrilét spóra. Fala vékony. Díszítő elemei a spóra felszínén egyenletesen elhelyezkedő, széles alapú, hirtelen kihegyesedő echinusok. Ezek miatt csak nehezen látható a vékony, rövid dehiszcencia vonal.

Méreték: 22 μ az átmérője, 1 μ -os az exine vastagsága, az echinusok az alapjuknál 3—4 μ szélesek, kb. 2—2,5 μ magasak. A dehiszcencia vonal 4 μ -os.

Differentialis diagnosis: Mérete szerint az *Echinatisporis mecsekensis* NAGY 1969 fajhoz áll a legközelebb, de az nagyobb és az echinusai jóval kisebbek. Az *E. echinoides* W. KR. 1963 ssp. *grausteinensis* W. KR. 1963-hoz is hasonlít, de W. KRUTZSCH faja nagyobb, echinusai vékonyabbak.

Megjegyzés: A fajt *Trilites* sp. néven jelöltem 1969-ben (p. 106., Pl. XXV., Fig. 2—4.).

Előfordulás: A holotipuson kívül egy további, 24 μ -os példány a Szokolya 2. sz. f. 51,1—51,9 m-ben (alsóbadeni).

Echinatisporis spinosus n. sp.

X. tábla 1—4. ábra

Holotypus: Szokolya 2. sz. f. 33. sz. minta, 1. lemez, 106,5×7,5, X. tábla, 1—4. ábra

Locus typicus: Szokolya 2. sz. f. 44,0—45,5 m

Stratum typicum: Alsó-bádeni, szürke agyagmárga

Diagnosis: Trilét miospóra, lekerekített sarkú, konvex oldalú, háromszögletű alakkal, ritka elhelyezkedésű echinusokkal díszítve. Az echinusok 8—9 μ hosszúságúak, bázisukon 4—5 μ szélességűek, végük elvékonyodó. Az elvékonyodás módja különböző: van olyan echinus, amelyik hirtelen, másik fokozatos átmenettel hegyesedik ki. Exinéje az echinusok között sima, vastagsága 2,0—2,5 μ . kétrétegű, a rétegek csaknem egyforma vastagok. Dehiszcencia vonala vékony, kb. 2/3-a a rádiusznak.

Méreték: A spóra teljes átmérője 41 μ , a test 33 μ .

Differentialis diagnosis: Sajátos, ritkán elhelyezkedő echinusai emlékeztetnek az *Echinatisporis longechinus* W. KR. 1959 (W. KR. 1959, p. 133) fajra. Eltér attól a kevésbé kerekded alakjával, a sokkal tömörebb és rövidebb echinusaival, sima exinéjével és a rövidebb dehiszcencia vonalával.

Előfordulás: Eddig egy példányban került elő.

Genus: *Megastachysporites* n. g.

Generotypus: *Megastachysporites ladanyensis* n. g. n. sp.

Diagnosis: Trilét spórák, lekerekített sarkokkal, konvex oldalakkal. A disztális oldalt vékony, átlátszó redőket alkotó membrán fedi. A redők muriszerű, hullámos lefutású lécekké egyesülnek. A redők és a lécek a spóra körvonalát is megszabják és a proximális oldalra is áthúzódnak. A proximális oldalon a dehiszcencia vonala vékony, a sarkokig futó. A spóra mindkét oldala, de főleg a proximális apex, finoman díszített (scabrat, granulát) stb.

Differentialis diagnosis: A *Camarazonosporites* genus néhány faja (*C. decorus* [WOLFF 1934] W. KR. 1959, *C. wilsnackensis* W. KR. 1963) emlékeztet a *Megastachysporites* n. g.-ra. De míg a *Megastachysporites* n. g.-nál kifejezetten membránszerű az exine, addig a *Camarazonosporites* fajoknál az exine hamulat szerkezetű.

Megjegyzés: E. M. KNOX (1950) *Selaginella megastachys* csoport leírása és ábrái alapján (p. 250—251 és Pl. XII. Fig. 93) a fosszilis *Megastachysporites* n. g. ebbe az alakkörbe tartozik.

Megastachysporites ladanyensis n. g. n. sp.

VIII. tábla 1—6. ábra

Holotypus: Jászládány 1. sz. f. 19. minta, 1. lemez, 116,8×14,7, VIII. tábla, 1—6. ábra

Locus typicus: Jászládány 1. sz. fűrés, 188,43—188,65 m

Stratum typicum: Középső-pleisztocén, kőzetlisztes agyag

Diagnosis: Trilét spóra, lekerekített sarkokkal, konvex hullámos oldalakkal; a spóra disztális oldala vékony, átlátszó, redőket alkotó membránnal borított. A membrán hullámos lefutású, muri-

szerű erősítő lécekkel ellátott. Ez a szerkezet a proximális oldal rádiuszának cca. felét is befedi. A proximális oldalon a vékony dehiszcencia vonal az equatorig kifutó. A felszín egésze, nem túl sűrűn, granulumokkal fedett.

Méretetek: $39 \times 34 \mu$ átmérőjű, a membrán redői $3-8 \mu$ hosszúak, $3-4 \mu$ magasak.

Differentialis diagnosis: A *Megastachysporites ladanyensis* nov. gen. et nov. sp. leginkább a ma élő *Selaginella megastachys* csoportba tartozó *Selaginella asperula* vA. vR. spórához hasonlít. (I. KNOX, E. M. 1950, Pl. XII. Fig. 93). Ezekről abban különbözik, hogy a *M. ladanyensis* nov. gen. et nov. sp. felszíne granulát, a *S. asperula* exinéje pedig „scabriolat”. A membránszerű díszítőelemek a recens fajon magasabbak és a proximális oldalra kevésbé húzódnak át, mint a fosszilis fajon.

Előfordulás: Egy példányban fordult eddig elő.

Classis: Pteropsida (*Filicinae*)

Ordo: Filicales

Subordo: Simplices

Familia: Gleicheniaceae

Genus: *Gleicheniidites* (ROSS 1949) BOLCH. 1968

Gleicheniidites rimosus n. sp.

XXVI. tábla 4–8. ábra

Holotypus: Szokolya 2. sz. f. 96. minta, 1. lemez, $104,9 \times 7,4$, XXVI. tábla, 4–8. ábra

Locus typicus: Szokolya 2. sz. f. 90,3–91,1 m

Stratum typicum: Alsó-bádeni, szürke agyag

Diagnosis: Trilét spórák, a proximális oldalon konkáv lefutású, hullámos szélű tórus veszi körül a sarkokig kifutó vékony dehiszcencia vonalat. A cingulum kissé hullámos lefutású, vastagsága a sarkoknál hirtelen lecsökken. A disztális oldal díszítőelemei háromszög alakba rendeződött, lapos rugae-k.

Méretetek: A holotypus 27μ , a cingulum vastagsága az oldalak közepén 5μ . A disztális oldal rugae-i $10-15 \mu$ hosszúak, $3-5 \mu$ szélesek.

Differentialis diagnosis: A *Gleicheniidites rimosus* n. sp. a *G. elegans* NAGY 1963 fajhoz hasonlít legjobban. A két faj elsősorban disztális oldali díszítőelemeivel tér el egymástól. A dehiszcencia vonal is eltérő: a *C. elegans*-nál nem éri el a sarkokat, a *G. rimosus*-nál eléri.

Megjegyzés: A holotypuson kívül két, 22μ -os példány került eddig elő: Zengővárkony 59. sz. f. $60,9-63,0$ m (kárpáti) és a Szokolya 2. sz. f. $34,0-37,0$ m (alsóbádeni) mintában.

Familia: Incertae sedis

Genus: *Verrucatisporites* NAGY 1969 emend.

1969. *Verrucatisporites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 104.

Emendált diagnosis: Azonotrilét trianguláris mikrospórák, ritkán és egyenetlenül elhelyezkedő egyes verrucae-val, amelyek mellett coni-k, granuli-k és spinae-k is előfordulhatnak.

Verrucatisporites tekeresensis n. sp.

XX. tábla 18–21. ábra, XXI. tábla 1–4. ábra

Holotypus: Tek. 1. sz. f. 6. minta, 1. lemez, $108,1 \times 29,8$, XX. tábla, 18–21. ábra

Locus typicus: Tekeres 1. sz. f. $14,4-27,2$ m

Stratum typicum: Pleisztocén, sárga homokos lösz

Diagnosis: Azonotrilét, poláris helyzetben lekerekített sarkú trianguláris spóra. Az exine vékony ($1,0-1,5 \mu$). A spóra disztális oldalán egyenetlenül elhelyezkedő, kis méretű ($1-2 \mu$ -os) verrucae-k

vannak, ezek között grana-k díszítik. A dehiszcencia vonal az egyenlítőig, vagy csaknem az egyenlítőig ér. A proximális oldalon sokkal kisebb és kevesebb verrucae található, néhol csak intragranulált.

Méretetek: A holotypus 43 μ .

Differentialis diagnosis: A *Verrucatisporites inaequalis* NAGY 1969-től a *V. tekeresensis* n. sp. nagyobb mérete, ehhez viszonyítva kisebb díszítőelemei és a dehiszcencia vonal menti díszítőelemek hiánya révén különbözik.

Megjegyzés: Néhány példány előkerült még 49–32 μ -os mérettel: Püspökhatvan 4. sz. f. 198,0–201,0 m (eggenburgi), Lak 1. sz. f. 196,0–192,9 m (szarmata), Naszály 1. sz. f. 104,0–106,0 m (alsó-pannoniai). Két példányt RÁKOSI L. fényképezett le a Torony 4. sz. f. 125,0–125,9 m-ből felső-pannoniai mintából.

Genus: *Corrugatisporites* (THOMSON et PFLUG 1953) emend.

Emendált diagnosis: Azonotrilet, lekerekített sarkú, háromszög alakú mikrospórák. Oldalvonaluk konvextól gyengén konkávig változhat. Felszínüket 1 μ feletti magasságú, bázisuknál 2 μ -nál szélesebb, főleg összeolvadt verrucae-ből álló corrugat, rugulat elemek díszítik. A díszítőelemek nagyjából a disztális oldalon helyezkednek el, szabálytalanul vagy szabályosan. Proximális oldaluk többé-kevésbé corrugat díszítettségű. A dehiszcencia vonala a sarkokig húzódik (vagy csaknem addig), tórussal vagy anélkül.

Megjegyzés: A *Cibotioidites* ROSS 1949 genus fajainak disztális oldalán a verrucae vonulatok az equatorral feltűnően párhuzamosan haladnak, s ez nem vonatkozik a *Corrugatisporites* genusra.

THOMSON et PFLUG 1953-ban (I. c.) tévesen IBRAHIM-nak tulajdonítják a genus és az egyetlen faj, amit ide sorolnak, az R. POTONIÉ által 1934-ben leírt *Sporites solidus*. (Megnevezik a leírás és ábra helyét is.) A Botanikai Nevezéktani Szabályzat (1978) értelmében ez a genus érvényes, ugyanis az a tény, hogy hibásan IBRAHIM-ot idézik, nem teszi érvénytelenné a nevet (Art. 46. Empfehlung 46 c. p. 198: „Wenn ein Autor, der zuerst einen Namen gültig veröffentlicht, ihn einer anderen Person zuschreibt, so ist das korrekte Autorzitat der Name des tatsächlich veröffentlichenden Autors . . .”).

A holotypus ténylegesen nincs kijelölve, mert THOMSON et PFLUG csak a „Bemerkungen”-ban írják az ide sorolt *S. solidus* után: „Autor ist R. POTONIÉ (1934, S. 42. und Taf. 1. Fig. 35)”, de a Botanikai Nevezéktani Szabályzat szerint (Art. 37. 1.): „Vom 1. Januar 1958 an ist die Veröffentlichung des Namens eines neuen Taxons . . . dann gültig, wenn der nomenklatorische Typus angegeben wird.”

Corrugatisporites delicatus n. sp.

XXII. tábla 1–7. ábra

Holotypus: Szk. 2. sz. f. 111. minta, 1. lemez, 43,2–113,1, XXII. tábla, 1–4. ábra

Locus typicus: Szokolya 2. sz. f. 109,0–111,2 m

Stratum typicum: Alsó-bádeni, szürke agyagmárga

Diagnosis: Azonotrilet, triangularis, corrugat spórák. A proximális oldal csaknem simának hat, de finoman, dudorosan redőzött. A dehiszcencia vonala vékony, hosszúsága a rádiusz $2/3$ – $3/4$ -ét éri el, lefutása lehet kissé hullámos is. A disztális oldalon a lapos, corrugat díszítőelemek hosszabb-rövidebb vonulatokat alkotnak. A sarkoknál kissé összetömörülnek, az oldalakhoz viszonyítva vastagabbak, valvae-szerűek.

Méretetek: A holotypus maximális átmérője: 51 μ , falvastagsága az oldalakon 2–5 μ .

Differentialis diagnosis: A *Corrugatisporites delicatus* n. sp.-t a *Corrugatisporites solidus* (R. POT. 1934) TH. et PF. 1953-tól a lapos díszítőelemek különböztetik meg, amelyek nem alkotnak határozott reticulumot a disztális oldalon.

Előfordulás: 44–55 μ mérettel, egyes példányokban került elő: Szokolya 2. sz. f. 79,1–111,2 m, Püspökhatvan 4. sz. f. 151,0–153,0 m (alsó-bádeni). A Szokolya 2. sz. f. 79,1–79,9 m (alsó-bádeni)-ből előkerült példányt cf.-tel jelöltem.

Corrugatisporites graphicus n. sp.

XXVI. tábla 9–17. ábra

Holotypus: Szk. 2. sz. f. 105. sz. minta, 1. lemez, 110,5–112, XXVI. tábla, 9–13. ábra

Locus typicus: Szokolya 2. sz. f. 100,0–101,0 m

Stratum typicum: Bádeni, szürke aleurit

Diagnosis: Azonotrilét, corrugat spórák, poláris helyzetben lekerekített sarkú háromszög alakúak. Proximális oldalukon a vékony, egyenes dehiszcencia vonaluk az equatorig ér, amelynek két oldalát jelentős vastagságú (3–7 μ) lapos tórus kíséri. A proximális oldalt kis méretű, egyedül álló verrucae-k és azok összeolvadásából keletkezett murikból álló díszítőelemek fedik. A spórafal — díszítőelemektől függően — a sarkoknál kissé vastagabb. A disztális oldalon lapos, összeolvadt verrucae-kból álló corrugat díszítőelemek vannak.

Méretetek: A holotypus 49 μ átmérőjű.

Differentialis diagnosis: A *Corrugatisporites graphicus* n. sp. a *C. delicatus* n. sp.-hez áll közel. Méretben, alakban és a disztális oldal díszítettségében nagyjából megegyeznek. Feltűnő különbség a két faj között lényegében a proximális oldal díszítettségében van: a *C. graphicus* n. sp.-t széles tórus és aránylag kis méretű verrucae-k, a *C. delicatus* n. sp.-t a tórus hiánya és finom redőzöttség jellemzi.

Előfordulás: 36–49 μ -os méretben, néhány példányban: Fót 1. sz. f. 216,5–218,8, 201,0–205,0 m (egri), Püspökhatvan 4. sz. f. 251,0–254,0 m (eggenburgi), Zengővárkony 45. sz. f. 16,0–16,4 m, Nagyörbő 1. sz. f. 967,9–969,0 m, Nógrádszakál 2. sz. f. 207,0–209,0 m (ottnangi), Szokolya 2. sz. f. 82,3–107,9 m, Nógrádszakál 2. sz. f. 185,0–187,0 m (bádeni).

Corrugatisporites limnicus n. sp.

XXVII. tábla 1–6. ábra

Holotypus: Pk. VI. sz. f. 3. minta, 1. lemez, 42×100,9, XXVII. tábla, 1–2. ábra

Locus typicus: Pusztakisfalú VI. sz. f. 6,3–7,8 m

Stratum typicum: Ottnangi, limnikus öslesztet, szürke agyag

Diagnosis: Azonotrilét miospórák. Poláris helyzetben lekerekített sarkú háromszög alakúak, a sarkok (díszítőelemek által) kissé megvastagodottak. A proximális oldal csaknem sima. A vékony dehiszcencia vonal nem ér egészen az equatorig. A dehiszcencia vonal mentén a sarkok felé elkeskenyedő tórus van. A disztális oldalt általában 1,5–3 μ -os verrucae-k díszítik, csak kevés olvadt össze közülük, a három saroknál azonban valvae-szerűen összeolvadtak.

Méretetek: A holotypus 39 μ .

Differentialis diagnosis: A *Corrugatisporites limnicus* n. sp. a *C. solidus* (R. Pot. 1934) Th. et Pf. 1953-mal méretben megegyezik, de a *C. limnicus* n. sp. tórusa vastagabb, a disztális oldalon a verrucae-k csak kevésbé összeolvadtak, a sarkok vastagodása nagyobb.

Előfordulás: A holotypuson kívül 37–50 μ méretben egyes példányok: Püspökhatvan 4. sz. f. 245,0–248,0 m (eggenburgi), Zengővárkony 45. sz. f. 16,4–17,2 m (ottnangi), Nagyörbő 1. sz. f. 818 m, Tengelic 2. sz. f. 850,0–851,3 m (alsó-bádeni).

Corrugatisporites litkeensis n. sp.

XXVII. tábla 10–13. ábra

Holotypus: L. 17. sz. f. 80. minta, 1. lemez, 108,0–11, XXVII. tábla, 10–13. ábra

Locus typicus: Litke 17. sz. f. 156,0–158,0 m

Stratum typicum: Kárpáti, szürke kőzetlisztes agyagmárga

Diagnosis: Azonotrilét triangularis spóra. Proximális oldalán a vékony dehiszcencia vonal a sarkokig ér. A vonal két oldalán összeolvadt, hullámos lefutású, lapos tórus kíséri. A proximális oldalon az apex háromszögletű mezőjét körülveve, nagyjából az equatorral párhuzamos, lapos verrucae-ból összenőtt corrugat lécek húzódnak. A verrucae-k magassága cca. 2 μ , hossza cca. 2,5–3 μ , felfelé kissé csökkenő mérettel. A disztális oldalon is corrugat léceket alkotnak a verrucae-k. A lécek 5–7 μ magasak. Az összenőtt egységek hossza a 12–15 μ -t is eléri, felülnézetből szögletesek. Közöttük néhol egy-egy 0,5–1 μ -os grana is elhelyezkedik.

Méretetek: A holotypus 60 μ -os.

Differentialis diagnosis: A *Corrugatisporites litkeensis* n. sp. erőteljes disztális oldali corrugat lécei magasabbak és egyenletesen helyezkednek el, míg ezek a *Corrugatisporites tekeresensis* n. sp.-en lekerekítettebbek és alacsonyabbak, s szabálytalanabban lefutók.

Előfordulás: Egy példányban került elő.

Corrugatisporites minoris n. sp.

XXVII. tábla 7—9. ábra

Holotypus: Ph. 4. sz. f. 79. minta, 1. lemez 115,1—7,1, XXVII. tábla, 7—9. ábra

Locus typicus: Püspökhatvan 4. sz. f. 299,0—302,0 m

Stratum typicum: Eggenburgi, szürke aleurit

Diagnosis: Azonotrilét triangularis, vastag falú spórák. A proximális oldal a sarkokig kifutó dehiszcencia vonal körül széles, lapos tóruszal és kevés granával díszített. A disztális oldal — ritkán elhelyezkedő — 3—7 μ hosszú és 2—3 μ széles verrucae-val és kevés összeolvadt verrucae-val fedett.

Méreték: A holotypus 32 μ -os, a spórafal vastagsága 3—4 μ .

Differentialis diagnosis: a *Corrugatisporites minoris* n. sp. hasonlít a *C. microvallatus* (W. KR. 1967) n. c. fajhoz méretével és vastag tórusával, de különbözik a *C. minoris* n. sp. vastagabb exinével és ritkábban elhelyezkedő verrucát elemeivel.

Előfordulás: a holotypuson kívül egy 48 μ -os példány, ugyancsak a Püspökhatvan 4. sz. f.-ből, a 204,0—207,0 m-ből került elő.

Corrugatisporites pseudovallatus n. sp.

XXIII. tábla 4—8. ábra

Holotypus: Zv. 59. sz. f. 14. minta, 1. lemez, 29,6×107,8, XXIII. tábla, 6—8. ábra

Locus typicus: Zengővárkony 59. sz. f. 34,0—37,5 m

Stratum typicum: Alsó-bádeni, szürke agyagmárga (slír)

Diagnosis: azonotrilét, poláris helyzetben triangulárisan lekerekített sarkokkal rendelkező spórák. A spórafal 2—3 μ -os, a sarkoknál kissé vastagabb. A proximális oldalon a vékony dehiszcencia vonal nem ér egészen a sarkokig, tórus kíséri. Az equator és a dehiszcencia vonal között merőlegesen, lapos, szigetszerűen elhelyezkedő díszítőelemek vannak. A disztális oldalon, egymással nagyjából párhuzamos, hullámos lefutású, lapos redők húzódnak.

Méreték: A holotypus 50 μ -os.

Differentialis diagnosis: A *Corrugatisporites pseudovallatus* n. sp.-t a *C. paucivallatus* (PFLUG 1953) n. c. fajtól szükséges elválasztani, mert a díszítőelemek iránya radiális, a rugulat elemek határozottabb vonulatokat alkotnak; a proximális oldalon nem szigetszerűek, s a disztális oldalon sem hullámos lefutásúak. Átmeneti alaknak tekintem a *C. paucivallatus*-hoz.

Előfordulás: Két példányban fordult elő a holotypuson kívül: Szokolya 2. sz. f. 102,2—104,7 m (alsó-bádeni).

Corrugatisporites tekeresensis n. sp.

XXIV. tábla 3—5. ábra

Holotypus: T. 1. sz. f. 252. sz. minta, 1. lemez, 91,0×10,6, XXIV. tábla, 3—5. ábra

Locus typicus: Tekeres 1. sz. f. 895,4—899,4 m

Stratum typicum: Kárpáti, szürke agyag

Diagnosis: Azonotrilét, trianguláris spóra, poláris helyzetben lekerekített sarkokkal. A proximális oldalon a dehiszcencia vonal nem ér az equatorig és körülötte háromszög alakban sima felszínű az exine. Ez a háromszög kisebb, mint a dehiszcencia vonal hossza. Az oldalakkal párhuzamosan — a dehiszcencia vonalak végeit körülvéve — összenőtt, rugulat lécek húzódnak. A disztális oldal rugulat lécei szabálytalanabban haladnak, egymást keresztezhetik és így rendszertelenül, szabálytalan reticulumot alkothatnak.

Méreték: A holotypus 53 μ .

Differentialis diagnosis: A *Corrugatisporites tekeresensis* nov. sp. a *C. solidus* (R. POT. 1934) TH. et PF. 1953-tól eltér a proximális oldal centrális részén levő sima háromszögével, a tórus- és sarok-díszítőelemek megvastagodásának hiányával.

Előfordulás: Egy példányban került elő eddig.

Genus: *Macroleptolepidites* NAGY 1963 emend.

Emendált diagnosis: „Azonotriléte microspores. The distal part is covered with conspicuous differently sized verrucae, beeing large on the edge of the spore, forming thus its contour decisively to a zigzagged line and having a smaller diameter mostly in the middle of the spore”. A proximális

oldalon, a dehiszcencia vonal mentén elhelyezkedő tóruson kívül csak kevés kisméretű verrucae, ill. granulum található.

Megjegyzés: A *Macroleptolepidites* genust a *Leptolepidites* genushoz hasonlítva, a díszítőelemek nagysága választja el (NAGY 1963). NORRIS a *Leptolepidites* genust emendálta (l. ott), s emiatt szükségessé vált a *Macroleptolepidites* genus újradiagnosztizálása is.

Macroleptolepidites ajkaënsis n. sp.

XXV. tábla 5—9. ábra

Holotypus: A. 157. sz. f., 1. lemez, 112×38,4, XXV. tábla, 5—9. ábra

Locus typicus: Ajka 157. sz. f. 314,9—318,3 m

Stratum typicum: Középső-miocén, szürke agyag

Diagnosis: Azonotrilét mikrospóra. Proximális oldalán a vékony, kissé hullámos lefutású dehiszcencia vonala csaknem a sarkokig ér. A dehiszcencia vonalat tórus kíséri. A proximális oldalon néhány kisebb verrucae van. A disztális oldalt nagyméretű verrucae-k fedik, amelyek a spóra alakját adják.

Méreték: A holotypus 29 μ , a disztális oldali verrucae-k 5—6 μ -osak, a proximális oldalon 1—1,5 μ -osak.

Differentialis diagnosis: A *Macroleptolepidites ajkaënsis* n. sp. a *M. krutzschi* NAGY 1963 fajtól kisebb méretével, de közel azonos méretű és kevésbé összeolvadt verrucae-ivel különül el.

Előfordulás: Egy példányban fordult elő eddig.

Macroleptolepidites hexagonalis n. sp.

XXV. tábla 15—17. ábra

Holotypus: L. 17. sz. f., 131. minta, 1. lemez, 116,5×20,9, XXV. tábla, 15—17. ábra

Locus typicus: Litke 17. sz. f. 258,0—260,0 m

Stratum typicum: Kárpáti, szürke agyagmárga

Diagnosis: Azonotrilét spóra. Disztális oldalán nagy, esetenként hólyagszerű — a spóra alakját megszabó — verrucae-kal fedett. A nagy méretű verrucae-k között néhány kisebb is található. A proximális oldal sima, vékony, aránylag rövid dehiszcencia vonallal, amely körül kevés, lapos, macula-szerű díszítőelem helyezkedik el.

Méreték: A holotypus 43 μ -os, a verrucae-k szélessége és magassága 2—12 μ között változhat.

Differentialis diagnosis: A *Macroleptolepidites hexagonalis* n. sp. a *M. ajkaënsis* n. sp.-re emlékeztet, de az kisebb, egyenletesebbek a verrucae méretei s az alakja inkább háromszögre utaló.

Előfordulás: Egy példányban került elő.

Genus: *Polypodiaceoisporites* R. POT. 1966

Polypodiaceoisporites boerzsoenyensis n. sp.

XXVIII. tábla 9—12. ábra, XXIX. tábla 1—3. ábra

Holotypus: Szk. 2. sz. f. 92. minta, 109×8,8, XXVIII. tábla, 9—12. ábra

Locus typicus: Szokolya 12. sz. f. 87,2—87,9 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Zonotrilét trianguláris miosporák. A cingulum széles (5—10 μ), kissé hullámos lefutású. A proximális oldalon az aránylag vékony dehiszcencia vonal a cingulumig tart. A dehiszcencia vonallal párhuzamosan hullámos lefutású, lapos, 7—8 μ széles tórus van, amelyen belül, egyenletlenül elhelyezkedő 2—3 μ széles és magas verrucae-k vannak. A spóra disztális oldalának szegélyét alapjainál összeolvadt verrucae, a felszínt pedig néhány lapos, széles (5—15 μ), összeolvadt verrucae gallérszerűen díszíti.

Méreték: A holotypus 67 μ -os.

Differentialis diagnosis: A *Polypodiaceoisporites boerzsoenyensis* n. sp. emlékeztet a *P. corrugatus* W. KR. 1967 fajra, de annál sokkal nagyobb, a sarkoknál a cingulum nincs megvastagodva, s a disztális oldal díszítőelemei nem alkotnak többé-kevésbé párhuzamos vonalakat.

Előfordulás: A faj többi példánya 51—55 μ -os, lelőhelyük Szokolya 2. sz. f. 80,7—91,5 m (alsó-bádeni); Cserhátszentiván 1. sz. f. 188,0—190,0 m (szarmata).

Megjegyzés: Botanikai hasonlóságot a *Pteris coloptera*-val (Pollen et Spores 1963 V. 2. p. 71.) találtunk. SHATILOVA és MČSEDLISVILI (1980. VI. T. 1. ábra) a grúziai pliocénből ábrázolt *Pteris* aff. *quadricurita* RETZ faja nagyon hasonlít a *Polypodiaceoisporites boerzsoenyensis* n. sp.-hez.

Polypodiaceoisporites corrutoratus n. sp.

XXVII. tábla 14—16. ábra, XXVIII. tábla 1—6. ábra

Holotypus: Szk. 2. sz. f. 87 m, 1. lemez, 107×6,1, XXVIII. tábla, 1—4. ábra

Locus typicus: Szokolya 2. sz. f. 82,1—83,9 m

Stratum typicum: Alsó-bádeni, agyagmárja

Diagnosis: Zonotrilét spórák. A 4—5 μ széles cingulum a sarkoknál többé-kevésbé elkeskenyedő. A kissé hullámos lefutású dehiszcencia vonalat a proximális oldalon hullámos szélű verrucae-ból összeolvadt 1—2 μ széles tórus veszi körül. A disztális oldalon 2—6 μ -os lapos, murivá összeolvadt díszítőelemek találhatóak.

Méreték: A holotypus 38 μ .

Differentialis diagnosis: A *Polypodiaceoisporites corrutoratus* n. sp. legjobban a *P. toriacus* RÁKOSI 1973 fajhoz hasonlít (1. c. p. 518. XVII. T. 1—2. á.). RÁKOSI faja szélesebb cingulumával s a disztális oldalon levő egyes verrucae-ból álló díszítőelemével tér el a *P. corrutoratus* n. sp.-től.

Előfordulás: 24—38 μ -os példányok: Pápa 2. sz. f. 242,8—243,3 m, 208,8—209,3 m (eggenburgi); Zengővárkony 59. sz. f. 60,9—63,0 m, 56,0—60,9 m; Litke 17. sz. f. 37,6—258,0 m; Fót 1. sz. f. 130,5—131,5 m (kárpáti). A faj akméja a bádeni emeletben volt, erre utal, hogy legtöbb példánya — a holotypussal együtt — a Szokolya 2. sz. fúrásból került elő: 104,7—106,4 m, 89,5—90,3 m, 81,5—82,3 m, 59,1—59,9 m, 51,5—51,9 m. További lelőhelyek: Szilvásvár 1. sz. f. 145,0 m, Cserhátszentiván 1. sz. f. 103,4—106,4 m, 19,0—21,0 m (szarmata); Tata térképező 26. sz. f. 45,0 m (pannóniai).

Polypodiaceoisporites pauciornatus n. sp.

XXXII. tábla 15—20. ábra

Holotypus: Szk. 2. sz. f. 47. minta, 1. lemez, 101,3×16,5, XXXI. tábla, 15—20. ábra

Locus typicus: Szokolya 2. sz. f. 51,1—51,9 m

Stratum typicum: Alsó-bádeni, agyagmárja

Diagnosis: Zonotrilét spórák, sima cingulummal. Proximális oldalán a cingulumig érő dehiszcencia vonal mentén tóruszerű megvastagodás van, amit kevés összeolvadt verrucae és grana is kísér. A disztális oldalt lapos, összeolvadt rugae díszíti.

Méreték: A holotypus 46 μ átmérőjű. A cingulum az oldalak közepén 5 μ , a sarkoknál teljesen elkeskenyedő, a holotypusnál a sarkoknál megszűnő. A tórus 2—3 μ , a sarkok felé elkeskenyedő, a verrucae mérete: 1 μ -tól cca. 5—6 μ -ig. A disztális oldal díszítettsége 30—36 μ átmérőjű.

Differentialis diagnosis: A *P. pauciornatus* n. sp. a *P. paucirugosus* n. sp.-hez áll közel. Eltérés főleg az, hogy míg a *P. pauciornatus* disztális oldalán lapos rugae-k a díszítőelemek, addig a *P. paucirugosus* disztális oldala csaknem teljesen lapos, egybeolvadó felszín, melyen egy-két vonalszerű ránc látható.

Megjegyzés: A díszítettség mértéke példányonként eltérő.

Előfordulás: 34—43 μ -os átmérővel (a holotypuson kívül): Fót 1. sz. f. 162,0—164,0 m (eggenburgi); Zengővárkony 59. sz. f. 71,4—73,0 m; Litke 17. sz. f. 104,0—106,0 m (kárpáti); Szokolya 2. sz. f. 100,0—101,0 m, 88,2—89,5 m (alsó-bádeni).

Polypodiaceoisporites paucirugosus n. sp.

XXXIII. tábla 1—4. ábra

Holotypus: L. 17. sz. f. 133. minta, 1. lemez, 106,5×21,5, XXXIII. tábla, 1—3. ábra

Locus typicus: Litke 17. sz. f. 262,0—244,0 m

Stratum typicum: Kárpáti, finomhomokos kőzetliszt

Diagnosis: Zonotrilét, lekerekített sarkú, háromszögletű spóra. Cingulum a aránylag vékony, változó szélességű, fala sima. A dehiszcencia vonala vékony, kissé hullámos lefutású és csaknem a

cingulumig ér. Proximális oldalán a dehiszcencia vonal mentén, lapos, összeolvadt díszítőelem, tórus van, amely a trilét márka 3 ágának találkozásánál, az apexnél a legvastagabb és a dehiszcencia vonal végénél elkeskenyedik. Disztális oldala többnyire kisebb kiterjedésű a proximális oldalnál és felszínén néhány ránc-szerű mélyedés látható. Felszínén — csaknem foltoknak minősülő — lapos, összeolvadt díszítőelemek is vannak.

Méretetek: A holotypus mérete 32 μ , cingulumuma 2—4 μ szélességű.

Differentialis diagnosis: A *P. paucirugosus* n. sp. a *P. pauciornatus* n. sp.-hez hasonló, de disztális oldali díszítettségük eltérő: a *P. paucirugosus* n. sp. disztális oldalán csak néhány redő van, a *P. pauciornatus*-nál lapos rugae-k rendeződtek el.

Megjegyzés: Az ide sorolt spórák 32—41 μ közötti méretűek, a cingulumok 2—4 μ szélesek. Néhány spórán a sarkoknál a cingulum csak méretében csökken, míg másoknál teljesen megszakad (becsípett). A dehiszcencia vonal mentén levő lapos díszítőelem 2—8 μ szélességű. A disztális oldal széle kissé hullámos lefutású is lehet.

Előfordulás: A holotypuson kívül néhány példány a Zengővárkony 59. sz. fúrásban: 78,0—81,0 m, 65,0—67,0 m (kárpáti); ezen kívül Szokolya 2. sz. f. 51,1—91,1 m; Nógrádszakál 2. sz. f. 99,5—101,0 m; Szilvássvár 1. sz. f. 145,0 m (bádeni); Tar 34. sz. f. 221,0—224,5 m (pliocén; itt talán másodlagos).

Polypodiaceoisporites pulchellus n. sp.

XXXIII. tábla 5—10. ábra

Holotypus: T. 2. sz. f. 239. sz. minta, 1. lemez, 113,3 \times 7,9, XXXIII. tábla, 5—7. ábra

Locus typicus: Tengelic 2. sz. f. 842,0—845,0 m

Stratum typicum: Bádeni, slír

Diagnosis: Zonotrilét spóra, lekerekített sarkokkal. A proximális oldalon, a kissé hullámos vonalú dehiszcencia vonal az equatorig ér. A proximális oldalt cca. 1 μ -os vastagságú léccel veszi körül. A cingulum 3—4 μ széles; sima, a sarkoknál elvékonyodó. A proximális oldal díszítettsége a dehiszcencia vonal környékére szorítkozik, nagyjából háromszög alakban helyezkedik el. A háromszög külső oldalán 1—2 μ -os granulomok és kis verrucae-k vannak, melyek a dehiszcencia vonal mentén lapos, 3—4 μ -os díszítőelemekké olvadnak össze. A disztális oldalon egy hullámos vonalú, háromszög alakú díszítőelem van, amely a sarkoknál kiszélesedik 4—5 μ -ra. A disztális oldalt kevés verrucae is díszíti.

Méretetek: A holotypus átmérője 32 μ .

Differentialis diagnosis: A *Polypodiaceoisporites pulchellus* n. sp. a *P. triangularis* n. sp.-vel mutat közös vonásokat: a disztális oldali háromszögletű díszítőelem mindkettőnél megvan. A *P. pulchellus* n. sp. valamivel nagyobb méretű. A *P. triangularis* n. sp. díszítőelemei a proximális oldalon összeolvadtak, a disztális oldalon csak a háromszögű díszítőelem van.

Megjegyzés: Néhány 32—35 μ átmérőjű példány került eddig elő: Nógrádszakál 2. sz. f. 91,4—95,0 m (alsó-bádeni); Nagygyörbő 1. sz. f. 977,2—979,2 m (ottnangi).

Polypodiaceoisporites triangularis n. sp.

XXXV. tábla 1—7. ábra

Holotypus: T. 2. sz. f. 238/a minta, 1. lemez, 115,9 \times 9,6, XXXV. tábla, 1—2. ábra

Locus typicus: Tengelic 2. sz. f. 839,0—842,0 m

Stratum typicum: Alsó-bádeni, slír

Diagnosis: Zonotrilét spóra. Equatorialis alakja trianguláris, sarkai lemeztetten legömbölyítettek. Oldalvonalainak lefutása enyhén konkáv. Cingulumuma sima. A proximális oldalon — lekerekített sarkú háromszögletű mezőben — lapos borda veszi körül a dehiszcencia vonalat, melynek lefutása enyhén hullámos, s a díszítőelem sarkáig ér. A disztális oldalon, a spóra felszínének közepén, a sarkok felé elkeskenyedő léccel háromszögű teret zár be.

Méretetek: a holotypus 24 μ átmérőjű, a cingulum szélessége cca. 3 μ , a disztális oldal díszítőeleme 3/4—1 μ vastagságú léccel, ami 10 μ átlójú teret zár be.

Differentialis diagnosis: Az irodalomban leírt kisméretű *Polypodiaceoisporites* fajoktól a *P. triangularis* n. sp. eltér a cingulum kifejlődése, a disztális oldal díszítettsége és proximális oldalának tömörebb díszítőelemei révén. A *P. triangularis* n. sp. a *P. pulchellus* n. sp.-nél kisebb és eltérő díszítettségű.

Előfordulás: (a holotypuson kívül): Eger, Wind-féle téglagyári fúrás 8,3—9,2 m (egri) (két, 27 μ -os példány); Vásárosnamény 1. sz. f. 751,0—754,0 m (pannoniai) (egy, 28 μ -os példány).

Polypodiaceoisporites triornatus n. sp.

XXXV. tábla 13—18. ábra

Holotypus: Szk. 2. sz. f. 84. minta, 1. lemez, 103,2×20,3, XXXV. tábla, 13—16. ábra

Locus typicus: Szokolya 2. sz. f. 80,7—81,5 m

Stratum typicum: Alsó-bádeni, szürke márga

Diagnosis: Zonotrilét miospórák. Cingulumuk szélessége 3—6 μ között változó, a sarkoknál egészen elvékonyodó is lehet. A proximális oldalon, általában háromszögű teret bezáró — a cingulummal nagyjából párhuzamosan haladó — cca. 2 μ szélességű lécs van. A dehiszcencia vonal 4/5—5/5 részét teszi ki a rádiusznak. A proximális oldalon lapos, egyes, vagy összeolvadt verrucae-k (1—5 μ -os) találhatóak. A disztális oldalon is háromszögletű mezőt körülzáró — a sarkoknál többnyire csúcsosan kifutó — díszítőlécs található. Szélessége 1—1,5 μ . A disztális oldal verrucae-kkal díszített.

Méretetek: a holotypus teljes átmérője 43 μ . A proximális oldal 40 μ , a disztális oldal 30 μ átmérőjű. A verrucae-k 1—8 μ -osak, összeolvadt elemeik 10—15 μ -osak.

Differentialis diagnosis: A *Polypodiaceoisporites triornatus* n. sp. a *P. torosus* NAGY 1969 fajra emlékeztet. A *P. triornatus* faj eltér abban, hogy oldalai konvexek, dehiszcencia vonala mellett tórus van, s a disztális oldalának díszítőelemei egyedien eltérő díszítettségek.

Megjegyzés: a faj morfológiailag nagyon változékony, az alsó-bádeni példányok (Szokolya 2. sz. f. 100,0—109,0 m) sarkai hosszán elnyúló csúcsban olvadnak össze, a szarmata alakoknál a cingulum szélesebb, a sarkoknál nem keskenyednek el (Cserhátszentiván 1. sz. f. 194,0—196,0 m, 132,0—134,0 m).

Genus: *Verrucingulatisporites* KEDVES 1961

***Verrucingulatisporites fotensis* n. sp.**

XXXVI. tábla 12—13. ábra

Holotypus: F. 1. sz. f. 55. minta, 98,5×21,2, XXXVI. tábla, 12—13. ábra

Locus typicus: Fót 1. sz. f. 181,0—182,7 m

Stratum typicum: Eggenburgi, finom homok

Diagnosis: Zonotrilét miospórák. A cingulum hullámos lefutású és a három saroknál erőteljesebben kifejlett (5—6 μ). Proximális oldala kevés — részben összeolvadt — verrucae-val fedett. Dehiszcencia vonala vékony, kissé hullámos lefutású, a cingulumig ér, vékony tórus kíséri. A disztális oldalon lapos, murivá összeolvadt verrucae-k fedik. Az összeolvadt verrucae mellett mindkét oldalon és a cingulumon is, kis verrucae-k is vannak.

Méretetek: A holotypus 42 μ átmérőjű.

Differentialis diagnosis: A *Verrucingulatisporites fotensis* n. sp. a *V. grandis*-hoz hasonlít a három saroknál erőteljesen kifejlődött cingulumával, de eltér annak kevésbé fodrozódott voltával, továbbá a disztális oldal lapos verrucae-ival. A sarkoknál kifejlett cingulumára révén hasonlít a *V. granulatus* W. KR. 1967 ssp. *triangulizonatus* W. KR. 1967 (Atlas IV—V. p. 124., 43. tábla, 1—3. ábra) fajhoz, de az új faj sarokcingulumára erősebben fodrozott és W. KRUTZSCH fajának apró díszítőelemei teljesen eltérőek.

Előfordulás: Egy példányban került eddig elő e faj.

***Verrucingulatisporites grandis* n. sp.**

XXXVI. tábla 15—18. ábra

Holotypus: Ph. 4. sz. f. 56. minta, 110,7×12,3, XXXVI. tábla, 15—17. ábra

Locus typicus: Püspökhatvan 4. sz. f. 230,0—233,0 m

Stratum typicum: Eggenburgi, szürke aleurit

Diagnosis: Zonotrilét spóra, a sarkoknál megvastagodott fodros cingulummal. A proximális oldalon lapos, verrucae-ból összeolvadt díszítőelemek vannak. A vékony, hullámos lefutású dehiszcencia vonal a cingulumig ér. A disztális oldal erőteljes, nagyméretű, a cingulumra is ráhajló — bázisuk mentén gyakran összeolvadt — verrucae-vonulatokkal díszített.

Méretetek: A holotypus 44 μ . A cingulum a sarkoknál 2—6 μ vastagságú, az oldalaknál 1/2 μ -os, s néhány verrucae vastagítja. A disztális oldal 2—4 μ vastagságú és cca. 4—10 μ hosszúságú verrucae-kkal, ill. azok összeolvadásából keletkezett díszítőelemekkel fedett.

Differentialis diagnosis: A *Verrucingulatisporites grandis* n. sp. a *V. fotensis*-hez hasonlít. Legjellegzetesebb tulajdonsága, amiben eltér: a disztális oldal erős díszítettsége.

Megjegyzés: három példányban került elő, 33–38 μ -os méretű további példányai is a Püspökhatvan 4. sz. f.-ből származnak (278,0–281,0 m; eggenburgi).

Verrucingulatisporites karpatiensis n. sp.

XXXVII. tábla 12–13. ábra

Holotypus: Nsz. 2. sz. f. 62. sz. minta, 1. lemez, 100,5 \times 17,9, XXXVII. tábla, 12–13. ábra

Locus typicus: Nógrádszakál 2. sz. f. 209,0–211,0 m

Stratum typicum: Kárpáti, szürke agyagmárga (slír)

Diagnosis: Zonotrilét spóra. Proximális oldalán, a sarkoknál megvastagodó (4–5 μ), oldalain elvékonyodó (2–3 μ) cingulum a csaknem sima. Dehiszcencia vonala vékony, nem ér a sarkokig, két oldalán tórus kíséri. Disztális oldala nagyméretű, a cingulumra ráhúzódo verrucae-val és kis grana-val díszített.

Méreték: A holotypus 46 μ .

Differentialis diagnosis: A *Verrucingulatisporites karpatiensis* n. sp. morfológiai sajátágaiban emlékeztet a *V. fotensis* fajra, de előbbi faj disztális oldali díszítőelemei jóval nagyobb méretűek, mint a *V. fotensis*-éi.

Előfordulás: Egy példányban fordult eddig elő.

Verrucingulatisporites nogradensis n. sp.

XXXVII. tábla 15–16. ábra

Holotypus: Nsz. 2. sz. f. 69. sz. minta, 111,5 \times 20,9, XXXVII. tábla, 15–16. ábra

Locus typicus: Nógrádszakál 2. sz. f. 223,0–225,0 m

Stratum typicum: Kárpáti, szürke agyagmárga

Diagnosis: Zonotrilét miospóra. Cingulum a spóra sarkainál megvastagodó, s ezen a részen lapos verrucae-k díszítik. A proximális oldalon, a dehiszcencia vonalat széles, lapos tórus kíséri, amely a sarkokig, vagy csaknem a sarkokig húzódo dehiszcencia vonal vége felé elkeskenyedik. A proximális oldalon néhány lapos verrucae is van. A disztális oldalon csaknem az egész felszínt kitöltő lapos, verrucae összeolvadásából keletkezett exine-megvastagodás van.

Méreték: A holotypus mérete 42 μ . A cingulum maximális szélessége a sarkoknál 5 μ . A proximális tórus az apexnél 5–6 μ , a sarkok felé 2–3 μ szélességű.

Differentialis diagnosis: A *Verrucingulatisporites nogradensis* n. sp. a *V. mecsekensis* NAGY 1969 fajra emlékeztet a proximális oldal díszítettsége és a spóra nagysága miatt. Elkülönül tőle a cingulum kifejlődése és a lapos, disztális oldali díszítőelemek révén.

Előfordulás: A holotypuson kívül a Szokolya 2. sz. fúrás 76,7–77,5 m-ből egy 62 μ -os példány került elő.

Verrucingulatisporites rugosus n. sp.

XXXVIII. tábla 4–10. ábra

Holotypus: Zv. 59. sz. f. 24. minta, 1. lemez 114,5 \times 21,9, XXXVIII. tábla, 6–9. ábra

Locus typicus: Zengővárkony 59. sz. f. 60,9–63,0 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Zonotrilét, verrucat spóra. A proximális oldalon a vékony dehiszcencia vonal kissé hullámos lefutású és a sarkokig húzódo. A felszínt a dehiszcencia vonal mentén is kisebb-nagyobb verrucae-k és grani-k díszítik, két oldalról pedig egy 2–3 μ széles, ívesen hajló, bázisuk mentén részben vagy egészen összenőtt murikból álló borda kíséri. A 6–7 μ széles, hullámos lefutású cingulumon kevés verrucae van, A disztális oldal széle fodrosan hullámos. A disztális oldal felszínén a verrucae-k többsége muriszerűen összeolvadt.

Méreték: A holotypus 48 μ átmérőjű. A faj 48–58 μ méretben fordult eddig elő. A cingulum 4–6 μ szélességű, a disztális oldali murik 4–8 μ szélesek és 4–40 μ hosszúak. Egyes példányoknál a cingulum a sarkoknál teljesen elvékonyodik.

Differentialis diagnosis: A *Verrucingulatisporites rugosus* n. sp. a *V. miocaenicus* NAGY 1969 fajhoz hasonlít a legjobban, hullámos vonalú cinguluma miatt. Eltér attól a proximális oldal sajtatos, főleg arci-szerű bordáival és a disztális oldal összeolvadt díszítőelemeivel.

Előfordulás: Zengővárkony 59. sz. f. 60,9–67,0 m (kárpáti); Szokolya 3. sz. f. 68,6–69,6 m (alsó-bádeni).

Genus: *Bifacialisporites* NAGY 1963

***Bifacialisporites badenensis* n. sp.**

XXXIX. tábla 1–3. ábra

Holotypus: Szk. 2. sz. f. 96. minta, 1. lemez, 108,6×18,6, XXXIX. tábla, 1–3. ábra

Locus typicus: Szokolya 2. sz. f. 90,3–91,1 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Zonotrilét spóra. Cinguluma sima, 3–4 μ széles. A proximális oldalon a kissé hullámos lefutású, vékony dehiszcencia vonal csaknem a cingulumig ér. A dehiszcencia vonal mentén a corrugat bordák tórus-szerűen helyezkednek el. A disztális oldal corrugat szegélye 3–6 μ szélességben túlnyúlik a cingulumon. Ezt követik a központ felé ívszerűen elhelyezkedő, háromszögletű térbe rendezett corrugat bordák, ill. rugae-k.

Méreték: A holotypus maximális átmérője 53 μ .

Differentialis diagnosis: A *Bifacialisporites badenensis* n. sp. legjobban a *B. grandis* n. sp.-hez hasonlít. Eltér ettől a disztális oldal díszítettségével, elsősorban jellegzetes hullámos lefutású bordáival, amelyek a disztális oldalról nézve a spóra körvonalát is adják.

Előfordulás: Egy példányban került eddig elő.

***Bifacialisporites goerboeensis* n. sp.**

XXXIX. tábla 4–6. ábra

Holotypus: Ng. 1. sz. f. 132. sz. minta, 108,3×7,1, XXXIX. tábla, 4–6. ábra

Locus typicus: Nagyörbő 1. sz. f. 892,0–897,0 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Zonotrilét miospóra. Proximális oldala zárt háromszöget alkotva sűrűn fedett verrucae-kkal. A verrucae némelyike összenőtt, s közöttük apró granik is vannak. A vékony dehiszcencia vonal a proximális oldal sarkáig nyúlik. A cingulum széles, hullámos lefutású. A disztális oldalt vastag, helyenként kiszélesedő, hullámos murik alkotják.

Méreték: A holotypus 50 μ átmérőjű, cinguluma 4–6 μ . A proximális oldal verrucae-i 2–5 μ -osak, a disztális oldal lécei 30 μ hosszúságot is elérnek, szélességük cca. 2–6 μ közötti.

Differentialis diagnosis: A *Bifacialisporites goerboeensis* n. sp. emlékeztet a *B. arciverrucosus* TREV. 1967-re. Abban különbözik tőle, hogy TREVISAN faján a léces szerkezet a proximális oldalon van, a *B. goerboeensis* n. sp.-en pedig a disztálison. A *B. goerboeensis* proximális oldalát nem lécek, hanem kizárólag verrucae-k díszítik.

Előfordulás: A holotypuson kívül a Zengővárkony 59. sz. f. 65,0–67,0 m (kárpáti) mintában is előfordult.

***Bifacialisporites grandis* n. sp.**

XXXIX. tábla 7–8. ábra, XL. tábla 1–4. ábra

Holotypus: Szk. 2. sz. f. 111. sz. minta, 1. lemez, 111,8×17,5, XL. tábla, 1–4. ábra

Locus typicus: Szokolya 2. sz. f. 109,0–111,2 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Zonotrilét miospóra, lekerekített sarkokkal. A proximális felszín széle hullámos. Ezen belül lapos rugae-k és verrucae-k töltik ki a felszínt. A vékony dehiszcencia vonal a sarkokig kinyúlik. A sima szélű cingulum a sarkok felé elvékonyodik. A disztális oldalon a cingulummal párhuzamosan haladó borda külső és belső oldala mellett is egyes vagy összenőtt verrucae-k találhatók. A disztális oldal közepét háromszögű, lapos rugae uralja, amely által közrefogott areákon sziget-szerűen rugae-k és apró verrucae-k vannak.

Méreték: A holotypus 53 μ átmérőjű. A proximális oldal areája 12–14 μ átmérőjű. A cingulum az oldalak közepén 5–7 μ , a sarkoknál 1,5 μ . A disztális oldalon a cingulummal párhuzamos borda az oldalak közepén 5–6 μ , a sarkok felé elvékonyodó. A mellette levő grana-k, ill. verrucae-k 1,5 μ -osak. A disztális oldal központi részének átmérője 18–20 μ .

Differentialis diagnosis: A *Bifacialisporites grandis* n. sp. a *B. medius* NAGY 1969 fajhoz hasonlít méretében és a proximális oldal díszítettségében, de eltér a *B. grandis* n. sp. disztális oldalán levő jellegzetes háromszögletű mezőben elhelyezett díszítőelemeivel.

Előfordulás: A holotypuson kívül 53–81 μ -os méretben néhány példányban került elő: Szokolya 2. sz. f. 115,3–118,3 m, 102,2–104,7 m, 90,3–91,1 m, Szokolya 3. sz. f. 68,6–69,6 m (alsó-bádeni).

***Bifacialisporites nogradensis* n. sp.**

XLII. tábla 5–8. ábra

Holotypus: Nsz. 2. sz. f. 17. sz. minta, 1. lemez, 103,9 \times 11,6, XLII. tábla, 5–8. ábra

Locus typicus: Nógrádszakál 2. sz. f. 95,0–99,9 m

Stratum typicum: Alsó-bádeni, finomhomokos aleurit

Diagnosis: Zonotrilét miospórák, lekerekített sarkokkal, konvex oldalvonalakkal. A proximális oldalon cca. 1–1,5 μ -os léccel körülvett háromszögletű mezőben van a sarkokig kinyúló dehiscencia vonal. A proximális oldal szélén — verrucae összenövéséből — fodorszerűen rendeződött, gallérszerű képződmény van. A cingulum hullámos lefutású, 5–7 μ széles, sima szelű, néhol becsípett. A disztális oldalon levő murik alapja 2–7 μ , vége 1 μ széles, de vannak egyes különálló verrucae-k is.

Méreték: A holotypus 54 μ -os. A proximális oldalon a háromszögletű mező átmérője 35 μ .

Differentialis diagnosis: A *Bifacialisporites nogradensis* n. sp. a *B. szokolyaënsis* n. sp.-hez áll közel. Ertér a *B. nogradensis* n. sp. proximális oldalán a gallérka jelenlétével, s a disztális oldalán a széles bázisú és elkeskenyedő murival.

Előfordulás: Egy példányban fordult elő.

***Bifacialisporites oculus* n. sp.**

XLII. tábla 9. ábra, XLIII. tábla 1–6. ábra

Holotypus: Zv. 59. sz. f. 14. minta, 1. lemez, 101,2 \times 44,9, XLIII. tábla, 1–3. ábra

Locus typicus: Zengővárkony 59. sz. f. 34,0–37,5 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Zonotrilét spórák. A proximális oldalon kevés, egyes, lapos grani-ból álló és főleg a dehiscencia vonal mentén elhelyezkedő díszítőelemekkel. A dehiscencia vonal vékony, a sarkokig ér. Keskeny tórus kíséri. A cingulum vékony, kissé hullámos lefutású. A disztális oldal szélén szegélyléc van. A disztális felszín díszítettségét vastag, hullámos lefutású murik alkotják, amelyek között rendszertelenül oculus-szerű exine-megvastagodások („szem”-ek) helyezkednek el.

Méreték: A holotypus 62 \times 58 μ méretű, cingulum 3–5 μ széles. A disztális oldal széle 2–16 μ vastag. Az oculus-szerű díszítőelemek 1–9 μ -osak, körülöttük 1–1,5 μ -osak a mélyedések, melyek még fokozzák a „szem”-ek morfológiai hatását.

Differentialis diagnosis: A *Bifacialisporites oculus* n. sp. a *B. mecsekensis* NAGY 1969-hez hasonlít a legjobban. A *Bifacialisporites oculus* n. sp. disztális oldalának „szem”-szerű díszítőelemei feltűnően különböznek a *B. mecsekensis* díszítésétől. A proximális oldal díszítőelemei a *B. oculus*-on finomabbak.

Megjegyzés: A holotypussal azonos mintában a faj egy oldalhelyzetben rögzített példánya is jelen van (62 μ hosszú, 54 μ magasságú; XLIII. tábla, 4–6. ábra). Ezen jól lemérhető a proximális oldal díszítőelemeinek magassága (2–3 μ).

Előfordulás: Zengővárkony 59. sz. f. 34,0–37,5 m; Szokolya 2. sz. f. 37,0–37,9 m (55 μ), Szokolya 3. sz. f. 53,6–54,6 m (64 \times 54 μ), 58,7–59,9 m (63 μ) (alsó-bádeni); Hidas 53. sz. f. 479,1–482,0 m (szarmata).

***Bifacialisporites ornatus* n. sp.**

XLIII. tábla 7. ábra, XLIV. tábla 1–2. ábra

Holotypus: Mihálygerge, felszíni feltárás, 1. minta 110,6 \times 11,3, XLIII. tábla, 7. ábra, XLIV. tábla, 1–2. ábra

Locus typicus: Mihálygerge

Stratum typicum: Kárpáti, slír

Diagnosis: Zonotrilét, lekerekített sarkú spóra. A proximális oldal szélét gallérka-szerű képződmények veszik körül. A dehiscencia vonal a proximális oldal széléig ér. A proximális oldalhoz csatlakozó cinguluma széles, kissé hullámos lefutású. A disztális oldalon főként lécszerűen összeolvadt, erőteljesen kiemelkedő, a szélekkel párhuzamosan futó vonulatokat alkotó, bázisukon kiszélesedő murik uralkodnak. Az ezekből a szélekre merőlegesen futó lécek kifelé elkeskenyedők és „u” alakú térelemeket alkotnak a disztális oldal szélén.

Méreték: A holotypus 64 μ . A hosszanti lécek cca. 30 μ -osak, a keresztlécek a 10 μ -t is elérik, a bázisukon a lécek cca. 3–4 μ szélességűek.

Differentialis diagnosis: A *Bifacialisporites arciverrucosus* TREVISAN 1967 (p. 10. II. T. 3. á.) hasonlít a *B. ornatus* n. sp.-hez, de TREVISAN faján a cingulummal párhuzamos lécek találhatóak s a keresztlécek nem mutatkoznak olyan jellegzetesen, mint a *B. ornatus* n. sp.-nél. TREVISAN a proximális oldalt tartja díszítettebbnek, s mindkét oldalon önálló verrucae-kat is említ. A fénykép és leírás alapján nem tudom a hazai fajjal azonosítani.

Előfordulás: Egy példányban került elő.

Bifacialisporites szokolyaënsis n. sp.

XLIV. tábla 3–8. ábra

Holotypus: Szk. 2. sz. f. 105. minta, 1. lemez, 111,0 \times 22,5, XLIV. tábla, 3–8. ábra

Locus typicus: Szokolya 2. sz. f. 100,0–101,0 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Zonotrilét miospóra. Proximális oldalán a dehiscencia vonala vékony, a sarkokig ér, két oldalán 4–7 μ széles tórus kíséri. A 2–4 μ széles cingulum a sarkoknál lekerekített, elvékonyodó. A disztális oldal kontúrja lecsapott sarkú háromszög, szegélyén sima szegélyperem helyezkedik el. Felszínét murivá olvadt verrucae-k borítják.

Méreték: A holotypus 47 μ átmérőjű, cinguluma 3–4 μ széles, a murik 1,5–7 μ szélesek és 2–3 μ magasak.

Differentialis diagnosis: A *Bifacialisporites szokolyaënsis* n. sp. a *B. nogradensis* n. sp.-hez hasonlít a legjobban. Ertér attól a proximális oldalon levő gallérka hiányával, s a disztális oldal laposabb díszítőelemei révén.

Előfordulás: Eddig egy példányban került elő.

Genus: *Microfoveolatosporis* W. KRUTZSCH 1959

Microfoveolatosporis fossulatus n. sp.

XLVII. tábla 12–14. ábra

Holotypus: P. 2. sz. f. 57. sz. minta, 1. lemez, 105,8 \times 25,8, XLVII. tábla, 12–14. ábra

Locus typicus: Pápa 2. sz. f. 242,8–243,3 m

Stratum typicum: Eggenburgi, agyag

Diagnosis: Azonolet, bab alakú spóra, merev, vastag fallal. Teljes felszínét lapos díszítőelemek borítják. Ezek között egyenetlen távolságra kis, 0,5–1 μ -os átmérőjű mikrofoveolumok vannak. A foveolumok mellett fossulat díszítőelemek reticulumszerűen rendeződtek. A díszítőelemek az exine szélén kissé hullámos körvonallal mutatkoznak. Dehiscencia vonala cca. 4/5-e a spóra hosszának; két oldalán a spórafal kitüremkedése ajakszerűen kíséri.

Méreték: A holotypus hossza 61 μ , szélessége 33 μ , falvastagsága 3 μ .

Differentialis diagnosis: Valamennyi *Microfoveolatosporis* fajtól különbözik fossulat díszítőelemeivel. Alakja karcsúságával a *Microfoveolatosporis alsovadaszensis* NAGY 1973-ra emlékeztet, de annál nagyobb, vastagabb falú.

Előfordulás: Egy példányban fordult elő.

Genus: *Echinosporis* W. KR. 1967

Echinosporis fotensis n. sp.

XLIX. tábla 1—6. ábra

Holotypus: F. 1. sz. f. 77. minta, 103,5×5,4, XLIX. tábla, 1—2. ábra

Locus typicus: Fót 1. sz. f. 121,0—122,0 m

Stratum typicum: Kárpáti, finomhomokos kőzetliszt (slír)

Diagnosis: Monolet spóra. Alakja ovális. Dehiscencia vonala a spóra proximális oldali vonalát követi, nem ér az equatorig. A felszínét — egyenetlen elrendezésben — széles alapú, végükön kihegyesedő echinusok fedik.

Méreték: A holotypus 37 μ (echinusokkal együtt). A spórafal kétrétegű, cca. 1/2 μ vastag. Az echinusok 1—5 μ távolságra vannak egymástól, szélességük 2—3 μ , magasságuk 1—5 μ .

Differentialis diagnosis: az *Echinosporis fotensis* n. sp. nagyobb méretével és ritkább, de nagyobb echinusaival különbözik mind az *E. echinatus* W. KR., mind az *E. microechinatus* W. KR. fajoktól.

Előfordulás: A holotypuson kívül néhány 33—43 μ méretű példány került elő: Fót 1. sz. f. 346,5—348,0 m (egri); Püspökhatvan 4. sz. f. 257,0—260,0 m (eggenburgi); Zengővárkony 45. sz. f. 17,2—17,8 m (ottnangi); Szokolya 2. sz. f. 52,7—53,5 m (alsó-bádeni); Tata (TVG) 26. sz. f. 9,0—11,0 m (alsó-pannóniai); Naszály 1. sz. f. 82,0—93,4 m (felső-pannóniai); utóbbi két helyen — valószínűleg — áthalmozódott.

Genus: Gemmatosporis W. KR. 1959

Gemmatosporis decoratus n. sp.

XLIX. tábla 11—15. ábra

Holotypus: F. 1. sz. f. 14. minta, 1. lemez, 115,3×7,4, XLIX. tábla, 11—13. ábra

Locus typicus: Fót 1. sz. f. 349,5—354,0 m

Stratum typicum: Egri, agyagmárga

Diagnosis: Monolet, bab alakú spórák. Dehiscencia vonaluk vékony, csaknem az equatorig ér. Az exine cca. 1/2—1 μ vastag, emiatt könnyen gyűrődik. Felszínén egyenetlenül és ritkán elhelyezkedő 0,5—1,5 μ méretű grani-k, kis verrucae-k, ill. gemmák vannak.

Méreték: A holotypus 42 μ hosszú, 23 μ széles.

Differentialis diagnosis: A *Gemmatosporis decoratus* n. sp. a *G. europaeus* KEDVES 1966 fajhoz áll közel. Hosszméretük megegyezik, hosszúság: szélesség arányuk azonban nem. A *G. europaeus* KEDVES 1966-nál ez 1,2; a *G. decoratus* n. sp.-nél 1,6—1,7. A *G. decoratus* n. sp. díszítőelemeinek száma igen kevés, s azok jóval kisebb méretűek, mint a *G. europaeus* KEDVES 1966 fajnál.

Előfordulás: 35—46 μ közötti hosszúsággal néhány példány: Fót 1. sz. f. 194,5—361,8 m (egri); Pusztakisfalu VI. sz. f. 12,5—15,0 m (ottnangi); Naszály 1. sz. f. 12,2—14,4 m (felső-pannóniai, valószínűleg áthalmozott).

Gemmatosporis delicatus n. sp.

XLIX. tábla 16—20. ábra

Holotypus: Pszf. VI. sz. f. 6. minta, 29,3×119, XLIX. tábla, 16—18. ábra

Locus typicus: Pusztakisfalu VI. sz. f. 12,5—15,0 m

Stratum typicum: Ottnangi, agyagos kőzetliszt

Diagnosis: Monolet spórák, kerekded, bab alakú körvonallal. Exine vékony (cca. 1/2 μ), emiatt másodlagos gyűrődésekkel ráncolt. A felszínén igen sűrűn apró (1 μ -os) granulumok vannak. Dehiscencia vonala rövid, cca. 1/3-a a spóra hosszának.

Méreték: A holotypus 44 μ hosszú.

Differentialis diagnosis: A *Gemmatosporis delicatus* n. sp. a *G. decoratus* n. sp.-vel azonos méretű de annál kerekdedebb, exinéje vékonyabb, díszítőelemei kisebbek és sűrűbben elhelyezkedők.

Megjegyzés: A lectotypus (ugyanezen minta 28,3×113,2) oldalhelyzetű példány, 46 μ -os.

Előfordulás: 32—46 μ -os méretű példányok: Zengővárkony 45. sz. f. 16,0—16,4 m; Pusztakisfalu VI. sz. f. 15,0—17,0 m (ottnangi).

Genus: Polypodiisporites R. POT. 1933

Polypodiisporites keszoeensis n. sp.

LII. tábla 6—7. ábra

Holotypus: Vkt. 1. sz. f. 10. minta, 111,1×9,0, LII. tábla, 6—7. ábra

Locus typicus: Várkesző 1. sz. f. 17,0—18,0 m

Stratum typicum: Felső-pannóniai, huminites bentonit

Diagnosis: Monolet, bab alakú spórák. Díszítőelemei 2—6 μ magas verrucae-k, ezek a disztális oldalon 4—6 μ magasak, a proximális oldalon rövidebbek. A verrucae-k elkülönültek s nem alkotnak reticulumot; a felszint sűrűn beborítják. Dehiscencia vonaluk 2/3—3/4-e a proximális oldalnak.

Méreték: A holotypus 62 μ hosszú, 37 μ széles.

Differentialis diagnosis: A *Polypodiisporites keszoeensis* n. sp. a *P. scutulium* (NAKOMAN 1965) n. c.* fajhoz hasonlít. Ez a hasonlóság a verrucae magasságában, egyenlőtlen elrendezésükben és a spóra méretében mutatkozik. A *P. keszoeensis* n. sp. karcsúbb alakjával, vékonyabb és más kifejlődésű verrucae-ival elkülönül a *Polypodiisporites scutulium* (NAKOMAN 1965) n. c.-tól.

Előfordulás: A holotypuson kívül egy példány (60 μ -os) Tata (TVG) 26. sz. f. 33,0—35,0 m-ből (pannóniai).

PHYLUM: GYMNOSPERMAE
SUBPHYLUM: PTERIDOSPERMOPHYTINA
Classis: *Coniferopsidae*
Ordo: *Pinales* (Coniferales)
Familia: *Abietaceae* — *Pinaceae*
Subfamilia: *Pinoideae*

Genus: *Pinuspollenites* (RAATZ 1937) R. POTONIÉ 1958

***Pinuspollenites longus* n. sp.**

LVIII. tábla 2—6. ábra

Holotypus: F. 1. sz. f. 22. minta, 1. lemez, 104,8×21,4, LVIII. tábla, 2—5. ábra

Locus typicus: Fót 1. sz. f. 290,5—294,0 m

Stratum typicum: Egri, szürke finomhomok

Diagnosis: A pollen teste lekerekített ovális, légzacsója a testtől mereven elálló, s a légzacsó magassága a test magasságával cca. azonos. A test felszíne sűrűn pontozott. A taraja 2,5 μ , a légzacsókkal való találkozásnál 3 μ . A taraj tectat, alatta ritkán elhelyezkedő baculumokból álló sexine és vékony, de jól követhető nexinéből áll. A disztális oldali csiranyilásnál a test exinéje elvékonyodó és ritkán elhelyezkedő, nagyszemű granulumokkal fedett. A légzacsó a szélén cca. 2 μ , a közepén cca. 4—5 μ átmérőjű reticulummal fedett.

Méreték: a holotypus teljes hossza: 70 μ

test hossza: 55 μ

test magassága: 36 μ

légzacsó magassága: 34 μ

légzacsó szélessége: 30 μ

Differentialis diagnosis: A W. KRUTZSCH által (1971, Atlas VI. p. 68. 9. tábla 8—11. ábra) közölt *Pityosporites cf. medius* TREVIS. 1967 faj — a fotók alapján — hasonló a *P. longus* n. sp.-hez. A W. KRUTZSCH munkájában szereplő képeken a légzacsók nem ennyire elállóak, mint az új fajnál, finomabb exineszerkezetük van; a test viszont sokkal erőteljesebben díszített és vastag tarajú.

Megjegyzés: A vékony exine következményeként mind a test, mind a légzacsó majdnem mindig gyűrött.

Előfordulás: 68—102 μ hossz mérettel több példány (de mintánként csak egy-egy darab): Fót 1. sz. f. 290,5—355,0 m (egri); ugyanezen fúrás 162,0—164,0 m (eggenburgi); Püspökhatvan 4. sz. f. 169,0—172,5 m; Fót 1. sz. f. 130,5—131,5 m (kárpáti); Szokolya 2. sz. f. 75,1—75,9 m (alsó-bádeni); Hidas 53. sz. f. 479,1—482,0 m; Cserhátszentiván 1. sz. f. 188,0—190,0 m (szarmata).

* *Basionym*: 1965. *Verrucosporites scutulium* n. sp. — NAKOMAN, F.: Étude palynologique de quelques échantillons, etc. — Ann. Soc. Géol. du Nord. T. LXXXIV. p. 292., Pl. 12. Fig. 5—7. Lille.

Pinuspollenites miocaenicus n. sp.

LIX. tábla 1—8. ábra

Holotypus: Szk. 2. sz. f. 1. lemez, 116,7×8,9, LIX. tábla, 1—3. ábra

Locus typicus: Szokolya 2. sz. f. 95,0—96,6 m

Stratum typicum: Alsó-bádeni, középszemű andezit-homok

Diagnosis: Disaccat, labdacus típusú pollenek, aránylag hosszúra nyúlt testtel (test: légzacskó arány = 1,5—1,9). A test alakja oblat. Az exine a proximális oldalon tectat, sexinéje baculumokból álló. A testfelszín microreticulat. A két légzacskó reticulat, a centrális részeken a reticulum lumen-átmérője eléri az 5 μ -t, a széleken 1—2 μ -os, aprószemű. A légzacskó exinéje vékony.

Méretetek: a holotypus teljes hossza: 90 μ ,
a test hossza: 58 μ ,
a test szélessége: 28 μ ,
proximális exinevastagság: cca. 1,5 μ ,
a légzacskó átmérője: 35—40 μ .

A pollenek teljes hosszúsága 58—95 μ , az exine vastagsága a pollen méretével összefüggően is változó. Több példányon a holotypusénál vékonyabb, ezek könnyen gyűrődnek.

Differentialis diagnosis: A *Pinuspollenites miocaenicus* n. sp. a *P. labdacus* (R. POT. 1932) R. POT. 1958-hoz közel áll, de az exine szerkezete, megnyúlt teste és a légzacskó alakja jól elkülöníti attól. A *P. labdacus* testhossz: légzacskó aránya = 1, a *P. miocaenicus* n. sp.-é 1,5—2 közötti.

Megjegyzés: Az 1969-ben *Pityosporites labdacus* (R. POT. 1932) TH. et PR. 1953 Type C név alatt összefoglalt morfológiai jellegű, hosszú testű polleneket soroltam ide (1969, p. 153. Pl. XXIX. Fig. 4.).

Előfordulás: Az egri emelet felső részétől az egész neogén folyamán rendszeresen előfordulnak, legnagyobb gyakoriságukat a kárpáti emeletben és az alsó-bádeniben érik el, de a pliocénben is megtalálhatók.

Genus: *Abietinaepollenites* R. POT. 1951 ex DELCOURT et SPRUM. 1955

Abietinaepollenites fotensis n. sp.

LXI. tábla 3—5. ábra

Holotypus: F. 1. sz. f. 42. sz. minta, 1. lemez, 106,8×13,6, LXI. tábla, 3—5. ábra

Locus typicus: Fót 1. sz. f. 209,5—209,9 m

Stratum typicum: Egri, agyagos kavics

Diagnosis: Disaccat, kerekded testű, közepes nagyságú pollen. A pollentest felszíne granulált. A légzacskók tapadása cca. a test 1/3-ad részén van, félkörnél kisebb, keskeny légzacskók követik a pollentest körvonalát. A légzacskók reticuluma finomszemű, cca. 1 μ -osak a lumenek.

Méretetek: A holotypus 61 μ teljes átmérőjű (disztális poláris helyzetben), 46 μ magas; a test 50 μ széles, 45 μ magas, a légzacskó 16 μ .

Differentialis diagnosis: A légzacskók távolsága a disztális oldal közepén 27 μ , szélén 5 μ . Az *Abietinaepollenites fotensis* n. sp. az *A. microalatus* (R. POT. 1931) R. POT. 1951 ex DELC. et SPRUM. 1955 ssp. *microalatus* fajhoz áll közel. Eltérnek attól az *A. fotensis* n. sp. finom szerkezetű légzacskói és azok sajátos helyzete.

Megjegyzés: 56—74 μ -os mérettel, elég sok példány: Fót 1. sz. f. 209,5—332,8 m (egri); Szászvár 8. sz. f. 432,5—432,7 m (eggenburgi). Néhány példány: Tekerés 1. sz. f. 855,0—859,0 m (kárpáti); Szokolya 2. sz. f. 51,1—51,9 m (alsó-bádeni).

Genus: *Cathaya* CHUN et KUANG

Cathaya pulaënsis n. sp.

LXV. tábla 1—5. ábra

Holotypus: Put. 3. sz. f. 14. minta, 108,8×9,1, LXV. tábla, 1—3. ábra

Locus typicus: Pula 3. sz. f. 13,5—14,0 m

Stratum typicum: Felső-pannóniai, aleurit

Diagnosis: Disaccat pollen, kerekded testtel. A test magassága kisebb, mint a légzacskóké. A test vastag exinéje összeolvadt verrucae-ből áll. A két légzacskó a *Pinus silvestris*-hez hasonlóan legömbölyített, a közöttük levő távolság 10–12 μ a sacci közepén. A légzacskók reticulumszemei a tapadási helyen sűrűn, párhuzamosan helyezkednek el. A légzacskókat nagyméretű, széles válaszfalú, szélén valamivel kisebb méretű reticulumok borítják.

Méreték: A holotypus teljes hosszátmérője 58 μ , a test magassága 26 μ , az exine vastagsága 1–1,5 μ , a légzacskó magassága 37 μ , szélessége 27 μ .

Differentialis diagnosis: A *Cathaya puluënsis* n. sp. nagyságrendileg a *Cathaya potoniéi* SIVAK 1976 és a *C. tingii* SIVAK 1976 fajokhoz hasonlít. Különbözik tőlük elsősorban a légzacskók és a test-méret arányaiban (ti. a test mindkét faj esetében nagyobb méretű, mint a *C. puluënsis* n. sp.-é), valamint a légzacskók reticulum-szemeinek erőteljesebb falvastagsága révén.

Előfordulás: Néhány példány került elő a hazai felső-pannóniai rétegekből: Pula 3. sz. f. 13,5–14,0 m-ből a holotypuson kívül egy további példány; ugyanezen fúrás 14,0–14,5 m-ből egy 82 μ -os példány (utóbbinál a légzacskó és a pollentest méretkülönbsége kisebb).

Subfamilia: Abietoideae

Genus: Abiespollenites THIERGART 1937

Abiespollenites sivaki n. sp.

LXXII. tábla 2–3. ábra, LXXIII. tábla 1–4. ábra

Holotypus: Vkt. 1. sz. f. 18. minta, 105,0×12,1, LXXII. tábla, 2–3. ábra, LXXIII. tábla, 1–2. ábra

Locus typicus: Várkesző 1. sz. f. 36,0–37,0 m

Stratum typicum: Felső-pannóniai, zöldesszürke bentonit

Diagnosis: Bisaccat fenyőpollen. A test ovális, vastag exinéjű. A proximális oldalon a vastag exine közepén kissé elkeskenyedő. A taraj sexinéje tectát, alatta vastag baculum réteg és vékony alapréteg húzódik. A taraj a proximális oldal közepén kissé beöblösödő. A test felszíne durva granulomokkal díszített. A test disztális oldalán a két légzacskó között, a csírányílás (leptoma) elvékonyodó exinéje csaknem sima. Az *Abies*-re jellemzően, oldalhelyzetben ventrálisán elhelyezkedő légzacskó szélein finomabbak, közepén nagyobbak a reticulum-szemek.

Méreték: A holotypus teljes hossza 100 μ , teljes szélessége cca. 56 μ . A test 58×45 μ . Az exine a proximális oldal közepén 4 μ . A légzacskó szélessége (oldalhelyzetben) 45 μ , magassága 35 μ .

Differentialis diagnosis: Az új faj méretben az *Abiespollenites crassus* NAGY 1969 fajhoz hasonló, de különbözik tőle sokkal erőteljesebb tarajával és valamivel egyenletesebb felszínével. Scanning elektronmikroszkópos felvételeken a test durva tectát struktúrája, s a sokkal simább légzacskó látható. Ez utóbbin a nagyméretű reticulum-szemek is felismerhetők (LXXIII. tábla 4. ábra).

Megjegyzés: Az *Abies veitchii* LINDLEY fénymikroszkópos képén (J. SIVAK, Pollen et Spores XVII. No. 3. 1975 p. 368. Pl. VI. Fig. 1.) jól tanulmányozható, hogy a taraj a proximális oldal közepén vékonyabb, mint a légzacskó közelében.

Előfordulás: 71–103 μ közötti nagyságú példányok: Eger, Wind-féle téglagyári feltárás „u” réteg, Fót 1. sz. f. 209,9–328,0 m, Hidas 53. sz. f. 494,8–496,0 m (szarmata); Hidas 53. sz. f. 298,0–299,1 m (alsó-pannóniai); Várkesző 1. sz. f. 34,0–37,0 m (felső-pannóniai).

Genus: Laricispollenites n. g.

Generotypus: Laricispollenites gerceensis n. g. n. sp.

Diagnosis: Nagyméretű, spheroidális, légzacskó nélküli pollenek. A vékony exine sexinéje vastagabb, mint a nexinéje. A sexine ritkán elhelyezkedő baculumokkal finoman díszített.

Differentialis diagnosis: A *Laricispollenites* n. g.-t a *Pseudotsugoidites* (R. POT., THOMS. et THIERG. 1959) NAGY 1969 genustól valamivel kisebb mérete, méretéhez viszonyítva vékonyabb és kevésbé díszített exinéje különíti el.

Megjegyzés: Azokat a példányokat sorolom csak ide, amelyeket a *Larix* genushoz tartozónak vélek. Tehát: nagyméretű, nem hyalin-vékony és planktonszerű, hanem exine rétegzettséget mutató és finoman díszített exinéjű polleneket. ERDTMAN és más kutatók leírásából és ábrázolásából kitűnik, hogy a *Larix* fajok között is vannak méretbeli és morfológiai különbségek (ERDTMAN 1957, 1965 és az „A kínai növények virágporának morfológiája” c. kiadvány, 1960).

A név megalkotásánál figyelembe kellett venni, hogy a *Larix* név már sokféle variációban szerepelt (*Larixpollenites* 1937, *Laricoidites* 1950, *Laricoipollenites* 1951). Ezeket nem használhattam, mert a „magnus” fajra voltak alapítva, amelyről W. KRUTZSCH megállapította, hogy egy plankton forma (l. W. KR. 1962, 1971). A *Larix* harmadidőszaki makro-maradványai ANDREÁNSZKY szerint (1954, p. 148) nagyon ritkák, de fiatal harmadkori (felső-pannóniai) jelenlétében nem kételkedhetünk.

Laricispollenites gerceensis n. g. n. sp.

LXXIV. tábla 2—5. ábra

Holotypus: Gét 1. sz. f. 21. minta, 1. lemez, 109,1×18,2, LXXIV. tábla, 3. ábra

Locus typicus: Gércse 1. sz. f. 31,0—31,5 m

Stratum typicum: Felső-pannóniai, aleuritós dolomitmárga

Diagnosis: Nagyméretű, szferoidális alakú pollenek. Az exine vastagabb sexinéből és vékonyabb nexinéből áll. Az exine finoman díszített. A ritkán elhelyezkedő apró (0,5 μ alatti) granulumok között elszórtan nagyobbak (0,5 μ feletti) is vannak. A vékony exine miatt a test felszínén másodlagos gyűrődések találhatók.

Méreték: A holotypus mérete 88 μ , exine vastagsága 2 μ .

Előfordulás: a holotypuson kívül egy 56 μ -os példány a Tekeres 1. sz. f. 850,0—855,0 m-ből (ottnangi) és egy 64 μ -os példány a Naszály 1. sz. f. 26,7—29,7 m-ből (felső-pannóniai).

Genus: *Cedripites* WODEHOUSE 1933

Cedripites hidasensis n. sp.

LXXVIII. tábla 5—6. ábra

1969. *Pityosporites labdacus* (R. POT. 1931) TH. et PF. 1953 Type „B” — NAGY, MÁFI Évk. 52. 2. pp. 142—143. Pl. XXIX. Fig. 3., Pl. XXX. Fig. 6.

Holotypus: H. 53. sz. f. 28. minta, 1. lemez, 10,8×76,3, LXXVIII. tábla, 5—6. ábra

Locus typicus: Hidas 53. sz. f. 630,8—632,0 m

Stratum typicum: Bádendi, barnakőszenes agyag

Diagnosis: Bisacat pollenek, szabálytalan, kerekded testtel, egymástól eléggé távol álló légzacsókkal. A test exine vastagsága a proximális oldalon cca. 1,5 μ (taraj), a disztális oldalon vékonyabb. A test egyenetlenül granulumokkal fedett. A légzacsó exinéje cca. 1/2 μ , ezért általában másodlagosan gyűrődött.

Méreték: A holotypus teljes hossza 65 μ , magassága 50 μ . A test magassága 45 μ , szélessége 40 μ . A légzacsó 43 μ magas, 28 μ széles. A reticulum-szemek átmérője a légzacsó közepén cca. 3—4 μ , a széleken cca. 1 μ .

Differentialis diagnosis: A *Cedripites hidasensis* n. sp. testméretével és exineszerkezetével a *C. lusaticus* W. KR. 1971-hez hasonló, de különböznek egymástól a légzacsó elhelyezkedésében, nagyságában és szerkezetében.

Előfordulás: 54—80 μ hosszúságú, 35—50 μ szélességű pollenek, leggyakoribbak a középső-miocénben: Szászvár 8. sz. f. 432,5—432,7 m (eggenburgi); Hidas 53. sz. f. 971,0—972,5 m, Komló 120. sz. f. 367,0—374,7 m (kárpáti); Hidas 53. sz. f. 630,8—763,3 m, Zengővárkony 59. sz. f. 41,8—44,4 m, Szokolya 2. sz. f. 53,5—54,3 m (bádendi); Hidas 53. sz. f. 494,8—496,0 m (szarmata).

Cedripites maximus n. sp.*

LXXVIII. tábla 3—4. ábra, LXXIX. tábla 1. ábra

Holotypus: Zgv. 59. sz. f. 23. minta, 1. lemez, 113,8×38,7, LXXVIII. tábla, 5—6. ábra, LXXIX. tábla, 1. ábra

Locus typicus: Zengővárkony 59. sz. f. 56,0—60,9 m

Stratum typicum: Kárpáti, homoklisztes agyagmárga

* Az 1969-es dolgozatomban kézirátában szereplő faj leírása a kinyomtatott munkából hiányzik, ill. a holotypus fényképe benmaradt (1969. XXXIII. tábla, 1. ábra) és a táblamagyarázóban (hibásan) *Piceapollenites neogenicus* n. sp.-nek van jelölve.

Diagnosis: Nagyméretű, kerekded testtel rendelkező, erőteljesen, de meglehetősen aprón reticulált felszínű pollenek. A taraj aránylag vékony. A légzacskó keskeny, felszíne valamivel nagyobb méretű reticulummal fedett, mint a testé.

Méretetek: A holotypus teljes hosszátmérője 90 μ , a pollentest 83 \times 75 μ , a reticulum átmérője cca. 1 μ -osak. A test szélén az exine vastagsága 2–3 μ közötti; a proximális oldalon a tarajnál vékonyabb, az oldalakon vastagabb. A légzacskók 70 \times 30 μ -osak, a reticulumok átmérője cca. 1,5–3 μ .

Differentialis diagnosis: A *Cedripites maximus* n. sp. a *C. szaszvarensis* NAGY 1969 fajtól nagy méretével és a pollentest alakjával tér el elsősorban. A *Cedripites crassus* NAGY 1969 is hasonló méretű, de a pollentest alakja más és sokkal vastagabb és más kifejlődésű a taraja.

Megjegyzés: A holotypus kissé proximális helyzetbe billenve fosszilizálódott, s így a légzacskó helyzetére nagyon jellemző WODEHOUSE *Cedripites* genusra vonatkozó leírása (1933, p. 490.).

Előfordulás: 68–106 μ mérettel néhány példány: Zengővárkony 45. sz. f. 16,4–17,2 m (ott-nangi); Zengővárkony 59. sz. f. 56,0–60,9 m, Almáspatak I. sz. feltárás, Magyaregregy-Kisréti-árok, Komló-Zobák puszta, felszíni feltárás (kárpáti); Szokolya 3. sz. f. 60,1–74,5 m (bádeni); Hidas 53. sz. f. 134,8–135,5 m (felső-pannóniai).

Familia: Cupressaceae

Genus: *Dacrydiumites* COOKSON 1953 emend. NAGY 1969

Dacrydiumites elegans n. sp.

LXXXV. tábla 5–10. ábra, LXXXVI. tábla 1. ábra

Holotypus: F. 1. sz. f. 30. minta, 1. lemez, 106,8 \times 19,5, LXXXV. tábla, 5–10. ábra

Locus typicus: Fót 1. sz. f. 237,5–238,0 m

Stratum typicum: Egri, kőzetlisztes agyagmárگا

Diagnosis: A test alakja kerekded-ovális, két kis saccussal és 2 sacculussal. A pollentest exinéje szemcsés, a proximális oldali durvább; a két légzacskó között, a disztális oldalon finomabb kifejlődésű. A taraja aránylag vastag, finom baculumokból áll, a test oldalára a légzacskók felé is lehúzódo. A légzacskók finoman reticuláltak.

Méretetek: A holotypus oldalsó helyzetben van, 73 μ a teljes átmérője, magassága 58 μ , a test hossza 54 μ , magassága 41 μ . A légzacskók hossza 34 μ , szélességük 15 μ (a legszélesebb részen). A sacculusok 5 μ magasak és 6–7 μ hosszúak. Az exine vastagsága 2,5–3 μ .

Differentialis diagnosis: A *Dacrydiumites elegans* n. sp. alakjával, a sacculus jelenlétével, annak elhelyezkedésével a *Dacrydiumites mawsonii* (COOKSON 1947) COOKSON 1953 fajhoz hasonlít a legjobban. Eltér attól, a méretén kívül (a *D. mawsonii* kisebb), a felszín díszítettségével is. Az új fajnál igen feltűnő a vastag baculumokból álló exine, és a légzacskón is jól kifejlődött apró szemű reticulum.

Előfordulás: A holotypuson kívül 38–62 μ méretben néhány példány: Fót 1. sz. f. 194,4–238,0 m (egri).

Megjegyzés: J. SIVAK (Montpellier) egy új fosszilis genushoz tartozónak tartja a fajt (szóbeli közlés).

Familia: Ephedraceae

Genus: *Ephedripites* BOLCH. 1953 ex R. POT. 1958

Subgenus: *Ephedripites* BOLCH. 1953 ex R. POT. 1958 sg. *Ephedripites* W. KR. 1961

Ephedripites sg. **Ephedripites boersoenyensis** n. sp.

LXXXVI. tábla 11—15. ábra

Holotypus: Szk. 3. sz. f. 47. minta, 1. lemez, 116,9×13,2, LXXXVI. tábla, 11—15. ábra

Locus typicus: Szokolya 3. sz. f. 52,6—53,6 m

Stratum typicum: Alsó-bádeni, diatómás agyagmárga

Diagnosis: Nagyméretű, „ephedroid” pollenek. Hosszméretük 59—65 μ , szélességük 21—22 μ közötti. Hosszúság: szélesség arányuk 2,8. A pollenek fala vékony, 3/4—1/2 μ . Bordáik száma cca. 14—15, ezek 1,5 μ szélesek, középen bordaél mutatkozik. A bordák közötti mező 1,5—3 μ széles. A második és a harmadik borda a sarkok felé csekély megvastagodással kis csúcsot alkot.

Méreték: A holotypus 65 μ hosszú, 25 μ széles, cca. 14 bordájú.

Differentialis diagnosis: Az *Ephedripites* sg. *Ephedripites* fajai között az *Ephedripites* sg. *Ephedripites regularis* HOECKEN—KLINKENBERG 1964* faj méretéhez, bordaszámához áll közel, de annak falvastagsága nagyobb, bordái is vastagabbak. Az *Ephedripites* sg. *Ephedripites regularis* vaskosabb (hosszúság: szélesség aránya = 2,0). Az új faj bordaközi mezői szélesebbek. A bordák és a mezők lefutása — az exine vékonysága miatt — kissé hullámos.

Előfordulás: a holotypuson kívül egyetlen további példány került elő: Szokolya 3. sz. f. 63,0—64,7 m (alsó-bádeni).

PHYLUM: ANGIOSPERMAE, ANGIOSPERMATOPHYTA

Classis: Dicotyledonopsida (*Dicotyledones*)

Subclassis: Polycarpicae — Rubiales

Ordo: Nymphaeales

Familia: Nymphaeaceae

Genus: *Nymphaeapollenites* NAGY 1969

Nymphaeapollenites minor n. sp.

LXXXIX. tábla 10—11. ábra; XC. tábla 1—3., 5—11. ábra

Holotypus: Vkt. 1. sz. f. 9. minta, 109,4×18,3, XC. tábla, 1—3. ábra

Locus typicus: Várkesző 1. sz. f. 15,0—16,0 m

Stratum typicum: Felső-pannóniai, szenes agyag

Diagnosis: Kerekded, zonisulcat, vékony exinájú, tüskés pollenek. A tüskék aránylag vékonyak, egyenletesen helyezkednek el az exine felszínén.

Méreték: A holotypus 21 μ átmérőjű, az exine vastagsága 1 μ alatti, a tüskék hossza cca. 2 μ , a tüskék alapjainak távolsága 1—2,5 μ között változó.

Differentialis diagnosis: A *Nymphaeapollenites minor* n. sp. kisebb méretű, mint a *N. pannonicus* NAGY 1969, azonkívül vékonyabb exinájú, a tüskék egyenletesebben és sűrűbben helyezkednek el rajta.

Előfordulás: 17—25 μ közötti mérettel, kevés példány: Szokolya 2. sz. f. 49,5—83,1 m (alsó-bádeni); Hidas 53. sz. f. 479,1—482,0 m, Cserhátszentiván 1. sz. f. 136,0—161,0 m (szarmata); Tata (TVG) 26. sz. f. 8,5—18,3 m, Megyaszó 1. sz. f. 15,0—16,0 m (alsó-pannóniai); Naszály 1. sz. f. 14,9—83,4 m (felső-pannóniai).

Ordo: Myrtales

Subordo: Myrtinae

Familia: Haloragaceae

Genus: *Myriophyllumpollenites* NAGY 1969 emend.

* HOECKEN—KLINKENBERG adatai alapján (Pollen et Spores 1964, p. 228.) a faj bordaszélessége 5 μ , a közöttük levő árok szélessége 1 μ .

Emendált diagnosis: Kerekded, suboblat, aspidat pollenek, széles vagy keskeny szegéllyel és 3, 4 — vagy több — pórusal. A pollen felszíne sima, reticulat vagy rugulat.

Differentialis diagnosis: A *Myriophyllumpollenites* genus abban különbözik a *Haloragacites* COUPER 1953 genustól, hogy a pollenszemcsék felszíne nem foltos.

Myriophyllumpollenites balatonensis n. sp.

XCV. tábla 3—6. ábra

Holotypus: Bk. I. 5. minta, 1. lemez, 116,4×38,1, CXV. tábla, 3—4. ábra

Locus typicus: Balatonkenese I. sz. f. 65,9—66,4 m

Stratum typicum: Alsó-pannóniai, kőzetlisztes agyagmárga

Diagnosis: Kerekded, jellegzetesen aspidat pollenek, több pórusal. Az exine aránylag vastag, felszíne sima. Sexine vékonyabb a nexinénél. A nexine durván rugulat.

Méretek: A holotypus mérete 26 μ . Az exine vastagsága 1,5—2 μ , a pórusnál 3 μ . A pórusok száma 6.

Differentialis diagnosis: A *Myriophyllumpollenites balatonensis* n. sp. a *M. quadratus* NAGY 1969 fajtól elsősorban intrarugulat felszínével tér el. A *M. balatonensis* n. sp. vastagabb exinéjével és díszítettségével különbözik a *M. minimus* n. sp. fajtól.

Megjegyzés: A holotypuson kívül a Bk. 1. sz. fúrásból (62,4—63,0 m) előkerült példányon is jól lemérhető a pórus-megvastagodás, a szembefordult póruson (lásd: XCV. tábla 5—6. ábra).

Előfordulás: Néhány 23—26 μ -os példány: Nógrádszakál 2. sz. f. 91,4—93,0 m (alsó-bádeni); Balatonkenese I. sz. f. (alsó-pannóniai); Naszály 1. sz. f. 18,0—104,6 m (felső-pannóniai).

Myriophyllumpollenites minimus n. sp.

XCV. tábla 7—13. ábra

Holotypus: Eger Wind-féle téglagyári feltárás „u” réteg, 11. minta, 1. lemez, 82,3×23,0, XCV. tábla, 7—9. ábra

Locus typicus: Eger, Wind-féle téglagyári feltárás „u” réteg

Stratum typicum: Egri, homokos agyag

Diagnosis: Kis méretű, vékony exinájú pollenek. Felszínük sima, finoman intragranulált. Aspidat, több pórusú pollenek.

Méretek: A holotypus 23 μ , cca. 1 μ -os exinével. Az aspidat megvastagodás cca. 2 μ .

Differentialis diagnosis: A *Myriophyllumpollenites minimus* n. sp. feltűnően vékony fala, kis mérete és felszíni díszítettsége révén különbözik mind a *M. balatonensis* n. sp.-től, mind a *M. quadratus* NAGY 1969 fajtól.

Megjegyzés: Eddig 4—5—6 pórusú változatai kerültek elő.

Előfordulás: Néhány 18—25 μ méretű példány; leggyakoribb az egri emeletben: Eger, Wind-féle téglagyári feltárás „u” réteg, 8., 11., 13. sz. minta. További példányai szórványosak: Püspökhátvan 4. sz. f. 299,0—302,0 m (eggenburgi); Nagygörbő 1. sz. f. 903,2—908,5 m (ottnangi); Szokolya 2. sz. f. 100,0—101,0 m (alsó-bádeni); Beremend 9. sz. f. 76,0 m (alsó-pannóniai, ez feltehetően áthalmazott).

Ordo: Cornales

Familia: Umbelliferae

Genus: *Umbelliferoipollenites* VENKATACHALA et KAR 1968 emend.

1968. *Umbelliferoipollenites* gen. nov. — VENKATACHALA et KAR, The Paleobotanist, Vol. 17. № 2. pp. 164—165.
1983. *Cerceanipollenites* n. fgen. — KEDVES, Grana, 22. pp. 41—42.

Emendált diagnosis: Megnyúlt ovális subprolát-prolát pollenek. Általában középen — az equatoriális síkban — kissé vékonyabbak, piskóta alakot mutatnak. Tricolporat, ritkábban dicolporat pollenek. Az exine tectát. A pórusok szerkezeti elemei az equatoriális régióban jellegzetesen megnövekednek, exine vastagodás formájában jelentkeznek.

Megjegyzés: A két genus között csak az a különbség, hogy az *Umbelliferoipollenites* VENKATACHALA et KAR dicolporát, a *Cerceanipollenites* KEDVES pedig tricolporát. A recens *Umbelliferae* pollenek morfológiájára vonatkozóan ERDTMAN (1952 p. 443) „(2)—3 colporate”-ot ír. Az általa le-

írt 85 species közül csak az *Echinophoreae* csoport 2 colpusú. Miután mindkét szerző *Umbelliferae* flórarokonságot említ, ezért helyesebb a 2 genus összevonása az első genusnév alatt, módosított diagnózissal.

Umbelliferoipollenites nogradensis n. sp.

XCVII. tábla 31—34. ábra

Holotypus: Nsz. 2. sz. f. 11. minta, 1. lemez, 105,9×8,0, XCVII. tábla, 31—32. ábra

Locus typicus: Nógrádszakál 2. sz. f. 78,0—79,5 m

Stratum typicum: Alsó-bádeni, tufitos, finomhomokos márga

Diagnosis: Prolát, piskóta alakú pollenek három vastag colpussal, amelyek a pólusok felé tornán végződnek. Az exopórusok erőteljes, meridionálisan megnyúlt, ovális rések. Felettük az exine erőteljesen megvastagodott, amely miatt az exine a pollentest equatoriális vonalában kiemelkedik. Az endopórusok téglalakúak, az exopóruson equatoriálisan túlnyúlnak. Az exine vastag, tectát, igen finom intrabaculumokkal, a sarkoknál kissé erőteljesebb kifejlődéssel. A felszíne finoman pontozott.

Méreték: A holotypus 34 μ hosszú, 13 μ széles, hosszúság: szélesség aránya 2,6. A colpus 26 μ hosszú, az exopórus 2,5 μ széles, 3 μ magas; az endopórus 4 μ széles, 3—3,5 μ magas.

Differentialis diagnosis: Az *Umbelliferoipollenites nogradensis* n. sp. az *U. speciosus* n. sp.-től finomabb díszítőelemeivel, erőteljesebb colpusával és pórusával tér el.

Előfordulás: 30—49 μ közötti méretű, ritka példányok: Nógrádszakál 2. sz. f. 78,0—101,0 m, Szokolya 2. sz. f. 89,5—111,2 m (alsó-bádeni).

Umbelliferoipollenites speciosus n. sp.

XCVII. tábla 35. ábra, XCVIII. tábla 4—7. ábra

Holotypus: Szk. 2. sz. f. 59. minta, 1. lemez, 116,1×11,6, XCVIII. tábla, 4—7. ábra

Locus typicus: Szokolya 2. sz. f. 60,7—61,5 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Prolát, piskóta alakú, tricolporat pollenek, a colpusok rövidek, a sarkok felé elvékonyodnak. Az exopórus kerek, az endopórus equatoriálisan elnyúló, négyszögletes. A pórusok feletti exine-megvastagodás és kiemelkedés gyakori. Az exine szerkezete tectat, intrabaculat.

Méreték: A holotypus 43 μ hosszú, 20 μ széles, a hosszúság: szélesség aránya 2:1. A colpusok cca. 26 μ hosszúak, az exopórusok 2,5 μ magasak, 2 μ szélesek. Az endopórusok 2,5 μ magasak, 6 μ szélesek.

Differentialis diagnosis: Az *Umbelliferoipollenites speciosus* n. sp. az *U. nogradensis* n. sp.-től rövidebb colpusával, erőteljesebben kifejlett intrabaculat exine-szerkezetével tér el.

Előfordulás: 26—43 μ -os méretű példányai ritkák: Szokolya 2. sz. f. 60,7—83,1 m, Szokolya 3. sz. f. 60,8—69,6 m (alsó-bádeni).

Umbelliferoipollenites tenuis n. sp.

XCVIII. tábla 8—12. ábra

Holotypus: Szk. 2. sz. f. 99. minta, 1. lemez, 112×44,0, XCVIII. tábla, 8—10. ábra

Locus typicus: Szokolya 2. sz. f. 93,0—95,0 m

Stratum typicum: Alsó-bádeni, agyagmárga

Diagnosis: Prolát, kissé piskóta alakú, tricolporat, tectát, finoman intrabaculat, kis, kerek exopórusú, equatoriális irányban megnyúlt endopórusú pollenek. Exine felszínük finoman punctat.

Méreték: A holotypus 30 μ hosszú, 14 μ széles, hosszúság: szélesség aránya 2:1. A colpusok vékonyak, a sarkok felé kissé összetartók, alig kihengyessedők. Az exopórus cca. 1 μ , az endopórus equatoriális irányban cca. 5 μ , magassága 2—2,5 μ . Az exine teljes vastagsága a pólusoknál cca. 2 μ , az oldalaknál cca. 1,5 μ .

Differentialis diagnosis: Az *Umbelliferoipollenites tenuis* n. sp. az *U. speciosus* n. sp.-től finomabb szerkezetű exinével, távol álló colpusaival tér el. Az *Umbelliferoipollenites nogradensis* n. sp.-től jobban látható baculumaival, kevésbé erőteljes colpus- és pórus szerkezetével különbözik.

Előfordulás: 25—36 μ -os hosszúsággal néhány példányban: Várpalota 133. sz. f. 208,3—214,2 m (eggenburgi); Szokolya 2. sz. f. 93,0—95,0 m (alsó-bádeni); Szirma 2. sz. f. 51,9—52,0 m (alsó-panóniai).

Ordo: Boraginales (Tubiflorae)
Familia: Convolvulaceae

Genus: Calystegiapollis W. KRUTZSCH 1966

Calystegiapollis sarmaticus n. sp.

CIV. tábla 8—10. ábra

Holotypus: Csi. 1. sz. f. 5. minta, 1. lemez, 106,0×46,0, CIV. tábla, 8—10. ábra

Locus typicus: Cserhátszentiván 1. sz. f. 15,5—16,5 m

Stratum typicum: Szarmata, homok (szenesedett növényi törmelékkal)

Diagnosis: Kerekded, kissé ovális, nagy pollen, a szélén a pórusoknál beöblösödésekkel. Felületén — egyenletes eloszlásban — 20—25 ovális pórusnyílás helyezkedik el. Az exine 3—3,5 μ vastag, tectát, intrabaculát. A tectum cca. 0,5 μ , a baculum-réteg 2—2,5 μ és a nexine cca. 0,5 μ vastag. A pórusoknál — beöblösödéseknél — a tectum feloldódott, s így a baculum-réteg alkotja — felületben — a pórus díszítettségét.

Méreték: A holotypus 61×56 μ -os, a pórusok 6—7 μ hosszúak, 3—4 μ szélesek.

Differentialis diagnosis: A *Calystegiapollis sarmaticus* n. sp. a *C. thuringiacus* W. KR. et MAJ. 1966 fajtól kisebb méretű és nem csepp alakú pórusaival, határozottabb, de vékonyabb exinéjével különül el.

Előfordulás: Egy példányban került eddig elő.

Ordo: Ebenales (Diospyrales)
Familia: Sapotaceae

Genus: Sapotaceoidapollenites R. POT. 1960

Sapotaceoidapollenites thomsoni n. sp.

CIX. tábla 20—22. ábra

Holotypus: Ph. 4. sz. f. 65. minta, 1. lemez, 100,0×7,2, CIX. tábla, 20—22. ábra

Locus typicus: Püspökhatvan 4. sz. f. 257,0—260,0 m

Stratum typicum: Eggenburgi, aleurit

Diagnosis: Kerekded, tetracolporat pollen. Szélesség: hosszúság aránya 0,9. Exinéje 1 μ körüli, finoman intrapunctat. Colpusai vékonyak, 1 μ körüliek, a pórusokat el nem érők. Exopórusai kis-méretű, a colpust alig túllépő kerek nyílások, endopórusai a colpusokon equatoriálisan túlnyúlnak, vékonyak (cca. 0,5 μ), amelyek az equator felé csaknem 1,5 μ -ra kiszélesednek.

Méreték: a holotypus mérete 32×28 μ .

Differentialis diagnosis: A kerek körvonalú, gömb alakú, vagy ahhoz közelálló formák közül a *Sapotaceoidapollenites kirchheimeri* (REISS. 1950) NAGY 1969 fajnak is 0,9—1,0 a szélesség: hosszúság indexe, de a *S. kirchheimeri* valamivel nagyobb, mint a *Sapotaceoidapollenites thomsoni* n. sp., az exopórusai is nagyobbak, kerek, vagy elliptikusak. Endopórusai sokkal szélesebbek és az exinéje megvastagszik az equator irányában.

Előfordulás: A holotypuson kívül további egy-két példány a Püspökhatvan 4. sz. f. eggenburgi szakaszában.

Megjegyzés: Morfológiailag és méretben is megegyező példányokat ábrázolt THOMSON (1949, X. tábla, 5—6. ábráján) a rajnai barnaköszénből, valamint THOMSON et PFLUG (1953, 15. tábla 44. ábra). THOMSON 1949-ben recens *Sapotaceae* polleneket is ábrázolt, ezek közül a *Mimusops elegans* (X. tábla 11. ábra) hasonlít feltűnő módon a fajhoz.

ZÁRSZÓ

A hazai neogén sporomorpháinak rendszerező tanulmánya alapján folyamatban van a spóra-pollen anyag értékelése is, mely főleg biosztratigráfiai, paleoökológiai és paleoklimatológiai vonatkozásban adhat új eredményeket. Soronkövetkező feladatommak az értékelés mielőbbi közreadását tekintem.

SPOROMORPHS OF THE NEOGENE IN HUNGARY

by

MRS. DR. ESZTER NAGY

INTRODUCTION

Palynological investigations of the Hungarian Neogene formations were carried out as a part of the detailed and comprehensive geological research performed on this field.

Many data about various areas of the country have already been published, mostly by the author (1957, 1958, 1962, 1963, 1965, 1967, 1973, 1979) and by Dr. P. SIMONCSICS (1959, 1960, 1964).

There have been attempts for an overall assessment of Neogene palynological data i.e. to clear up paleofloristical connections, to separate paleofloristic units (NAGY 1971) and to trace floristic changes during the Neogenes (NAGY 1976).

I wish to express my thanks to Dr. GÉZA HÁMOR (Director of the Hungarian Geological Institute) who provided me the conditions to do this basic study, by supplying core samples and advices in geology.

I gratefully acknowledge the help obtained in botanical questions from MME M. VAN CAMPO (Montpellier), MME D. LOBREAU-CALLEN (Chevreloup), in nomenclature by Dr. T. SIMON, Dr. J. BODA, Dr. GY. HEGEDŰS.

I sincerely thank MISS INGEBORG MÓCZA for her technical assistance, for photography Dr. MRS. M. PELLÉRDY, MISS ANNA KÁRPÁTI, for SEMG — MRS. V. TAKÁCS, for the typing — MRS. V. SIGMOND. Finally, I express my gratitude to all colleagues who helped me in some way or other during the study.

Most of the palynological material from the Neogene of Hungary comes from core samples, supplied by geologists. The palynological research is connected mainly to the mapping activity of G. HÁMOR et al., comprising, as a rule, the whole Neogene section of borehole sequences as to the Mecsek Mountains and North-Hungary.

Palynological investigations were carried out for G. HÁMOR, Á. JÁMBOR, J. HALMAI, MRS. M. HÓDI-KORPÁS, L. KORPÁS, J. KÓKAY, GY. RADÓCZ, G. SOLTI, Á. GROSSZ, G. CHIKÁN, D. BIHARI, I. JANKOVICS, L. RÁKOSI, G. PANTÓ, MRS. E. PERLAKI-ILKEY, L. PENTELÉNYI, F. BARTHA, MRS. P. FODOR and for other researchers in and outside the Institute.

I received research material from the following areas: Mecsek Mountains — East and West, counties Somogy and Zala, Bakony Mountains, northern and southern margins of the Bakony Mts, Kisalföld (Little Hungarian Plain), Dunántúl Hillocks, Alföld (Great Hungarian Plain) especially its western, northern and eastern margins and Jászság area, the mountains Börzsöny, Cserhát, Mátra, Bükk; the Nógrád Hillocks, southern flank of Mátra Mts, Salgótarján Basin, Cserhát and Szerencs Hillocks and Tokaj Mountains.

Beside longer boreholes, section of certain borings and sometimes even single samples were also studied palynologically.

Data were completed by the investigation of mine crosscuts (mines Hidasbánya and Petőfibánya) and outcrops [section in Szászvár, Magyaregregy, Nógrád, Salgótarján, Eger (the Egerian holostatotype) and other localities].

Stratigraphically, the materials comprise all stages of the Neogene, beginning from the Oligo—Miocene Egerian. The most important ones are the following:

- Egerian stage*: Eger, brickyard borehole, 0.0—46.6 m, Eger, brickyard pit, layers, “x”, “k”, “u”, Fót 1, 193.4—373.0 m, Tata (TVG) 27, 32.1—74.7 m,
- Eggenburgian stage*: Fót 1, 132.5—193.4 m, Püspökhatvan 4, 185.0—302.0 m, Nógrádmegyer 1, 50.3—51.1 m, Nógrádsípek 1, 104.8—114.02 m, Egyházasgerge 1, 181.4—209.3 m, Kazár section 1, Ipolytárnóc area, surface sections, Budajenő 2, 544.4—575.9 m, Nagygörbő 1, 1023.0—1069.0 m, Várpalota 133, 208.3—226.3 m, Pápa 2, 192.8—337.5 m, Szászvár 8, 26.0—428.2 m, Tekeres 1, 995.0—1094.8 m,
- Ottungian stage*: Pusztakisfalu VI., 5.2—51.8 m, Zengővárkony 45, 16.0—21.2 m, Nagygörbő 1, 923.0—1023.0 m, Várpalota 133, 175.6—208.3 m, Rákoskeresztúr I, 338.0—537.0 m, Gyulakeszi key sections I—II—III, Kazár 514, 7.8—103.0 m, Mátraverebély 79, 175.0—324.0 m, Tar 32, 324.0—350.0 m, Alsóvadász 1, 875.0—1059.0 m,
- Karpathian stage*: Hidas 53, 763.3—830.0 m, Komló 120, 6.0—386.8 m, Zengővárkony 59, 56.0—83.0 m, Magyaregregy area, surface sections, Nagygörbő 1, 706.0—923.0 m, Várpalota 133, 161.0—167.7 m, Tengelic 2, 861.8—863.6 m, Rákoskeresztúr I, 148.0—354.0 m, Fót 1, 75.4—132.5 m, Püspökhatvan 4, 124.0—185.0 m, Garáb 1, 0.0—318.0 m, Litke 17, 22.0—265.0 m, Piliny 8, 33.3—138.5 m, Nógrádszakál 2, 213.0—290.0 m,
- Badenian stage*: Hidas 53, 558.0—763.3 m, Hidas 88, 248.0—333.5 m, Hidas 89, 266.5—317.1 m, Hidas 91, 284.0—325.0 m, Hidas 105, 311.0—356.8 m, brown-coal mine, seams II, IV, V, VI, Zengővárkony 59, 24.9—44.7 m, Nagygörbő 1, 344.0—892.0 m, Tengelic 2, 726.4—853.3 m, Szokolya 2, 2.8—106.4 m, Szokolya 3, 21.0—77.4 m, Szokolya 11, 26.0 m, Nógrádszakál 2, 23.7—213.0 m, Tar 34, 500.0—641.0 m, Alsóvadász 1, 730.4—875.0 m, Balaton 26, 3.0—332.5 m,
- Sarmatian stage*: Hidas 53, 417.0—554.3 m, Vajta, water expl. boreh. 724.—728.0 m, Nagygörbő 1, 322.0—350.7 m, Lajoskomárom 1, 671.0—718.0 m, Cserhátszentván 1, 13.2—200.0 m, Tar 34, 348.8—500.0 m, Alsóvadász 1, 240.4—709.5 m,
- Lower Pannonian*: Hidas 53, 258.5—417.0 m, Tata, mapping 26, 4.5—50.0 m, Tata (TVG) 26, 18.3—39.0 m, Tata (TVG) 27, 18.5—32.1 m, Pápa 2, 71.1—192.8 m, Naszály 1, 10.0—150.0 m, Tököl 1, 688.5—747.2 m, Alsóvadász 1, 156.8—240.0 m, Megyaszó 1, 52.0—206.0 m,
- Upper Pannonian*: Hidas 53, 73.3—258.5 m, Pápa 2, 3.0—71.0 m, Pula 3, 6.0—36.5 m, Gérce 1, 9.0—130.8 m, Várkesző 1, 2.0—42.0 m, sections from mine Petőfibánya; Megyaszó 1, 17.0—52.0 m.

The Miocene formations were partially characterized by palynological data, complying with the wish of G. HÁMOR, in the years before (1978—1980). The materials studied represent the most important, most characteristic formations. The palynologically least relevant ones are, of

course, the pyroclastics. The subdivision of formations was based on the data by G. HÁMOR, Á. JÁMBOR, MRS. M. HÓDI-KORPÁS and J. HALMAI.

The materials studied represent the following formations:

Eger Formation: Eger, Wind brickyard, borehole and surface section (T. BÁLDI, 1975)

Törökbálint Formation: Fót 1, 160.0—373.0 m

Becske Formation: Fót 1, 144.0—160.0 m

Putnok Schlier Formation: Püspökhatvan 4, 182.4—306.0 m

Zagyvapálfalva Mottled Clay Formation: Kazár, key section N° 1; surface sections from Nagybátony-Szorospatak; Zagyvapálfalva sand quarry; Kazár sand quarry; Kazár gravel pit; Sósartyán-Kapcástető gravel pit, Kisterenye-Aranyhegy; Egyházasgerge 1, 181.4—209.3 m, Nógrádmegyer 1, 50.3—51.1 m, Nógrádsípek 1, 104.8—114.0 m

Szászvár Formation: South of Szászvár N-S directed main valley; Szászvár 8, 26.0—428.2 m; Kisbattyán 1, 459.0—462.0 m; Máza 15, 92.0—97.0 m; Pusztakisfalú VI, 5.2—51.8 m; Zengővárkony 45, 16.0—21.2 m

Salgótarján Brown Coal Seams Formation: Gyulakeszi key section; Kazár 514, 7.8—103.0 m, Mátraverebély 79, 175.0—261.0 m, Tar 32, 324.0—350.0 m, Egyházasgerge 1, 146.0—178.0 m, Nógrádmegyer 1, 50.3—51.1 m

Egyházasgerge Sandstone Formation: Rákoskeresztúr I, 228.5—382.5 m, 408.3—559.4 m

Budafa Formation: Komló 120, 6.0—178.0 m

Garáb Schlier Formation: Garáb 1, 0.0—318.0 m, Litke 1, 37.6—265.0 m, Piliny 8, 33.3—138.0 m, Nógrádszakál 2, 213.0—290.0 m, Rákoskeresztúr I, 164.9—228.6 m, 382.5—408.0 m, Püspökhatvan 4, 120.4—176.7 m, Fót 1, 142.8—144.0 m

Fót Formation: Fót 1, 25.5—34.6 m, 35.1—37.0 m, 38.0—45.0 m, Püspökhatvan 4, 58.7—120.4 m, Rákoskeresztúr I, 162.5—163.5 m

Tar Dacite Tuff Formation: Tengelic 2, 853.3—863.5 m

Nógrádszakál Formation: Nógrádszakál 2, 108.0—213.0 m

Pécsszabolcs Formation: Pécsszabolcs 1, 38.8—48.4 m

Sámsonháza Formation: Nógrádszakál 2, 78.0—108.0 m

Badenian Clay Formation: Szokolya 2, 2.8—118.3 m, Szokolya 3, 21.0—37.0 m, Szokolya 11, 26.0 m

Hidas Brown-Coal Formation: Hidas brown-coal mine, seams II, IV, V, VI., Hidas 53, 590.2—672.5 m, Hidas 88, 233.3—333.5 m, Hidas 89, 267.0—323.5 m, Hidas 91, 285.0—325.0 m, Hidas 105, 310.0—356.7 m, Pécsvárad 44, 39.7—49.9 m

Szilágy Clayey-Marl Formation: Hidas 53, 554.9—590.2 m, Szilágy 1, 228.5—310.0 m, Tengelic 2, 723.1—853.3 m

Sajóvölgy Formation: Cserhátszentiván 1, 6.0—200.0 m, Tar 34, 15.0—500.0 m

Kisbér Gravel Formation: Pápa 2, 163.5—192.8 m

Szák Clayey-Marl Formation: Pápa 2, 122.0—163.5 m, Naszály 1, 60.0—150.0 m, Tata (TVG) 26, 7.0—39.0 m, Tata (TVG) 27, 8.5—30.7 m, Tata mapping 26, 4.5—50.0 m

Somló Formation: Pápa 2, 44.0—122.0 m, Naszály 1, 21.8—60.0 m

Tihany Formation: Pápa 2, 5.0—44.0 m, Naszály 1, 8.0—21.8 m

Pula Alginite Formation: Pula 1, 2.5—11.5 m, Pula 2, 38.5—79.1 m, Pula 3, 16.0—36.5 m, Gérce 1, 0.6—130.8 m, Várkesző 1, 2.0—42.0 m

Bükkalja Lignite Formation: mine Petőfibánya, lower shaft, Szücsi 172, 40.5—102.9 m, Visonta 91, 36.7—70.7 m.

TAXONOMICAL DESCRIPTIONS

To identify described taxons exact descriptions and good illustrations are needed because, as a rule, there is no possibility to revise the holotypes. This statement is especially true as to many old, basic holotypes the description and illustration of which do not meet modern requirements. Further difficulties arise from the fact that the original authors themselves changed their descriptions with regard to holotype illustration and denomination (as in two works of R. POTONIÉ from 1934). Other authors — referring to the original author — often publish forms of morphology and dimensions differing considerably from the original one (as in THOMSON et PFLUG 1953). Sometimes the authors change the original taxonomical descriptions but instead of formulating it more exactly they rather enbroaden it. This results in merging of formerly well differentiated taxons.

For all these difficulties I tried to classify forms including them into already described taxa.

Comparisons — as far as possible — were made by locating literature data, which served as a basis for the identification of taxa and are cited in the headings. In many cases original diagnoses are cited, too, especially if there are differences among various authors. In many cases authors do not refer exactly to the original diagnosis but on the basis of forms found by themselves — and without mentioning amendments — modify it to some extent. The data from Hungary are commented upon photos taken by myself, in order to enable future researches to make comparisons. In the described taxa the basionym data are always given, accompanied by a synonym list informing only about significant changes and more important combinations.

As a rule, new taxa are described only if they possess very different and characteristic morphological features.

In classification the natural system of plants was used. There are a lot of fossil forms, however which can not be conveniently assigned to any recent taxon.

In many cases authors dealing with recent material, suggest multiple alternatives for the taxonomical position of a certain taxon. This may have various reasons:

1. The fossil taxon is extinct.
2. The spora or pollen microstructure of recent taxa is unknown (In describing recent taxa even systematicians do not consider to be necessary to include descriptions of spores or pollen grains).
3. The recent counterpart of the fossil taxon is not yet known. In some cases it may be an undescribed tropical or subtropical plant.

Although the libraries in Hungary were extensively studied and international relations maintained, there is always a possibility that a certain "new" taxon has already been described somewhere by somebody.

Accordingly, I simply wish to state that this study was made on the basis of information available at the time it was completed.

PHYLUM: BRYOPHYTA

Small (7—20 μ) rounded remains, supposedly moss spores were found in many samples from the Neogene of Hungary. Especially coal seams and intercalated barren layers contained them in numbers (Table I., Fig. 1—10.). According LM investigations some of them have a smooth, opaque surface, but the majority show a microstructure: granulate, baculate, intragranulate, intrabaculate, generally without germ pore. The studies by ERDTMAN (1957), and BOROS et JÁRAI-KOMLÓDI (1975) contain drawings and photos of numerous *Bryophyta* genera with the above-mentioned morphological features which may have lived also in the Neogene of this country. They represent, among others,

the genera *Ceratodon*, *Schistostega*, *Splachnum*, *Georgia*, *Metzgeria*, *Dicranella*, *Polytrichum* (see NAGY 1969 pp. 82—83.).

Classis: Anthocerotinae

Ordo: Anthocerotales

Familia: Anthocerotaceae

The presence of this family in the Tertiary of Central Europe was recognized by K. RUDOLPH in 1935 (B. Bot. Cbl. 54. Taf. 5. Fig. 28.). W. KRUTZSCH (1963, Atlas II., p. 2.) assigned four form-genera to this family. In Hungary the following genera have been found:

Genus: *Saxosporis* W. KRUTZSCH 1963

1963. *Saxosporis* n. fgen. W. KR., Atlas II., p. 4.

Generotypus: *Saxosporis duebenensis* W. KR. 1963

***Saxosporis* cf. *gerlachi* W. KRUTZSCH 1967**

Plate I. Fig. 15.

1967. *Saxosporis gerlachi* n. fsp. W. KRUTZSCH — Atlas IV—V., p. 94. Taf. 29. Fig. 1—6.

A specimen, similar to this rare species from the Lower Miocene of Germany, was collected from Fót 1, 348.0—349.5 m, from its Egerian section. The 46 μ diameter specimen has verrucae more variable in size than in the holotype thus it was considered as cf.

***Saxosporis gracilis* W. KR. et PACLT. 1963**

Plate I. Fig. 13—14.

1963. *Saxosporis gracilis* n. fsp. (W. KR. et PACLT. OVA) — W. KR., Atlas II., p. 50. Taf. 6.

One specimen, 49 μ , found in Eggenburgian sandy clay near Ipolytarnóc (sample N° 1285, MAJZON). It is poorly preserved. The holotype was described from the Oligo—Miocene brown-coal bearing sequence of Southern Bohemia.

***Saxosporis hidasensis* NAGY 1968**

Plate I. Fig. 11—12.

1968. *Saxosporites hidasensis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14 (1—2), pp. 113—114., Pl. I., Figs 1., 3., 5.

One specimen, 33 μ , found in the Upper Pannonian; Hidas 53, 132.5—134.5 m.

Genus: *Rudolphisporis* W. KRUTZSCH 1963

1963. *Rudolphisporis* n. fgen. — W. KR., Atlas II., pp. 4—5.

Generotypus: *Rudolphisporis rudolphi* (W. KR. 1959) W. KR. et PACLT. 1963

***Rudolphisporis rudolphi* (W. KR. 1959) W. KR. et PACLT. 1963**

Plate I. Fig. 16—18.

1935. *Anthoceros* cf. *punctatus* — RUDOLPH, B. Bot. Cbl. 54. p. 328., Taf. 5., Abb. 28., Diagr. 7.

1959. *Microreticulatisporites rudolphi* n. fsp. — W. KR., Geol., Beih. 21/22 p. 159.

1963. *Rudolphisporis rudolphi* (W. KR. 1959) n. c. (W. KR. et PACLT.) — W. KR., Atlas II., p. 56., Taf. 9.

Some rather poorly preserved specimens occurred in sizes 48—67 μ in the Karpathian of Zengővárkony 59, 56.0—60.9 m, in the Sarmatian of Cserhátszentiván 1, 15.5—16.5 m and in the Upper Pannonian of Hidas 53, 73.3—89.5 m (NAGY 1969, p. 83—84.).

RUDOLPH (l. c.) described the species from layers considered to be Pliocene. According to KRUTZSCH and PACLTOVÁ the locality is "± tiefmiozän". (W. KRUTZSCH cites L. STUHLIK who found the species in Upper Miocene lacustrine sequences.)

Rudolphisporis cf. rudolphi (W. KR. 1959) W. KR. et PACLT. 1963

Plate I. Fig. 19.

1969. *Rudolphisporites cf. rudolphi* W. KR. et PACLT. 1963 — NAGY, MÁFI Évk. 52. 2., p. 84. Pl. X. Fig. 9.

Some spores found (sizes 45–50 μ) exclusively in the Mecsek Mountains, in the Karpathian stage — Zengővárkony 59, 63.0–65.0 m and Hidas 53, 763.3–764.6 m. Due to the reduced number of distal appendages it may be regarded to be transitional between *R. rudolphi* and *R. mecsekensis*.

Rudolphisporis mecsekensis NAGY 1968

Plate I. Fig. 20–21.

1968. *Rudolphisporites mecsekensis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. 1–2. pp. 114–115., Pl. I. Fig. 2., 4., 6.

Diameter 53–57 μ . Few specimen found in the Middle Miocene, Karpathian stage — Zengővárkony 59, 56.0–60.9 m.

Genus: Bohemiasporis W. KRUTZSCH 1967

1967. *Bohemiasporis* n. fgen. — W. KR., Atlas IV–V. p. 16.

Genotype: *Bohemiasporis vaclavensis* (W. KR. et PACLT. 1963) W. KR. et PACLT. 1967

Bohemiasporis vaclavensis (W. KR. et PACLT. 1963) W. KR. et PACLT. 1967

Plate II. Fig. 1–2.

1963. *Rudolphisporis? vaclavensis* n. fsp. — W. KR. et PACLT. — W. KR., Atlas II. p. 60. Taf. II. 1–6.

1967. *Bohemiasporis vaclavensis* (W. KR. et PACLT. 1963) n. c. — W. KR. et PACLT. 1967 — W. KR., Atlas IV–V. p. 96. Taf. 30. 1–6.

1969. *Bohemiasporites vaclavensis* (W. KR. et PACLT. 1963) W. KR. 1967 — NAGY, MÁFI Évk. 52. 2. pp. 84–85.

Two specimens, 47 μ , have been found in the Karpathian of Zengővárkony 59, 56.0–60.9 m. This species occurs in the Miocene of Germany and Czechoslovakia (rare).

Genus: Phaeocerosporites NAGY 1968

1968. *Phaeocerosporites* n. gen. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1–2), p. 115.

Genotype: *Phaeocerosporites baranyaënsis* NAGY 1968

Phaeocerosporites baranyaënsis NAGY 1968

Plate II. Fig. 3–5.

1968. *Phaeocerosporites baranyaënsis* n. sp. — NAGY, Acta Bot. Sci. Acad. Hung. 14. (1–2) p. 116. Pl. I. 7–8.

Sporadically occurring spores, size 40–56 μ , in the Egerian — Fót 1, 349.5–354.0 m, in the Eggenburgian — Budajenő 2, 518.2–523.0 m, in the Karpathian — Hidas 53, 837.9–839.0 m, Zengővárkony 59, 51.3–56.0 m, 78.0–81.0 m, Paks 2, 804.0–810.0 m, in the Badenian — Hidas 53, 755.0–757.0 m, Bánd 3, 66.8–68.5 m, Várpalota 212, 167.8–190.5 m, Szokolya 2, 33.5–34.7 m.

Botanically, the spores are strikingly similar to *Phaeoceros bulbiculosus* (BROTERO) PROSH. (ERDTMAN 1965, p. 133–134. Fig. 25., NAGY 1968, p. 216.).

Phaeocerosporites fotensis n. sp.

Plate II. Fig. 6—7.

Holotypus: Fót 1, sample No 28, plate No 1.109×20, Plate II. Fig. 6—7.

Locus typicus: Fót 1, 241.6—243.2 m

Stratum typicum: Egerian stage, grey, fine sandy silt

Diagnosis: A trilete spore of triangular shape, in polar situation poles rounded. The exine is 4 μ thick, the edge is uneven, slightly sinuous. Both surfaces are scabrate, granulate. Proximally the line of dehiscence reaches the thick exosporium, or almost so, and due to the thick exine it is accompanied by a torus-like thickening. On the distal side small verrucae or grani are found up to 2/3 of the distance equal to the tori, surrounding a roughly triangular space.

Size of the holotype: 50 μ .

Differential diagnosis: *Phaeocerosporites fotensis* n. sp. differs from the species *Ph. baranyaensis* NAGY and *Ph. transversus* NAGY by its less determined contours, by the length of the dehiscence line and by the ornamentation of the distal side.

Only one specimen has been found.

Phaeocerosporites transversus NAGY 1968

Plate II. Fig. 8—10.

1968. *Phaeocerosporites transversus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1—2) p. 125. Pl. II. 1—2.

Spores of 56—66 μ . Until now beside the holo- and isotype the species was found in the Karpathian — Zengővárkony 59, 51.3—56.0 m and in the Lower Badenian — Szokolya 2, 50.3—54.1 m.

Classis: Hepaticae

Ordo: Marchantiales

Familia: Ricciaceae

Genus: Ricciaesporites NAGY 1968

1968. *Ricciaesporites* n. gen. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1—2) p. 126.

Generotypus: *Ricciaesporites hungaricus* NAGY 1968

Characteristic fossil forms were found in the Karpathian of the Mecsek Mountains, comparable to the recent species, later in younger layers too, in the Bakony Mountains and in the southern foreland of the Vértes Mountains. The species of the *Ricciaesporites* genus were allocated by PACLTOVÁ and SIMONCSICS (1970) into the genus *Zlivisporis* PACLTOVÁ 1961. On the basis of the original diagnosis of *Zlivisporis* (1961) it would be rather difficult to do so, however, except the perisporium becomes a cingulum. The proximal side is not smooth but forms a reticulum — in all species described until now. The specimens I studied, showed no dehiscence line neither on fossil nor on recent species. In the case of *R. transdanubicus* the folding of the perisporium may have produced a morphological feature similar to a line of dehiscence (Pl. IV. Fig. 12.). In moss spores even very minute lines of dehiscence are possible, but alete forms too. Accordingly, it is possible to suppose the presence of slight, but not visible lines of dehiscence in specimens with very thick walls, although they may be as well completely missing. In this connection I wish refer again to a figure of *Riccia duplex* LORBEER, published in 1968, where the protoplasm just pours forth through a pore near one of the poles. Thus, those species which show three germinal apertures there is no line of dehiscence, or if there is any, it has no function.

Emending the genus *Triporoletes*, PLAYFORD wrote in 1971 the following (p. 553.): “*Ricciaesporites* NAGY 1968, from Hungarian Miocene strata is closely similar to *Triporoletes* (al. *Rouseisporites*) as NAGY (1969 p. 317 footnote) has commented. Aside from their considerable age disparity, it does not seem appropriate at this stage to merge the two generic taxa, for both species allocated by NAGY to *Ricciaesporites* show a much closer resemblance to extant ricciaceous spores (in particular to those of *Riccia* — see NAGY 1968, Pl. 7.), than they do to the type (and other) species of *Triporoletes*”.

SRIVASTAVA (1975) does not accept this opinion of PLAYFORD and includes *Ricciaesporites* into the genus *Triporoletes*. As to myself, although the fossil specimens occurred as “sporae dispersae” and not “in situ”, I consider the generic name *Ricciaesporites* as valid and founded even botanically.

Ricciaesporites hungaricus NAGY 1968

Plate III. Fig. 1—2.

1968. *Ricciaesporites hungaricus* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1—2) pp. 126—128., Fig. 4., Pl. III. 1—3., IV. 1.

Some specimens found in the Karpathian stage — Zengővárkony 59, 51.3—65.0 m about 100 μ of size. The water exploratory borehole at Vajta contained it at 724.0—728.0 m in the Sarmatian, Vigántpetend 1, 86.0—86.2 m in the Upper Pannonian (probably redeposited).

Ricciaesporites cf. neogenicus (W. KR. et PACLT. 1967) n. c.

Plate III. Fig. 3., Plate IV. Fig. 3.

1967. *Zlavisporis neogenicus* n. fsp. W. KR. et PACLT. — W. KR., Atlas IV—V. p. 98., Taf. 31.

Three specimens found in Várkesző 1, 15.0—16.0 m in the Upper Pannonian; size 50—70 μ . It is described as "cf." because on the crumpled specimens only some parts of the reticulum, the little spinae on the rim of the perisporium and in some places a folding line — regarded by the authors as line of dehiscence — are visible. Their state of preservation suggest redeposition.

Ricciaesporites transdanubicus NAGY 1968

Plate IV. Fig. 1—2., 12.

1968. *Ricciaesporites transdanubicus* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. 1—2. p. 128—129. Fig. 5. Pl. IV. 2., Pl. II. 1.

Two specimens received from the Karpathian — Zengővárkony 59, 56.0—60.9 m size 98 μ and in 63.0—65.0 m — size 95 μ . Another corroded specimen, 69 μ , occurred in Várkesző 1, 36.0—37.0 m a probable redeposition. Among the recent species studied it reminds best *Riccia duplex* LORBEER.

Classis: Musci

Subclassis: Sphagnidae

Ordo: Sphagnales

Familia: Sphagnaceae

Genus: *Stereisporites* (PF. 1953) W. KR. 1963

1953. *Stereisporites* n. gen. (PF.) — TH. et PF., Palaeontogr. 94. B. 1—4. p. 53.

1963. *Stereisporites* TH. et PF. 1953 s. lato — W. KR., Atlas III. p. 9.

Genotypus: *Stereisporites stereoides* (R. POT. et VEN. 1934) PF. 1953

R. POTONIÉ et VENITZ (1934) mention the species *Sporites stereoides*, described from Rheinian Lower Miocene brown-coal (Arb. Inst. Paläobot. 5. p. 11.), as *Sphagnaceae*?. They record its occurrence in the Pliocene, too. RAATZ was the first to use the name *Sphagnumsporites stereoides* (1937, p. 9.), but the genus is not monotypic as f. *minor* covers a species of different morphology, thus the generic name is not valid.

W. KRUTZSCH gave a very detailed study of Mesozoic and Tertiary spores — in the literature considered as *Sphagnum*. On morphological basis — by PFLUG — with the type *Stereisporites stereoides* (R. POT. et VENITZ 1934) TH. et PF. 1953 is corresponds to *Stereisporites* sgen. *Stereisporites*.

This generic concept with subgenera as interpreted by W. KRUTZSCH (1963, Atlas III.) is in no way identical with the original formulation given by PFLUG. Accordingly, it is preferable to use the name of W. KRUTZSCH (see above). In the Neogene of Hungary the following fossil species have been determined:

Stereisporites sg. **Stereisporites involutus** (DOKT.-HREBN. 1960) W. KR. 1963 ssp.
nochtenensis W. KR. et SONTAG 1963

Plate III. Fig. 4.

1963. *Stereisporites (Stereisporites) involutus nochtenensis* W. KR. et SONTAG 1963 — W. KR., Atlas III. p. 46. Taf. 5., Fig. 8–9.

A specimen of 26 μ size occurred in the Upper Pannonian — Gérce 1, 75.6–76.0 m. German palynologists signalled this form from the Middle Miocene.

Stereisporites sg. **Stereisporites megastereis** W. KR. 1963

Plate II. Fig. 11–12.

1963. *Stereisporites (Stereisporites) megastereis* n. fsp. — W. KR., Atlas III. p. 46., Taf. 5., Fig. 19–22.

One specimen, size 33 μ , found in the Upper Pannonian — Naszály 1, 32.8–34.9 m. W. KRUTZSCH found spores of ca. 26–30 μ in the Lower and Middle Miocene as well as in the Pliocene of Germany.

Stereisporites sg. **Stereisporites minor** (RAATZ 1937) W. KR. 1959 ssp. **minor**

Plate III. Fig. 5–7.

1937. *Sphagnum-sporites stereoides* POT. et VENITZ f. *minor* n. f. — RAATZ, Abh. Preuss. Geol. Landesanst. N. F., H. 185. p. 9., Taf. 1. Fig. 5.

1959. *Stereisporites minor* (RAATZ 1937) n. c. subfsp. *minor* W. KR. — W. KR., Geol., Beih. 21/22, p. 71.

1963. *Stereisporites (Stereisporites) minor* (RAATZ 1937) W. KR. 1959 subfsp. *minor* — W. KR., Atlas III. p. 36. Taf. I. 1–2.

The form described and illustrated by RAATZ was determined by W. KRUTZSCH in 1963 and the 16–20 μ specimens range from the Upper Oligocene to the Pliocene.

The form described from the Middle Miocene occurs in Czechoslovakia and Poland in the Miocene. In Hungary it was collected in the "u" layers in the brickyard at Eger besides in single specimens in massula, too (samples 21. and 8.). Further it was found in the Lower Badenian — Szokolya 3, 40.0–40.8 m, Várpalota 317, 102.9–103.1 m and in the Upper Pannonian — Naszály 1, 15.1–17.0 m and 51.0–54.3. The specimens are of 20–23 μ size.

Stereisporites sg. **Stereisporites minor** (RAATZ 1937) W. KR. 1959 ssp.
microstereis W. KR. et SONTAG 1963

Plate III. Fig. 8–9.

1963. *Stereisporites (Stereisporites) minor microstereis* n. subfsp. — W. KR., Atlas III. p. 38. Taf. 2. 1–8.

One specimen found, size 23 μ , in the Eggenburgian — Szászvár 8, 26.0–27.0 m. W. KRUTZSCH and SONTAG described the species from the Upper Oligocene — Lower Miocene.

Remark: The specimen published as *Stereisporites (Stereisporites) cyclus* W. KR. 1963 ssp. *microcyclus* W. KR. 1963 — (NAGY 1969, p. 86.) proved during revision to be this species.

Stereisporites sg. **Stereisporites pseudopsilatus** W. KR. 1959 ssp. **pseudopsilatus**

Plate III. Fig. 12–13.

1949. *Sphagnales* — KREMP, Palaeontographica 90. B. 1–3. p. 57. Taf. III. 7–8.

1959. *Stereisporites pseudopsilatus* n. fsp. — W. KR., Geologie, Beih. 21/22. p. 72.

1963. *Stereisporites (Stereisporites) pseudopsilatus pseudopsilatus* W. KR. 1959 b. — W. KR., Atlas III. Taf. 6. 1–4.

The Miocene *Sphagnum* spore from Konin published by KREMP — was determined by KRUTZSCH (1959) and 1963 it was given a diagnosis. Its age is considered to be Mio-Pliocene, mentioning further occurrences from the Middle Miocene. In Hungary, some specimens of 28–34 μ size were found in the Upper Pannonian — Tata (TVG) 27, 8.5–18.3 m, Naszály 1, 104.0–106.0 m.

Stereisporites sg. **Stereisporites pseudopsilatus** W. KR. 1963 ssp.
validus (DOKT.-HREBN. 1960) W. KR. 1963

Plate III. Fig. 14.

1960. cf. *Sphagnum* — *Sporites stereoides* R. POT. et VEN. f. *valida* — DOKT.-HREBN., p. 224. Tabl. XV. Fig. 3.
1963. *Stereisporites* (*Stereisporites*) *pseudopsilatus validus* (DOKT.-HREBN. 1960) n. c. — W. KR., Atlas II. p. 48., Taf. 6.

The form described by DOKTOROWICZ-HREBNICKA (1960) is mentioned by KRUTZSCH from the Pliocene. In Hungary specimens (30–35 μ) were found in the Upper Pannonian — Naszály 1, 82.0–93.4 m, in the Pannonian — Vásárosnamény 7, 787.0–787.7 m and in the Lower Badenian — Nógrád-szakál 2, 122.0–123.0 m.

Stereisporites sg. **Stereisporites stereoides** (R. POT. et VEN. 1934) TH. et PF. 1953 ssp.
stereoides

Plate III. Fig. 10–11.

1934. *Sphagnaceae?* *Sporites stereoides* n. sp. — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 11., Taf. 1. Fig. 4.
1937. *Sphagnum-sporites stereoides* R. POT. et VEN. — RAATZ, Abh. Preuss. Geol. L. A. N. F. 183. p. 9. Taf. I. Fig. 4.
1953. *Stereisporites stereoides* (R. POT. et VEN.) n. c. — TH. et PF., Palaeontogr. 94. B. 1–4. p. 53. Taf. I. Fig. 64–73. pro parte
1956. *Sphagnumsporites stereoides* (POT. et VEN. 1934) RAATZ 1937 — R. POT., Synopsis I. p. 17. Taf. I. Fig. 7.
1963. *Stereisporites* (*Stereisporites*) *stereoides* (R. POT. et VEN. 1934) TH. et PF. 1953 fssp. *stereoides* — W. KR., Atlas III. p. 42., Taf. 3. Fig. 1–30.

In 1934 R. POTONIÉ and VENITZ did not fix the holotype. This was done later by R. POTONIÉ (in 1956). In 1953 the species considered *Sphagnaceae* were united artificially by THOMSON et PFLUG into a morphological unit, taking as generotype this species. W. KRUTZSCH gave during the study of the genus a new diagnosis of the species (1963), accepting the holotype by R. POTONIÉ (for details, see W. KRUTZSCH 1963).

German and other Central-European authors mention the species from both the Miocene and the Pliocene. Well preserved specimens were found in the Pliocene of Hungary — Bogács 9/5, 151.0–151.5 m, Gérce 1, 80.0–85.0 m, Várkesző 1, 38.0–39.0 m. The diameter was 24–26 μ .

Stereisporites sg. **Stereisporites stereoides** (R. POT. et VENITZ 1934) TH. et PF. 1953 ssp.
stereis (W. KR. 1959) W. KR. 1963

Plate III. Fig. 15–16.

1959. *Stereisporites stereis* n. fsp. — W. KR., Geol., Beih. 21/22 p. 71.
1963. *Stereisporites* (*Stereisporites*) *stereoides stereis* (W. KR. 1959) n. c. — W. KR., Atlas III. p. 42.

In 1959 W. KRUTZSCH chose from THOMSON et PFLUG 1952 Plate I. Fig. 9. and 1953 Plate I. Fig. 66. (enlarged by 500 \times) as holotype. In 1963 gave it a diagnosis as a subspecies of *Stereisporites stereoides*, based on a more expressed area line and a more apparent presence of microstructure.

German researches found it to occur from the Upper Paleocene to the Middle Miocene. In Hungary it was recovered in the Upper Pannonian — Gérce 1, 76.5–80.0 m resulting in a single but perfectly preserved specimen.

Stereisporites sg. **Stereisporites stictus** (WOLFF 1934) W. KRUTZSCH 1959 ssp. **stictus**

Plate IV. Fig. 4.

1934. *Sporites stictus* n. sp. — WOLFF, Arb. Inst. Paläobot. 5. p. 65., Taf. 5. Fig. 31.
1959. *Stereisporites* cf. *stictus* (WOLFF 1934) n. c. — W. KR., Geol., Beih. 21/22. p. 74.
1963. *Stereisporites* (*Stereisporites*) *stictus* (WOLFF 1934) W. KR. 1959b, subfsp. *stictus* — W. KR., Atlas III. p. 50. Taf. 7. 4–12.

As WOLFF described and illustrated the holotype in 1934, the denomination by KRUTZSCH in 1959 has only importance as to nomenclature. On my part I do not consider the specimen published by KRUTZSCH in the Atlas III. Pl. 7. Fig. 1–3. as belonging to this species — at least on the basis of the picture. Describing the holotype WOLFF mentioned a dehiscence line up to 1/3 of the radius

without areal ornamentation. This was mentioned again by KRUTZSCH in the new diagnosis. These specimens were found in the Pliocene.

The spore found in the Pannonian — Bogács 9/5, 147.0–150.0 m is 35 μ , the form found in the Upper Pannonian — Pula 3, 14.0–14.5 m has a diameter of 37 μ . W. KRUTZSCH determines the measurement range as 30–35 μ . The holotype is described by WOLFF as having 28 μ .

Stereisporites sg. **Stereisporites stictus** (WOLFF 1934) W. KR. 1963 ssp.
woelfersheimensis (W. KR. 1959) W. KR. 1963

Plate IV. Fig. 6.

1959. *Stereisporites woelfersheimensis* n. fsp. — W. KR. Geol., Beih. 21/22. p. 72.

1963. *Stereisporites (Stereisporites) stictus woelfersheimensis* (W. KR. 1959b) n. c. — W. KR., Atlas III. p. 50. Taf. 7. Fig. 13–20.

W. KRUTZSCH classified here in 1959 the spores from the Pliocene, mentioned by KIRCHHEIMER as *Sphagnum*. Further finds came also from the Pliocene (KRUTZSCH 1963 l. c.). The specimen collected from the Upper Pannonian — Pula 3, 13.0–13.5 m, has a diameter of 38 μ and according description of W. KRUTZSCH has a 3–4 μ thick cingulate wall.

Stereisporites sg. **Stereisporites cf. tristereoides** W. KRUTZSCH 1963

Plate IV. Fig. 5.

1963. *Stereisporites (Stereisporites?) tristereoides* n. fsp. — W. KR., Atlas III. p. 46. Taf. 5. 10–12.

One specimen, size 30 μ , — as secondarily crumpled taken as “cf.” — found in the Upper Pannonian — Naszály 1, 14.9–15.1 m. W. KRUTZSCH described it from lacustrine Pliocene layers of Germany. In the description of W. KRUTZSCH the question mark after the subgenus may be neglected as according the diagnosis whether it has a microstructure or not it belongs to *Stereisporites* sg. *Stereisporites* (Atlas III. p. 10.).

Stereisporites sg. **Stereigranisporis granulus** W. KRUTZSCH et SONTAG 1963

Plate IV. Fig. 7–8.

1963. *Stereisporites (Stereigranisporis) granulus* n. fsp. W. KR. et SONTAG — W. KR., Atlas III. p. 86. Taf. 24. 13–16.

The species has a size of 22–25 μ , it occurred in the Lower Badenian Schlier — Hidas 53, 757.0–758.0 m (NAGY 1969, p. 86–87.) and in the Upper Pannonian — Várkesző 1, 15.0–16.0 m, Naszály 1, 32.8–34.9 m. KRUTZSCH et SONTAG described the species from the Middle Miocene.

Stereisporites sg. **Stereigranisporis semigranuloides** W. KR. 1963

Plate IV. Fig. 9

1963. *Stereisporites (Stereigranisporis) semigranuloides* n. fsp. — W. KR., Atlas III. p. 88. Taf. 25. 1–2.

One specimen, size 29 μ , found in the Ottnangian — Várpalota 133, 204.0–208.0 m. W. KRUTZSCH described the species from the Pliocene but from a moraine, thus its redeposition is probable.

Stereisporites sg. **Stereigranisporis semigranulus** W. KR. 1963

Plate IV. Fig. 10–11.

1963. *Stereisporites (Stereigranisporis) semigranulus* n. fsp. — W. KR., Atlas III. p. 86. Taf. 24. 23–33.

Two specimens — 21–24 μ — found in Várkesző 1, 34.0–35.0 m in the upper Pannonian.

Stereisporites sg. **Distancoraesporis crassiancoris** W. KR. 1963

Plate V. Fig. 1.

1963. *Stereisporites (Distancoraesporis) crassiancoris* n. fsp. — W. KR., Atlas III. p. 64. Taf. 14. 7—14.

Some specimens found — size 29—32 μ — in Sarmatian — Cserhátszentiván 1, 183,7—185.0 m and in the Upper Pannonian — Naszály 1, 104.0—106.0 m. The species was described by KRUTZSCH from the Pliocene of Germany.

Stereisporites sg. **Distancoraesporis huenfeldensis** W. KR. 1959

Plate V. Fig. 2.

1954. *Sphagnum* sp. — LESCHIK, Senck. 35. 3/4. H., p. 248. Taf. 1. Fig. 1.

1959. *Stereisporites huenfeldensis* n. fsp. — W. KR., Geologie, Beih. 21/22. p. 72.

1963. *Stereisporites (Distancoraesporis) huenfeldensis* — W. KR., Atlas III. 58. Taf. 11. 15—21.

The species had a 23 μ diameter when found in the Upper Pannonian — Beremend 9, 76.0 m. LESCHIK found it also in Pliocene layers of Germany.

Stereisporites sg. **Distancoraesporis mecklenburgensis** W. KR. 1963

Plate V. Fig. 3—4.

1963. *Stereisporites (Distancoraesporis) mecklenburgensis* n. fsp. — W. KR., Atlas III. p. 56. Taf. 1. 1—23.

Some specimens found, 24—26 μ , in the Lower Pannonian — Tata (TVG) 27, 8.5—18.3 m. W. KRUTZSCH mentioned it as frequent in the Pliocene in Germany.

Stereisporites sg. **Distancoraesporis punctoides** W. KR. 1963

Plate V. Fig. 5.

1963. *Stereisporites (Distancoraesporis) punctoides* n. fsp. — W. KR., Atlas III. p. 64. Taf. 14. 15—18.

Specimens of 32—35 μ found in the Lower Badenian — Szokolya 2, 42.3—43.1 m and in the Lower Pannonian — Naszály 1, 131.5—150.0 m. W. KRUTZSCH described the species from the Pliocene of Germany.

Stereisporites sg. **Distgranisporis granisteroides** W. KR. et SONTAG 1963

Plate V. Fig. 6.

1963. *Stereisporites (Distgranisporis) granisteroides* n. fsp. W. KR. et SONTAG — W. KR., Atlas III. p. 82, Taf. 22. 5—13.

Some specimens — 24—25 μ — found in the Lower Pannonian — Szederkény 8303, 63.6—67.0 m and Rábasömjén III. 1817.0—1819.5 m. W. KRUTZSCH described specimens with 25—28 μ from Pliocene and Miocene layers.

Stereisporites sg. **Distgranisporis minimoides** W. KR. 1963

Plate V. Fig. 7—8.

1963. *Stereisporites (?Distgranisporis) minimoides* n. fsp. — W. KR., Atlas III. p. 82. Taf. 22. 1—4.

W. KRUTZSCH in describing small, 20—21 μ , moss spores from the Pliocene used question mark when united them with this subgenus. On the drawing (p. 80. Abb. 15/46) distinct verrucae are visible. The Hungarian specimen, 22 μ , came from the Upper Pannonian — Pula 3, 13.5—14.0 m. W. KRUTZSCH found the species in a Pliocene moraine.

Stereisporites sg. **Distverrusporis cingulatus** W. KR. 1963 ssp. **cingulatus**

Plate V. Fig. 9—10.

1963. *Stereisporites (Distverrusporis) cingulatus cingulatus* n. fsp. et subfsp. — W. KR., Atlas III. p. 78. Taf. 20. 1—11.

Some specimens, diameter 34—35 μ , encountered in the Sarmatian — Alsóvadász 1, 441.0—448.0 m and in the Lower Pannonian — Tata (mapping) 26, 14.6—16.8 m. W. KRUTZSCH described this form from the Pliocene of Germany.

Stereisporites sg. **Distverrusporis cf. cingulatus** W. KR. 1963. ssp. **cingulatus**

Plate V. Fig. 11—13.

1963. *Stereisporites (Distverrusporis) cingulatus cingulatus* n. fsp. et subfsp. — W. KR., Atlas III. p. 78. Taf. 20. 5—7.

One specimen, 39 μ , found in the Lower Pannonian — Tata (mapping) 26, 45.0 m. Its dimensions fit into the original description; it shows, however, little ornamentation. Therefore it was considered "cf.". W. KRUTZSCH described the species from the Pliocene of Germany.

Subclassis: *Bryidae*

Ordo: *Pottiales*

Familia: *Encalyptaceae*

Genus: *Encalyptaesporites* NAGY 1968

1968. *Encalyptaesporites* n. g. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1—2) p. 129.

Generotypus: *Encalyptaesporites pliocenicus* NAGY 1968

Encalyptaesporites pliocaenicus NAGY 1968

Plate V. Fig. 14—16., Plate VI. Fig. 1—3.

1968. *Encalyptaesporites pliocenicus* n. gen. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1—2) pp. 129—130. Pl. VIII. 1., 3.

Beside the generotype, 43 μ , from a Pannonian sequence — Hidas 53, 132.5—134.8 m some others were found in the Lower Badenian, one 37 μ others 32 μ , — Szokolya 2, 48.7—49.5 m and 47.16—47.9 m. The smaller specimens have smaller verrucae, 2—3 μ , and the germination aperture is cca. 15 μ .

The original diagnosis applied the term "trilete" not properly, the holotype being at best subtriangular or in the case of specimens from Szokolya 2, rather roundish.

Ordo: *Funariales*

Familia: *Ephemeraceae*

Genus: *Ephemerisporites* NAGY 1968

1968. *Ephemerisporites* n. gen. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1—2) pp. 130—131.

Generotypus: *Ephemerisporites borsodensis* NAGY 1968

Ephemerisporites borsodensis NAGY 1968

Plate V. Fig. 17—21.

1968. *Ephemerisporites borsodensis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (1—2) p. 131. Pl. V. 2—3.

The holotype aside the species was recorded from the southern flank of Vértes Mountains to Northern Hungary in the following boreholes: Karpathian — Fehérvárcsurgó 160, 310.7—313.8 m, Sarmatian — Cserhátszentiván 1, 101.6—104.0 m and 183.7—185.0 m, Upper Pannonian — Naszály 1, 54.5—60.0 m.

Familia: Incertae sedis

Genus: *Szokolyasporites* n. gen.

Generotypus: *Szokolyasporites bryophytoides* n. gen. n. sp.

Diagnosis: Roundish, azonolete, atreme spores. The ectexine is smooth, the exine is thick, intrafoveolate.

Differential diagnosis: The shape, intrafoveolate structure and lacking trilete mark differentiate it from the genus *Foveotriletes* VAN DER HAMMEN 1954 ex R. POTONIÉ 1956.

Szokolyasporites bryophytoides n. gen. n. sp.

Plate VI. Fig. 4—8.

Holotypus: Szokolya 2, sample No 87, slide No 1, 110.6×13.5, Plate VI. Fig. 4—8.

Locus typicus: Szokolya 2, 82.1—83.9 m

Stratum typicum: Badenian clay-marl

Diagnosis: Roundish, azonolete, atreme spore. The exine is thick, cca. 3 μ , the ectexine is intrafoveolate. The intrafoveolate structure forms a reticulum-like surface, made up of densely situated foveola. The germination aperture is rupture-like, the longer diameter of the leptoma is cca. 14 μ . The diameter of the holotypus is 36 μ .

Differential diagnosis: The shape of the species and the germination aperture resemble the genus *Ephemerisporites* but the exine structure is different.

One specimen found. Botanically — morphologically — it resembles the *Bryophyta* phylum.

PHYLUM: PTERIDOPHYTA

Regarding *Pteridophyta* spores my view was published in 1969 (p. 87.). In the present study, too, particular attention was paid to this taxonomically important group. In various facies they may be used as association indicators and are valuable in stratigraphy. Their preservation is generally secured by the strong exine.

In Europe they are reasonably well-known, through studies of KRUTZSCH, this fact being a motivation to registrate his morphological groups in the Hungarian material, too.

Classis: *Lycopsida* or *Lycopodiineae*

Ordo: *Lycopodiales*

Familia: *Lycopodiaceae*

Genus: *Lycopodiumsporites* THIERGART 1937* ex DELCOURT et SPRUMONT 1955

1937. *Lycopodiumsporites* aff. *agathoecus* R. POT. — THIERGART, Geol. Jb. 58. p. 293.

1955. *Lycopodiumsporites* THIERG. 1937 — DELC. et SPRUM., Mém. Soc. Belge de Géol. N. S. 4—5. pp. 31—32.

* The proper year is not 1938 but 1937, the reprint's year of publication (see R. POTONIÉ, Synopsis III. p. 99.)

1963. *Lycopodiumsporites* THIERG. ex DELC. et SPRUM. 1955 — DETTMAN, Proc. Roy. Soc. Vic. 77. 1. pp. 43—44.

Generotypus: *Lycopodiumsporites agathoecus* (R. POT. 1934) THIERG. 1937 ex DELC. et SPRUM. 1955

The species *Sporites agathoecus*, described in 1934 by R. POTONIÉ, is allocated by THIERGART to the *Lycopodiaceae* family (1937, p. 293.). THIERGART was the first to introduce the generic name *Lycopodiumsporites*. However, as it did not comply with the Rules of the Botanical Code (Art. 42. 2) it is not valid. DELCOURT et SPRUMONT (1955) attached a generic diagnosis to the genus which thus became valid. W. KRUTZSCH (1963) detailed at length the morphological and nomenclatural aspects of *Lycopodiaceae* (Atlas II. 1963. p. 5. onwards and Atlas IV—V. 1967. p. 15.) and applied an artificial morphological name.

***Lycopodiumsporites altranftensis* (W. KR. 1963) n. c.**

Plate VI. Fig. 9—11.

1963. *Retitriletes altranftensis* n. fsp. — W. KR., Atlas II. p. 92—93. Taf. 27. 4—8.

It is mentioned by W. KRUTZSCH as a rare species from the Lower and Middle Miocene of Germany. In Hungary, it was found in the Egerian — Fót 1, 349.5—354.0 m, size 35 μ .

***Lycopodiumsporites pseudoclavatus* (W. KR. 1963) n. c.**

Plate VI. Fig. 12—15.

1963. *Retitriletes pseudoclavatus* n. fsp. — W. KR., Atlas III. p. 110. Taf. 36. 1—13.

In Hungary it was described by me from the mine Petőfibánya, deep shaft as *Lycopodium clavatum* typus RUDOLPH (NAGY 1958, pp. 30—31.) size 34 μ . Later it was found in the Upper Pannonian again — Gérce 1, 34.5—37.5 m and Várkesző 1, 17.0—18.0 m. These latter two specimens have 30 μ diameter. W. KRUTZSCH described the species from the Upper Pliocene.

***Lycopodiumsporites reticuloides* (W. KR. 1963) n. c. ssp. *reductoides* W. KR. 1963**

Plate VI. Fig. 16—21.

1963. *Retitriletes reticuloides reductoides* n. subfsp. — W. KR., Atlas II. p. 104. Taf. 33. 1—6.

Some specimens, diameter 45—46 μ , found in the Lower and Upper Pannonian — Naszály 1, 116.5—131.5 m.

Lycopodiumsporites rueterbergensis* (W. KR. 1963) n. c. ssp. *rueterbergensis

Plate VII. Fig. 1—3.

1963. *Retitriletes rueterbergensis rueterbergensis* n. fsp. et subfsp. — W. KR., Atlas II. p. 98. Taf. 30.

The species was found by KRUTZSCH in the Pliocene of Germany and connected botanically to the *Lycopodium complanatum* form group. In Hungary one 36 μ size specimen was found, in the Mt. Tokaj, Pusztafalu shaft N° 3 — Upper Pannonian.

Genus: *Selagosporis* W. KRUTZSCH 1963

1963. *Selagosporis* n. fgen. — W. KR., Atlas II. p. 23—25.

Generotypus: *Selagosporis selagoides* W. KR. 1963

Selagosporis sp. A.

Plate VII. Fig. 4—5.

1963. *Selagosporis* fsp. A. — W. KR., Atlas II. p. 138. Taf. 50. 1—4.

One spore found, 28 μ , in Badenian coal-bearing clayey marl — Alsóvadász 1, 737.8—744.1 m. In Germany and in the USSR it was collected from Miocene brown coal seams.

Genus: *Verrucingulatisporites* KEDVES 1961

Verrucingulatisporites murireticulatus NAGY 1963

Plate VII. Fig. 6—9.

1963. *Verrucingulatisporites murireticulatus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. p. 394. Pl. IV. Fig. 24., 26.

Some spores, diameter 43—55 μ , recorded from the Eggenburgian — Szászvár 8, 26.0—27.0 m, Püspökhatvan 4, 233.0—236.0 m and from the Karpathian — Zengővárkony 59, 60.9—63.0 m, Litke 17, 216.0—218.0 m.

Ordo: Selaginellales

Familia: Selaginellaceae

Genus: *Lusatisporis* W. KR. 1963

1963. *Lusatisporis* n. fgen. — W. KR., Atlas III. p. 21.

Generotypus: *Lusatisporis punctatus* W. KR. 1963

The species of this genus have been encountered mostly in North Hungary. The southernmost occurrence was in the southern foreland of the Vértes Mountains in borehole Tengelic 1. According to W. KRUTZSCH—referring of different authors—the fossil genus is connected with the group of *Selaginella sibirica*.

Lusatisporis perinatus W. KR. 1963

Plate VII. Fig. 11—12.

1963. *Lusatisporis perinatus* n. fsp. — W. KR., Atlas III., p. 98. Taf. 30. 10—11.

It is a rare species, 42—56 μ , found in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, sample 16. and 5., in the Upper Badenian — Tengelic 2, 751.0—755.0 m, and in the Lower Pannonian — Tata (TVG) 26, 7.0—9.0 m. It is probably a secondarily redeposited in the younger layers. W. KRUTZSCH described it from the Middle Miocene of Germany.

Lusatisporis punctatus W. KR. 1963

Plate VII. Fig. 10.

1963. *Lusatisporis punctatus* n. fsp. — W. KR., Atlas III. p. 98., Taf. 30. 1—9.

Ten specimens, 41—49 μ , found in the coal-bearing section of the Ottnangian — boreholes Alsóvadász 1, 854.0—1034.6 m and Jákfalva 16, coal seam No. 5.

Lusatisporis undulosus NAGY 1973

Plate VII. Fig. 13—14.

1963. *Lusatisporis undulosus* n. sp. — NAGY, Acta Bot. Ac. Sci. Hung. 19. (1—4) p. 454., Pl. I. Fig. 4—5.

Beside the holotype and the accompanying specimens of the Ottnangian sample of borehole Alsóvadász 1, 1029.0—1034.6/5 m no other forms have been found.

Genus: *Echinatisporis* W. KR. 1959

1959. *Echinatisporis* n. fgen. — W. KR., Geol., Beih. 21/22. p. 132.

Generotypus: *Echinatisporis longechinus* W. KR. 1959

***Echinatisporis bockwitzensis* W. KR. 1963**

Plate VIII. Fig. 7.

1963. *Echinatisporis bockwitzensis* n. fsp. — W. KR., Atlas III. p. 110. Taf. 36. 1—5.

Some specimens, 45 μ , found in the Egerian — Fót 1, 352.5—354.0 m and 355.5—357.5 m. Although they are rather unclean, they may be considered to belong to this species on the basis of their size and the distribution of echini. The echini are a bit stouter than on the holotype described by W. KRUTZSCH, resembling more the echini on the second published specimen (Taf. 36. 4—5). It is a rare species.

***Echinatisporis cserhatensis* n. sp.**

Plate VIII. Fig. 10—13.

Holotype: Cserhátszentiván 1, sample N° 68, slide N° 1, 102×13.4, Plate VIII. Fig. 10—11.

Locus typicus: Cserhátszentiván 1, 163.0—165.0 m

Stratum typicum: Sarmatian; grey silt with fine sand

Diagnosis: The spore is azonotrilete. In polar position it is triangular, with slightly concave sides and rounded corners. Both sides are covered by echini, with a torus along the dehiscence line.

The whole diameter of the holotype is 48 μ . The maximum diameter of the body is 36 μ , the echini are 3—5 μ long, at the base 4—5 μ broad becoming more or less bluntly peaked. The distance between the echini is variable, cca. 1—4 μ , in some cases, however, 2—3 echini are united at their base. The echini are proximally slightly shorter. The nexine is 1.5—2 μ thick under the echini. The dehiscence line is thin, reaching almost to the poles.

Both sides of the dehiscence line rays are accompanied by a flat microverrucate torus, measuring cca. 3 μ , which is slightly undulating on the outer side.

Differential diagnosis: As to size and shape it resembles *Echinatisporis echinoides* W. KRUTZSCH 1963 (Atlas III. p. 114.) and its subspecies. The main difference is the broad torus on the proximal side. The echini are longer and wider, too. The whole form is more robust than *E. echinoides*.

Beside the holotype an other specimen, 44 μ , was found in Cserhátszentiván 1, 101.6—104.0 m.

***Echinatisporis cycloides* W. KR. 1963**

Plate VIII. Fig. 8—9.

1963. *Echinatisporis cycloides* n. fsp. — W. KR., Atlas III. p. 108., Taf. 35. 7—10.

KRUTZSCH described the species from the Chattian as being over 45 μ . The specimens in Hungary occurred in younger layers: Badenian — Várpalota 317, 100.9—101.1 m, Middle Miocene — Zobákpuszta (NAGY 1969, p. 89.) and Lower Pannonian — Tata (TVG) 26, 30.0—33.0 m.

***Echinatisporis echinoides* W. KR. et. PACLT. ssp. echinoides**

Plate VIII. Fig. 14—15;

1963. *Echinatisporis echinoides echinoides* n. fsp. et subfsp. — W. KR., Atlas III. p. 114. Taf. 38. 1—5.

The species, 34—39 μ , was found in the Lower Badenian — Tengelic 2, 817.0—820.0 m, in the Middle Miocene — Paks 2, 740.2—740.4 m, in the Eggenburgian — Budajenő 2, 538.4—539.4 m and in the Egerian — Fót 1, 288.0—290.5 m.

***Echinatisporis fotensis* n. sp.**

Plate VIII. Fig. 16—17.

Holotype: Fót 1, sample N° 21, slide N° 1, 20.2×111.1, Plate VIII. Fig. 16—17.

Locus typicus: Fót 1, 294.0—301.0 m

Stratum typicum: Egerian; grey silt with fine sand

Diagnosis: A trilete spore in polar view rounded, with small echini. On the proximal side the thin dehiscence line reaches the equator. The exine is thin, 1 μ . The cca. 1 μ echini cover the proximal side more densely than the distal side where their length is cca. 2–3 μ , the base is broad, cca. 1.5 μ , the peak is abrupt.

The holotype is 28 μ .

Differential diagnosis: This species is near, due to its small size, to the *E. miocaenicus* W. KR. et SONTAG 1963 (Atlas III. p. 110.) but the echini are much smaller, thinner and sparser than in the latter.

Only one specimen has been found.

***Echinatisporis hidasensis* NAGY 1969**

Plate IX. Fig. 1–5.

1969. *Echinatisporites hidasensis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 90–91., T. 13. Fig. 15–16.

This species, 38–39 μ , was found in the Mecsek Mountains in the Karpathian, Badenian, Sarmatian layers, one specimen in each. In Northern Hungary it occurred in the Egerian — Eger, Wind brickyard 17.6–18.3 m, in the Karpathian — Litke 17, 256.0–258.0 m, in the Lower Badenian — Szokolya 3, 44.0–45.5 m.

***Echinatisporis longechinus* W. KR. 1959**

Plate IX. Fig. 6–8.

1959. *Echinatisporis longechinus* n. fsp. — W. KR., Geol., Beih. 21/22. p. 133. Taf. 20. Fig. 217–218., Taf. 21. Fig. 219., Taf. 22. Fig. 229–233.

The species was described by KRUTZSCH from the Middle Eocene of Geiseltal, but found later in the Chatian, too. Some specimens, 37–55 μ , were found in the Egerian — Fót 1, 237.5–238.0 m, in the Eggenburgian — Fót 1, 162.0–164.0 m, Budajenő 2, 556.5–557.7 m, in the Lower Badenian — Hidas 53, 735.0–738.0 m, Szokolya 2, 107.9–108.0 m, in the Sarmatian — Cserhátszentiván 1, 136.0–138.0 m. The fragmentary specimens from the Badenian and Sarmatian may have been redeposited.

***Echinatisporis mecsekensis* NAGY 1969**

Plate IX. Fig. 11–13.

1969. *Echinatisporites mecsekensis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 90. T. 13., Fig. 7–8.

Some specimens collected, 31–41 μ , from the Egerian — Eger, Wind brickyard x_2 layer, from the Ottnangian (holotype) — Zengővárkony 45, 16.0–16.4 m, from the Karpathian — Tekeres 1, 855.0–859.0 m. It may possibly belong to the *Selaginellaceae* (NAGY 1969, p. 90.).

***Echinatisporis microechinatus* W. KR. 1963**

Plate IX. Fig. 9–10.

1963. *Echinatisporis microechinatus* n. fsp. — W. KR., Atlas III. p. 106., Taf. 34. 1–9.

The specimen, 47 μ , is by 2 μ bigger than the holotype and its echini are longer. It comes from the Eggenburgian — Püspökhatvan 4, 278.0–281.0 m. KRUTZSCH found it in the lower Upper Oligocene and considered it to be rare.

***Echinatisporis microechinoides* W. KR. 1963**

Plate IX. Fig. 14–15.

1963. *Echinatisporis microechinoides* n. fsp. W. KR., Atlas III. p. 116. Taf. 39. 1–14.

Specimens of 35 μ were found in the Karpathian — Tekeres 1, 870.0 m, in the Sarmatian — Lak I, 353.7–357.7 m and at the Pannonian-Pontian boundary — Naszály 1, 106.0–112.0 m.

Echinatisporis minimus n. sp.

Plate IX. Fig. 16—18.

Holotype: Szászvár 8, sample N° 2, slide N° 1., 45.5×102.8, Plate IX. Fig. 16—18.

Locus typicus: Szászvár 8, 26.0—27.0 m

Stratum typicum: Eggenburgian, greenish-grey, sandy marl

Diagnosis: The spore is small, roundish, azonotrilete. The wall is thin. Evenly spaced echini with broad base and abrupt peak make up the ornamentation, due to them the narrow, short dehiscence line is hardly discernible.

Measurements: Diameter 22 μ , exine thickness 1 μ , echini base diameter 3—4 μ , height 2—2.5 μ , dehiscence line 4 μ .

Differential diagnosis: In size it is close to the species *E. mecsekensis* NAGY 1969, but the latter is bigger, with much smaller echini. The *E. echinoides* W. KRUTZSCH 1963 ssp. *grausteinensis* W. KR. 1963 is also similar, except for the bigger size and thinner echini.

Remark: The species was mentioned by me as *Trilites* sp. in 1969 (p. 106., Pl. XXV. Fig. 2—4.). One other specimen, 24 μ , was found in the Lower Badenian — Szokolya 2, 51.1—51.9 m.

Echinatisporis miocaenicus W. KR. et SONTAG 1963

Plate IX. Fig. 19—21.

1963. *Echinatisporis miocaenicus* n. fsp. — W. KR., Atlas III. p. 110. Taf. 36. Fig. 6—13.

Specimens of 38—40 μ full diameter were found in the Egerian — Fót 1, 328.0—332.8 m, in the Karpathian — Litke 17, 226.0—228.0 m, in the Lower Badenian — Nógrádszakál 2, 99.5—101.0 m, in the Upper Badenian — Tengelic 2, 742.0—746.0 m.

Echinatisporis spinosus n. sp.

Plate X. Fig. 1—4.

Holotype: Szokolya 2, sample N° 33., slide N° 1., 106.5×7.5, Plate X. Fig. 1—4.

Locus typicus: Szokolya 2, 44.0—45.5 m

Stratum typicum: Lower Badenian; grey clayey marl

Diagnosis: It is a trilete miospore, rounded triangular, the sides are convex, sparsely ornamented by echini. The echini are 8—9 μ long, on the base 4—5 μ broad, tapering to the end. In this respect they are variable, some taper abruptly, others gradually. The exine is smooth between the echini, 2—2.5 μ thick, double-layered which are almost equally thick. The dehiscence line is thin, ca. 2/3 of the radius.

Measurements: The full diameter is 41 μ , the body 33 μ .

Differential diagnosis: It reminds *E. longechinus* W. KR. 1959 (W. KR. 1959, p. 133.) due to its remarkable and sparse echini. It differs from it, however, by its less rounded shape, the much stouter and shorter echini, the smooth exine and the shorter dehiscence line.

Until now one specimen has been found.

Echinatisporis szaszvarensis NAGY 1969 emend.

Plate X. Fig. 5—7.

1969. *Echinatisporites szaszvarensis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 89. T. 13., F. 6., 9.

Diagnosis emendation: The spore is roundish, covered by spinae. The spines are 5—6 μ broad at the base, 4—5 μ long with tapering or rounded end. Among the echini small grana are visible. The dehiscence line is thin.

Remark: The 37 μ spore occurred in one specimen in Szászvár 8, 437.8—438.5 m. During the revision it became clear that the diagnosis needs an amendment.

Echinatisporis variabilis NAGY 1969

Plate X. Fig. 8—9.

1969. *Echinatisporites variabilis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 90—91.

Besides the holotype (53 μ , Hidas 53, 669.2—669.8 m) other specimens, fully identical with it in size and morphology, were found in the same Hidas 53, 667.2—669.2 m sample, i.e. Badenian and Egerian — Fót 1, 209.5—209.9 m.

Echinatisporis verruechinus W. KR. 1959

Plate X. Fig. 10.

1959. *Echinatisporis verruechinus* n. fsp. — W. KR., Geol., Beih. 21/22 p. 135. Taf. 23. 243—249.

One 34 μ specimen was found in the Egerian — Fót 1, 355.5—357.0 m. W. KRUTZSCH described it from Lutetian of Germany.

Echinatisporis wiesaënsis W. KR. 1963

Plate X. Fig. 11—14.

1963. *Echinatisporis wiesaënsis* n. fsp. — W. KR., Atlas III., p. 112. Taf. 37. 1—7.

Two specimens were found in the Lower Badenian of Northern Hungary — Szokolya 2, 45.5—46.3 m, Nógrádszakál 2, 121.2—122.0 m. KRUTZSCH described it as a rare species from the Middle Miocene layers.

Echinatisporis sp. I.

Plate X. Fig. 15—16.

1963. *Echinatisporis* fsp. I. — W. KR., Atlas III. p. 116. Taf. 39. 15—20.

In the Lower Badenian — Tengelic 2, 835.7—839.0 m a 32 μ spore was found, similar to the one described by KRUTZSCH (1963, p. 116. Taf. 39. Fig. 15—20.) from the Middle Miocene of Germany as *Echinatisporis* fsp. I.

Echinatisporis sp. III.

Plate X. Fig. 17.

A Pliocene sample — Kapolcs 2, 47.7 m — yielded a 34 μ trilete, echinate spore with slightly rounded poles, densely covered on the surface by 1—1.5 μ long echini. The dehiscence line is straight and reaches the equator. The crumpled specimen, being poorly preserved, could not be determined with certainty.

Genus: *Megastachysporites* n. g.

Genotype: *Megastachysporites ladanyensis* n. g. n. sp.

Diagnosis: The spores are trilete, the poles rounded, the sides convex. The distal side is covered by a membrane forming thin, transparent folds. The folds unite to form muri-like, sinuous lathes determining the shape of the spore and may appear even proximally. On the proximal side the dehiscence line is thin and it reaches the poles. Both sides of the spore, but especially the proximal apex, are finely ornamented, scabrate, granulate, etc.

Differential diagnosis: Some species from the genus *Camarazonosporites*, as *C. decorus* (WOLFF 1934) W. KR. 1959, *C. wilsnackensis* W. KR. 1963, resemble *Megastachysporites* n. g., the exine is, however, quite membrane-like, whereas in the former its structure is hamulate.

Remark: On the basis of the description and illustrations of the recent *Selaginella megastachys* group (E. M. KNOX 1950, p. 250—251 and Plate XII. Fig. 93.) the fossile *Megastachysporites* n. g. belongs to this group.

Megastachysporites ladanyensis n. g. n. sp.

Plate VIII. Fig. 1–6.

Holotype: Jászladány 1, sample N° 19, slide N° 1., 116.8 × 14.7, Plate VIII. Fig. 1–6.

Locus typicus: Jászladány 1, 188.43–188.65 m

Stratum typicum: Middle Pleistocene; clay with silt

Diagnosis: It is a trilete spore, the poles are rounded, the sides sinuously convex, the distal side is covered by a thin transparent folding membrane. The membrane is sinuous, reinforced with muri-like lathes. The same structure covers ca. half of the proximal radius. The thin dehiscence line runs proximally to the equator. The whole surface is moderately covered by granules.

Measurements: The diameter is 39 × 34 μ, the membraneous folds are 3–8 μ long, 3–4 μ high.

Differential diagnosis: The *Megastachysporites ladanyensis* n. g. et n. sp. resembles mostly the spores of *Selaginella asperula* vA. vR. (KNOX, E. M. 1950, Pl. XII. Fig. 93.) which belongs to the recent *Selaginella megastachys* group. It differs from it by its surface, being granulate in *M. ladanyensis* while “scabriolate” in *S. asperula*. The membrane-like ornamentation in the recent species is higher and covers the proximal side less than in the fossile species.

One specimen has been found.

Genus: *Brandenburgisporis* W. KRUTZSCH 1962

1962. *Brandenburgisporis* n. fgen. — W. KR., Atlas I., pp. 9–10.

1967. *Brandenburgisporis* W. KR. 1962. — W. KR., Atlas IV–V. p. 4.

Generotypus: *Brandenburgisporis treplinensis* W. KR. 1962

W. KRUTZSCH did not know the botanical affinity this genus in 1962, but in 1967 referred it—among others—to *Selaginellaceae*.

***Brandenburgisporis beckwitzensis* W. KR. 1967**

Plate XI. Fig. 1.

1967. *Brandenburgisporis beckwitzensis* n. fsp. — W. KR., Atlas IV–V. p. 38. Taf. 1. 1–13.

One specimen, 28 μ, encountered in the Lower Badenian — Szokolya 2, 34.0–37.0 m. KRUTZSCH described this species from the Middle Oligocene.

***Brandenburgisporis lusaticus* W. KR. 1967**

Plate XI. Fig. 2–4.

1967. *Brandenburgisporis lusaticus* n. fsp. — W. KR., Atlas IV–V. p. 40. Taf. 2. 13–16.

The spores, 23–25 μ, occurred in the Egerian — Fót 1, 275.0–278.7 m and in the Upper Pannonian — Pula 3, 16.5–17.0 m. KRUTZSCH described the species from the Middle Miocene.

***Brandenburgisporis tenera* W. KR. 1962**

Plate XI. Fig. 5–9.

1962. *Brandenburgisporis tenera* n. fsp. — W. KR., Atlas I. p. 54. Taf. 20. 1–4.

The spores, 22–29 μ, were found in the Egerian — Eger, Wind brickyard borehole 10.9–11.1 m, in the Karpathian — Tekeres 1, 850.0–855.0 m, in the Badenian — Nógrádszakál 2, 91.4–93.0 m, in the Upper Pannonian — Naszály 1, 19.0–20.5 m, in the Lower Badenian — Szokolya 2, 37.9–38.3 m.

***Brandenburgisporis* cf. *toroides* W. KR. 1967**

Plate XI. Fig. 10–11.

1967. *Brandenburgisporis toroides* n. fsp. — W. KR., Atlas IV–V. p. 38.

One spore, 42 μ, was found in the Ottnangian — Balaton 26, 529.9–523.0 m. As it is triplane one can only suppose it has a torus. The structure seems to be granulate rather than punctate.

Brandenburgisporis treplinensis W. KR. 1962

Plate XI. Fig. 12—13.

1962. *Brandenburgisporis treplinensis* n. fsp. — W. KR., Atlas I. p. 52. Taf. 19. 5—12.

Two specimens, 27—29 μ , were collected from a Sarmatian sample — Cserhátszentiván 1, 185.0—185.5 m.

Genus: *Muerrigerisporis* W. KRÜTZSCH 1963

1963. *Muerrigerisporis* n. fsp. — W. KR., Atlas III. pp. 23—24.

Generotypus: *Muerrigerisporis muerrigeri* (PFLANZL 1955) W. KR. 1963

Muerrigerisporis muerrigeri (PFLANZL 1955) W. KR. 1963

Plate XI. Fig. 14.

1955. *Cingulatisporis mürrigeri* n. sp. (PFLANZL) — MÜRRIGER et PFLANZL, Notizbl. Hess. L. Amt. Bodenf. 83. p. 87. Taf. 5. Fig. 4a, b.

1959. *Echinatisporis muerrigeri* (PFLANZL) n. c. — W. KR., Geol., Beih. 21—22. p. 133.

1963. *Muerrigerisporis muerrigeri* (PFLANZL) n. c. — W. KR., Atlas III. p. 120. Taf. 11. 1—2.

The species occurred in the Lower Badenian — Szokolya 2, 65.5—66.3 m and in the Lower Pannonian — Pápa 2, 189.6—192.8 m. The latter occurrence is probably secondary.

Classis: *Pteropsida (Filicinae)*

Subclassis: *Eusporangiatae*

Ordo: *Ophioglossales*

Familia: *Ophioglossaceae*

Genus: *Ophioglossisporites* NAGY 1969

1969. *Ophioglossisporites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 91.

Generotypus: *Ophioglossisporites rotundus* NAGY 1969

Ophioglossisporites grandis (COOKSON 1947) NAGY 1969

Plate XI. Fig. 15—16.

1947. *Trilites grandis* n. sp. — COOKSON, B. A. N. Z. A. R. E. Rep. A. II. 8. p. 137. XVI. 66—67.

1969. *Ophioglossisporites grandis* (COOKSON 1947) NAGY 1969 — NAGY, MÁFI Évk. 52. 2. p. 92.

The spores, 60—66 μ , were found in the Karpathian — Zengővárkony 59, 51.3—56.0 m and in the Upper Pannonian — Hidas 53, 126.6—132.5 m. The latter, as to its state of preservation, may be a redeposited specimen. COOKSON mentioned its similarity to *Ophioglossum lusoaffricanum* WELW. (l. c.).

Ophioglossisporites rotundus NAGY 1969

Plate XI. Fig. 17—18.

1969. *Ophioglossisporites rotundus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 91. Pl. XV. Fig. 1—4.

The species, size 38—42 μ , occurred sporadically in the Lower Badenian — Zengővárkony 59, 34.0—37.5 m, in the Ottnangian — Pusztakisfalu VI, 10.5—12.5 m and in the Upper Pannonian — Vigántpetend 1, 86.0—86.2 m. The latest one is probably redeposited. Among recent species it resembles best the spores of *Ophioglossum lusitanicum* L.

Subclassis: *Leptosporangiatae*

Ordo: *Osmundales*

Familia: *Osmundaceae*

Genus: *Osmundacidites* COUPER 1953

1953. *Osmundacidites* n. gen. — COUPER, New. Zeal. Geol. Surv. Pal. Bul. 22. p. 20.

Genotype: *Osmundacidites wellmanii* COUPER 1953

The genus *Osmundacidites* was set up and determined by COUPER in 1953 taking as genotype *Osmundacidites wellmanii* (p. 20. Pl. I. Fig. 5.). Botanically, he compared it to the recent *Todea barbara* (THUNB.) MOORE among the *Osmundaceae*. R. POTONIÉ (Synopsis I. p. 30—31. Taf. 3. Fig. 22.) accepted in general the generic diagnosis by COUPER, referring only to the genotype in a certain sense he wrote the following: "Struktur beim Generotypus etwas reduziert". He compared the species to the recent *Osmunda claytoniana*. THOMSON et PFLUG created two genera in 1953, *Rugulatisporites* and *Baculatisporites* (p. 56). The genotype for *Regulatisporites* is *R. quintus* n. sp. (no type was designated). It contained round, rugulate, thin-walled spores of 40—80 μ with suggested connections to the *Osmundaceae*.

As genotype for the genus *Baculatisporites* the *Sporites primarius* WOLFF 1934 is accepted. It is a 43—47 μ roundish spore with thin exine: "... mit vielen, kurzen 1—2 μ langen, meist stumpfen, säulen- bis schwach kegelförmigen Papillen besetzt" (1934, p. 66.). WOLFF assigned it to the *Lycopodiales*.

THOMSON et PFLUG described "primarius" as 20—70 μ , baculate and rounded, botanically cf. *Pteridium*.

R. POTONIÉ (1956, Synopsis I.) acknowledged all the genera as valid. He accepted the connections of *Osmundacidites* and *Rugulatisporites* to the *Osmunda* and the partial relationship of *Baculatisporites* with the genus *Pteridium*. On the basis of the *Pteridium aquilinum* KUHN illustration (ERDTMAN, 1954, Pl. XXVIII. Fig. 484.) *Pteridium* is more rounded-triangular than rounded, like "primarius" holotype.

KRUTZSCH accepted in 1959 (Geologie, Beiheft p. 138,) the generic name *Baculatisporites* THOMSON et PFLUG. He incorporated the genus *Osmundacidites* COUPER 1953 as a later synonym. KRUTZSCH included here mostly equatorially rounded, thin-walled spores showing variable baculate, verrucate, short echinate, clavate, gemmate ornamentation or even more or less rugulate spores. He separated the genus *Verrucosisporites* IBRAHIM 1953 from the *Rugulatisporites* TH. et PF. showing considerable fusion of ornamentation. The botanical relationships are given on the basis of literature comparisons (p. 139.), beside the *Pteris*, *Pteridium* and *Hymenophyllaceae* he mentioned *Osmundaceae*. He considered that none of the "primarius" as described by THOMSON et PFLUG belongs to this species. He even described a new species from the specimens considered to be typical by THOMSON et PFLUG.

KRUTZSCH described in 1967 (Atlas IV—V. p. 6—9.) the nomenclature and botanical relationship of the genus in detail. The genus *Verrucosisporites* IBRAHIM is reserved for Paleozoic forms, the *Baculatisporites* TH. et PF. 1953 (sensu lato) for the post-Paleozoic species. The other genera were united into the latter genus (p. 7.). He considered the genus *Osmundacidites* COUPER to be not valid as he found out that the study by THOMSON et PFLUG was published in March that of COUPER in autumn. (The articles bear no evidence of this statement.)

In the case of all species described by KRUTZSCH (Atlas IV—V, p. 48—66.) the *Osmundaceae* are suggested, except for *B. nanus* ssp. *gracilis*. As a possible botanical relationship for a similar though slightly smaller specimen cf. *Pteridium* sp. LESCHIK is given (LESCHIK 1956, Paleontogr. 100. B. 1—3. p. 33. Taf. 15. Fig. 3.).

I consider COUPER's generic name as a progressive step as opposed to the exclusively morphologically coined name *Baculatisporites*. On one hand one may only surmise that COUPER's article was published later, on the other hand the original interpretation of *Baculatisporites* by THOMSON et PFLUG is anyhow at variance with the amendment done by KRUTZSCH in 1959. Consequently, I use the generic name *Osmundacidites* which reflects the botanical relationship, according the present stand of science.

Osmundacidites gemmatus (W. KR. 1959) NAGY 1969

Plate XII. Fig. 3—4.

1959. *Baculatisporites gemmatus* n. fsp. — W. KR., Geol., Beih. 21/22. p. 142. Taf. XXV. 270—271.

One specimen, 50 μ , was found in the Eggenburgian — Szászvár 8, 433.0—434.1 m, the other from the Plio—Pleistocene — Tekeres 1, 14.4—17.2 m was probably redeposited.

Osmundacidites nanus (WOLFF 1934) n. c.

Plate XI. Fig. 19., Plate XII. Fig. 1—2.

1934. *Sporites nanus* n. sp. — WOLFF, Arb. Inst. Paläobot. 5. p. 66—67. Taf. 5. Fig. 9.

1959. *Baculatisporites nanus* (WOLFF 1934) n. c. — W. KR., Geol., Beih. 21/22. Jhg. 8. p. 140.

These spores, 29—40 μ , were found in the Egerian — Fót 1, 321.5—328.0 m, in the Badenian — Tar 34, 530.0—533.0 m, in the Sarmatian — Lak 1, 206.0—210.0 m, in the Upper Pannonian — mine Petőfibánya. WOLFF described it from the Pliocene of Germany. KRUTZSCH found it also mainly in the Pliocene, but in the Pleistocene and Miocene, even in the Upper-Oligocene of Germany.

Osmundacidites primarius (WOLFF 1934) n. c. ssp. primarius

Plate XII. Fig. 5—6.

1934. *Sporites primarius* n. sp. — WOLFF, Arb. Inst. Paläobot. Petr. Bd. 5. p. 66. Taf. 5. Fig. 8.

1953. *Baculatisporites primarius* (WOLFF 1934) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. p. 56. Taf. 2. Fig. 51—53.

1960. *Osmunda-Sporites primarius* WOLFF forma trina — DOKT.-HREBN. Inst. Geol. Biul. 157. p. 225. T. 16. Fig. 13.

1967. *Baculatisporites primarius primarius* — W. KR., Atlas IV—V. p. 54. Taf. 9. 1—12.

Specimens, 39—47 μ , were found in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Lower Badenian — Tengelic 1, 726.4—730.2 m, 768.0—771.0 m, in the Sarmatian — Tekeres 1, 18.8—23.6 m.

Osmundacidites primarius (WOLFF 1934) n. c. ssp. crassiprimarius W. KR. 1967

Plate XII. Fig. 8.

1967. *Baculatisporites primarius crassiprimarius* n. subfsp. — W. KR., Atlas IV—V. p. 58. Taf. 11.

Specimens of 44—63 μ were found in the Upper Oligocene — Tata (TVG) 27, 72.8—74.7 m, in the Egerian — Fót 1, 216.5—218.8 m, and 237.5—239.0 m, in the Karpathian — Tököl 1, 845.0—846.0 m, in the Badenian — Tengelic 2, 830.0—833.0 m. KRUTZSCH (l. c.) mentioned it from the Middle Oligocene to Upper Pliocene in East Germany and Czechoslovakia.

Osmundacidites primarius (WOLFF 1934) n. c. ssp. major RAATZ 1937

Plate XII. Fig. 7.

1937. *Sporites primarius* WOLFF f. *major* n. f. — RAATZ, Abhandl. Preuss. Geol. L. A., N. F., H. 183. p. 12. Taf. 1. Fig. 14.

1967. *Baculatisporites primarius major* RAATZ 1937 — W. KR., Atlas IV—V. p. 56. Taf. 10.

Specimens of 36—60 μ were found in the Ottnangian — Alsóvadász 1, 1029.5—1034.6 m, in the Badenian — Szokolya 3, 51.6—52.6 m, in the Upper Pannonian — Pusztafalu shaft No. 3, and Pula 3, 13.5—14.0 m.

RAATZ described it from the Middle-Miocene in Germany.

Osmundacidites primarius (WOLFF 1934) n. c. ssp. oligocaenicus W. KR. 1967

Plate XII. Fig. 9—10.

1967. *Baculatisporites primarius oligocaenicus* n. subfsp. — W. KR., Atlas IV—V. p. 60. Taf. 12. 1—6.

Specimens of 60—61 μ were found in the Egerian — Eger, Wind brickyard borehole 21.5—21.9 m, in the Plio—Pleistocene — Tokaj Moutains, Pusztafalu shaft No 3, 0.5—1.0 m. These latter are probably redeposited.

Osmundacidites quintus (PF. et TH. 1953) n. c. ssp. **quintus**

Plate XIII. Fig. 1—2.

1953. *Rugulatisporites quintus* n. sp. (PF. et TH.) — THOMSON et PFLUG, Palaeont. 94. B. 1—4. p. 56.
1967. *Baculatisporites quintus quintus* — W. KR., Atlas IV—V. p. 48. Taf. 6.

One specimen found, 63 μ , in the Lower Pannonian — Megyaszó 1, 200.0—206.5 m.

KRUTZSCH described it from the Upper Tertiary (Miocene—Pliocene) of Germany, as to its botanical relationship he mentioned the *Osmunda regalis* L.

Osmundacidites quintus (THOMSON et PFLUG 1953) n. c. ssp. **microquintus** W. KR. 1967

Plate XIII. Fig. 3.

1967. *Baculatisporites quintus microquintus* n. ssp. — W. KR., Atlas IV—V. Taf. 8. 1—7.

One specimen of 57 μ was found in the Badenian — Kóspallag 11, 187.7—189.5 m. W. KRUTZSCH described the subspecies from the Middle and Upper Miocene of Germany and Czechoslovakia.

Osmundacidites quintus (THOMS. et. PF. 1953) n. c. ssp. **rhenanus** W. KR. 1967

Plate XIII. Fig. 4—5.

1967. *Baculatisporites quintus rhenanus* n. subfsp. — W. KR., Atlas IV—V. p. 52. Taf. 7. 6—9.

One specimen found, 44 μ , in the Badenian — Tengelic 2, 814.0—817.0 m.

It is a bit smaller, than the FLIEGEL's exemplar found in the ?Brunssumian (Dutsch—German boundary).

Osmundacidites quintus (TH. et. PF. 1953) n. c. ssp. **rugulatoides** W. KR. 1967

Plate XIII. Fig. 6—7.

1967. *Baculatisporites quintus rugulatoides* n. subfsp. — W. KR., Atlas IV—V. p. 52. Taf. 8. 8—117.

Specimens of 38—43 μ found in the Ottnangian — Alsóvadász 1, 1029.5—1034.6 m, in the Upper Pannonian — Pula 3, 14.0—14.5 m. The subspecies is related to *Osmunda lancea* THUNBG. (W. KRUTZSCH, l. c.).

Ordo: Filicales

Subordo: Simplices

Familia: Schizaeaceae

Genus: Cicatricosisporites R. POTONIE et GELLETICH 1933

1933. *Cicatricosi-sporites* n. gen. — R. POT. et GELL., Sitz. Gesell. Naturf. Freunde, Jhg. 1932. p. 522.

Generotypus: *Cicatricosisporites dorogensis* R. POT. et GELL. 1953

Cicatricosisporites chattensis W. KR. 1961 ssp. **minor** W. KR. 1967

Plate XIII. Fig. 8—9.

1967. *Cicatricosisporites chattensis minor* n. subfsp. — W. KR., Atlas IV—V. p. 84. Taf. 24. 9—11.

One specimen, 36 μ , found in layer "k" of the Egerian holostratotype — Eger, Wind brickyard; KRUTZSCH described the species from the Chattian in Germany.

Cicatricosisporites lusaticus W. KRUTZSCH 1967

Plate XIII. Fig. 10–12.

1967. *Cicatricosisporites lusaticus* n. fsp. — W. KR., Atlas IV–V. Taf. 25. p. 85.

Specimens of 38–45 μ were found in the Oligocene — Eger, Wind brickyard borehole 50.3–50.9 m, in the Egerian — Fót 1, 349.5–354.0 m. KRUTZSCH described the species from the Lower Miocene in Germany and related to the genus *Anemia*.

Cicatricosisporites mecsekensis NAGY 1963

Plate XIII. Fig. 13–14.

1963. *Cicatricosisporites mecsekensis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3–4. pp. 391–392.

Beside the type specimen (Upper Pannonian), more specimens (longit. diameter 59–80 μ) were found in the Ottnangian — Zengővárkony 45, 16.0–16.4 m, in the Karpathian — Zengővárkony 59, 56.0–60.9 m, Nagyárpád 18, 13.6–20.0 m, in the Lower Badenian — Szokolya 2, 41.5–42.3 m.

Cicatricosisporites minimus NAGY 1963

Plate XIII. Fig. 15–16.

1963. *Cicatricosisporites minimus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3–4. p. 391. Tab. II. Fig. 14–15.

Two specimens, 17 μ , were found in the Eggenburgian — Szászvár 8, 26.0–27.0 m.

Cicatricosisporites pannonicus NAGY 1969

asp. triplanus

Plate XIV. Fig. 1–3.

1969. *Cicatricosisporites pannonicus* n. sp. asp. triplanus — NAGY, MÁFI Évk. 52. 2. p. 93. XIII. 10., 14.

One specimen, 34 μ , found in the Eggenburgian — Szászvár 8, 26.0–27.0 m.

Genus: *Concavisporites* PFLUG 1953 emend. DELCOURT et SPRUMONT 1955

1953. *Concavisporites* n. g. (PF.) — TH. et PF., Palaeontogr. 94. B. 1–4. p. 49.

1955. *Concavisporites* PF. 1953 emend. — DELC. et SPR., Mém. Soc. Belg. Géol. N. S. 4–5. pp. 22–24.

Genotype: *Concavisporites rugulatus* PFLUG 1953

Concavisporites minimodivisus NAGY 1963

Plate XIV. Fig. 4.

1963. *Concavisporites minimodivisus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3–4. pp. 387–388. Tab. I. Fig. 1–4.

One spore, 41 μ , found in the Karpathian — Komló 1, 398.3 m.

Remark: BOLCHOVITINA (1968, p. 36.) considered this species to belong to her artificial genus as *Plicifera minimodivisa* (NAGY) BOLCH. as she supposed (l. c. p. 37.) that the torus (kyrtom) is distally situated. I studied the spore again (Amplival microscope, new cross-table No 102.6–12.6) and the well preserved specimen complied with my original description, i.e. the torus is proximally situated. Consequently, the species is classified here as it was before.

The species is related to the family *Gleicheniaceae* (PFLUG 1953, p. 49.).

Concavisporites sp.

Plate XIV. Fig. 5.

1969. *Concavisporites* sp. — NAGY, MÁFI Évk. 52. 2. p. 97. Pl. XV. Fig. 2–3.

Concavisporites forms of 27–28 μ . Their size is similar to that of the forms described by W. KRUTZSCH as *Neogenisporites* from the Plio–Miocene, the angles however, are more rounded.

The plates show specimens from the Sarmatian — Hidas 53, 147.5–148.5 m and from the Egerian — Eger, Wind brickyard borehole.

Compared with recent material the size and the smooth outline of the exine reminds one of *Adiantum tetraphyllum*. A *Gleichenia polypodioides* illustration (KREMP et KAWASAKI 1972, p. 10.) also may be compared with these nearly triplane specimens.

Genus: *Gleicheniidites* (ROSS 1949) BOLCH. 1968

1949. *Gleicheniidites senonicus* n. spm. — ROSS, Bull. of the Geol. Inst. Univ. Upsala XXXIV. p. 31–32.

Genotype: *Gleicheniidites senonicus* ROSS 1949

***Gleicheniidites elegans* NAGY 1963**

Plate XIV. Fig. 6–8.

1963. *Gleicheniidites (Laticrassisporis) elegans* n. sp. — NAGY, Pollen et Spores, V. 2. Nov. pp. 401–402.

Two specimens, 28–32 μ , were found in the Egerian — Eger, Wind brickyard pit, layer “u”, and in the Upper Pannonian — Vásárosnamény 1, 787.7–785.0 m.

Remark: In the original description I supposed the spore to be redeposited. As I see it today it may be in situ as well. This conclusion is supported by the fact that the presence of *Gleicheniaceae* was not restricted by climatic conditions in this phase of the Egerian and other species, characteristic of the older stages of the Neogene, are also present.

***Gleicheniidites microstellatus* NAGY 1963**

Plate XIV. Fig. 9–10.

1963. *Gleicheniidites microstellatus* n. sp. — NAGY, Pollen et Spores V. 2. Nov. pp. 400–401.

Some specimens, 20 μ , were found in the Egerian — Eger, Wind brickyard pit (stratotype), layer “u”.

Remark: W. KRUTZSCH (1967. Atlas IV–V. p. 20.) assigned this species to the genus *Polyodiaceoisporites*. On the other hand BOLCHOVITINA (1968, p. 44. T. XI. 12–13.) described and illustrated it under the original name in her monography on the *Gleicheniaceae*.

***Gleicheniidites rimosus* n. sp.**

Plate XXVI. Fig. 4–8.

Holotype: Szokolya 2, sample N° 96, slide N° 1, 104.9×7.4, Plate XXVI. Fig. 4–8.

Locus typicus: Szokolya 2, 90.3–91.1 m

Stratum typicum: Lower Badenian grey clay

Diagnosis: Trilete spores. The thin dehiscence line, running to the angles, is surrounded proximally by a concave, sinuous torus. The cingulum is slightly sinuous, its thickness decreases abruptly at the angles. Distal ornamentation: triangularly situated flat rugae.

The holotype is 27 μ , cingulum thickness at mid-line 5 μ . Distal rugae are 10–15 μ long, 3–5 μ wide.

Differential diagnosis: *Gleicheniidites rimosus* n. sp. is similar to *G. elegans* NAGY 1963. They differ first of all in the distal ornamentation. The dehiscence line is different, too: in *G. elegans* it does not reach the angles while in *G. rimosus* it does.

Beside the holotype two 22 μ specimens were found until now in the Karpathian — Zengővárkony 59, 60.9–63.0 m and in the Lower Badenian Szokolya 2, 34.0–37.0 m.

Gleicheniidites umbonatus (BOLCH. 1953) BOLCH. 1968 f. *minor* NAGY 1969

Plate XIV. Fig. 11—16.

1969. *Gleicheniidites* sgen. *Triremisporites umbonatus* n. c. f. *minor* n. f. — NAGY, MÁFI Évk. 52. 2. p. 94. Pl. X. Fig. 10—11.

Specimens, 17 μ , were found in the Eggenburgian — Szászvár 8, 26.0—27.0 m and in the Egerian — Eger, Wind brickyard borehole 8.3—9.2 m.

Gleicheniidites zengoeensis NAGY 1969 emend.

Plate XIV. Fig. 17—20.

1969. *Gleicheniidites* sgen. *Triremisporites zengoeensis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 94—95. Fig. 6. Pl. XV. 5—6.

One 28 μ spore found in the Karpathian — Zengővárkony 59, 56.0—60.9 m.

Diagnosis emendation: Trilete gleichenoid spore. The concave side lines thin out at the angles, which are rounded but proximally the side line goes fust over the angles. The thin, slightly sinuous dehiscence line reaches the equator. Distally unevenly wrinkled, flat, fused ornamentation is visible. The edges of distal ornamentation display uneven, flat waves.

Genus: Clavifera BOLCHOVITINA 1966

1966. *Clavifera* BOLCH. gen. nov. — BOLCH., Acad. Sci. USSR. p. 68—69.

Generotypus: *Clavifera triplex* (BOLCH. 1953) BOLCH. 1966

Clavifera triplex (BOLCH. 1953) BOLCH. 1966 f. *minor* NAGY 1969

Plate XIV. Fig. 21—22.

1968. *Gleicheniidites* sgen. *Triplexisporites triplex* (BOLCH. 1953) W. KR. 1959 f. *minor* n. f. — NAGY, MÁFI Évk. 52. 2. p. 95. Fig. 7. Pl. XIV. Fig. 7—9.

Specimens, 20 μ , were found in the Eggenburgian — Szászvár 8, 83.0—83.6 m and in the Egerian — Eger, Wind brickyard borehole 8.2—9.2 m.

Familia: Incertae sedis

Genus: Leiotriletes (NAUMOVA 1937) R. POT. et KR. 1954

1954. *Leiotriletes* (NAUMOVA 1937) emend. R. POT. et KREMP, Geol. Jb. 69. (in: Synopsis, VI. p. 120. Taf. 4. Fig. 1—3.)

Generotypus: *Leiotriletes sphaerotriangulus* (LOOSE 1932) R. POT. et KR. 1954

Leiotriletes adriennis (R. POT. et GELL. 1933) W. KR. 1959 ssp. *pseudomaximus*
(TH. et PF. 1953) W. KR. 1959

Plate XIV. Fig. 23.

1933. *Punctati-sporites adriennis* sp. — R. POT. et GELL., Sitzg. Nat. Fr. p. 521.

1952. *Triradiato-sporites adriennis* R. POT. ssp. *crassus* PFLUG — MÜRR. et PFL., Notizbl. Taf. 11. Abb 6. (Marxheim).

1953. *Laevigatosporites pseudomaximus* n. sp. — TH. et PF., Palaeontogr. 94. B. 1—4. p. 54. Taf. 2. Fig. 20—22.

1959. *Leiotriletes adriennis* (R. POT. et GELL. 1953) n. c. subsp. *pseudomaximus* (TH. et PF. 1953) n. c. — W. KR., Geol., Beih. 21—22. p. 59.

Two damaged specimens were found, in the Egerian — Fót 1, 249.5—354.0 m and in the Karpathian — Nagymányok, Melegoldal.

Leiotriletes apheles (HUNGER 1952) W. KR. 1959

Plate XIV. Fig. 24—25.

1952. *Sporites apheles* n. sp. — HUNGER, Bergakad. 4. 5. p. 193. Taf. 1. Fig. 4.

1959. *Leiotriletes apheles* (HUNG. 1952) n. c. — W. KR., Atlas I. p. 22. Taf. 4. Fig. 1—10.

Forms of 36—48 μ in the Sarmatian — Lak 1, 206.0—210.0 and 357.7—360.7 m and in the Badenian — Szilvásvárád 1, 37.2—110.2 m.

HUNGER and KRUTZSCH found this species in the Lower Miocene of Germany.

Leiotriletes hidasensis NAGY 1969

Plate XV. Fig. 1.

1969. *Leiotriletes hidasensis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 100—101. Pl. XVI. Fig. 1.

Specimens of 52—60 μ , found in the Pannonian — Hidas 53, 258.1—258.5 m.

Leiotriletes maxoides W. KR. 1962 ssp. maxoides

Plate XV. Fig. 2—4.

1962. *Leiotriletes maxoides maxoides* n. fsp. et subfsp. — W. KR., Atlas I. p. 18. 2. 1—5.

A frequent form, 58—80 μ , in the Egerian and Eggenburgian, less so in the younger stages of the Neogene. Found in the Egerian — Eger, Wind brickyard, layer "u", and in the upper section of the brickyard borehole, in the Egerian—Karpethian — Fót 1, in the Eggenburgian — Pápa 2, 308.8—309.0 m, Püspökhatvan 4, 204.0—281.0 m, in the Ottangian — Alsóvadász 1, 1029.0—1034.6 m, in the Karpethian — Szilvásvárád 1, 207.0 m, Litke 17, 232.0—254.0 m, in the Badenian — Kóspallag 11, 80.0—81.2 m, Nógrádszakál 2, 165.0—167.0 m, in the Sarmatian — Vajta, water exploratory borehole 724.0—728.0 m, in the Pannonian — Tata (TVG) 26, 27.0—30.0 m (redeposited).

W. KRUTZSCH (l. c.) and HUNGER (1953) related the species to the genus *Lygodium*.

Leiotriletes maxoides W. KR. 1972 ssp. maximus (PF. 1953) W. KR. 1959

Plate XV. Fig. 7., Plate XVI. Fig. 1.

1952. *Triradiato-sporites adriennis* R. POT. ssp. *maximus* PF., cf. *Lygodium*, Taf. 11. Fig. 7. — MÜRR. et PF., Notizbl. Hess. L. A. Bodenforsch. VI. 3. p. 57.

1953. *Divisisporites maximus* n. sp. (PF.) — TH. et PF., Palaeontogr. 94. B. 1—4. p. 52. Taf. 1. Fig. 57—58.

1959. *Leiotriletes maximus* (PF. 1953) n. comb. — W. KR., Geol. Jhg. 8, Beih. 21/22, p. 57.

1962. *Leiotriletes maxoides* KR. *maximus* (PF. 1953) KR. 1959 — W. KR., Atlas I., p. 20. Taf. 3. Fig. 1—4.

Quite frequent spores, 81—125 μ , found in the Egerian — Eger, Wind brickyard borehole and pit layer "x₂", Fót 1, 194.5—195.5 m, in the Eggenburgian — Pápa 2, 308.8—309.0 m, in the Ottangian — Alsóvadász 1, 1029.0—1034.6 m, in the Karpethian — Zengővárkony 59, 60.9—65.0 m, Magyaregregy — Leánykő surface exposure, sample 27, Tököl 1, 845.6—876.0 m, Püspökhatvan 4, 153.3—157.0 m, Litke 17, 212.0—214.0 m, in the Lower Badenian — Szokolya 2, 40.7—70.3 m, in the Pannonian — Pápa 2, 189.6—192.8 m (redeposited).

Leiotriletes maxoides W. KR. 1962 ssp. minoris W. KR. 1962

Plate XV. Fig. 5—6.

1962. *Leiotriletes maxoides* W. KR. *minoris* n. sbsp. — W. KR., Atlas I. p. 16. Taf. 1. Fig. 2—4.

Some specimens, 40—56 μ , were found in the Egerian — Eger, Wind brickyard borehole 7.8—8.3 m, Fót 1, 214.0—216.5 m, in the Eggenburgian — Püspökhatvan 4, 236.0—239.0 m, Fót 1, 171.7—172.7 m, Pápa 2, 208.8—212.0 m, in the Karpethian — Litke 17, 258.0—260.0 m, Nógrádszakál 2, 281.0—283.0 m, in the Badenian — Szokolya 2, 51.5—51.9 m, mine Hidasbánya seam II, sample 5, in the Sarmatian — Alsóvadász 1, 690.0—696.0 m, in the Upper Pannonian — Megyaszó 1, 25.0—32.0 m.

KRUTZSCH described this subspecies from the Oligo—Miocene to the Upper Tertiary in Germany.

Leiotriletes microadriennis W. KR. 1959

Plate XVI. Fig. 2.

1959. *Leiotriletes microadriennis* n. fsp. — W. KR., Geol. Jhg. 8. Beih. 21/22, pp. 61–62.

1973. *Leiotriletes microadriennis* W. KR. 1959 — KEDVES, Studia Biol. Hung. 12. pp. 30–31.

Some specimens, 42–46 μ , were found in the Karpathian — Tököl 1, 824.0–830.5 m, in the Sarmatian — Cserhátszentiván 1, 130.0–132.0 m, 153.0–161.0 m and in the Pannonian — Vásárosnamény 1, 785.0–787.7 m. All there are probably redeposited as KRUTZSCH described it from the Middle Eocene of Geiseltal and KEDVES (1973) mentioned it from the Eocene of the Bakony Mountains.

Leiotriletes microlepidoidites W. KR. 1962

Plate XVI. Fig. 3–5.

1962. *Leiotriletes microlepidoidites* n. fsp. — W. KR., Atlas I. p. 30. Taf. 8. 1–18.

Several specimens, 21–30 μ , were found in the Egerian — Eger, Wind brickyard borehole 10.9–11.1 m, pit layer “u”, sample 22. and 7., Fót 1, 181.0–182.7 m, 361.8 m, in the Eggenburgian — Szászvár 8, 26.0–27.0 m, 434.5–435.0 m, Budajenő 2, 556.5–557.7 m, in the Karpathian — Szilvásvárad 1, 262.0 m, Kóspallag 11, 160.7–162.0 m, Litke 17, 226.0–230.0 m, in the Badenian — Hidas 53, 708.1–708.5 m, Nógrádszakál 2, 91.4–93.0 m, Szokolya 3, 32.0–33.0 m, Tar 32, 222.0–224.0 m, 548.0–552.0 m, Tengelic 2, 817.0–820.0 m, 839.0–842.0 m, in the Sarmatian — Cserhátszentiván 1, 98.0–100.6 m, in the Pannonian — Hidas 53, 298.0–299.1 m.

Leiotriletes miocaenicus NAGY 1969

Plate XVI. Fig. 7–8.

1969. *Leiotriletes miocaenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 100. XVI. 4–5.

Spores of 42–58 μ were found in the Karpathian — Mecsek Mountains, in the Egerian — Tata (TVG) 27, 58.2–59.0 m, in the Upper Pannonian — Tar-Fenyvespuszta area, sample 27., Naszály 1, 25.0–26.7 m (this one may be redeposited).

cf. **Leiotriletes neddenioides** W. KR. 1962

Plate XVI. Fig. 9–11.

1962. *Leiotriletes neddenioides* n. fsp. — W. KR., Atlas I. p. 32. Taf. 9. 1–15.

Specimens of 36–44 μ were found in the Karpathian — Litke 17, 148.0–150.0 m, in the Middle Miocene — Császár 1, 99.5 m, in the Lower Pannonian — Balatonkenese 1, 62.4–63.0 m, in the Pliocene — Megyaszó 1, 32.0–38.0 m.

KRUTZSCH described it from the Upper Oligocene–Lower Miocene and supposed it to occur in the Pliocene, too.

Leiotriletes seidewitzensis W. KR. 1962

Plate XVI. Fig. 6., 12–14.

1962. *Leiotriletes seidewitzensis* n. fsp. — W. KR., Atlas I. p. 30. Taf. 8. 19–24.

Rather rare spores, 19–32 μ , found in the Egerian — Eger, Wind brickyard pit, layer “u”, Fót 1, 216.5–218.8 m, in the Eggenburgian — Fót 1, 171.7–172.7 m, Várpalota 133, 214.2–217.0 m, Püspökhatvan 4, 266.0–269.0 m, in the Ottnangian — Pusztakisfalu VI, 6.3–7.8 m, in the Karpathian — Püspökhatvan 4, 153.3–157.0 m, Litke 17, 264.0–265.0 m.

Leiotriletes triangulatoides W. KR. 1962

Plate XVI. Fig. 15—17.

1962. *Leiotriletes triangulatoides* n. fsp. — W. KR., Atlas I. p. 24. Taf. 5. Fig. 1—6.

Spores of 35—45 μ , found in the Egerian — Fót 1, 216.5—358.5 m, in the Eggenburgian — Budajenő 2, 538.4—539.4 m, Püspökhatvan 4, 204.0—230.0 m, in the Upper Pannonian — Naszály 1, 51.0—54.3 m (probably redeposited).

Leiotriletes triangulus (MÜRR. et PF. 1952 ex W. KR. 1959) W. KR. 1962

Plate XVI. Fig. 18., Plate XVII. Fig. 1—2.

1952. *Triradiato-sporites neddeni* R. POT. ssp. *triangulus* — PFLUG, Notizbl. Hess. L. A. Bodenf. VI/3. p. 57. Taf. II. Fig. 5.

1959. *Toroisporis (Toroisporis) triangulus* MÜRR. et PF. 1962 ex KR. — W. KR., Geol. Jhg. 8. Beih. 21/22. pp. 91—92.

1962. *Leiotriletes triangulus* (MÜRR. et PF. 1952 ex KR. 1959b) n. c. — W. KR., Atlas, I. p. 24.

Specimens of 24—35 μ moderately frequent found in the Egerian — Tata (TVG) 27, 72.8—74.7 m, Eger, Wind brickyard pit, layer "x₂", Fót 1, 266.0—269.0 m, in the Karpathian — Tököl 1, 906.5—910.3 m, Litke 17, 208.0—210.0 m, in the Lower Badenian — Szokolya 2, 51.9—52.7 m, 87.2—87.9 m, in the Lower Pannonian — Naszály 1, 8.0—12.0 m, 29.7—32.0 m, 131.5—150.0 m, Pápa 2, 142.8—143.3 m.

Remark: When distinguishing this species from the *Leiotriletes seidewitzensis* group, KRUTZSCH mentioned the size as difference. The description of *L. triangulatoides* (1962, l. c. p. 24.) reveals, however, that the upper size limits for *L. triangulus* and *L. microlepidoidites* coincide. I consider the slight thickening at the angles to be a more important difference, which gives a characteristic triangular shape — even in crumpled state — to *L. triangulus*.

Leiotriletes wolffi W. KR. 1962 ssp. *wolffi*

Plate XVII. Fig. 3—5.

1962. *Leiotriletes wolffi wolffi* n. fsp. et subfsp. — W. KR., Atlas I. p. 26. Taf. 6. 1—4.

A frequently encountered and abundant species, 35—45 μ , especially in the warmer periods of the Neogene. It occurs in the Egerian — Eger, Wind brickyard pit, sample 30.; borehole 10.9—11.0 m, Fót 1, 208.8—332.8 m, in the Eggenburgian — Fót 1, 155.0—181.0 m, Püspökhatvan 4, 236.0—239.0 m, Budajenő 2, 518.2—523.0 m, Ottnangian — Tököl 1, 1271.0—1273.0 m, Karpathian — Zengővárkony 59, 56.0—60.9 m, Várpalota 133, 166.0—167.7 m, Litke 17, 256.0—258.0 m, Lower Badenian — Tengelic 2, 839.0—842.0 m, Szokolya 2, 51.1—118.3 m, Szokolya 3, 34.0—37.0 m, Nógrádszakál 2, 95.0—123.0 m, Pásztó 4, 122.0 m, Sarmatian — Cserhátszentiván 1, 192.0—194.9 m, Lower Pannonian — Tata 26, 16.8—24.6 m, Tata (TVG) 26, 30.0—33.0 m.

Leiotriletes wolffi W. KR. 1962 ssp. *brevis* W. KR. 1962

Plate XVII. Fig. 6—9.

1962. *Leiotriletes wolffi* KR. *brevis* n. subsp. — W. KR., Atlas I. p. 28. Taf. 7. 1—20.

This form is very common, 27—38 μ , generally well preserved, just some are crumpled.

It is found mainly in the Egerian though it is present in the younger layers, too. It occurs in the Eggenburgian, Badenian, Sarmatian and Pannonian in smaller numbers or redeposited. Found in the Egerian — Eger, Wind brickyard pit layers "u", "k", Fót 1, 201.0—290.5 m, in the Eggenburgian — Fót 1, 160.0—162.0 m, in the Ottnangian — Szilvássvár 1, 360.3—362.3 m, in the Karpathian — Litke 1, 232.0—234.0 m, Várpalota 133, 166.0—167.7 m, Zengővárkony 59, 56.0—60.9 m, in the Badenian — Tengelic 2, 751.0—755.0 m, Ajka 157, 314.9—318.3 m, Szokolya 3, 68.6—69.6 m, Nógrádszakál 2, 78.0—79.5 m, 93.0—95.0 m, Szokolya 2, 37.9—38.3 m, Tar 34, 530.0—533.0 m, in the Sarmatian — Tar 34, 372.3—374.5 m, Cserhátszentiván 1, 138.0—139.0 m, in the Pannonian — Tata (TVG) 26, 15.0—18.0 m, Naszály 1, 22.0—25.0 m, Várkesző 1, 26.0—37.0 m, Pápa 2, 126.7—127.7 m.

Genus: *Monoleiotriletes* W. KR. 1959

1959. *Monoleiotriletes* n. fgen. — W. KR., Geol., Beih. 21/22. pp. 64–65.

Generotypus: *Monoleiotriletes angustus* W. KR. 1959

***Monoleiotriletes gracilis* W. KR. 1959**

Plate XVII. Fig. 10–12.

1959. *Monoleiotriletes gracilis* n. fsp. — W. KR., Geol., Beih. 21–22, p. 65–66. Taf. IV. Fig. 24.

1962. *Monoleiotriletes gracilis* W. KR. 1959b — W. KR., Atlas I. p. 44. Taf. 15. 1–9.

Specimens of 42–48 μ , found in the Egerian — Eger, Wind brickyard borehole 8.3–9.2 m, brickyard pit, layers “u”, Fót 1, 195.5 m, 354.0–355.0 m, in the Eggenburgian — Szászvár 8, 433.8–434.1 m, in the Ottnangian — Pusztakisfalu VI., 10.5–12.5 m.

KRUTZSCH considered the species to occur from the Middle Eocene to the Middle Miocene in Germany.

Genus: *Intrapunctisporis* W. KR. 1959

1959. *Intrapunctisporis* n. fgen. — W. KR., Geol., Beih. 21/22. p. 69.

1962. *Intrapunctisporis* KR. 1959 — W. KR., Atlas I. p. 10.

Generotypus: *Intrapunctisporis intrapunctis* W. KR. 1959

***Intrapunctisporis altranftensis* W. KR. 1962**

Plate XVII. Fig. 13.

1962. *Intrapunctisporis altranftensis* n. fsp. — W. KR., Atlas I. p. 62. Taf. 24. Fig. 1–3.

One 38 μ specimen in the Eggenburgian — Fót 1, 122.0–123.0 m. KRUTZSCH described the species from the Lower Miocene brown-coal dead group.

***Intrapunctisporis balinkaëense* (KEDVES 1973) n. c.**

Plate XVII. Fig. 14.

1973. *Leiotriletes balinkaëense* n. fsp. — KEDVES, Studia Biol. Hung. 12. pp. 31–32.

One 45 μ specimen, found in the Sarmatian — Cserhátszentiván 1, 188.0–190.0 m, it may be redeposited from the Oligocene. It was found in the Middle Eocene–Upper Oligocene layers of the Bakony Mountains, too.

It is supposedly related to the genus *Lygodium* of the family *Schizaeaceae*.

KRUTZSCH wrote in 1959 (Geologie, Beiheft 21/22. p. 56.) on the ornamentation of the *Leiotriletes* “mit hyalin–glatter oder chagrener Sporenwand”. In the same study (p. 69.) he suggested a new genus with the following structure: “mit intra, oder mediopunctater Sporenwand”. KEDVES, however, wrote in his diagnosis: “structure intrapunctate”.

Accordingly it is preferable to transfer the species to the genus *Intrapunctisporis*.

***Intrapunctisporis gracilis* W. KR. 1962**

Plate XVII. Fig. 17.

1962. *Intrapunctisporis gracilis* n. fsp. — W. KR., Atlas I. p. 62. Taf. 24. Fig. 4–8.

One 44 μ specimen was found in the Lower Badenian — Szokolya 2, 86.3–87.1 m. In Germany, it was found in the Lower Miocene. A rare species.

Genus: *Punctatisporites* IBRAHIM 1933

1933. *Punctatisporites* n. g. — IBR., Sporenformen des Aegirhorizonts des Ruhr Reviers. Diss., Würzburg, p. 21.

Punctatisporites crassiexinus W. KR. 1962

Plate XVII. Fig. 15–16.

1962. *Punctatisporites crassiexinus* n. fsp. — W. KR., Atlas I. p. 48. Taf. 17.

The species, 43–60 μ , is found in small numbers (1–5) in the Egerian — Eger, Wind brickyard borehole 8.3–9.2 m, in the Eggenburgian — Fót 1, 168.0–169.3 m, Püspökhátvan 4, 201.0–272.0 m, in the Lower Badenian — Szokolya 2, 84.7–85.5 m. The holotype has been described from Nagykőrös 1. As to its botanical relationship KRUTZSCH mentioned the family *Schizaeaceae*.

Punctatisporites crassimaximus W. KR. 1962

Plate XVIII. Fig. 1–2.

1962. *Punctatisporites ? crassimaximus* n. fsp. — W. KR., Atlas I. p. 50. Taf. 18.

Specimens of 57–73 μ were found in the Egerian — Eger, Wind brickyard borehole 10.9–11.1 m, Fót 1, 196.4–336.8 m, Felsőpetény mine, sample No 1, Kóspallag 11, 80.0–81.2, in the Karpathian — Nógrádszakál 2, 287.0–290.0 m, Litke 17, 260.0–262.0 m, these latter are probably redeposited. The holotype was described from Nagykőrös 1.

Remark: The original diagnosis of *Punctatisporites* IBRAHIM 1933 did not exclude a thick exine nor a grouping of dots, therefore the question mark after the generic name is dropped.

Punctatisporites punctatoides W. KR. 1967

Plate XVIII. Fig. 3–4.

1967. *Punctatisporites ? punctatoides* n. fsp. — W. KR., Atlas IV–V. p. 70. Taf. 17. 1–3.

One specimen, 32 μ , was found in the Lower Badenian — Tengelic 2, 835.7–839.0 m.

Remark: The question mark after the generic name was dropped again as it is rather difficult to decide what should be the size of the ornamentation of the exosporium described by IBRAHIM as “fein sandig”.

Punctatisporites tanndorfensis W. KR. 1962

Plate XVIII. Fig. 5.

1962. *Punctatisporites tanndorfensis* n. fsp. — W. KR., Atlas I. p. 46. Taf. 16. Fig. 1–6.

Specimens of 42–56 μ were found in the Egerian — Eger, Wind brickyard pit layer “x₂”, Fót 1, 355.5–357.0 m, Kóspallag 11, 80.0–81.2 m. KRUTZSCH described it from the Oligo–Miocene in Germany and as to its botanical relationship mentioned the family *Schizaeaceae*.

Genus: *Dictyophyllidites* COUPER 1958 emend. DETTMAN 1963

1958. *Dictyophyllidites* n. gen. — COUPER, Palaeontogr. 103. B. p. 140.

1963. *Dictyophyllidites* COUPER emend. — DETTMAN, Roy. Soc. Vic. Vol. 77. Part I. p. 27.

Genotype: *Dictyophyllidites harrisi* COUPER 1958

Dictyophyllidites irregularis (PF. 1953) n. c.

Plate XVIII. Fig. 6–7.

1953. *Laevigatosporites neddeni* R. POT. ssp. *irregularis* n. ssp. (PF.) — THOMSON et PFLUG, Palaeontogr. 94. B. 1–4. p. 54. Taf. 2. Fig. 2–5.

1959. *Toroisporis (Toroisporis) irregularis* (PF. 1953) n. c. — W. KR., Geol., Jhg. 8. Beih. 21/22. pp. 96–97.

Some specimens were found in the Eggenburgian — Pápa 2, 211.0–212.0 m, in the Karpathian — Magyaregregy, Leánykő, main seam, sample No 2. in the Lower Badenian — Zengővárkony 59, 41.8–44.4 m, in the Sarmatian — Alsóvadász 1, 690.1–696.5 m.

Remark: KRUTZSCH (1959) marked out the typus from the figures of PFLUG (1953, l. c. Taf. 2. Fig. 2.), and the life span of the species (from Paleocene to Lower Oligocene). As to its botanical relationship mentioned the family *Polypodiaceae*, incidentally *Cyathaceae*.

Dictyophyllidites pessinensis (W. KR. 1962) n. c.

Plate XVIII. Fig. 8—9.

1962. *Toroisporis* (*Toroisporis*) *pessinensis* n. fsp. W. KR., Atlas I. p. 84. Taf. 35. 1—6.

Forms of 26—31 μ were found in the Egerian — Fót 1, 130.5—367.3 m, in the Karpathian — Püspökhatvan 4, 287.0—290.0 m, Litke 17, 262.0—264.0 m, in the Upper Pannonian — Naszály 2, 51.0—54.3 m (redeposited). KRUTZSCH found it in the Lower and Middle Miocene in Germany.

cf. **Dictyophyllidites pliocaenicus** (THIERGART 1940) n. c.

Plate XVIII. Fig. 10., 12.

1962. *Toroisporis*? *pliocaenicus* (THG. 1940) n. c. — W. KR., Atlas I. p. 86. Taf. 36. 7—9.

The 39—43 μ specimens are just slightly smaller than the dimensions given by KRUTZSCH, the characters are similar, their age is, however, quite different. KRUTZSCH (et THIERGART) described this species from the Pliocene whereas in Hungary it occurred in the Egerian — Fót 1, 209.9—212.6 m, 348.0—349.5 m.

Dictyophyllidites teupitzensis (W. KR. 1962) n. c. ssp. *teupitzensis*

Plate XVIII. Fig. 11.

1962. *Toroisporis* (*Toroisporis*) *teupitzensis teupitzensis* n. fsp. et subfsp. — W. KR., Atlas I. p. 78. Taf. 32. 1—10

Two specimens were found, 32—45 μ , in the Karpathian — Tököl 1, 886.0—888.5 m, Szilvás-várad 1, 145.0 m. The holotype was described from Nagykőrös 1.

The species is morphologically similar to some illustrations of the Japanese *Cheiropleuria bicupis* (BL.) PR. (*Polypodiaceae*) in KREMP et KAWASAKI 1972, p. 109, Fig. 215, left side; and ERDTMAN 1957, Fig. 92. p. 54.

Dictyophyllidites teupitzensis (W. KR. 1962) n. c. ssp. *medioris* W. KR. 1962

Plate XVIII. Fig. 13—14.

1962. *Toroisporis* (*Toroisporis*) *teupitzensis* W. KR. *medioris* n. subfsp. — W. KR., Atlas I. p. 80. Taf. 33. 1—14.

Moderately frequent (5—10 specimens), 32—42 μ forms occurring in the Egerian — Eger, Wind brickyard pit layers "u", Fót 1, 228.5—357.0 m, in the Lower Badenian — Nógrádszakál 2, 239.0—241.0 m, Szokolya 2, 115.3—118.3 m, in the Pannonian — Tata 27, 8.5—18.3 m. KRUTZSCH considered the species to be a steady though not common element in the Lower and Middle Miocene assemblages.

Genus: Undulatisporites PFLUG 1953

1953. *Undulatisporites* n. gen. (PF.) — TH. et PF., Palaeontogr. 94. B. 1—4. p. 52.

Genotype: *Undulatisporites microcutis* PFLUG 1953

Undulatisporites convexus SCHULER et SITTLER 1969

Plate XVIII. Fig. 15.

1969. *Undulatisporites convexus* n. sp. — SCHULER et SITTLER, Bull. Serv. Carte géol. Als. Lorr. 22. 2. p. 182. Pl. 1. Fig. 7., 8.

A 29 μ spore was found in the Upper Pannonian — Naszály 1, 37.2—38.0 m, probably redeposited.

cf. *Undulatisporites structuris* W. KR. 1962

Plate XIX. Fig. 1–2.

1962. *Undulatisporites structuris* n. fsp. — W. KR., Atlas I. p. 76. Taf. 31. 1–5.

One 30 μ specimen was found in the Pannonian — Naszály 1, 104.0–106.0 m.

The shape is not rounded at the corner but rather peaked, thus it was marked as cf. W. KRUTZSCH described it from the Mio–Pliocene boundary.

Genus: *Foveotriletes* VAN DER HAMMEN 1954 ex R. POT. 1956

1954. *Foveotriletes* subgenus — VAN DER HAMMEN, Bol. Geol. Vol. II. No. 2. p. 14. (nomen nudum).

1956. *Foveotriletes* (VAN DER HAMMEN 1954, p. 14) ex R. POTONIÉ — R. POTONIÉ, Synopsis I. p. 43.

Genotype: *Foveotriletes scrobiculatus* (ROSS 1949) R. POTONIÉ 1956

Foveotriletes crassifovearis* W. KR. 1962 ssp. *crassifovearis

Plate XIX. Fig. 3–5.

1962. *Foveotriletes crassifovearis* n. fsp. — W. KR., Atlas I. p. 56. Taf. 21. 1–12.

1967. *Foveotriletes crassifovearis crassifovearis* W. KR. — W. KR., Atlas IV–V. p. 44.

Two specimens, 28–29 μ , were found in the Karpadian — Tököl 1, 906.5–910.3 m and in the Upper Pannonian — Naszály 1, 37.2–38.0 m. This latter, although it is well preserved, may have been redeposited. KRUTZSCH commented it as in the Oligo–Miocene and Lower Miocene.

***Foveotriletes crassifovearis* W. KRUTZSCH 1962 ssp. *crassoides* W. KR. 1967**

Plate XIX. Fig. 6.

1967. *Foveotriletes crassifovearis crassoides* n. subfsp. — W. KR., Atlas IV–V. p. 44. Taf. 4. Fig. 7–8.

One 38 μ specimen was found in the Lower Badenian — Szokolya 2, 75.9–76.7 m. KRUTZSCH described it from the Middle Miocene of Germany.

***Foveotriletes crassifovearis* W. KR. 1962 subfsp. *microfovearis* W. KR. 1967**

Plate XIX. Fig. 7–8.

1967. *Foveotriletes crassifovearis microfovearis* n. subfsp. — W. KR., Atlas IV–V. p. 44. Taf. 4. 1–6.

Specimens of 21–25 μ were encountered in the Egerian — Fót 1, 364.5–367.5 m, in the Eggenburgian — Budajenő 2, 518.2–523.0 m, in the Lower Badenian — Szokolya 2, 37.0–37.8 m. According to KRUTZSCH it is a species occurring sparsely in the Middle Miocene of Lausitz.

***Foveotriletes pessinensis* W. KR. 1967**

Plate XIX. Fig. 10–12.

1967. *Foveotriletes pessinensis* n. fsp. — W. KR., Atlas IV–V. p. 42. Taf. 3. 11–19.

A typical specimen of 36 μ was found in the Eggenburgian — Balaton 26, 566.2–559.0 m. KRUTZSCH described it from Lower Miocene coal-bearing beds.

***Foveotriletes rueterbergensis* W. KR. 1962**

Plate XIX. Fig. 9., 13.

1962. *Foveotriletes rueterbergensis* n. fsp. — W. KR., Atlas I. p. 54–55. Taf. 20. 7–13.

Few specimens were found, 27–30 μ , in the Eggenburgian — Fót 1, 176.7–181.0 m, in the Lower Badenian — Szokolya 2, 95.0–96.6 m, 101.0–102.0 m. KRUTZSCH found it in Pliocene clay.

Foveotriletes semifovearis W. KR. 1967

Plate XIX. Fig. 14—15.

1967. *Foveotriletes semifovearis* n. fsp. — W. KR., Atlas IV—V. p. 42. Taf. 3. 1—10.

Specimens of 38—49 μ were found in the Egerian — Eger, Wind brickyard pit layer "x₂", in the Eggenburgian — Püspökhatvan 4, 213.0—284.0 m, in the Badenian — Zengővárkony 45, 7.2—16.4 m, Tengelic 2, 780.0—783.0 m, Szokolya 2, 87.2—87.9 m.

Foveotriletes triangulus W. KR. 1962

Plate XIX. Fig. 16—17.

1962. *Foveotriletes ? triangulus* n. fsp. — W. KR., Atlas I. p. 54. Taf. 20. 5—6.

Three specimens, 38—39 μ , were found in the Lower Badenian — Zengővárkony 59, 34.0—37.5 m, Nógrádszakál 2, 93.0—95.0 m, Szokolya 2, 107.0—109.0 m. KRUTZSCH described the species from the Middle Miocene.

Remark: I consider the question mark, applied by KRUTZSCH, to be unnecessary because if it is foveolate, as it is, then it certainly belongs to this formal genus.

Foveotriletes verrucatoides W. KR. 1962

Plate XIX. Fig. 18—21.

1962. *Foveotriletes verrucatoides* n. fsp. — W. KR., Atlas I. p. 56. Taf. 21. 13—18.

Specimens of 35—46 μ were found in the Egerian — Fót 1, 288.0—290.5 m, in the Eggenburgian — Budajenő 2, 575.5—575.9 m, in the Badenian — Tengelic 2, 805.0—808.0 m.

KRUTZSCH considered it was a rare species in the Oligo—Miocene and Lower Miocene.

Genus: *Favoisporis* W. KRUTZSCH 1959

1959. *Favoisporis* n. fgen. — W. KR., Palaeontogr. 105. B. p. 127.

Genotype: *Favoisporis trifavus* W. KR. 1959

KRUTZSCH described one species from this genus, I described two *Favoisporis* species in 1963 (Pollen et Spores, V. 2.). During further studies more specimens of all three species were encountered.

Until now it was not found in layers younger than Oligo—Miocene or Eggenburgian. Accordingly, I supposed that the forms found in younger layers (1967, p. 6, 48) of Germany — well in side the boreal belt — were redeposited. KRUTZSCH considered *Favoisporites* an Arctotertiary element though the botanical connections seem to contradict the theory as he related it to *Botrychium matricariaefolium* (RETZ.) A. BR. and to *Cryptogramma* species. The spore of *Botrychium subbifoliatum* BRACK. shows on the photo (in SELLING 1946, p. 25. Pl. 2. Figs. 29—30) clear similarity, as for as size or morphology are concerned, to *Favoisporis*.

Favoisporis concavus NAGY 1963

Plate XX. Fig. 1—4.

1963. *Favoisporis concavus* n. sp. — NAGY, Poll. et Spores, Vol. V. No. 2. p. 405. Pl. III. Fig. 1—3.

Few specimens, 34—39 μ , were found in the Egerian — Eger, Wind brickyard pit layer "u", Fót 1, 234.0—305.0 m, in the Badenian — Tengelic 2, 850.0—851.0 m (redeposited).

Favoisporis concavus is of the same size as *F. trifavus* W. KR. but the verrucae are smaller and a very concave shape.

Favoisporis hungaricus NAGY 1963

Plate XX. Fig. 5—10.

1963. *Favoisporis hungaricus* n. sp. — NAGY, Poll. et Spores, Vol. V. No. 2. pp. 405—406. Pl. III. Fig. 7—8.

Specimens of 23—29 μ were found in the Egerian — Eger, Wind brickyard pit layer "u", Fót 1, 240.0—241.6 m, 354.0—355.0 m.

The shape of *Favoisporis hungaricus* complies with the illustrations in KRUTZSCH, 1959 but it is much smaller (under 30 μ whereas the holotype is 23 μ). The ornamental verrucae are at the same time larger (1—4 μ). According to the illustrations of KRUTZSCH (1967, Atlas IV—V, p. 46.) those on Taf. 5. Fig. 8—14. belong to the species *Favoisporis hungaricus* NAGY.

Favoisporis trifavus W. KR. 1959

Plate XIX. Fig. 22.

1959. *Favoisporis trifavus* n. sp. — W. KR., Palaeontogr. B. 105. pp. 127—128.

1967. *Favoisporis trifavus* W. KR. 1959 — W. KR., Atlas IV—V. p. 46. Taf. 5. 4—23. (pro parte).

Few specimens were found in the Egerian — Fót 1, 237.5—328.0 m, in the Eggenburgian — 168.0—169.3 m.

Genus: Microfoveolatisporis W. KR. 1962.

1962. *Microfoveolatisporis* n. fgen. — W. KR., Atlas I. p. 10.

Genotype: *Microfoveolatisporis tuemmlitzensis* W. KR. 1962

Microfoveolatisporis apheloides W. KR. 1962

Plate XX. Fig. 11.

1962. *Microfoveolatisporis apheloides* n. fsp. — W. KR., Atlas I. p. 58. Taf. 22. 4—9.

One specimen was found in the Upper Pannonian — Megyaszó 1, 25.0—32.0 m. KRUTZSCH described the species from the Pleistocene of Germany and mentioned it as being very rare.

Microfoveolatisporis tuemmlitzensis W. KRUTZSCH 1962

Plate XX. Fig. 12—13.

1962. *Microfoveolatisporis tuemmlitzensis* n. fsp. — W. KR., Atlas I. p. 58. Taf. 22. 1—3.

One specimen was found in the Upper Pannonian — Tihany 62, 56.2—57.2 m. KRUTZSCH considered it to be rare when describing from the Lower Miocene.

Genus: Verrucatisporites NAGY 1969 emend.

1969. *Verrucatisporites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 104.

Diagnosis emendation: Azonotrilete triangular microspores. They have some irregularly situated single verrucae and besides some coni, granuli and spinae may occur.

Genotype: *Verrucatisporites inaequalis* NAGY 1969

Verrucatisporites inaequalis NAGY 1969

Plate XX. Fig. 14—17.

1969. *Verrucatisporites inaequalis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 104. Pl. XXV. Fig. 7—8.

One specimen, found in the Otnngian — Zengővárkony 45, 17.2—18.7 m.

Verrucatisporites tekeresensis n. sp.

Plate XX. Fig. 18–21., Plate XXI. Fig. 1–4.

Holotype: Tek. 1, sample N° 6., slide N° 1., 108.1×29.8, Plate XX. Fig. 18–21.

Locus typicus: Tekeres 1, 14.4–27.2 m

Stratum typicum: Pleistocene; yellow sandy loess

Diagnosis: Azonotrilete triangular spores with rounded corners. The exine is thin (1.0–1.5 μ). Distally unevenly distributed small verrucae (1–2 μ) cover the spore with grana in between. The dehiscence line reaches the equator or does almost so. The proximal side shows much less and smaller verrucae sometimes being only intragranulated.

The holotype is 43 μ .

Differential diagnosis: *Verrucatisporites tekeresensis* n. sp. differs from *V. inaequalis* NAGY 1969 by its bigger overall size but relatively smaller ornamentation elements and by the lack of ornamentation along the dehiscence line.

Some more specimens were found in 49–32 μ size, in the Eggenburgian — Püspökhatvan 4, 198.0–201.0 m, in the Sarmatian — Lak 1, 192.9–196.0 m, in the Lower Pannonian — Naszály 1, 104.0–106.0 m. Two specimens were photographed by RÁKOSI, L. from the Upper Pannonian — Torony 4, 125.0–125.9 m.

Genus: *Cibotioidites* Ross 1949

1949. *Cibotioidites zonatus* n. spm. — Ross, Bull. Geol. Inst. Univ. Upsala XXXIV. p. 32, Pl. I. Fig. 15–16.

1953. *Corrugatisporites* IBRAHIM — THOMSON et PFLUG, Palaeontogr. 94. Abt. B. 1–4. pp. 57–58 (pro parte).

1953. *Triletes* COOKSON ex COUPER — COUPER, New Zeal. Geol. Surv. Pal. Bull. 22. p. 29 (pro parte).

1974. *Cibotioidites* ROSS — SKARBY, Acta Univ. Stockholm, Vol. XXVIII. 1. 1–7. Pl. I–III (pro parte).

Genotype: *Cibotioidites zonatus* Ross 1949

***Cibotioidites zonatus* Ross 1949**

Plate XXI. Fig. 5–10.

1949. *Cibotioidites zonatus* n. spm. — Ross, Bull. Geol. Inst. Univ. Upsala XXXIV. p. 32, Pl. I. Fig. 15–16.

1953. *Corrugatisporites solidus* (R. POT. 1934) TH. et PF. 1953 subsp. *multivallatus* PFLUG 1953 (pro parte) — TH. et PF., Palaeontogr. 94, Abt. B. 1–4. p. 55–56. Taf. 2. 37.

1967. *Triletes multivallatus* (PF. 1953) W. KRUTZSCH 1959 „sensu lato“ — W. KR., Atlas IV–V. p. 72. Taf. 18 (pro parte).

1969. *Lygodioisporites multivallatus* (PFLUG 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 106.

1974. *Cibotioidites zonatus* ROSS 1949 — SKARBY, Acta Univ. Stockholm, XXVIII. 1 (pro parte).

Moderately frequent specimens, 36–37 μ , found from the Egerian to the Ottnangian: Eger, Wind brickyard borehole 6.1–11.1 m, Fót 1, 50.3–371.5 m, Püspökhatvan 4, 204.0–207.0 m, Tekeres 1, 899.4–911.0 m, Zengővárkony 45, 16.0–17.8 m, Szilvássvár 1, 130.0 m.

Remark: The following may be stressed and used as differential diagnosis from Ross' species description (1949): “Exine 4–5 μ thick, provided with thickenings in the equator and parallel with this one. The laesurae are surrounded with crests and reach the angles”.

The same morphological characteristics are shown on the *Corrugatisporites solidus* ssp. *multivallatus* figures in PFLUG 1953, Plate 2. Fig. 37.

KRUTZSCH separated in 1959 *multivallatus* and *paucivallatus* as two species, in 1967 united it again (see remark at *C. paucivallatus*). As holotype he depicted a photo from PFLUG (THOMSON et PFLUG 1953, pl. 2. fig. 38) which is, in my view, rather *paucivallatus* than *multivallatus* type.

If the original diagnosis from Ross is accepted then on the basis of distal equatorial-parallel ornaments the “*multivallatus*” form has to be united with *Cibotioides zonatus*. Thus besides the mentioned figure from PFLUG those in KRUTZSCH's study (1967, Tafel 18. Fig. 1–3., 7–9., 13–15.) has to be grouped with *C. zonatus*.

SKARBY studied the species again in 1974, using Ross' material. Her description, however, extended the morphological characters of the species extensively. She wrote: “ridges in many cases winding and branching to form a more or less complete network”. Further: “it may also have a foveate appearance”. These latter characters — distal reticulum with thick wall which here foveolate effect in a certain focus — are characters of *Corrugatisporites solidus* (see there).

According to the photos the thickening of ornaments at the corners is a common characteristics in both species.

On the basis of all these I consider the following belong to the species from SKARBY's photos: the lectotype (Pl. I. Fig. 1.), then Plate I. Fig. 2. and Plate III. Fig. 1, 5 and 6.

Due to the reticulate structure of the distal side on Plate II. Fig. 1—3. belong to the species *Corrugatisporites solidus* (R. POT. 1934) TH. et PF. 1953.

Genus: *Corrugatisporites* THOMSON et PFLUG 1953 emend.

1953. *Corrugatisporites* IBRAHIM 1933 — TH. et PF. 1953. Palaeontogr. 94. Abt. B. 1—4. p. 55.

1955. *Lygodiisporites* R. POT. 1951 — DELC. et SPRUM. Mém. Soc. Belge de Géol. N. Ser. 4—5. p. 33.

1956. *Lygodiisporites* R. POTONIÉ 1951 — R. POT., Synopsis I. p. 40.

Genotype: *Corrugatisporites solidus* (R. POT. 1934) TH. et PF. 1953

Diagnosis emendation: Azonotrilete, triangular microspores with rounded corners. The side line may vary from convex to slightly concave. The surface is covered by corrugate, rugulate elements, mainly consisting of fused verrucae, higher than $1\ \mu$, and broader than $2\ \mu$ at the base. The ornamentation covers mainly the distal side, regularly or irregularly. The proximal side is more or less corrugate. The dehiscence line reaches the corners or almost does not, with or without torus.

Remark: On the distal side of the genus *Cibotiides* ROSS 1949 the verrucae ranges run strikingly parallel to the equator which is not the case in the genus *Corrugatisporites*.

THOMSON et PFLUG in 1953 derived the genus erroneously from IBRAHIM and the only species they allocated to this genus was *Sporites solidus*, described by POTONIÉ in 1934. They gave the source where the description and the illustration was to be found. According to the Botanical Code the genus is valid, as the erroneous citation of IBRAHIM does not invalidate the name. According to the Botanical Code, Art. 46., Recommendation 46 C., p. 40: . . . "When an author who first validly publishes a name ascribes it to another person, the correct author citation is the name of the actual publishing author . . ." The holotype is in fact undetermined, as THOMSON et PFLUG mentioned it only in the "Bemerkungen" after the *S. solidus* which was also classified here "Autor ist R. POTONIÉ" (1934, S. 42. und Taf. 1. fig. 35) — however, according to the Botanical Code, Art. 37. 1.: "Publication on or after 1 Jan. 1958 of the name of a new taxon of the rank of family or below is valid only when the nomenclatural type is indicated . . ."

***Corrugatisporites asolidus* (W. KRUTZSCH 1959) n. c.**

Plate XXI. Fig. 11—12.

1959. *Triletes asolidus* n. fsp. — W. KR., Geol., Beih. 21/22. p. 151. Taf. 27. Fig. 290—293.

1967. *Ischyosporites asolidus* (W. KR. 1959) n. c. — W. KR., Atlas IV—V. p. 78. Taf. 21. 1—3.

One specimen, $44\ \mu$, in the Eggenburgian — Püspökhatvan 4, 201.0—204.0 m. It fits well the genus *Corrugatisporites*. KRUTZSCH allocated the species to the genus *Ischyosporites*, but that holotype has smooth proximal side — and some ornamentation on the corner. KRUTZSCH described the species from the Middle Eocene of Geiseltal (1959) but considered it to occur in the Oligocene and Miocene too (1967).

***Corrugatisporites corrivallatus* (W. KRUTZSCH 1967) n. c.**

Plate XXI. Fig. 13—14.

1967. *Trilites corrivallatus* n. fsp. — W. KR., Atlas IV—V. p. 74. Taf. 19. 1—6.

A few specimens, 38 — $49\ \mu$, were encountered in the Egerian — Fót 1, 372.0 m, in the Eggenburgian — Püspökhatvan 4, 263.0—266.0 m, in the Ottományian — Szilvásvárád 1, 372.5—381.8/2 m, in the Karpathian — Litke 17, 222.0—224.0 m, Nógrádszakál 2, 221.0—223.0 m, in the Badenian — Tengelic 2, 835.7—839.0 m, Szokolya 2, 81.5—82.5 m. KRUTZSCH considered it to be related to the *Lygodiaceae*. The species was described by him from Lower Miocene brown coal beds in Germany.

***Corrugatisporites delicatus* n. sp.**

Plate XXII. Fig. 1—7.

Holotype: Szk. 2, sample No 111., slide No 1., 43.2×113.1 , Plate XXII. Fig. 1—4.

Locus typicus: Szokolya 2, 109.0—111.2 m

Stratum typicum: Lower Badenian; grey clayey marl

Diagnosis: Azonotrilete, triangular, corrugate spores. The proximal side seems to be almost smooth, although it is fine bulbously folded. The dehiscence line is thin, its length is $2/3-3/4$ that of the radius, and it may be slightly sinuous. Distally flat, corrugate ornamentation form longer or shorter ridges, becoming slightly tight at the corners, thicker than on the sides, like valvae.

Holotype maximal diameter: $51\ \mu$, wall thickness on the sides $2-3\ \mu$.

Differential diagnosis: *Corrugatisporites delicatus* n. sp. is differentiated from *C. solidus* (R. Pot.) by the flat ornamentation, not forming a distinct reticulum on the distal side.

Single specimens, $44-55\ \mu$ were found in the Lower Badenian — Szokolya 2, 79.1–111.2 m, Püspökhatvan 4, 151.0–153.0 m. The specimen found in the Lower Badenian — Szokolya 2, 79.1–79.9 m was marked "cf".

Corrugatisporites graphicus n. sp.

Plate XXVI. Fig. 9–17.

Holotype: Szk. 2, sample No 105., slide No 1., 110.5×11.2 , Plate XXVI. Fig. 9–13.

Locus typicus: Szokolya 2, 100.0–101.0 m

Stratum typicum: Badenian; grey silt

Diagnosis: Azonotrilete, corrugate spores, in polar position triangular with rounded corners. The thin, straight dehiscence line reaches proximally the equator, accompanied on both sides by a flat, broad ($3-7\ \mu$) torus. Proximally it is covered by small, single verrucae and muri, as a result of their fusion. The spore wall is, depending on ornamentation, slightly thicker at the corners. Distally there are flat, corrugate ornaments, made up by confluent verrucae.

The holotype has a diameter of $49\ \mu$.

Differential diagnosis: *Corrugatisporites graphicus* n. sp. is close to *C. delicatus* n. sp. They are similar as to size, shape and distal ornaments. The basic difference is in the proximal ornaments: *C. graphicus* n. sp. is characterised by a broad torus and relatively small verrucae whereas *C. delicatus* nsp. by lacking a torus and showing fine folds.

Some specimens were found from this species, $36-49\ \mu$, in the Egerian — Fót 1, 211.0–218.8 m, in the Eggenburgian — Püspökhatvan 4, 251.0–254.0 m, in the Ottnangian — Zengővárkony 45, 16.0–16.4 m, Nagygörbő 1, 967.9–969.0 m, Nógrádszakál 2, 207.0–209.0 m, in the Badenian — Szokolya 2, 82.3–107.9 m, Nógrádszakál 2, 185.0–187.0 m.

Corrugatisporites hungaricus (NAGY 1963) n. c.

Plate XXII. Fig. 8–11.

1963. *Triletes hungaricus* n. sp. — NAGY, Pollen et Spores, V. p. 402. Pl. II. 1–3.

Specimens of $36-44\ \mu$ were found in the Egerian — Eger, Wind brickyard pit, layer "u", others of $36-42\ \mu$ size were found in the Egerian — Fót 1, 228.2 m, in the Eggenburgian — Fót 1, 173.2–176.7 m, Püspökhatvan 4, 151.0–153.0 m, 257.0–260.0 m, in the Karpathian — Litke 17, 218.0–226.0 m, Nógrádszakál 2, 205.0–207.0 m.

It is probably related to the genus *Dicksonia* (COUPER 1960, p. 39. Pl. I. Fig. 2–4.; ERDTMAN 1957 p. 58.).

When describing the species (NAGY, 1963) I suggested *Dicksonia youngiae* C. MOORE. The genus and even the family *Dicksoniaceae* inhabit the tropics and most of them are tree ferns.

Corrugatisporites limnicus n. sp.

Plate XXVII. Fig. 1–6.

Holotype: Pk. VI., sample No 3., slide No 1., 42×100.9 , Plate XXVII. Fig. 1–2.

Locus typicus: Páztakísfalu VI. 6.3–7.8 m

Stratum typicum: Ottnangian; limnic sequence, grey clay

Diagnosis: Azonotrilete miospores. They are on the corners rounded triangular, the corners are slightly thicker due to the ornaments. The proximal side is almost smooth. The thin dehiscence line does not reach the equator fully. Along the dehiscence line a torus is situated, thinning out towards the corners. Distally there are verrucae, generally $1.5-3\ \mu$, with only few fused, except the three corners where they are fused valvae-like.

The holotype is 39 μ in size.

Differential diagnosis: *Corrugatisporites limnicus* n. sp. is of the same size as *C. colidus* (R. POT., 1934) TH. et PF. 1953 but the torus is more thick and the verrucae are less fused distally, though the corner thickness is more expressed.

Beside the holotype single 37–50 μ specimens were found in the Ottnangian — Zengővárkony 45, 16.4–17.2 m, in the Lower Badenian — Nagyörbő 1, 818.0 m, Tengelic 2, 850.0–851.3 m, in the Eggenburgian — Püspökhatvan 4, 245.0–248.0 m.

***Corrugatisporites litkeensis* n. sp.**

Plate XXVII. Fig. 10–13.

Holotype: L. 17, sample N° 80., slide N° 1., 108.0×11.0, Plate XXVII. Fig. 10–13.

Locus typicus: Litke 17, 156.0–158.0 m

Stratum typicum: Karpathian; grey, silty, clayey marl

Diagnosis: Azonotrilete triangular spore. The thin dehiscence line proximally reaches the corners, accompanied on both sides by a flat, sinuous, fused torus. Proximally fused flat verrucae form corrugate laths which run roughly parallel to the equator and surround the triangular apical space. The verrucae are cca. 2 μ high, 2.5–3 μ long, slightly tapering towards above. The verrucae form also distally corrugate laths, and are 5–7 μ high, 12–15 μ long, angular from above. Among them single 0.5–1 μ grana are found.

The holotype is 60 μ in size.

Differential diagnosis: *Corrugatisporites litkeensis* n. sp. has strong distal corrugate laths which are higher and more evenly spaced than in *C. tekeresensis* n. sp. where they are more rounded, lower and less regular.

One specimen was found.

***Corrugatisporites microvallatus* (W. KRUTZSCH 1967) n. c.**

Plate XXII. Fig. 12–14.

1967. *Triletes microvallatus* n. fsp. — W. KR., Atlas IV–V. p. 76. Taf. 20. 1–11.

The species was found in the Egerian — Eger, Wind brickyard borehole 7.8–8.3 m, and pit, layer “u”; in the Lower Badenian — Tengelic 2, 830.0–833.0 m.

***Corrugatisporites minoris* n. sp.**

Plate XXVII. Fig. 7–9.

Holotype: Ph. 4., sample N° 79., slide N° 1., 115.1×7.1, Plate XXVII. Fig. 7–9.

Locus typicus: Püspökhatvan 4, 299.0–302.0 m

Stratum typicum: Eggenburgian; grey silt

Diagnosis: Azonotrilete triangular, thick-walled spores. The dehiscence line reaches proximally the corners, its ornamentation is a broad, flat torus and some grana. The distal side is covered by sparse 3–7 μ long and 2–3 μ broad verrucae and by some fused ones.

The holotype is of 32 μ , the spore-wall thickness is 3–4 μ .

Differential diagnosis: *Corrugatisporites minoris* n. sp. reminds one *C. microvallatus* (W. KR. 1967) n. c. in size and in having the thick torus, but differs in the thicker exine and the more sparse verrucate elements.

Beside the holotype another 48 μ specimen was found also in Püspökhatvan 4, 204.0–207.0 m.

***Corrugatisporites paucivallatus* (PFLUG 1953) n. c. et emend.**

Plate XXIII. Fig. 1–3.

1953. *Corrugatisporites solidus* R. POT. ssp. *paucivallatus* n. subsp. (PF.) — TH. et PF., Palaeontogr., 94. Abt. B. p. 56. Taf. 2. Fig. 41.

1959. *Triletes paucivallatus* (PFLUG 1953) n. c. — W. KR., Geol., Beih. 21/22. p. 149.

1969. *Lygodiosporites paucivallatus* (PFLUG 1953) n. c. — NAGY, MÁFI Évk. 52. 2. pp. 105–106. Pl. XVIII. Fig. 6–7.

Diagnosis emendation. Trilete microspores, polarly rounded corners. The proximal side is less ornamented. The ornaments are fused and single verrucate elements. The ornaments are 1–2 μ high and 1–4 μ broad. The corrugate ridges are wide spaced than the breadth of the elements and are perpendicular to the side-walls. They form more loose, reticulum-like shapes distally than found in typical *solidus* forms.

PFLUG diagnosed *Corrugatisporites solidus* in 1953 and without determining *C. solidus* ssp. *solidus* he separated within it two subspecies, *C. solidus* ssp. *multivallatus* and *C. solidus* ssp. *paucivallatus*.

He considered as *C. solidus multivallatus* specimens with dense, rugulate ornamentation, above 2 μ . PFLUG meant that both subspecies belong to the species *solidus* and thus they are not separable from *solidus*. The photos published by PFLUG may be regarded as original *solidus* by R. POTONIÉ. I considered *multivallatus* (NAGY 1969) as a species having corrugate ornaments parallel to the dehiscence line or the equator. Accordingly *multivallatus* can not be separated morphologically from *Cibotiidites zonatus* ROSS. Therefore I had to group all species, previously classified as *multivallatus*, with *Cibotiidites zonatus*. In 1967 KRUTZSCH deleted *Triletes paucivallatus* and by expanding the diagnosis allocated it to *multivallatus* "sensu lato".

In my view, however, it is exactly *paucivallatus* which can be separated well, on the basis of PFLUG's diagnosis, from *C. solidus* and the description of *C. paucivallatus* formulated in 1969 used the very same basis (p. 106).

The species was found in the Egerian — Eger, Wind brickyard borehole 10.9–11.1 m, in the Eggenburgian — Fót 1, 155.0–158.0 m, Püspökhatvan 4, 242.0–245.0 m, in the Ottningian — Pusztakisfalu VI. 6.3–12.5 m, Zengővárkony 45, 17.2–17.8 m, in the Karpathian — Litke 17, 156.0–226.0 m, Nógrádszakál 2, 287.0–290.0 m, in the Lower Badenian — Szokolya 2, 79.1–79.9 m, Nógrádszakál 2, 121.2–122.0 m, Tengelic 2, 817.0–820.0 m.

Corrugatisporites pseudovallatus n. sp.

Plate XXIII. Fig. 4–8.

Holotype: Zv. 59., sample No 14., slide No 1., 29.6×107.8, Plate XXIII. Fig. 6–8.

Locus typicus: Zengővárkony 59, 34.0–37.5 m

Stratum typicum: Lower Badenian; grey clayey marl (schlier)

Diagnosis: Azonotrilete triangular spores with polarly rounded corners. The spore-wall is 2–3 μ thick, slightly thicker at the corners. On the proximal side the thin dehiscence line bordered by a torus does not reach quite to the corners. Between the equator and the dehiscence line there are perpendicular, flat islets of ornaments. Distally roughly parallel, sinuous, flat folds are visible.

The holotype is 50 μ in size.

Differential diagnosis: *Corrugatisporites pseudovallatus* n. sp. has to be separated from *C. paucivallatus* (PFLUG 1953) as the ornaments are radially directed, the corrugate elements show more distinct ridges and there are no islets proximally and even distally they are not sinuous. I consider it as a transitional form towards *C. paucivallatus*.

Beside the holotype two specimens were found, in the Lower Badenian — Szokolya 2, 102.2–104.7 m.

Corrugatisporites semivallatus (W. KR. 1967) n. c.

Plate XXIII. Fig. 9–12.

1967. *Triletes semivallatus* n. fsp. — W. KR., Atlas IV–V. p. 74. Taf. 19. 7–15.

Solidus-type spores of 38–44 μ . Some specimens were found in the Egerian — Eger, Wind brickyard borehole 10.9–11.1 m, Fót 1, 228.2 m, in the Karpathian — Litke 17, 216.0–220.0 m, in the Badenian — Tab, thermal water borehole 790.0–791.5 m; these may have been redeposited.

Corrugatisporites solidus (R. POT. 1934) THOMSON et PFLUG 1953

Plate XXIV. Fig. 1–2.

1934. *Sporites solidus* n. sp. — R. POTONIÉ, Arb. Inst. Paläobot. B. 4. p. 42. Taf. 1. Fig. 35.

1950. *Lygodium flexuosoides* Typen, — *Lygodium ? sporites solidus* R. POT. — R. POT., THOMS. et THIERS., Geol. Jb. Bd. 65. p. 45. Taf. A. Fig. 5–6.

1951. *Lygodioisporites solidus* R. POT. — R. POT., Palaeontogr. 91. Abt. B. p. 135, 136, 144, etc. (nomen nudum).
 1953. *Corrugatisporites solidus* R. POT. — TH. et FR., Palaeontogr. 94. Abt. B. p. 55 (pro parte).
 1956. *Lygodioisporites* (al. *Sporites*) *solidus* (R. POT. 1934) R. POT. 1951 — R. POT., Synopsis I. p. 40. Taf. 5. Fig. 4.
 1959. *Trilites solidus* (R. POT. 1934b) n. c. — W. KR., Geol., Jhg. 8, Beih. 21—22. pp. 150—151.
 1969. *Lygodioisporites solidus* (R. POT. 1934) R. POT. 1951 — NAGY, MÁFI Évk. 52. 2. p. 105. Pl. XVIII. Fig. 5.
 1973. *Corrugatisporites solidus* R. POT. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. 19. (1—4). pp. 458—459.
 1974. *Cibotiidites* — 1934, *Sporites solidus* R. POT. — POTONIÉ et VENITZ, p. 14. Pl. 1. Fig. 14. — *Cibotiidites zonatus* ROSS, pro parte — SKARBY, Acta Univ. Stockholm Vol. XXVIII. 1., pp. 2. et 5.

Specimens of 35—50 μ , found in the Rupelian — Eger, Wind brickyard borehole 46.0—46.6 m, in the Egerian — brickyard pit "x₂" layer, Fót 1, 216.5—354.0 m, in the Eggenburgian — Fót 1, 181.0—182.7 m, Várpalota 133, 217.6—220.0 m, Püspökhatvan 4, 290.0—293.0 m, in the Ottnangian — Zengővárkony 45, 17.2—17.8 m, 16.4—17.2 m, Nagygörbő 1, 892.0—897.0 m, Alsóvadász 1, 1029.3—1034.6 m, in the Karpathian — Fót 1, 119.0 m, Litke 17, 222.0—224.0 m, Nógrádszakál 2, 211.0—213.0 m, in the Badenian — Tengelic 2, 830.0—839.0 m, Nógrádszakál 2, 91.4—93.0 m, Szokolya 2, 79.1—79.9 m. It is frequent in the Egerian, less so in other layers.

Corrugatisporites tekeresensis n. sp.

Plate XXIV. Fig. 3—5.

Holotype: Tek. 1. sample No 252., slide No 1., 91.0×10.6, Plate XXIV. Fig. 3—5.

Locus typicus: Tekeres 1, 895.4—899.4 m

Stratum typicum: Ottnangian; grey clay

Diagnosis: Azonotrilete triangular spore, polarly rounded corners. Proximally the dehiscence line does not reach the equator and the exine is smooth around it in a triangle. This triangle is smaller than the length of the dehiscence line. Parallel to the sides fused, rugulate laths surround the end of the dehiscence line. The rugulate laths distally are more irregular, forming an irregular reticulum.

The holotype is 53 μ in size.

Differential diagnosis: *Corrugatisporites tekeresensis* n. sp. differs from *C. solidus* by the proximal central smooth triangle and by showing no thickening of the torus and the corner ornaments.

One specimen was found.

Genus: *Leptolepidites* COUPER 1953 emend. NORRIS 1968

1953. *Leptolepidites* n. gen. — COUPER, New Zeal. Geol. Surv. Paleont. Bull. 22. p. 28.

1968. *Leptolepidites* COUPER emend. — NORRIS, New Zeal. Journ. of Geol. and Geophys. II. 2. June, p. 316.

COUPER described under the name trilete spores ornamented by verrucae on both sides. NORRIS (1962, p. 655) reconsidered the generotype in 1962 and by 1968 he amended the genus. Thus distally they are: "ornamented with well developed verrucae of variable size and shape and with occasional rugulae. Proximal face laevigate or only lightly sculptured".

Thus I had to revise my earlier species, allocated according to COUPER to this genus, except *L. magnipolatus* NAGY 1963. The species *L. baranyaensis* and *L. parvus* were transferred into the genus *Convruccosisporites* R. POT. et KREMP 1954.

Leptolepidites magnipolatus NAGY 1963

Plate XXIV. Fig. 6—9.

1963. *Leptolepidites magnipolatus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. p. 389.

Beside the holotype (Zengővárkony 45, 16.4—17.8 m, Ottnangian), one 50 μ specimen was found in the Eggenburgian — Püspökhatvan 4, 245.0—248.0 m, and other 31—38 μ specimens came from the Karpathian — Litke 17, 37.6—39.0 and 230.0—232.0 m.

Genus: *Convruccosisporites* R. POTONIÉ et KREMP 1954

1954. *Convruccosisporites* nov. gen. — R. POT. et KREMP, Geol. Jb. 69. p. 137. Taf. 6. Fig. 18.

Generotypus: *Convruccosisporites triquetrus* (IBRAHIM 1933) R. POT. et KREMP 1954

Converrucosisporites baranyaënsis (NAGY 1963) n. c.

Plate XXIV. Fig. 10—12.

1963. *Leptolepidites baranyaënsis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. p. 388—389. Pl. I. Fig. 5—6.

Two well-preserved specimens were found, the holotype — in the Ottnangian — Zengővárkony 45, 16.4—17.2 m* and an other 55 μ specimen in the Upper Pannonian — Naszály 1, 17.0—18.0 m. A third specimen found in the Eggenburgian — Püspökhatvan 4, 296.0—299.0 m was marked cf. due to its poorly preserved state.

Due to the amendment of the genus *Leptolepidites* COUPER 1963 by NORRIS in 1968 this species had to be deleted from the genus as its proximal side too is ornamented by big verrucae. Thus I reallocated it into the genus *Converrucosisporites* R. POTONIÉ et KREMP 1954.

Converrucosisporites parvus (NAGY 1969) n. c.

Plate XXV. Fig. 1—4.

1969. *Leptolepidites parvus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 107—108. Pl. XVIII. Fig. 11—12.

Some specimens were found, 28—46 μ , in the Egerian — Fót 1, 234.0—235.0 m, in the Eggenburgian — Budajenő 2, 518.2—523.0 m, Püspökhatvan 4, 224.0—227.0 m, in the Karpathian — Litke 17, 228.0—230.0 m.

Genus: *Macroleptolepidites* NAGY 1963 emend.

1963. *Macroleptolepidites* n. g. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. p. 389.

Diagnosis emendation: Azonotrilete microspores. The distal part is covered with conspicuous differently sized verrucae, being large on the edge of the spore, forming thus its contour decisively to a zigzagged line and having a smaller diameter mostly in the middle of the spore. Proximally, besides the torus alongside the dehiscence line, there are few, small verrucae or granula.

Remark: The genus *Macroleptolepidites* was separated from the genus *Leptolepidites* by the different size of the ornaments. NORRIS emended the genus *Leptolepidites* and this makes the reclassification of the genus *Macroleptolepidites* necessary.

Genotype: *Macroleptolepidites krutzschii* NAGY 1963

***Macroleptolepidites ajkaënsis* n. sp.**

Plate XXV. Fig. 5—9.

Holotype: A. 157, slide No 1, 112×38.4, Plate XXV. Fig. 5—9.

Locus typicus: Ajka 157, 314.9—318.3 m

Stratum typicum: Middle Miocene; grey clay

Diagnosis: Azonotrilete microspore. Proximally the thin, slightly sinuous dehiscence line reaches almost the corners, accompanied by a torus. Proximally there are some smaller verrucae. The distal side is covered by big verrucae, determining the shape of the spore.

The holotype is 29 μ , distal verrucae 5—6 μ , proximal verrucae 1—1.5 μ .

Differential diagnosis: *Macroleptolepidites ajkaënsis* n. sp. differs from *M. krutzschii* NAGY 1963 by its smaller size and by its less fused verrucae which are of similar size.

One specimen was found.

***Macroleptolepidites duplex* (NAGY 1968) n. c.**

Plate XXV. Fig. 10—14.

1968. *Semigleicheniidites duplex* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (3—4) pp. 357—358. Pl. I. Fig. 1, 4—5.

Specimens of 29—33 μ were found in the Karpathian — Zengővárkony 59, 65.0—67.5 m, in the Badenian — Herend 52, 39.2—42.7 m.

* Wrong depth given in the original description.

During the study of the Hungarian Neogene flora and its morphological reevaluation it became clear that the species has to be allocated into this genus. At the time of the description I believed the species to have been redeposited from older layers but as other species from this genus occur also in the Neogene, it is probable that this species too is a Neogene form.

Macroleptolepidites hexagonalis n. sp.

Plate XXV. Fig. 15—17.

Holotype: L. 17., sample No 131., slide No 1., 116.5×20.9, Plate XXV. Fig. 15—17.

Locus typicus: Litke 17, 258.0—260.0 m

Stratum typicum: Karpathian; grey clayey marl

Diagnosis: Azonotrilete spore. Distally it is covered by big, sometimes inflated verrucae, determining the shape of the spore. Among the big verrucae there are some smaller ones. The proximal side is smooth with a thin, relatively short dehiscence line, surrounded by some flat, macula-like ornaments.

The holotype is 43 μ, the verrucae are 2—12 μ high and/or broad.

Differential diagnosis: *Macroleptolepidites ajkaensis* n. sp. reminds on *M. hexagonalis* n. sp. but the verrucae are more evenly sized, the shape is more triangular and it is bigger.

One specimen was found.

Macroleptolepidites krutzschii NAGY 1963

Plate XXV. Fig. 18—20., Plate XXVI. Fig. 1—3.

1963. *Macroleptolepidites krutzschii* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. p. 390—391. Tab. II. Fig. 7—10.

Some 32—48 μ specimens were found in the Pliocene — Hidas 53, 258.1—258.5 m, in the Lower Badenian — Nógrádszakál 2, 95.0—96.5 m, in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Eggenburgian — Püspökhatvan 4, 251.0—254.0 m.

Genus: Polypodiaceoisporites R. POTONIÉ 1956

1951. *Polypodiaceoisporites (speciosus und macrospeciosus)* — R. POT., Palaeontogr. 91. B. 5—6. 144 (nomen nudum).

1956. *Polypodiaceoisporites* R. POTONIÉ 1951 — R. POT., Synopsis I., p. 63.

Genotype: *Polypodiaceoisporites speciosus* (R. POT. 1934) R. POT. 1956

The genus is widespread in time and space. In Hungary, it occurs a great number (dominant) mainly in Paleogene and Lower Miocene formations. Its occurrence in the Pliocene may be due to redeposition.

The species from this genus are related by various authors to various tropical or subtropical recent genera (KRUTZSCH 1967, Atlas IV—V. p. 19). Accordingly they may be used for paleoclimatological considerations. The following recent taxa may be cited according to KREMP et KAWASAKI (1972):

Species:	Area:
<i>(Eriosorus congestus) = Gymnogramma congesta</i> CHRIST.	Costa Rica
<i>Jamesonia imbricata</i> (CAV.) HK. et GREV.	Columbia
<i>Hemipteris werneri</i>	Solomons
<i>Schizostege lydgatei</i> HILL.	Hawaii
<i>Ochropteris pallens</i> (SW.) J. SM.	tropical Africa, Madagascar, Mascarenes

KRUTZSCH (Atlas IV—V. 1967. IV. 19) mentioned, besides *Selaginella scandens*, also mainly *Polypodiaceae* genera:

Genus:	Area:
<i>Actinopteris</i>	tropical Africa, Asia
<i>Anogramma</i>	tropical America; Japan
<i>Dendstaedtia</i>	tropical South America, Australia
<i>Pteris</i>	cosmopolitan
<i>Schizoloma</i>	tropical, subtropical
<i>Taenitis</i>	tropical Asia; Fidji Islands
among the <i>Cyatheaceae</i> :	
<i>Cibotium</i>	tropical America; Polynesia; Asia
<i>Cyathea</i>	tropical, subtropical

Polypodiaceoisporites acutus NAGY 1969

Plate XXVIII. Fig. 7—8.

1969. *Polypodiaceoisporites acutus* n. sp. — NAGY, MÁFI Évk. 52. 2. 112—113. Pl. XIX. Fig. 9.

Specimens of 46—53 μ were found in the Upper Pannonian — Hidas 53, 73.3—89.5 m, 126.6—132.5 m.

Polypodiaceoisporites boerzsoenyensis n. sp.

Plate XXVIII. Fig. 9—12., Plate XXIX. Fig. 1—3.

Holotype: Szk. 2, sample No 92., 109 \times 8.8, Plate XXVIII. Fig. 9—12.

Locus typicus: Szokolya 2, 87.2—87.9 m

Stratum typicum: Lower Badenian; clayey marl

Diagnosis: Zonotrilete triangular miospores. The cingulum is broad (5—10 μ), slightly sinuous. On the proximal side the relatively thin dehiscence line reaches the cingulum. The dehiscence line is accompanied by a sinuous, flat, 7—8 μ broad torus, between the two there are unevenly spaced 2—3 μ broad and high verrucae. The distal spore rim is ornamented by basally fused verrucae, the surface by some flat, broad (5—15 μ) fused verrucae, like a collar.

The holotype is 67 μ in size.

Differential diagnosis: *Polypodiaceoisporites boerzsoenyensis* n. sp. reminds one *P. corrugatus* W. KR. 1967 but is bigger, the cingulum is not thick at the corners and the distal ornaments do not form more or less parallel lines.

Other specimens 51—55 μ , of this species, found in the Lower Badenian — Szokolya 2, 80.7—81.5 m, in the Sarmatian — Cserhátszentiván 1, 188.0—190.0 m.

Remark: Botanical relationship was found to *Pteris coloptera* (Pollen et Spores 1963. V. 2. p. 71). SHATILOVA and MCHEDHISHVILI (1980. VI. T. 1.) showed *Pteris* aff. *quadriaurita* RETZ from the Pliocene of Gruzia which is very similar to *P. boerzsoenyensis* n. sp.

Polypodiaceoisporites corrutoratus n. sp.

Plate XXVII. Fig. 14—16., Plate XXVIII. Fig. 1—6.

Holotype: Szk. 2, sample No 87., slide No 1., 107 \times 6.1, Plate XXVIII. Fig. 1—4.

Locus typicus: Szokolya 2, 82.1—83.9 m

Stratum typicum: Lower Badenian; clayey marl

Diagnosis: Zonotrilete spores. The cingulum is 4—5 μ wide, becoming more or less thinner at the corners. The dehiscence line is slightly sinuous proximally surrounded by a 1—2 μ wide torus, formed by sinuous verrucae. Distally there are 2—6 μ , flat ornament which became muri by fusion.

The holotype is 38 μ in size.

Differential diagnosis: *Polypodiaceoisporites corrutoratus* n. sp. reminds best *P. toriacus* RÁKOSI 1973 (p. 518. T. XVII. Fig. 1—2), that species differs by its broader cingulum and distal single verrucae ornaments.

Specimens, 24—38 μ , were found in the Eggenburgian — Pápa 2, 208.8—243.3 m, in the Karpathian — Zengővárkony 59, 56.0—63.0 m, Litke 17, 37.6—258.0 m, Fót 1, 130.5—131.5 m. The species had its acme in the Badenian, supported by the fact that most specimens and the holotype came from Szokolya 2, 51.5—106.4 m. Further occurrences are: Szilvássvár 1, 145.0 m, Cserhátszentiván 1, 19.0—21.0 m, 103.4—106.4 m (Sarmatian), Tata (mapping) 26, 45.0 m (Pannonian).

Polypodiaceoisporites cyclocingulatus W. KR. 1967

Plate XXIX. Fig. 4—5.

1967. *Polypodiaceoisporites cyclocingulatus* n. fsp. — W. KR., Atlas IV—V. p. 112. Taf. 38. 17—22.

Poorly preserved, 37—43 μ spores in the Egerian — Fót 1, 201.0—205.0 m, in the Eggenburgian* — Szászvár 8, 26—27 m, in the Lower Badenian — Szokolya 2, 51.1—51.9 m, 81.5—82.5 m, in the Pannonian — Alsóvadász 1, 219.0—212.0 m, this last may have been redeposited.

* I published the specimens from Szászvár as *Neogenisporis* sp. in 1969 (MÁFI Évk. 52. 2. p. 129).

PACLTOVÁ and SIMONCSICS (1970 p. 607) found it in Czechoslovakia in a "Helvetian—Tortonian" brown coal sequence in small numbers. KRUTZSCH (1967) described this rare species from an Oligo—Miocene brown coal sequence.

Polypodiaceoisporites gracillimus NAGY 1963

Plate XXIX. Fig. 6—11.

1963. *Polypodiaceoisporites gracillimus* n. sp. — NAGY, Pollen et Spores, V., Nov. 398—400. Pl. 1. 3—6.

Specimens of 38—44 μ were found in the Egerian — Eger, Wind brickyard borehole 8.2—9.2 m, brickyard pit "u" layer (holotype), Fót 1, 201.0—364.0 m, Tata (TVG) 27, 72.8—74.7 m, in the Eggenburgian — Budajenő 2, 556.5—557.7 m, in the Karpathian — Litke 17, 220.0—222.0 m, 230.0—232.0 m, Tököl 1, 830.0—833.0 m, Nógrádszakál 2, 271.0—273.0 m, 283.0—285.0 m, Magyar-egregy, Kistréti árok and Almáspatak surface exposures, in the Lower Badenian — Kóspallag 11, 162.0—163.0 m, Szokolya 2, 82.3—83.1 m, Szokolya 3, 60.1—60.8 m, Nógrádszakál 2, 101.2—122.0 m.

The Pannonian specimens were probably redeposited from older layers: Tata mapping 26, 36.2—47.2 m, Hidas 53, 298.0—299.1 m.

Earlier, a form from the Mecsek Mountains was mentioned as *Polypodiaceoisporites gracillimus* NAGY 1963 var. *emarginatus* (1969 p. 111. Pl. XIX. Fig. 10, 14) which differed from the holotype *P. gracillimus* in that the cingulum was slightly rounded at and near the corners and the ornaments were not fused around the trilete mark. This form is more rounded and the cingulum is slightly thinner — Ottnangian, Zengővárkony 45, 13.2—13.7 m.* In the present study it is not separated from the species.

KRUTZSCH in 1967 (Atlas IV—V) suggested subspecies to the *P. gracillimus* but the basic subspecies he could not find in the German material. His subspecies, due to the apparently different distal verrucae, may not be accepted as *P. gracillimus* subspecies. One of the specimen, published as *P. saxonicus* (Atlas, IV—V. 1967 p. 111. Taf. 37. Fig. 15—17), is identical with the *P. gracillimus* holotype.

Polypodiaceoisporites hamulatus NAGY 1969

Plate XXIX. Fig. 12—16.

1969. *Polypodiaceoisporites hamulatus* n. sp. — NAGY, MÁFI Évk. 52. 2. 119. XXI. 9—10.

Five specimens were found, 26—31 μ , in the Karpathian — Zengővárkony 59, 56.0—60.9 m, in the Eggenburgian — Szászvár 8, 26.0—27.0 m.

Polypodiaceoisporites helveticus NAGY 1969

Plate XXIX. Fig. 17—20.

1969. *Polypodiaceoisporites helveticus* n. sp. — NAGY, MÁFI Évk. 52. 2. 114—115. XX. 14, 17.

Specimens of 34—43 μ were found in the Egerian — Fót 1, 236.0—237.5 m, Tata (TVG) 27, 72.8—74.7 m, in the Eggenburgian — Szászvár 8, 433.8—434.1 m, Püspökhatvan 4, 219.0—222.0 m, in the Ottnangian — Pusztakisfalu VI, 6.3—7.8 m, 10.5—12.5 m, Tekeres 1, 884.0—886.7 m.

Polypodiaceoisporites hidasensis NAGY 1969

Plate XXX. Fig. 1—6.

1969. *Polypodiaceoisporites hidasensis* n. sp. — NAGY, MÁFI Évk. 52. 2. 118. XX. 12—13.

Some specimens, 37 μ , were found in the Lower and Middle Badenian — Hidas 53, 600.5—602.3 m, 708.1—708.5 m. One redeposited specimen, which may be marked as cf. from the Upper Pannonian — Naszály 1, 93.4—104.6 m.

* In the original description the depth is given erroneously as Zengővárkony 45, 8.6—13.2 m (NAGY 1969 p. 111).

Polypodiaceoisporites latigracilis (W. KR. 1967) n. c. n. sta.

Plate XXX. Fig. 7–9.

1967. *Polypodiaceoisporites gracillimus latigracilis* n. subfsp. — W. KR., Atlas IV–V. p. 106. Taf. 35. 17–20.

One 38 μ specimen from the Lower Badenian — Szokolya 2, 51.1–51.9 m.

Remark: This taxon, described by KRUTZSCH as subspecies differs from *P. gracillimus* NAGY 1963 by its round shape, proximal echinus-like tapering sculptures and single and fused distal ornaments. Because of these I consider it as a full species. KRUTZSCH mentioned it from the Upper Oligocene and “in gewissen Abschnitten des Miozäns” as a rare species.

Polypodiaceoisporites cf. latizonatus KEDVES 1961

Plate XXX. Fig. 10–11.

1961. *Polypodiaceoisporites latizonatus* n. fsp. — KEDVES, Pollen et Spores 3. 137–138.

One crumpled 40 μ specimen was found in the Egerian — Fót 1, 301.0–305.0 m. KEDVES described the species from the Eocene of Dorog, so it may have been redeposited.

Polypodiaceoisporites longus NAGY 1969 emend.

Plate XXX. Fig. 12–17.

1969. *Polypodiaceoisporites longus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 121. Pl. XIV. Fig. 2, 4.

Diagnosis emendation: Trilete cingulate spore. The cingulum is of even thickness on the sides (cca. 4 μ) and concave, suddenly narrowing at the corners. On the proximal side, the line of dehiscence runs to the corners, accompanied by a few separate and coalesced verrucae. On the distal side there is a narrower ornament with wavy line running parallel to the equator and ending in projections of 2 to 4 μ size at the corners. On the distal side there are coalesced verrucae of 5 μ maximum width. A size of the holotype is 41 by 36 μ .

The holotype is a damaged specimen from the Karpathian — Zengővárkony 59. New, well-preserved specimens from the Lower Badenian — Szokolya 2, 38.3–118.3 m.

Remark: On the basis of new specimens it was possible to amend the diagnosis.

Polypodiaceoisporites lusaticus W. KRUTZSCH 1967

Plate XXXI. Fig. 1–4.

1967. *Polypodiaceoisporites lusaticus* n. fsp. — W. KR., Atlas IV–V. p. 112. Taf. 38. 1–16.

1969. *Polypodiaceoisporites miocaenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. 116–117. XXI. 2, 4.

The average size of the spores is 20–34 μ , though also some 36–37 μ were found in the Egerian — Eger, Wind brickyard borehole, 7.8–8.3 m, brickyard pit “x₂” layer, Fót 1, 223.2 m, in the Eggenburgian — Püspökhátvan 4, 230.0–233.0 m, Ipolytarnóc, Mihálygerge surface exposures, Pápa 2, 242.8–243.3 m, in the Ottnangian — Alsóvadász 1, 1029.0–1034.6 m, in the Karpathian — Litke 17, 154.0–228.0 m, Fót 1, 119.2–120.0 m, in the Lower Badenian — Tengelic 2, 850.0–851.3 m, in the Badenian — Várpalota 128, 207.0–210.3 m, Tab (thermal water borehole) 790.0–791.5 m, and in the Upper Pannonian — Hidas 53, 298.0–299.1 m, Szederkény 8303, 14.8–15.9 m which may have been redeposited.

Remark: The taxon described from Hungary had to enter the synonym list due to the length press “period” of the monography.

The specimen showed in KRUTZSCH 1967, Plate 38. Fig. 9–11. differs considerably from the holotype due to its “caterpillar-like” rugulate ornaments just like the drawing 19. (p. 116, Abb. 12).

Polypodiaceoisporites magdalenae NAGY 1969

Plate XXXI. Fig. 5–8.

1969. *Polypodiaceoisporites magdalenae* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 118., XX. 2, 10.

One 29 μ specimen from the Egerian — Eger, Wind brickyard pit, layer “x₂” beside the 27 μ

holotype some few 23–29 μ specimens in the Eggenburgian — Szászvár 8, 26.0–27.0 m, in the Ottngian a 27 μ form — Alsóvadász 1, 1029.0–1034.6 m, 28 μ form in the Karpathian — Tököl 1, 886.0–888.5 m.

Polypodiaceoisporites marxheimensis (MÜRR. et PFLUG 1952) W. KRUTZSCH 1959

Plate XXXI. Fig. 9.

1952. *Triradiato-spor. marxheimensis* n. sp. — MÜRR. et PF., Notizbl. Hess. L. A. Bodenf. VI. 3. p. 57, Taf. II. Fig. 2–4.

1953. *Cingulatisporites marxheimensis* (MÜRRIGER et PFLUG) n. c. — TH. et PF., Palaeontogr. 94. B. 1–4. p. 58. Taf. 1. Fig. 13–15.

1959. *Polypodiaceoisporites marxheimensis* (MÜRR. et PF. 1952) n. c. — W. KR., Geol., Beih. 22/22. p. 180.

One 63 μ specimen in the Lower Badenian — Szokolya 2, 60.7–61.5 m. — The species was described from the Upper Oligocene of Germany.

Polypodiaceoisporites maximus NAGY et RÁKOSI 1966

Plate XXXI. Fig. 10–11.

1966. *Polypodiaceoisporites maximus* n. sp. — NAGY et RÁKOSI, Annual Report of the Hung. Geol. Inst. of 1964, p. 268, 275, I. 4–6.

Specimens of 48 μ found in the Egerian — Fót 1, 349.5–354.0 m, in the Lower Badenian — Bánd 3, the holotype is 55 μ .

Polypodiaceoisporites mecsekensis NAGY 1969

Plate XXXI. Fig. 12–17.

1969. *Polypodiaceoisporites mecsekensis* n. sp. — NAGY, MÁFI Évk. 52. 2. 113. XIX. 7–8.

It occurs regularly, in small number, in the Egerian — Fót 1, 321.5–328.0 m, 209.9–212.6 m, Rákoskeresztúr I., 535.0–537.0 m, in the Eggenburgian — Fót 1, 160.0–162.0 m, 153.0–158.0 m, 142.0–142.8 m, Budajenő 2, 538.4–539.4 m, in the Ottngian — Pusztakisfalu VI, 10.5–12.5 m, in the Karpathian — Zengővárkony 59, 63.0–81.0 m, Fót 1, 118.0 m, Litke 17, 194.0–196.0 m, in the Lower Badenian — Hidas 53, 669.2–667.8 m, 711.0–713.0 m, Zengővárkony 59, 30.9–34.0 m, Szokolya 2, 51.1–51.9 m, Nógrádszakál 2, 93.0–95.0 m, and in the Upper Pannonian — Hidas 53, 135.5–137.0 m, which were corroded and redeposited.

Polypodiaceoisporites medius NAGY 1963

Plate XXXII. Fig. 1–6.

1963. *Polypodiaceoisporites medius* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3–4. 392–393. T. III. Fig. 18–19.

Specimens of 30–37 μ , in the Eggenburgian — Szászvár 8, 26.0–27.0 m (holotype), Pápa 2, 242.0–242.8 m, in the Badenian — Tar 34, 530.0–533.0 m.

Polypodiaceoisporites microconcaus W. KR. 1967

Plate XXXII. Fig. 7–8.

1967. *Polypodiaceoisporites microconcaus* n. fsp. — W. KR., Atlas IV–V. p. 114. Taf. 39, 18–32.

Some specimens of 18–25 μ were found in the Eggenburgian — Püspökhatvan 4, 227.0–230.0 m, in the Karpathian — Tököl 1, 873.0–876.0 m, in the Pannonian — Vásárosnamény 1, 787.5–785.0 m, Naszály 1, 19.0–20.5 m, in the last stage they were probably redeposited.

Polypodiaceosporites minutiosus NAGY 1969

Plate XXXII. Fig. 9—10.

1969. *Polypodiaceosporites minutiosus* n. sp. — NAGY, MÁFI Évk. 52. 2. 117. XVIII. 2—3. 13—14.

Beside the three 20 μ specimens from the terrestrial sequence of the Mecsek Mountains no further specimens were found.

Polypodiaceosporites minutus NAGY 1969

Plate XXXII. Fig. 11—12.

1969. *Polypodiaceosporites minutus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 119—120. XIX. 2—5.

Very rare spores of 22—37 μ , found in the Eggenburgian — Szászvár 8, 26.0—27.0 m, 432.5—432.7 m, in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Karpadian — Hidas 53, 1017—1019 m, in the Lower Badenian — Nógrádszakál 2, 121.2—122.0 m, and probably redeposited in the Upper Pannonian — Hidas 53, 118.0—126.8 m.

Polypodiaceosporites muricinguliformis NAGY 1969

Plate XXXII. Fig. 13—14.

1969. *Polypodiaceosporites muricinguliformis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 115. Pl. XX. Fig. 7, 8.

Spores of 40—48 μ , found in the Egerian — Fót 1, 209.9—212.6 m, in the Eggenburgian — Budajenő 2, 538.4—539.1 m, in the Karpadian — Zengővárkony 59, 60.9—63.0 m, Litke 17, 208.0—256.0 m, in the Lower Badenian — Szokolya 2, 84.7—90.3 m, Zengővárkony 59, 39.8—41.8 m (holotype), Tar 34, 450.0—454.0 m, in the Badenian — Hidas 89, 313.0 m, in the Sarmatian — Cserhát-szentiván 1, 30.0—32.5 m.

Polypodiaceosporites pauciornatus n. sp.

Plate XXXII. Fig. 15—20.

Holotype: Szk. 2, sample N° 47., slide N° 1., 101.3×16.5, Plate XXXII. Fig. 15—20.

Locus typicus: Szokolya 2, 51.1—51.9 m

Stratum typicum: Lower Badenian; clayey marl

Diagnosis: Zonotrilete spores with smooth cingulum. Proximally the dehiscence line reaches the cingulum, accompanied by a torus-like thickening and some fused verrucae and grana. The distal side is covered by flat, fused rugae.

Dimensions: The holotype is 46 μ , the cingulum is 5 μ broad at mid-side, becoming quite thin at the corners, in the holotype it even disappears there. The torus is 2—3 μ broad, narrower towards the corners; the verrucae vary from 1—6 μ . The diameter of the distal ornamentation is 30—36 μ .

Differential diagnosis: *P. pauciornatus* n. sp. is close to *P. paucirugosus* n. sp. The former shows flat rugae distally whereas the latter is almost flat, suffused with only some fold lines.

Remark: The ornamentation is individually variable. Besides the holotype 34—43 μ specimens were found in the Lower Badenian — Szokolya 2, 88.2—101.0 m, in the Karpadian — Zengővárkony 59, 71.4—73.0 m, Litke 17, 104.0—106.0 m, in the Eggenburgian — Fót 1, 162.0—164.0 m.

Polypodiaceosporites paucirugosus n. sp.

Plate XXXIII. Fig. 1—4.

Holotype: L. 17., sample N° 133., slide N° 1., 106.5×21.5, Plate XXXIII. Fig. 1—3.

Locus typicus: Litke 17, 262.0—244.0 m

Stratum typicum: Karpadian; silt with fine grained sand

Diagnosis: Zonotrilete, triangular spore with rounded corners. The cingulum is relatively thin, of variable width with smooth wall. The dehiscence line is thin, slightly sinuous, reaching almost the cingulum. Proximally a flat, fused torus ornaments it alongside the dehiscence line, which is thickest at the confluence of the three trilete marks, at the apex, becoming thin at the end of the dehiscence line.

The distal side is generally smaller than the proximal and shows some fold-like shallows. There are some flat, confluent ornaments on the surface, amounting almost to spots.

The holotype is 32 μ , the cingulum is 2–4 μ broad.

Differential diagnosis: *P. paucirugosus* n. sp. is similar to *P. pauciornatus* n. sp. but the ornamentation is different distally: *P. paucirugosus* has only some folds whereas *P. pauciornatus* shows flat rugae.

Remark: The spores are 32–41 μ , the cingulum 2–4 μ broad. On some spores the cingulum is just lower at the corners, in others it disappears and becomes emarginated. The falt ornament along the dehiscence line is 2–8 μ wide. The distal sideline may be slightly sinuous.

Beside the holotype some specimens in the Karpathian — Zengővárkony 59, 65.0–81.0 m, in the Badenian — Szokolya 2, 51.1–91.1 m, Nógrádszakál 2, 99.5–101.0 m, Szilvásvár 1, 145.0 m, and may be secondary in the Pliocene — Tar 34, 221.0–224.5 m.

Polypodiaceoisporites pulchellus n. sp.

Plate XXXIII. Fig. 5–10.

Holotype: T. 2., sample No 239., slide No 1., 113.3 \times 7.9, Plate XXXIII. Fig. 5–7.

Locus typicus: Tengelic 2, 842.0–845.0 m

Stratum typicum: Badenian; schlier

Diagnosis: Zonotrilete spore, with rounded corners. The slightly sinuous dehiscence line reaches proximally the equator, the side is surrounded by a cca. 1 μ thick lath. The cingulum is 3–4 μ broad, smooth, becoming thin at the corners. The ornamentation is restricted to the dehiscence line area, forming roughly a triangle. Small verrucae and 1–2 μ granula cover the surface outside the triangle, fusing into flat 3–4 μ ornaments along the dehiscence line. Distally there is a sinuous triangular ornament, broader — 4–5 μ — at the corners. Some verrucae cover the distal side.

The holotype is 32 μ .

Differential diagnosis: *Polypodiaceoisporites pulchellus* n. sp. shows common features with *P. triangularis* n. sp., like the distal triangular ornament. *P. pulchellus* n. sp. is slightly bigger. The ornamentation on *P. triangularis* n. sp. is proximally confluent, the distal side shows only the triangle.

Some 32–35 μ specimens were found in the Lower Badenian — Nógrádszakál 2, 91.4–95.0 m, in the Ottnangian — Nagyörbő 1, 977.2–979.2 m.

Polypodiaceoisporites rectolatus NAGY 1963

Plate XXXIII. Fig. 11–16.

1963. *Polypodiaceoisporites rectolatus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3–4. 393–394.

1973. *Segmentizonosporites rectolatus* (NAGY 1963d) n. c. — KEDVES, Studia Biol. Hung. p. 52. XVI. 15–16.

Some specimens, 33–43 μ , were encountered in the Eggenburgian — Szászvár 8. 433.8–434.1 m (holotype), in the Ottnangian — Alsóvadász 1, 1029.0–1034.6 m, in the Karpathian — Litke 17, 214.0–218.0 m, in the Lower Badenian — Nógrádszakál 2, 95.5–99.5 m.

Remark: KEDVES allocated in 1973 a specimen from the Lower Eocene of the Bakony Mountains into a new genus set up by him. I reject this opinion as the cingulum does not narrow in all specimens at some corners of the species and as this character is not consequent it may not be used for the separation of genera.

Polypodiaceoisporites saxonicus W. KRUTZSCH 1967

Plate XXXIII. Fig. 17–18.

1967. *Polypodiaceoisporites saxonicus* n. fsp. — W. KR., Atlas IV–V. p. 110. Taf. 37. Fig. 5–9.

Spores of 30–35 μ , found in the Badenian — Kóspallag 11, 47.0–47.4 m, 160.7–162.0 m. The spores are rather poorly preserved which may be the result of volcanic effects or redeposition. KRUTZSCH mentioned it to occur sparsely in Upper Oligocene and Lower Miocene formations. Accordingly, its Plio–Pleistocene occurrence may be due to redeposition. The specimen of the Atlas IV–V. Taf. 37. Fig. 15–17. is very close to the holotype of *Polypodiaceoisporites gracillimus* NAGY 1963 (see there).

Polypodiaceoisporites schoenewaldensis W. KRUTZSCH 1967

Plate XXXIII. Fig. 19—21.

1967. *Polypodiaceoisporites schoenewaldensis* n. fsp. — W. KR., Atlas IV—V. p. 110. Taf. 37. Fig. 1—4.

Single spores of 37—42 μ in the Egerian — Fót 1, 234.0—235.0 m, 357.0—358.5 m, Tata (TVG) 27, 72.8—74.7 m, in the Eggenburgian — Püspökhatvan 4, 233.0—236.0 m, in the Ottnangian — Várpalota 133, 175.6—180.0 m, in the Lower Badenian — Tengelic 2, 850.0—851.3 m, Szokolya 2, 55.1—55.9 m.

KRUTZSCH described the species from the Middle Oligocene.

Polypodiaceoisporites seidewitzensis W. KRUTZSCH 1967

Plate XXXIII. Fig. 22—24.

1967. *Polypodiaceoisporites seidewitzensis* n. fsp. — W. KR., Atlas IV—V. p. 114. Taf. 39. 8—17.

Few specimens, 23—24 μ , were collected from the Eggenburgian — Püspökhatvan 4, 233.0—275.0 m, from the Badenian — Tab, thermal water borehole 790.0—791.5 m.

KRUTZSCH described the species from the Lower Miocene and found it in Germany and Czechoslovakia.

Polypodiaceoisporites semiverrucatus (W. KR. 1967) n. sta.

Plate XXXIV. Fig. 1—4.

1967. *Polypodiaceoisporites gracillimus semiverrucatus* n. subfsp. — W. KR., Atlas IV—V. p. 108. Taf. 36. 1—16.

Specimens of 32—36 μ were found in the Badenian — Kóspallag 11, 162.0—163.0 m, 160.7—162.0 m, 47.0—47.4 m, in the Ottnangian — Tekeres 1, 908.9—911.4 m.

From among the illustrations shown on Plate 36. (KRUTZSCH op. cit.) I consider the specimens in Fig. 1—5. (Bellzig 1, Miocene), Fig. 12—13. (Treplin 2, Upper Oligocene) and Fig. 9—11., 14—16. from Czechoslovakia belong to the new species.

Polypodiaceoisporites simplicatus (NAGY 1969) nov. nom. et emend.

Plate XXXIV. Fig. 5—6.

1969. *Polypodiaceoisporites simplex* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 114. Pl. XX. Fig. 1.

Diagnosis emendation: Zonotrilete spores with triangular, rounded corners. The sides vary from slightly concave to convex. The smooth cingulum is relatively broad, 6—8 μ . Proximally the dehiscence line is straight, thin, reaching almost to the corners. The almost torus-like fused verrucae along the dehiscence line are 4—5 μ broad, without following the dehiscence line in its whole length. Distally sparse, more or less fused verrucate elements form a 20—25 μ triangle.

Remark: SAH described in 1967 (p. 33—34.) a morphologically different species by the name *Polypodiaceoisporites simplex* so that I had to change the name of my *simplex* species. Further specimens suggested that amendment was needed in the diagnosis.

Spores of 46—53 μ were found in the Karpathian — Zengővárkony 59, 65.0—67.0 m, Litke 17, 264.0—265.0 m, in the Lower Badenian — Nógrádszakál 2, 121.2—122.0 m, Szokolya 2, 101.0—102.2 m, 95.0—96.6 m, in the Sarmatian — Cserhátszentiván 1, 190.0—192.0 m, in the Upper Pannonian — Hidas 53, 118.0—126.8 m, the holotype, probably redeposited.

KEDVES (1973, Pl. XV. Fig. 5—6.) found it in the Middle and Upper Eocene of the Bakony Mountains.

Polypodiaceoisporites snopkovae KEDVES 1973

Plate XXXIV. Fig. 7—8.

1973. *Polypodiaceoisporites snopkovae* n. fsp. — KEDVES, Studia Biol. Hung. p. 47—48. XV. 3, 4.

One specimen, 35 μ , in the Egerian — Fót 1, 228.2—230.0 m, in the same borehole but in the Eggenburgian 168.0—169.3 m one poorly preserved specimen, marked as cf.

KEDVES described the species from the Middle Eocene of the Bakony Mountains.

Polypodiaceoisporites speciosus (R. POT. 1934) R. POTONIÉ 1956

Plate XXXIV. Fig. 9.

1934. *Sporites speciosus* n. sp. — R. POT., Arb. Inst. Paläobot. 4. 44. Taf. I. Fig. 32.

1951. *Polypodiaceoisporites speciosus* — R. POT., Palaeontogr. 91. B. 5–6. 114. Taf. XX. Fig. 8.

1956. *Polypodiaceoisporites* (al. *Sporites*) *speciosus* (R. POT. 1934) R. POT. 1951 — R. POT., Synopsis I. p. 63. Taf. 9. Fig. 84.

1969. *Polypodiaceoisporites speciosus* (R. POT. 1934) R. POT. 1951 — NAGY, MÁFI Évk. 52. 2. p. 110–111.

Spores of 32–48 μ in few specimens in the Egerian — Fót 1, 237.5–238.0 m, in the Lower Badenian — Szokolya 2, 104.7–106.4 m, in the Upper Pannonian — Hidas 53, 135.5–148.5 m. The last one was redeposited.

Remark: R. POTONIÉ described the species in 1934 from Eocene layers of Geiseltal and together with others allocated it to “*Lycopodiaceae?*”.

In 1951 he used the generic name *Polypodiaceoisporites* as nomen nudum and with the species name *speciosus* he applied it to morphologically different species (e.g. *P. neddeni*).

He depicted the *P. speciosus* as generotype in 1956 and provided a description and illustration which may be regarded a generic diagnosis (Taf. 9. Fig. 84.). Thus the name *Polypodiaceoisporites speciosus* is valid from this time in contrast to R. POTONIÉ 1956 and NAGY 1969 (see above).

Polypodiaceoisporites spiniverrucatus TREVISAN 1967

Plate XXXIV. Fig. 10–12.

1967. *Polypodiaceoisporites spiniverrucatus* n. fsp. — TREVISAN, Palaeontogr. Ital., LXIII. N. Ser. XXXII. p. 10–11. III. 1–2.

36–45 μ spores in few specimens, found in the Karpathian — Litke 17, 40.0–41.0 m, in the Lower Badenian — Szokolya 2, 87.2–87.9 m, in the Sarmatian — Cserhátszentiván 1, 15.5–138.0 m.

Remark: The specimens in this country are bigger than those described by TREVISAN (30–32 μ). TREVISAN considered it was related to the genus *Pteris*, especially to *P. pellucida*. The Italian forms came from the Messinian stage.

Polypodiaceoisporites szaszvarensis NAGY 1969

Plate XXXIV. Fig. 13–16.

1969. *Polypodiaceoisporites szaszvarensis* n. sp. — NAGY, MÁFI Évk. 52. 2. 117–118. XX. 3–6.

Spores of 20–25 μ , a few specimens, found in the Egerian — Eger, Wind brickyard borehole 9.2–9.7 m, in the Eggenburgian — Kisbattyán 1, 462.0 m, Szászvár 8, 26.0–27.0 m.

Polypodiaceoisporites torosus NAGY 1969

Plate XXXIV. Fig. 17–22.

1969. *Polypodiaceoisporites torosus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 120–121. Fig. 24. Pl. XX. Fig. 9, 11.*

Moderately frequent in 30–50 μ size, found in the Eggenburgian, Ottningian, Lower Badenian of the Mecsek Mountains and in the Eggenburgian — Fót 1, 173.2–176.7 m, in the Ottningian — Tekeres 1, 870.0 m, in the Karpathian — Litke 17, 224.0–226.0 m, Tekeres 1, 845.0–850.0 m, in the Lower Badenian — Szokolya 3, 71.2–74.5 m, Szokolya 2, 79.1–79.9 m, 81.5–82.3 m, in the Lower Pannonian — Pápa 2, 189.6–192.8 m, which is probably redeposited.

Polypodiaceoisporites triangularis n. sp.

Plate XXXV. Fig. 1–7.

Holotypus: T. 2, sample N° 238/a, slide N° 1, 115.9×9.6, Plate XXXV. Fig. 1–2.

Locus typicus: Tengelic 2, 839.0–842.0 m

Stratum typicum: Lower Badenian; schlier

* In NAGY 1969. p. 120. on the drawing the left proximal side torus is missing which is distally thinner.

Diagnosis: Zonotrilete spore. The equatorial shape is triangular, the corners truncately rounded. The side lines are slightly concave. The cingulum is smooth. Proximally a flat rib surrounds the dehiscence line in a triangle with rounded corners which is slightly sinuous and reaches the corners of the ornament. Distally, in the center of the spore, a triangle is formed by a lath, thinning out towards the corners.

Dimensions: Diameter 24 μ , cingulum width cca. 3 μ , the distal ornament is a 0.7–1 μ broad lath, surrounding a 10 μ diameter space.

Differential diagnosis: *P. triangularis* n. sp. differs from small *Polypodiaceoisporites* species, described until now by the cingulum, the distal ornamentation and the denser proximal ornamentation. This species is smaller than *P. pulchellus* n. sp. and the ornamentation is different.

Besides the holotype it was found in the Egerian — Eger, Wind brickyard borehole 8.3–9.2 m (two 27 μ species), in the Pannonian — Vásárosnamény 1, 751.0–754.0 m, one specimen, 28 μ .

Polypodiaceoisporites triangulus W. KRUTZSCH 1967 ssp. **triangulus**

Plate XXXV. Fig. 8–11.

1967. *Polypodiaceoisporites triangulus triangulus* n. fsp. et subfsp. — W. KR., Atlas IV–V. 104. T. 34. 1–8.

Spores of 38–45 μ were found, some specimens, in the Eggenburgian — Budajenő 2, 538.4–539.4 m, in the Lower Badenian — Nógrádszakál 2, 93.0 m.

The species was described by KRUTZSCH from the Middle Miocene. Only few specimens were found.

Polypodiaceoisporites triangulus W. KRUTZSCH 1967 ssp. **trianguloides** W. KRUTZSCH 1967

Plate XXXV. Fig. 12.

1967. *Polypodiaceoisporites triangulus trianguloides* n. subfsp. — W. KR., Atlas IV–V. p. 104. Taf. 34. 9–13.

A corroded 41 μ specimen was found in the Upper Oligocene — Tata (TVG) 27, a 40 μ specimen in the Eggenburgian — Püspökhatvan 4, 284.0–287.0 m, and one cf. in the Lower Badenian — Szokolya 2, 51.1–51.9 m.

KRUTZSCH described this rare subspecies from the “locus typicus” in the Lower Miocene of Saxonia.

Polypodiaceoisporites triornatus n. sp.

Plate XXXV. Fig. 13–18.

Holotypus: Szk. 2., sample N° 84., slide N° 1., 103.2×20.3, Plate XXXV. Fig. 13–16.

Locus typicus: Szokolya 2, 80.7–81.5 m

Stratum typicum: Lower Badenian; grey marl

Diagnosis: Zonotrilete miospores. The cingulum is 3–6 μ broad, it may become quite thin at the corners. On the proximal side there is a cca. 2 μ broad lath, running roughly parallel to the cingulum and forming generally a triangle. The dehiscence line is $4/5$ – $5/5$ of the radius. Proximally flat single or fused verrucae are found (1–5 μ). Distally too there is a triangle-forming lath, running acutely to the corners, which is 1–1.5 μ broad. The distal side is ornamented by verrucae.

Dimensions: Diameter 43 μ , proximal diameter 40 μ , distal diameter 30 μ . The verrucae are 1–8 μ , the fused elements 10–15 μ .

Differential diagnosis: *Polypodiaceoisporites triornatus* n. sp. reminds *P. torosus* NAGY 1969. The *P. triornatus* n. sp. has convex sides, the dehiscence line is accompanied by a torus and the ornamental elements of the distal side are individually different.

Remark: The species is morphologically very variable. The Lower Badenian specimens (Szokolya 2, 100.0–109.0 m) form a long, fused ornament at the corners. The Sarmatian forms have broader cingulum which is not thinner at the corners (Cserhátszentiván 1, 132.0–134.0 m, 194.0–196.0 m).

Polypodiaceoisporites verrucosus NAGY 1969

Plate XXXVI. Fig. 1—2.

1969. *Polypodiaceoisporites verrucosus* n. sp. — NAGY, MÁFI Évk. 52. 2. 113—114. Pl. XIX. Fig. 12—13.

Spores of 30—33 μ were found in the Egerian — Fót 1, 216.5—218.8 m, 370.5—371.5 m, Eger, Wind brickyard pit, layers "u", in the Eggenburgian — Szászvár 8, 26.0—27.0 m, Várpalota 133, 214.2—217.0 m, in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Badenian — Kőspallag 11, 162.0—163.0 m.

Polypodiaceoisporites zengoevarkonyensis NAGY 1969

Plate XXXVI. Fig. 3—7.

1969. *Polypodiaceoisporites zengővarkonyensis* n. sp. — NAGY, MÁFI Évk. 52. 2. 110. Pl. XX. Fig. 15—16.

Spores of 31—42 μ were found in the Lower Badenian — Zengővárkony 59, 34.0—37.5 m (holotype), Tengelic 2, 850.0—851.2 m, Szokolya 2, 55.1—104.7 m, Nógrádszakál 2, 99.5—109.1 m, in the Sarmatian — Cserhátszentiván 1, 169.0—171.0 m.

Polypodiaceoisporites zolyomii NAGY 1963

Plate XXXVI. Fig. 8—10.

1963. *Polypodiaceoisporites zolyomii* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. 309. Pl. III. Fig. 20—21.

Some spores of 34—39 μ were found in the Ottnangian — Szászvár 8, 26.0—27.0 m, Nagygyörfő 1, 977.2—979.7 m, Tekeres 1, 874.9—878.2 m, in the Badenian — Tar 34, 427.0—430.0 m, Szokolya 2, 81.5—82.3 m.

Genus: Verrucingulatisporites KEDVES 1961

1961. *Verrucingulatisporites* n. gen. — KEDVES, Pollen et Spores, Vol. III. No. 1. Mai, p. 140.

Genotype: *Verrucingulatisporites verrucatus* KEDVES 1961

Verrucingulatisporites elegans NAGY et RÁKOSI 1966

Plate XXXVI. Fig. 11., 14.

1966. *Verrucingulatisporites elegans* n. sp. — NAGY et RÁKOSI, Ann. Rep. of Hung. Geol. Inst. 1964, pp. 268—269., 275—276., Pl. II. 1—4.

The 46 μ specimen came from the Lower Badenian of the Bakony Mountains.

Verrucingulatisporites fotensis n. sp.

Plate XXXVI. Fig. 12—13.

Holotypus: F. 1., sample N° 35., slide N° 1., 98.5×21.2, Plate XXXVI. Fig. 12—13.

Locus typicus: Fót 1, 181.0—182.7 m

Stratum typicum: Eggenburgian; fine sand

Diagnosis: Zonotrilete miospore. The cingulum is sinuous, more expressed (5—6 μ) at the corners. The proximal side is covered by some, partially fused, verrucae. The dehiscence line is thin, slightly sinuous, reaches the cingulum, accompanied by a thin torus. It is covered distally by flat, fused verrucae, forming muri. On both sides and on the cingulum besides the verrucae there are small verrucae, too.

The holotype is 42 μ in size.

Differential diagnosis: The *V. fotensis* n. sp. is similar to *V. grandis* n. sp. due to the well-developed cingulum at the three corners, but it is less folded, and the distal verrucae are flat. The cin-

gulum reminds *V. granulatus* W. KR. 1967 ssp. *triangulizonatus* W. KR. 1967 (Atlas IV—V. p. 124. Taf. 43. Fig. 1—3), too, but *V. fotensis* n. sp. is stronger rippled and the small ornaments W. KR.'s species are distinctly different.

One specimen was found.

Verrucingulatisporites grandis n. sp.

Plate XXXVI. Fig. 15—18.

Holotypus: Ph. 4, sample N° 56., slide N° 1., 110.7×12.3, Plate XXXVI. Fig. 15—18.

Locus typicus: Püspökhatvan 4, 230.0—233.0 m

Stratum typicum: Eggenburgian; grey silt

Diagnosis: Zonotrilete spore, on the corners the cingulum is thicker, with folds. Proximally it is ornamented by flat verrucae. The thin sinuous dehiscence line reaches the cingulum. The distal side is ornamented by large verrucae-ridges which are frequently fused at their basis and lean against the cingulum.

Dimensions: The holotype is 44 μ . The cingulum is 2—6 μ at the corners, 0.5 μ on the sides, some verrucae make it look thicker. The distal side is covered by 2—4 μ broad, 4—10 μ long verrucae which may be single or confluent.

Differential diagnosis: *Verrucingulatisporites grandis* n. sp. reminds best *V. fotensis* n. sp. The distinctive character is the well developed ornamentation of the distal side.

Remark: Three 33—38 μ specimens were found in the Eggenburgian — Püspökhatvan 4, 239.0—242.0 m, 278.0—281.0 m.

Verrucingulatisporites granus W. KR. 1967 ssp. *granus*

Plate XXXVII. Fig. 1—3.

1967. *Verrucingulatisporites granus granus* n. fsp. subfsp. — W. KR., Atlas IV—V. p. 126. Taf. 41. Fig. 1—11.

Spores of 31—35 μ found in the Lower Badenian — Nógrádszakál 2, 78.0—79.5 m, in the Lower Pannonian — Tata (TVG) 26, 35.0—39.0 m, the last may have been redeposited.

KRUTZSCH found the rare species in the Middle Oligocene—Lower Miocene of Germany.

Verrucingulatisporites gregussi NAGY 1963

Plate XXXVII. Fig. 4—5., 7., 11.

1963. *Verrucingulatisporites gregussi* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. p. 395.

Some specimens, 45—46 μ , were found in the Ottnangian — Zengővárkony 45, 16.0—16.4 m, 17.2—17.8 m.

Remark: In the holotype description the locality is wrong. It occurred in Zengővárkony 45, sample 5., 17.2—17.8 m and not sample 4., 16.0—16.4 m.

Verrucingulatisporites heteroverrucatus SIMONCSICS 1966

Plate XXXVII. Fig. 6.

1964. *Verrucingulatisporites heteroverrucatus* n. sp. — SIMONCSICS, Fortschr. Geol. Rheinl. West. 12. pp. 99—100. Taf. 1. Fig. 4—5.

Specimen of 45 μ maximal diameter was found in the Ottnangian — Tekeres 1, 869.7—874.0 m. SIMONCSICS described the species from the Salgótarján Brown Coal Seams Formation in the Ottnangian, too.

Verrucingulatisporites karpatiensis n. sp.

Plate XXXVII. Fig. 12—13.

Holotypus: Nsz. 2, sample N° 62., slide N° 1., 100.5×17.9, Plate XXXVII. Fig. 12—13.

Locus typicus: Nógrádszakál 2, 209.0—211.0 m

Stratum typicum: Karpathian; grey clay-marl (schlier)

Diagnosis: Zonotrilete spore. Proximally the cingulum is almost smooth, thicker at the corners (4–5 μ), thinner on the sides (2–3 μ). The dehiscence line is thin, it does not reach the corners and is accompanied on both sides by a torus. The distal side is ornamented by big verrucae, including the cingulum, and small grani.

Dimensions: The holotype is 46 μ .

Differential diagnosis: *Verrucingulatisporites karpatischen* n. sp. reminds in its morphology *V. fo-tensis* n. sp. but its distal ornaments are much bigger than in the latter species.

One specimen was found.

Verrucingulatisporites mecsekensis NAGY 1969

Plate XXXVII. Fig. 8.

1969. *Verrucingulatisporites mecsekensis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 122. Pl. XXI. Fig. 5–6.

Besides the holotype more specimens of 35–47 μ were found in the Egerian — Püspökhátvan 4, 302.0–306.0 m, in the Ottnangian — Zengővárkony 45, 16.0–17.2 m, Pusztakisfalú VI. 12.5–15.0 m, in the Badenian — Tab thermal borehole, 790.0–791.5 m, Tengelic 2, 795.6–796.4 m, Szokolya 3, 35.0–36.0 m, Szokolya 2, 76.7–77.5 m.

Remark: In the original description the holotype dimensions are erroneous. The right values are 47×42 μ . The large verrucae distally look like a cingulum but there is no second cingulum.

Verrucingulatisporites miocaenicus NAGY 1969

Plate XXXVII. Fig. 9–10., 14.

1969 *Verrucingulatisporites miocaenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 122. Pl. XXI. Fig. 1., 3.

The species, 39–47 μ , was found in the Egerian — Eger, Wind brickyard borehole, 9.2–9.7 m, in the Eggenburgian — Püspökhátvan 4, 245.0–248.0 m, 257.0–260.0 m, in the Ottnangian — Zengővárkony 45, 16.4–17.2 m, in the Karpathian — Litke 17, 75.0–77.0 m, 220.0–222.0 m.

Remark: The sample data in the original holotype description are erroneous: not sample 3., 16.0–16.4 m, but Zengővárkony 45, sample 4., 16.4–17.2 m.

Verrucingulatisporites nogradensis n. sp.

Plate XXXVII. Fig. 15–16.

Holotypus: Nsz. 2, sample N° 69., slide N° 1., 111.5×20.9, Plate XXXVII. Fig. 15–16.

Locus typicus: Nógrádszakál 2, 223.0–225.0 m

Stratum typicum: Karpathian; grey clayey marl

Diagnosis: Zonotrilete miospore. The cingulum becomes thicker at the corners, where it is ornamented by flat verrucae. Proximally the dehiscence line is accompanied by a flat, broad torus which is thinner at the end of the dehiscence line which in turn reaches the corners or almost does so. The proximal side has some flat verrucae. Distally the exine is thicker due to the fused, flat verrucae, covering almost the whole surface.

Dimension: The holotype is 42 μ . The maximum breadth of the cingulum at the corners is 5 μ . The proximal torus is 5–6 μ at the apex, 2–3 μ at the corners.

Differential diagnosis: *Verrucingulatisporites nogradensis* n. sp. reminds *V. mecsekensis* NAGY 1969 due to the proximal ornamentation and spore size. It differs by cingulum characters and flat distal ornaments.

Besides the holotype one 62 μ specimen was found in the Badenian — Szokolya 2, 76.7–77.5 m.

Verrucingulatisporites rugosus n. sp.

Plate XXXVIII. Fig. 4–10.

Holotypus: Zv. 59, sample N° 24., slide N° 1., 114.5×21.9, Plate XXXVIII. Fig. 6–9.

Locus typicus: Zengővárkony 59, 60.9–63.0 m

Stratum typicum: Lower Badenian; clayey marl

Diagnosis: Zonotrilete, verrucate spore. Proximally the thin dehiscence line is slightly sinuous and reaches the corners. The surface is covered by verrucae and grani of different size along the dehiscence line too and on both sides it is accompanied by a 2–3 μ broad arcuate rib, formed by basally partially or fully fused muri. There are some verrucae on the 6–7 μ broad, sinuous cingulum. The distal side line is ribbled-sinuuous. Most of the verrucae on the distal side are muri-like fused.

Dimension: The holotype is 48 μ , others are 48–58 μ . The cingulum is 4–6 μ broad, the distal muri are 4–8 μ broad and 4–10 μ long. On some specimens the cingulum thins out completely at the corners.

Differential diagnosis: *Verrucingulatisporites rugosus* n. sp. reminds best *V. miocaenicus* NAGY 1969 due to the sinuous cingulum. Differs however by the characteristic arci-like ribs of the proximal side and the fused ornaments of the distal side.

The species was found in the Karpathian — Zengővárkony 59, 60.9–67.0 m, in the Lower Badenian — Szokolya 3, 68.6–69.6 m.

Verrucingulatisporites trifoliiformis NAGY 1969

Plate XXXVIII. Fig. 11–12.

1969. *Verrucingulatisporites trifoliiformis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 123. Pl. XXI. Fig. 12–13.

A 32 μ specimen was found in the Ottnangian — Pusztakisfalu VI., 15.0–17.0 m.

Verrucingulatisporites undulatus NAGY 1963

Plate XXXVIII. Fig. 13–14.

1963. *Verrucingulatisporites undulatus* n. sp. — NAGY, Pollen et Spores V. 2. p. 400. Pl. I. Fig. 7–8.

Spores of 31–34 μ , found in the Egerian — Eger, Wind brickyard pit layers “u”, in the Badenian — Kóspallag 1, 160.7–162.0 m, which is probably redeposited.

Verrucingulatisporites cf. varius W. KR. 1967

Plate XXXVIII. Fig. 15–16.

1967. *Verrucingulatisporites varius* n. fsp. — W. KR., Atlas IV–V. p. 127. Taf. 44. Fig. 16–19.

Rather poorly preserved 46–50 μ specimens from the Egerian — Eger, Wind brickyard borehole 16.8–17.2 m, Karpathian — Zengővárkony 59, 63.0–65.0 m.

KRUTZSCH mentioned it as a rare species from the Upper Oligocene of Lausitz.

Genus: Gemmatriletes PIERCE 1961

1961. *Gemmatriletes* n. gen. — PIERCE, Lower Upper Cretaceous plant microfossils from Minnesota, Univ. of Minn., Bull. 42. p. 20.

G e n e r o t y p u s : *Gemmatriletes morulus* PIERCE 1961

Gemmatriletes sp.

Plate XXXVIII. Fig. 1–3.

Trilete spore of 27 μ , covered by verrucae, found in the Eggenburgian — Pápa 2, 242.0–243.8 m. The sample contained many redeposited *Normapolles* sp. from the Cretaceous and therefore I consider *Gemmatriletes* too as having been redeposited.

Genus: Bifacialisporites NAGY 1963

1963. *Bifacialisporites* n. gen. — NAGY, Pollen et Spores Vol. V. No. 1. Mai, p. 143–144.

G e n e r o t y p u s : *Bifacialisporites murensis* NAGY 1963

Remark: KRUTZSCH (1967, p. 19.) considered *Bifacialisporites* NAGY 1963 as a synonym of *Poly-podiaceoisporites* R. POT. 1956. I do not accept this opinion as there are morphological differences between the two genera which make them easily separable, as mentioned in the differential diagnosis (NAGY 1963, p. 144.) and in the study later (1969, p. 126.) and pointed out on the drawing there.

Bifacialisporites NAGY 1963 is also stratigraphically important, as some of its species are good indicators of the Karpathian and Lower Badenian stages.

***Bifacialisporites badenensis* n. sp.**

Plate XXXIX. Fig. 1—3.

Holotypus: Szk. 2, sample N° 96., slide N° 1., 108.6×18.6, Plate XXXIX. Fig. 1—3.

Locus typicus: Szokolya 2, 90.3—91.1 m

Stratum typicum: Lower Badenian; clayey marl

Diagnosis: Zonotrilete spore. The cingulum is smooth, 3—4 μ broad. Proximally, the dehiscence line is slightly sinuous and thin, reaches almost the cingulum. Corrugate ribs are torus-like situated along the dehiscence line. The corrugate rim of the distal side is by 3—6 μ longer than the cingulum, this is followed towards the center by arcuate, triangularly arranged corrugate ribs and rugae.

The holotype diameter is 53 μ .

Differential diagnosis: *Bifacialisporites badenensis* n. sp. reminds best *B. grandis* n. sp. Differs from it however, by its distal ornamentation, first of all by the characteristic sinuous ribs which give the contour line of the spore distally.

One specimen was found.

***Bifacialisporites goerboeensis* n. sp.**

Plate XXXIX. Fig. 4—6.

Holotypus: Ng. 1., sample N° 132., slide N° 1., 108.3×7.1, Plate XXXIX. Fig. 4—6.

Locus typicus: Nagyörbő 1, 892.0—897.0 m

Stratum typicum: Lower Badenian; clayey marl

Diagnosis: Zonotrilete miospore. The dense verrucate ornamentation proximally forms a closed triangle. Some of the verrucae are fused, between them small grani are situated. The thin dehiscence line reaches proximally the corner. The cingulum is broad, sinuous. The distal side is covered by thick, locally broad, sinuous muri.

Dimension: The holotype is 50 μ , the cingulum is 4—6 μ . The proximal verrucae are 2—5 μ , the distal laths 30 μ long, 2—6 μ broad.

Differential diagnosis: *Bifacialisporites goerboeensis* n. sp. reminds *B. arciverrucosus* TREV. 1967. The difference is in the laths which are proximal on *V. arciverrucosus* TREV. and distal on *V. goerboeensis* n. sp. The proximal side of *V. goerboeensis* is covered exclusively by verrucae.

Besides the holotype it was found in the Karpathian — Zengővárkony 59, 65.0—67.0 m.

***Bifacialisporites grandis* n. sp.**

Plate XXXIX. Fig. 7—8., Plate XL. Fig. 1—4.

Holotypus: Szk. 2, sample N° 111., slide N° 1., 111.8×17.5, Plate XL. Fig. 1—4.

Locus typicus: Szokolya 2, 109.0—111.2 m

Stratum typicum: Lower Badenian; clay-marl

Diagnosis: Zonotrilete miospore with rounded corners. The proximal rim is sinuous, this flat rugae and verrucae fill out the surface. The thin dehiscence line reaches the corners. The cingulum is smooth and becomes thin towards the corners. Distally there is a parallel rib to the cingulum with single and fused verrucae on both sides. The distal side is largely dominated by a triangular, flat ruga which is covered by rugae and small verrucae.

Dimensions: The holotype is 53 μ , the proximal area diameter is 12—14 μ . The cingulum is 5—7 μ broad at mid-side and 1.5 μ at the corners. Distally the rib parallel to the cingulum is 5—6 μ at mid-side and thins out towards the corners. The grani and verrucae beside are 1.5 μ . The distal central area is 18—20 μ .

Differential diagnosis: *Bifacialisporites grandis* n. sp. reminds *B. medius* NAGY 1969 as to size and proximal ornamentation, differs from it, however by the characteristic distal ornamented triangulum.

Besides the holotype some specimen, 53—81 μ , were found in the Lower Badenian — Szokolya 2, 102.2—104.7 m, 115.3—118.3 m, Szokolya 3, 68.6—69.6 m.

***Bifacialisporites magnus* NAGY 1969**

Plate XL. Fig. 5—7.

1969. *Bifacialisporites magnus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 125. Pl. XXII. Fig. 1.

Spores of 58—72 μ found in the Lower Badenian — Szokolya 2, 109.0—111.2 m, in the Pannonian — Hidas 53, 258.1—258.5 m (the holotype) which was probably redeposited.

***Bifacialisporites mecsekensis* NAGY 1969**

Plate XLI. Fig. 1—3.

1969. *Bifacialisporites mecsekensis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 125—127 Pl. XXII. Fig. 3., 5—6.

Spores of 70—78 μ , found in few specimens in the Egerian — Eger, Wind brickyard pit, layer "x₂", in the Karpathian — Zengővárkony 59, 56.0—67.9 m, in the Lower Badenian — Zengővárkony 59, 34.0—37.5 m, Szokolya 3, 77.2—77.4 m.

Remark: The morphological characters of the species are similar to the *Cibotium* spores (*Cyathaceae*).

***Bifacialisporites medius* NAGY 1969**

Plate XLI. Fig. 4—8.

1969. *Bifacialisporites medius* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 127—128. Holotypus: Pl. XXII. 2—4., non Pl. XXIII. 1—3.

Specimens of 40—57 μ (holotype 52 μ) are rather frequent, found in the Eggenburgian — Pápa 2, 211.0—212.0 m, in the Karpathian — Zengővárkony 59, 63.0—65.0 m, in the Lower Badenian — Tengelic 2, 839.0—842.0 m, Zengővárkony 59, 34.0—37.5 m, and in the Pliocene — Tar 34, 210.0—213.0 m, the latter are certainly redeposited.

Remark: In the original description the word "holotype" at Table XXIII. Fig. 1—3. is wrong. The holotype is shown by Plate XXII. Fig. 2, 4.

***Bifacialisporites murensis* NAGY 1963**

Plate XLII. Fig. 1—2., 4.

1963. *Bifacialisporites murensis* n. sp. — NAGY, Pollen et Spores, Vol. V. No. 1. Mai. p. 144. Pl. I. Fig. 1—2.

Specimens of 50—60 μ were found in the Karpathian — Zengővárkony 59, 60.9—63.0 m, Magyaregregy-Almáspatak surface exposure, sample 1/a, Litke 17, 216.0—218.0 m, in the Lower Badenian — Zengővárkony 59, 39.0—41.0 m, Nagyörbő 1, 892.0—897.0 m, Szokolya 2, 115.3—118.3 m, in the Upper Pannonian — Hidas 53, 126.6—132.5 m, 258.1—258.5 m — the holotype was found in this stage.

It is supposedly related to *Lygodium* (1969, p. 123.).

***Bifacialisporites murensis* NAGY 1963 f. *minor* NAGY 1969**

Plate XLII. Fig. 3.

1969. *Bifacialisporites murensis* f. *minor* n. f. — NAGY, MÁFI Évk. 52. 2. p. 123. Pl. XXI. Fig. 7—8.

Spores of 27—35 μ , very similar to the basic species, but distinctly smaller, were found in some specimens in the Egerian — Fót 1, 228.2 m, in the Ottnangian — Zengővárkony 45, 16.0—16.4 m, in the Karpathian — Litke 17, 232.0—234.0 m, in the Lower Badenian — Hidas 53, 757.0—759.0 m.

Bifacialisporites nogradensis n. sp.

Plate XLII. Fig. 5—8.

Holotypus: Nsz. 2, sample N° 17., slide N° 1., 103.9×11.6, Plate XLII. Fig. 5—8.

Locus typicus: Nógrádszakál 2, 95.0—99.9 m

Stratum typicum: Lower Badenian; fine sandy silt

Diagnosis: Zonotrilete miospores. The corners are rounded, the side lines convex. Proximally the dehiscence line reaches the corners and is surrounded by a triangle of 1—1.5 μ broad lath. On the edge of the proximal side a collar was formed by ribbled, fused verrucae. The cingulum is sinuous, 5—7 μ broad, smooth, sometimes emarginated. The muri distally are basally 2—7 μ , in the end 1 μ broad, there are some single verrucae too.

Dimensions: The holotype is 54 μ , the proximal triangle has a diameter of 35 μ .

Differential diagnosis: *Bifacialisporites nogradensis* n. sp. is close to *B. szokolyaënsis* n. sp., differs from it however, by the collar proximally and the distal broad based and tapering muri.

One specimen was found.

Bifacialisporites oculus n. sp.

Plate XLII. Fig. 9., Plate XLIII. Fig. 1—6.

Holotypus: Zv. 59., sample N° 14., slide N° 1., 101.2×44.9, Plate XLIII. Fig. 1—3.

Locus typicus: Zengővárkony 59, 34.0—37.5 m

Stratum typicum: Lower Badenian; clay marl

Diagnosis: Zonotrilete spores. The proximal ornaments are some flat, single grani, especially along the dehiscence line which is thin, reaches the corners, accompanied by a torus. The cingulum is thin, slightly sinuous. The distal side is rimmed by a lath. The distal ornamentation is given by thick, sinuous muri, among them irregularly spaced "oculi" i.e. exine thickenings.

Dimensions: The holotype is 62×58 μ , the cingulum is 3—5 μ broad, the distal side rim 2—16 μ thick. The oculi are 1—9 μ broad, among them 1—1.5 μ pits increasing morphological effect.

Differential diagnosis: *Bifacialisporites oculus* n. sp. reminds *B. mecsekensis* n. sp. The distal oculi, however, are strikingly different from the ornaments on *B. mecsekensis* n. sp. The proximal ornaments are finer on *B. oculus* n. sp.

Remark: In the same sample as the holotype a laterally fixed specimen is to be found, too (62 μ long, 54 μ high; see Plate XLIII. Fig. 4—6.), where the height of the proximal ornaments may be well measured (2—3 μ). Other four specimens were also found in the Lower Badenian — Szokolya 2, 37.0—37.9 m (55 μ), Szokolya 3, 53.6—54.6 m (64×54 μ), 58.7—59.9 m (63 μ), in the Sarmatian — Hidas 53, 479.1—482.0 m.

Bifacialisporites ornatus n. sp.

Plate XLIII. Fig. 7., Plate LXIV. Fig. 1—2.

Holotypus: Mihálygerge, 110.6×11.3, Plate XLIII. Fig. 7., Plate LXIV. Fig. 1—2.

Locus typicus: Mihálygerge, surface exposure, sample N° 1.

Stratum typicum: Karpathian; schlier

Diagnosis: Zonotrilete, rounded spore. The proximal side is surrounded by collar-like formations. The dehiscence line reaches the edge of the proximal side. The cingulum, joining the proximal side is broad, slightly sinuous. Distally the muri dominate which are mainly lath-like fused ridges, running parallel to the side-lines and basally broad. The laths running perpendicular to the edges are tapering and form u-shaped elements on the rim of the distal side.

Dimensions: The holotype is 64 μ , the parallel laths are about 30 μ , the perpendicular ones 10 μ , at the base 3—4 μ broad.

Differential diagnosis: *Bifacialisporites ornatus* n. sp. reminds *B. arciverrucosus* TREV. 1967 (p. 10. Plate II. Fig. 3.) but there are laths parallel to the cingulum and the perpendicular ones do not show up so characteristically as in *B. ornatus* n. sp. TREVISAN considered the proximal side to be more ornamented and mentioned single verrucae on both sides. On the basis of the description and the photo it can not be identified with the Hungarian species.

One specimen was found.

Bifacialisporites szokolyaënsis n. sp.

Plate XLIV. Fig. 3–8.

Holotypus: Szk. 2., sample N° 105., slide N° 1., 111.0×22.5, Plate XLIV. Fig. 3–8.

Locus typicus: Szokolya 2, 100.0–101.0 m

Stratum typicum: Lower Badenian; clay-marl

Diagnosis: Zonotrilete miospore. Proximally the dehiscence line is thin, reaches the corners, accompanied by a 4–7 μ broad torus. The 2–4 μ broad cingulum is tapering and rounded at the corners. The distal contour is a truncate triangle with smooth rim. The surface is covered by verrucae, fused into muri.

Dimensions: The holotype is 47 μ , the cingulum 3–4 μ broad, the muri 1.5–7 μ broad and 2–3 μ high.

Differential diagnosis: *Bifacialisporites szokolyaënsis* n. sp. reminds best *B. nogradensis* n. sp. but differs by the missing collaret proximally and the more flat ornaments distally.

One specimen was found.

Genus: *Mecsekisporites* NAGY 1968 emend.

1968. *Mecsekisporites* n. g. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. 14. (3–4), p. 360. Pl. II. Fig. 1–3.

Diagnosis emendation: Trilete spores, sides convex, corners rounded. Proximally three tangential, parallel broad ribs surround an area with more or less straight borders. The thin dehiscence line runs in this area. It is densely covered both on the proximal and on the distal area by single grani, verrucae or fused muri.

Remark: The genus was emended on the basis of criticism by PACLTOVÁ and SIMONCSICS (1970 pp. 605–606.).

Relationship: When studying the generotype of *Mecsekisporites* — *M. mioceanicus* — I suggested in 1968 on the basis of ERDTMAN's drawing (1957, p. 54. Fig. 93.) a possible connection to *Cibotium barometz* LINK. SIMONCSICS and PACLTOVÁ (see above) cited the ENGLER's Syllabus and suggested the connection of *Cibotium* to *Dicksoniaceae*. According to WILLIS (1966, p. 349.) from among the genera of *Dicksoniaceae* the *Cibotium*, and some others, are allocated to the *Cyatheaceae*.

PACLTOVÁ and SIMONCSICS mentioned the morphological resemblance of *Mecsekisporites* to the living *Anogramma leptophylla* (L.) (*Gymnogrammaceae*). The illustrations (Plate V. Fig. 62. a. b. c.) in GREGUSS' study (1941) are, indeed, very similar to *Mecsekisporites*. The *Anogramma* live in the temperate belt. The natural relationship of *Mecsekisporites* is underlined by the article of LE COQ et al. (1973) mentioning that on the basis of main structural elements the spore of *Gymnogramme calomelanos* (KAUL) var. *argyrophylla* MOORE is closest to *Mecsekisporites cerebralis* NAGY 1968. The *Gymnogramme* genus is identical with the genus *Eriosorus* FÉE, embracing 55 American, tropical species (WILLIS 1966, p. 507., 420.).

All specimens of the genus came from the Karpathian and the Lower Badenian which were warm periods of the Neogene.

Mecsekisporites aequus NAGY 1968

Plate XLIV. Fig. 9–10.

1968. *Mecsekisporites aequus* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (3–4) p. 361. Pl. II. Fig. 4–5.

1969. *Mecsekisporites aequus* NAGY 1968 — NAGY, MÁFI Évk. 52. 2. p. 130. Pl. XXV. Fig. 1.

Some specimens of 55–85 μ were found in the Karpathian — Zengővárkony 59, 56.0–60.9 m (holotype), Magyaregregy, Kistréti árok surface exposure, Várpalota 133, 161.0–167.7 m, in the Lower Badenian — Hidas 53, 757.0–759.0 m.

Remark: In 1969 the holotype statement was erroneously applied at Plate XXV. Fig. 1.

Mecsekisporites cerebralis NAGY 1968

Plate XLV. Fig. 1.

1968. *Mecsekisporites cerebralis* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (3–4) p. 362. Pl. IV. Fig. 1., 4., 5.

Rare specimens of 77–90 μ were found in the Karpathian — Zengővárkony 59, 56.0–60.9 m, in the Lower Badenian — Szokolya 2, 91.1–92.7 m.

Mecsekisporites miocaenicus NAGY 1968

Plate XLV. Fig. 2.

1968. *Mecsekisporites miocaenicus* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (3–4), p. 360–361.

Specimens of 61–85 μ were found in the Karpathian — Zengővárkony 59, 51.3–56.0 m, Lower Badenian — same, 34.0–37.5 m (holotype).

Mecsekisporites zengoevarkonyensis NAGY 1968

Plate XLV. Fig. 3–7.

1968. *Mecsekisporites zengővárkonyensis* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 14. (3–4), p. 361–362. III. 1–4.

Specimens of 50–67 μ were found in the Karpathian — Zengővárkony 59, 56.0–60.9 m, 63.0–65.0 m, 71.4–73.0 m, in the Lower Badenian — Szokolya 2, 33.5–34.7 m, 47.9–48.7 m.

Genus: *Laevigatosporites* IBRAHIM 1933

1933. *Laevigato-sporites* n. g. — IBRAHIM, Sporenformen des Aegirhorizonts des Ruhr-Reviers. Diss. p. 39.

Genotype: *Laevigato-sporites vulgaris* IBRAHIM 1932

Most of the Neogene forms classified as *Laevigatosporites* have no stratigraphic value as they occur during the whole Neogene.

Important studies on the genus: KRUTZSCH, 1967 Atlas IV–V. and NAGY, 1969.

Laevigatosporites discordatus PFLUG 1953

Plate XLVI. Fig. 1–2.

1953. *Laevigatosporites discordatus* n. sp. (PFLUG) — TH. et PF., Palaeontogr. 94. B. 1–2. p. 59. Taf. 3. Typ.: Fig. 40–43.

1959. *Laevigatosporites discordatus* PF. 1953 — W. KR., Geol., Beih. 21/22. p. 195. Holotypus: TH. et PF., T. 3. Fig. 40.

Some specimen, 57–63 μ , were found in the Egerian — Fót 1, 222.5–225.5 m, in the Lower Badenian — Szokolya 2, 81.5–82.3 m, 90.3–91.1 m, 104.7–106.9 m.

PFLUG described it from Paleocene to Lower Oligocene layers.

Laevigatosporites gracilis WILSON et WEBSTER 1946

Plate XLVI. Fig. 3–5.

1946. *Laevigato-sporites gracilis* sp. nov. — WILSON et WEBSTER, Am. Journ. Botany, Vol. 33. No. 4. p. 273. Fig. 4.

On the basis of the holotype (Catalog of Fossil Spores and Pollen, Vol. 14) I classified here *Laevigatosporites* spores smaller than 30 μ . Some specimens occur regularly in formations ranging from the Egerian to the Pleistocene. Plate XLVI. Fig. 5. shows one covered fungus spores [Tata (TVG) 27, 72.8–74.7 m, from the Egerian].

Laevigatosporites haardti (R. POT. et VEN. 1934) TH. et PF. 1953

Plate XLVII. Fig. 6–7.

1934. *Sporites haardti* n. sp. — R. POT. et VENITZ, Arb. Inst. Paläobot. Bd. 5. pp. 13–14. Taf. 1. Fig. 34.

1953. *Laevigatosporites haardti* R. POT. et VEN. — TH. et PF., Palaeontogr. 94. B. 1–4. p. 59.

R. POTONIÉ and VENITZ allocated here 28–34 μ specimens (the holotype is 34 μ). The species is mentioned from the Danian up to the Pliocene. THOMSON and PFLUG classified 25–70 μ specimens under this name. As I consider it better to separate smaller and bigger specimens in the nomen-

clature thus considering the holotype and the data of KRUTZSCH's Atlas (IV—V. 1967) I classify here spore smaller than 40 μ , roughly bean-shaped with a smooth exine, without separating any subspecies. In Hungary it occurs during the whole Neogene, becoming especially frequent in the Pliocene.

***Laevigatosporites major* (COOKSON 1947) W. KR. 1959**

Plate XLVI. Fig. 8.

1947. *Monolites major* n. spm. — COOKSON, Plant microfossils from the lignites of Kerguelen Archipelago, B. A. N. Z. A. R. E. Ser. A. II. p. 135. Pl. 15. Fig. 56.

1959. *Laevigatosporites major* (COOKSON 1947) n. c. — W. KR., Geol., Beih. 21/22. p. 195.

Some specimens, 59 \times 25 μ , were found in the Lower and Middle Miocene. The spores are long bean-shaped, the dehiscence line is short.

***Laevigatosporites nitidus* (MAMCZAR 1960) W. KR. 1967**

Plate XLVI. Fig. 9—10.

1960. *Polypodiaceae-Sporites haardti* R. POT. et VEN. forma *nitida* — MAMCZAR, Z Badan Trzeciorzedu w Polsce, Tom. III. p. 197. Tab. I. Fig. 9.

1967. *Laevigatosporites nitidus* (MAMCZAR 1960) emend. et n. comb. subfsp. *nitidus* — W. KR., Atlas IV—V. pp. 149—150. Taf. 53. Fig. 6—7., 10—12.

Spores of 50—54 μ , occurring in few specimens in the Middle Miocene.

Remark: J. MAMCZAR in 1960 mentioned the species in the English, Russian and Polish text as f. *nitida*. In the tables (Table I. Fig. 9.) due to misprint it appears as *nutida*. KRUTZSCH accepted this name without regard of the text.

MAMCZAR described the species from the Middle Miocene, KRUTZSCH found it in the Miocene—Pliocene.

***Laevigatosporites pseudodiscordatus* W. KR. 1959**

Plate XLVI. Fig. 11—12.

1959. *Laevigatosporites pseudodiscordatus* n. fsp. — W. KR., Geol., Beih. 21/22. pp. 196—197. Taf. 39. Fig. 432.

1967. *Laevigatosporites pseudodiscordatus* W. KR., 1959b — W. KR., Atlas IV—V. p. 152., Taf. 54. Fig. 1—5.

Spores of 53—60 μ length found in some specimens in the Eggenburgian — Eger, Wind brickyard pit, layer "u", Püspökhatvan 4, 227.0—230.0 m, 251.0—254.0 m.

KRUTZSCH described the species from the Middle Eocene of the Geiseltal. He mentioned its occurrence from the Lower Miocene—Oligocene of Hungary and the URSS (on the basis of data by POKROVSKAIA 1956).

Genus: *Microfoveolatosporis* W. KRUTZSCH 1959

1959. *Microfoveolatosporis* n. fgen. — W. KR., Geol., Beih. 21/22. p. 211.

Genotype: *Microfoveolatosporis pseudodentatus* W. KR. 1959

KRUTZSCH (1959, 1967) related the genus to the *Schizaeaceae*.

***Microfoveolatosporis afavus* (W. KR. 1959) W. KR. 1967**

Plate XLVI. Fig. 13—15.

1959. *Verrucatosporites afavus* n. fsp. — W. KR., Geol., Beih. 21/22. pp. 209—210. T. 41. Fig. 460—462.

1967. *Microfoveolatosporis afavus* (W. KR. 1959b) n. c. — W. KR., Atlas IV—V. p. 168. Taf. 67. Fig. 11—17.

61—62 μ specimens were found in the sample from the Oligocene—Miocene boundary — Felsőpetény mine, sample No. 1., in the Eggenburgian — Fót 1, 142.8—144.0 m. KRUTZSCH described the species from the Middle Eocene of Geiseltal but found it in the Middle—Upper Oligocene, too.

Microfoveolatosporis alsovadaszensis NAGY 1973

Plate XLVII. Fig. 1—4.

1973. *Microfoveolatosporis alsovadaszensis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 19 (1—4), p. 454. Pl. III. 1—3.

50—73 μ specimens were found in the Egerian — Püspökhatvan 4, 302.0—306.0 m, in the Eggenburgian — Fót 1, 162.0—164.0 m, Pápa 2, 242.0—242.8 m, in the Ottnangian — Alsóvadász 1, 1029.3—1034.6 m, in the Badenian — Szilvásvár 1, 38.3—107.0 m.

Remark: The holotype is crumpled at the end so that the full size is bigger than 49 μ , may be about 60 μ .

Microfoveolatosporis canaliculatus DETTMANN 1963

Plate XLVII. Fig. 5—9.

1963. *Microfoveolatosporis canaliculatus* sp. nov. — DETTM., Proc. Roy. Soc. Vic. 77. 1. p. 87. Pl. XIX. Fig. 15—21.

Specimens of 27—38 μ found in the Rupelian — Eger, Wind brickyard borehole 50.3—50.9 m, in the Egerian — same brickyard pit, layer "x₂", in the Badenian — Szokolya 2, 33.5—34.7 m, Tar 34, 530.0—533.0 m.

Remark: I found small spores in the Middle Oligocene and Neogene layers, exactly the same morphologically as those described by M. DETTMANN (1963) from the Lower Cretaceous Tambo Formation as monolete spores of 28—39 μ .

RÁKOSI L. mentioned that he observed on more occasions similar spores in the Oligocene of Hungary.

Microfoveolatosporis fossulatus n. sp.

Plate XLVII. Fig. 12—14.

Holotypus: Pápa 2, sample N^o 57., slide N^o 1., 105.8×21.8, Plate XLVII. Fig. 12—14.

Locus typicus: Pápa 2, 242.8—243.3 m

Stratum typicum: Eggenburgian; clay

Diagnosis: Azonolete spore, bean-shaped, wall rigid, thick. The whole surface is covered by flat ornaments, among these irregular, tiny 0.5—1 μ microfoveolates are situated. Besides the foveolae there are fossulate ornaments, arranged reticula-like. The ornaments show a sinuous outline at the edge of the exine. The dehiscence line reaches 4/5 of the spore length, accompanied on both sides by a lip-like wall protuberance.

Dimensions: The holotype is 61 μ long, 33 μ broad, wall thickness 3 μ .

Differential diagnosis: The species differs from all *Microfoveolatosporis* by its fossulate ornaments. The slim shape reminds *M. alsovadaszensis* NAGY 1973 but is bigger and the wall is thicker. One specimen was found.

Microfoveolatosporis neogranuloides W. KR. 1967

Plate XLVII. Fig. 10—11.

1967. *Microfoveolatosporis neogranuloides* n. fsp. — W. KR., Atlas IV—V. p. 172., Taf. 63. Fig. 1—9.

Specimens of 49—58 μ were found in the Karpathian — Nógrádszakál 2, 251.0—253.0 m, in the Lower Badenian — Szokolya 2, 42.7—53.5 m.

KRUTZSCH mentioned Lower Miocene occurrences of the species from Germany and Miocene ones from Czechoslovakia.

Microfoveolatosporis sellingi W. KRUTZSCH 1967

Plate XLVII. Fig. 15.

1967. *Microfoveolatosporis sellingi* n. fsp. — W. KR., Atlas IV—V. p. 170. Taf. 62. Fig. 2—10.

Single specimens, 59—77 μ , were found in the Egerian — Eger, Wind brickyard borehole 7.8—8.3 m, Fót 1, 216.5—218.8 m, in the Karpathian — Litke 17, 258.0—260.0 m, Tököl 1, 845.5—

846.0 m, in the Middle Miocene — Tar-Fenyvespuszta district, in the Lower Badenian — Szokolya 2, 80.7—81.5 m. The specimens in the Karpathian and Lower Badenian are probably redeposited.

KRUTZSCH mentioned it from the Rupelian to the Middle Miocene, POKROVSKAIA signalled it from the Oligocene of the Northern-Ural Mountains.

Genus: *Perinomonoletes* W. KRUTZSCH 1967

1967. *Perinomonoletes* n. fsp. — W. KR., Atlas IV—V. p. 29.

Spores with perisporia. Perisporia are found in some of the *Leptosporangiata* subclass ferns as *Aspleniae* and *Aspidieae* (BOWEN 1935 in KREMP 1965, p. 113.).

***Perinomonoletes goersbachensis* W. KR. 1967**

Plate XLVIII. Fig. 1—2.

1967. *Perinomonoletes goersbachensis* n. fsp. — W. KR., Atlas IV—V. p. 222. Taf. 87., Fig. 10—12.

Specimens, 55—60 μ including perisporium, were found in the Lower Badenian — Szokolya 3, 60.8—63.0 m, Szokolya 2, 75.1—75.9 m.

KRUTZSCH described the species from the Pliocene of Germany.

***Perinomonoletes pliocaenicus* W. KRUTZSCH 1967**

Plate XLVIII. Fig. 3—4.

1967. *Perinomonoletes pliocaenicus* n. fsp. — W. KR., Atlas IV—V. p. 222. Taf. 87. Fig. 2—9.

Rare spores with perisporium, 31—49 μ , were found in the Egerian — Tata (TVG) 27, 72.8—74.7 m, Fót 1, 237.5—238.0 m, in the Pannonian — Tihany 62, 56.2—57.2 m, Hidas 53, 126.6—132.5 m.

KRUTZSCH published the species from the Pliocene of Germany.

***Perinomonoletes spicatus* NAGY 1973**

Plate XLVIII. Fig. 5—6.

1973. *Perinomonoletes spicatus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1—4. pp. 454—455. Pl. II. Fig. 6—7.

Spores of 32—50 μ (holotype 56 μ) were found in the Egerian — Fót 1, 209.9—361.8 m, in the Eggenburgian — Fót 1, 181.0—182.7 m, Püspökhatvan 4, 201.0—204.0 m, in the Karpathian — Fót 1, 120.0—132.5 m, in the Lower Badenian — Szokolya 2, 89.5—90.3 m, in the Sarmatian — Cserhátszentiván 1, 188.0—190.0 m, Alsóvadász 1, 280.6—283.6 m (holotype), in the Lower Pannonian — Naszály 1, 131.5—150.0 m, Tata (TVG) 27, 21.0—32.1 m.

Remark: HOCHULI (1978, p. 40.) dated the beginning of the Egerian with the first appearance of the species.

Genus: *Intrapunctosporis* W. KRUTZSCH 1967

1967. *Intrapunctosporis* n. fgen.-nom. — W. KR., Atlas IV—V. p. 24.

Genotype: *Intrapunctosporis pliocaenicus* W. KR. 1967

***Intrapunctosporis lusaticus* W. KR. et SONTAG 1967**

Plate XLVIII. Fig. 7.

1967. *Intrapunctosporis lusaticus* n. fsp. "W. KR. et SONTAG" — W. KR., Atlas IV—V. p. 156. Taf. 56. Fig. 3—4

One specimen, 76 μ , was found in the Karpathian — Litke 17, 104.0—106.0 m. KRUTZSCH et SONTAG found the species in the Middle Miocene in Germany (Lausitz).

Intrapunctosporis pliocaenicus W. KR. 1967

Plate XLVIII. Fig. 8.

1967. *Intrapunctosporis pliocaenicus* n. fsp. — W. KR., Atlas IV—V. p. 156. Taf. 55. 13—15.

Specimens of 50—54 μ were found in the Lower Badenian — Nógrádszakál 2, 165.0—167.0 m, in the Middle Badenian — mine Hidasbánya, II. seam, in the Lower Pannonian — Hidas 53, 298.0—299.1 m.

KRUTZSCH found it in few specimens in the Pliocene of Germany.

Genus: *Extrapunctosporis* W. KR. 1959

1959. *Extrapunctosporis* n. fgen. — W. KR., Geol., Beih., 21—22. pp. 199—200.

Genotype: *Extrapunctosporis extrapunctoides* W. KRUTZSCH 1959

Extrapunctosporis megapunctus W. KR. 1959

Plate XLVIII. Fig. 11—12.

1959. *Extrapunctosporis megapunctus* n. fsp. — W. KR., Geol., Beih. 21/22. pp. 200—201. T. 40. Fig. 437—438.

1967. *Extrapunctosporis megapunctus* W. KR. 1959 — W. KR., Atlas IV—V. p. 158. Taf. 57. Fig. 6—8.

Some specimens, 50—56 μ , were found in the Egerian — Fót 1, 241.6—243.2 m, in the Karpathian — Litke 17, 118.0—120.0 m, in the Lower Badenian — Szokolya 3, 60.8—63.0 m, Szokolya 2, 47.9—48.7 m.

KRUTZSCH found the species in the Eocene of Geiseltal and mentioned 1967 (Atlas IV—V., p. 158.) that it occurred up to the Middle Miocene.

Extrapunctosporis microalveolatus W. KR. 1967

Plate XLVIII. Fig. 9—10.

1967. *Extrapunctosporis microalveolatus* n. fsp. — W. KR., Atlas IV—V. p. 163. Taf. 59. Fig. 9—12.

It was found as 33 μ in the Lower Miocene — Szászvár 8, 434.3—434.5 m. KRUTZSCH described it as a rare element of 27—35 μ from the Upper Oligocene of Germany.

Extrapunctosporis* cf. *miocaenicus W. KR. 1967

Plate XLVIII. Fig. 13—14.

1967. *Extrapunctosporis miocaenicus* n. fsp. — W. KR., Atlas IV—V. p. 102. Taf. 59. Fig. 1—4.

Two spores of 39 μ longer diameter were found in the Egerian — Felsőpetény mine, sample 1., in the Karpathian — Tekeres 1, 850.0—855.0 m.

Remark: The "cf." is applied as the sculpture is not visible so convincingly as on the figure of W. KRUTZSCH (see above). KRUTZSCH described the species from the Lower Miocene of Germany.

Genus: *Echinosporis* W. KR. 1967

1967. *Echinosporis* n. fsp. — W. KR., Atlas IV—V. p. 27.

W. KRUTZSCH considered the species of this genus to be Middle and Upper Tertiary elements. For all of their similarity he did not consider them to be identical to the Quaternary *Cystopteris fragilis* (L.) BERNH. and *Dryopteris cristata* fern (L.) A. GRAY species.

Genotype: *Echinosporis echinatus* W. KR. 1967

Echinosporis echinatus W. KR. 1967

Plate XLVIII. Fig. 15–16.

1967. *Echinosporis echinatus* n. fsp. — W. KR., Atlas IV–V. p. 172. Taf. 63. Fig. 10–13.

1969. *Polypodiisporites acutus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 135. Pl. XXVII. Fig. 3–4.

Specimens of 23–30 μ were found in the Ottnangian — Zengővárkony 45, 17.2–17.8 m, in the Lower Badenian — Nógrádszakál 2, 93.0–95.0 m, Szokolya 3, 48.6–50.6 m.

W. KRUTZSCH found the species as 20–28 μ in the Lower Miocene in few specimens.

Echinosporis fotensis n. sp.

Plate XLIX. Fig. 1–6.

Holotypus: F. 1., sample N° 77., slide N° 1., 103.3×5.4, Plate XLIX. Fig. 1–2.

Locus typicus: Fót 1, 121.0–122.0 m

Stratum typicum: Karpathian; fine sandy silt (schlier)

Diagnosis: Monolete spore. Shape oval. The dehiscence line follows the proximal side-line but does not reach the equator. The surface is covered by irregularly spaced, broad-based, tapering echini.

Dimensions: The holotype is 37 μ , including echini. The spore wall is two-layered, cca. 0.5 μ thick. The echini are spaced 1–5 μ , are 2–3 μ broad and 1–5 μ high.

Differential diagnosis: *Echinosporis fotensis* n. sp. differs from *E. echinatus* W. KR. and *E. microechinatus* W. KR. species by its more sparse but longer echini.

Beside the holotype some 33–43 μ specimens were found in the Egerian — Fót 1, 346.5–348.0 m, in the Eggenburgian — Püspökhátvan 4, 257.0–260.0 m, in the Ottnangian — Zengővárkony 45, 17.2–17.8 m, in the Lower Badenian — Szokolya 2, 52.7–53.5 m, in the Lower Pannonian — Tata (TVG) 26, 9.0–11.0 m, in the Upper Pannonian — Naszály 1, 82.0–93.4 m. The two last were probably redeposited.

Remark: The specimens reminds the genus *Cystopteris*.

Echinosporis microechinatus W. KR. 1967

Plate XLIX. Fig. 7–10.

1967. *Echinosporis microechinatus* n. fsp. — W. KR., Atlas IV–V. p. 174. Taf. 63. 14–27.

Some 30–38 μ specimens were found in the Egerian — Eger, Wind brickyard pit layer “u”, Fót 1, 288.0–290.5 m, in the Eggenburgian — Fót 1, 171.7–182.7 m, in the Ottnangian — Zengővárkony 45, 16.0–16.4 m, Fót 1, 119.2–120.0 m.

Remark: The Hungarian forms are slightly bigger than those described by KRUTZSCH (18–28 μ) but the other morphological characters are the same, so they are considered to belong to this species.

KRUTZSCH mentioned its occurrence from the Chattian of Germany and from the Miocene.

Genus: Gemmatosporis W. KR. 1959

1959. *Gemmatosporis* n. fgen. — W. KR., Geol., Jhg. 8. Beih. 21–22. pp. 203–204.

Genotypus: *Gemmatosporis gemmatoides* W. KR. 1959

Gemmatosporis decoratus n. sp.

Plate XLIX. Fig. 11–15.

Holotypus: F. 1., sample N° 14., slide N° 1., 115.3×7.4, Plate XLIX. Fig. 11–13.

Locus typicus: Fót 1, 349.5–354.0 m

Stratum typicum: Egerian; clay marl

Diagnosis: Monolete bean-shaped spores. The dehiscence line is thin, it almost reaches the equator. The exine is cca. 0.5–1 μ thick so that it crumples easily. The surface is covered by irregularly and sparsely situated 0.5–1.5 μ grani, small verrucae and gemmae.

Dimensions: The holotype is 42 μ long, 23 μ broad.

Differential diagnosis: *Gemmatosporis decoratus* n. sp. is close to *G. europaeus* KEDVES 1966. The length is identical, the length—width ratio is different. In *G. europaeus* it is 1.2, in *G. decoratus* it is 1.6—1.7. *G. decoratus* has very few ornaments, which are much smaller than in *G. europaeus*.

Some 35—46 μ specimens were found in the Egerian — Fót 1, 194.5—361.8 m, in the Ottnangian — Pusztakisfalu VI. 12.5—15.0 m, in the Upper Pannonian — Naszály 1, 12.2—14.4 m. The latest one is probably redeposited.

Gemmatosporis delicatus n. sp.

Plate XLIX. Fig. 16—20.

Holotypus: Pszf. VI., sample N° 6., slide N° 1., 29.3×119, Plate XLIX. Fig. 16—18.

Locus typicus: Pusztakisfalu VI. 12.5—15.0 m

Stratum typicum: Ottnangian; clayey silt

Diagnosis: Monolete spores. The outline is rounded bean shape. As the exine is thin, cca. 0.5 μ , it is crumpled secondarily. The surface is covered by dense, tiny 1 μ granuli. The dehiscence line is short, cca. 1/3 of spore length.

Dimensions: The holotype is 44 μ long.

Differential diagnosis: *Gemmatosporis delicatus* n. sp. has the same length as *G. decoratus* n. sp. but is more rounded, the exine thinner, the ornaments are smaller and more dense.

Remark: The lectotype (same sample 28.3×113.2) is a laterally situated specimen of 46 μ .

Specimens of 32—46 μ were found in the Ottnangian — Zengővárkony 45, 16.0—16.4 m, Pusztakisfalu VI. 15.0—17.0 m.

Genus: *Polypodiisporites* R. POT. 1933

1931. *Polypodii (?) spononites favus* n. sp. — R. POT., Braunkohle, H. 27. p. 556. (holotypus).

1933. *Polypodii-sporites* R. POTONIÉ 1931 — R. POT. et J. GELL., Sitzgber. Ges. Natf. Fr. Jhg. 1932. p. 524.

1949. *Polypodiidites senonicus* n. spm. — ROSS, Bull. Geol. Inst. p. 33. Pl. I. Fig. 8—9.

1953. *Verrucatosporites* n. gen. (PF. et TH.) — TH. et PF., Palaeontogr. 94. B. 1—4. p. 59.

1953. *Reticuloisporites* n. gen. (PF.) — TH. et PF., Palaeontogr. 94. B. 1—4. p. 60.

1967. *Verrucatosporites* TH. et PF. 1953 — W. KR., Atlas IV—V. p. 27—28.

1969. *Polypodiisporites* R. POT. 1934 — NAGY, MÁFI Évk. 52. 2. pp. 133—134.

1969. *Polypodiidites* ROSS ex COUPER 1953 — NAGY, MÁFI Évk. 52. 2. pp. 136.

1969. *Verrucatosporites* TH. et PF. 1953 — NAGY, MÁFI Évk. 52. 2. p. 137.

1973. *Polypodiisporites* R. POT. 1933 — NAGY, Acta Bot. Acad. Sci. Hung. 19. (1—4.) pp. 456—458.

The generic name from 1931 is not valid due to the question mark, that of 1933 is a monotypical generic name, the others are synonyms (see above).

Polypodiisporites sp. indet., forma A n. c.

Plate XLIX. Fig. 21.

1967. *Verrucatosporites* fsp. A. — W. KR., Atlas IV—V. p. 192. Taf. 72. 9—11.

It was found as 50×32 μ in the Eggenburgian — Várpalota 133, 208.3—214.2 m.

Remark: KRUTZSCH found one specimen of the form A in the Lower Miocene, sized 54×34 μ .

Polypodiisporites alienus (R. POT. 1931) NAGY 1973

Plate XLIX. Fig. 22., Plate L. Fig. 1.

1931. *Sporonites alienus* n. sp. — R. POT., Braunkohle, H. 27. Abb. 1. Fig. 1. p. 556. (Holotypus)

1934. *Sporites alienus* R. POT. — R. POT., Arb. Inst. Paläobot. 5. p. 13. T. 1. Fig. 10. (Diagnosis)

1953. *Verrucatosporites alienus* (R. POT.) n. c. — TH., et PF., Palaeontogr. 94. B. 1—4. p. 60.

1959. *Verrucatosporites* cf. *alienus* (R. POT. 1931) TH. et PF. — W. KR., Geol., Beih. 21/22. pp. 205—206.

1973. *Polypodiisporites alienus* (R. POT. 1934) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. (1—4.) p. 457.

The species occurs regularly, of 35—66 μ size, in greater numbers in Egerian and Lower Miocene formations. In the younger Neogene layers it is found only sporadically and may be redeposited.

Remark: KRUTZSCH (1959) and NAGY (1973) studied the taxonomical implications of this species. Because of the, among others, considerable size differences I consider it to be a collective species.

Polypodiisporites balticus (W. KR. 1962) NAGY 1973 ssp. **major** W. KR. 1967

Plate L. Fig. 2.

1967. *Verrucatosporites balticus major* n. subfsp. — W. KR., Atlas IV—V. p. 178. (pro parte), Taf. 65. 18—22.

Few specimens, 35—38 μ , were found in the Egerian — Fót 1, 209.5—209.9 m, in the Lower Badenian — Szokolya 3, 77.2—77.4 m.

KRUTZSCH mentioned it as a rare species from the Lower Miocene of Germany.

Polypodiisporites bockwitzensis (W. KR. 1967) NAGY 1973

Plate L. Fig. 3—5.

1967. *Verrucatosporites bockwitzensis* n. fsp. — W. KR., Atlas IV—V. p. 190. Taf. 71. 1—2.

1973. *Polypodiisporites bockwitzensis* (W. KR. 1967) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1—4. p. 458.

Specimens of 55—70 μ were found in the Egerian — Fót 1, 372.0 m, 216.5—218.8 m, in the Eggenburgian — Fót 1, 176.7—181.0 m, Várpálotá 133, 214.2—217.0 m, in the Karpáthian — Litke 17, 210.0—212.0 m, 176.0—178.0 m, Nógrádszakál 2, 271.0—273.0 m, Tököl 1, 906.5—910.3 m, Zengővárkony 59, 60.9—63.0 m, in the Badenian — Nógrádszakál 2, 119.2—121.2 m, Tengelic 2, 742.0—746.0 m, in the Upper Pannonian — Naszály 1, 9.0—11.0 m. The last one was probably redeposited.

KRUTZSCH mentioned 55—70 μ specimens from the Upper Oligocene and Lower Miocene of Germany.

Polypodiisporites cerebriformis (NAGY 1963) n. c.

Plate L. Fig. 6—11.

1963. *Polypodiisporites cerebriformis* n. sp. — NAGY, Pollen et Spores, Vol. V. No. 2. pp. 404—405. Pl. II. Fig. 7—8.

Few specimens were found in the Egerian — Eger, Wind brickyard pit, layer "k" (holotype), Fót 1, 196.4 m, in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Karpáthian — Litke 17, 200.0—202.0 m. This last one may be redeposited.

Remark: KRUTZSCH (Atlas IV—V. p. 178.) mentioned its similarity to *P. balticus*: "bei cerebriformis erscheint dies nicht so sicher, ist aber wahrscheinlich". As it is bigger and its ornamentation elements are different from other species, it is a separate species.

Polypodiisporites clatriformis (TH. et PF. 1953) NAGY 1973

Plate L. Fig. 12—13.

1952. *Monorad.-spor. clatriformis* n. sp. — MÜRR. et PF., Notizbl. Hess. L. A. Bodenf. VI. H. 3. p. 61. Taf. 11. Fig. 9.

1953. *Reticuloidosporites clatriformis* (MÜRR. et PF.) n. c. — TH. et PF., Palaeontogr. 94. B. 1—4. p. 61. Taf. 4. Fig. 5.

1959. *Reticuloidosporites (Polypodiisporites) clatriformis* (TH. et PF. 1953) n. c. — W. KR., Geol., Beih. 21/22. p. 214.

1967. *Verrucatosporites clatriformis* (MÜRR. et PF. 1952 ex TH. et PF. 1953) n. c. — W. KR., Atlas IV—V. p. 196. Taf. 84. 2—6.

1973. *Polypodiisporites clatriformis* (TH. et PF. 1953) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1—9. p. 458.

Specimens of 61—92 μ were found in the Eggenburgian — Fót 1, 142.8—144.0 m, Balaton 26, 581.5—585.5 m, Püspökhatvan 4, 266.0—269.0 m, in the Ottnangian — Alsóvadász 1, 984.5—1034.6 m, in the Karpáthian — Nógrádszakál 2, 122.0—290.0 m, Litke 17, 190.0—264.0 m, Magyar-egregy-Almáspatak surface exposure, in the Badenian — Szokolya 2, 37.9—83.1 m, Hidas 53, 558.0—683.0 m, in the Sarmatian — Cserhátszentiván 1, 139.0—141.0 m.

Remark: The "clatriformis" was nomen nudum in 1952. In 1953 THOMSON et PFLUG described it and published the 1952 figure, too. They allocated here 80—120 μ specimens with verrucae of 12 μ longer diameter and 5 μ high. KRUTZSCH found 65—100 μ specimens with verrucae 5—6 μ high. The species is considered to occur in Germany from the Middle or Upper Eocene to the Upper Miocene.

Polypodiisporites favus (R. POTONIÉ 1931) R. POT. 1933

Plate L. Fig. 14., Plate LI. Fig. 1—2.

1931. *Polypodii(?) -sporonites favus* n. sp. — R. POT., Braunkohle 27, p. 556. Abb. 3. (Holotypus)
1933. *Polypodii-sporites favus* R. POT. — R. POT. et J. GELL., Sitzber. Ges. Naturf. Fr. Jhg. 1932. p. 524. Taf. 2. Fig. 18.
1953. *Verrucatosporites (Polypodiisporites) favus* R. POT. n. c. — TH. et PF., Palaeontogr. 94. B. 1—4. p. 60.
1959. *Reticuloidosporites (Polypodiisporites) favus* (R. POT. 1931) n. c. — W. KR., Geol., Beih. 21/22. p. 215.
1967. *Verrucatosporites favus* (R. POT. 1931) TH. et PF. 1953 ssp. *favus* — W. KR., Atlas IV—V. p. 184.
1969. *Polypodiisporites favus* (R. POT. 1931) R. POT. 1933 — NAGY, MÁFI Évk. 52. 2. p. 134.
1973. *Polypodiisporites favus* R. POT. 1933 — NAGY, Acta Bot. Acad. Sci. Hung. 19. (1—4.) p. 456.

The synonym list reflects well the changes in the nomenclature of *P. favus*. As to its morphology, the workers agree: it is covered by dense, flat verrucae, among them shows "negative" reticulum and as whole is slightly bean-shaped. As to dimensions the descriptions show more variability. The holotype is 57 μ , with 5—7 verrucae. R. POTONIÉ gave values of 35—37 μ for Lower Miocene forms (1934, 5. p. 12.), THOMSON et PFLUG published 30—80 μ .

Adopting R. POTONIÉ's holotype and its size I classify here bean-shaped spores with dense verrucae forming negative reticulum, the flat verrucae are 4—5 μ broad and 2—3 μ high. From 60 specimens photos, excluding extreme values (4 were 71—64 μ , 5 were under 42 μ) and the damaged and crumpled ones (42 specimens, i.e. the majority) had 49—62 μ .

The form was described by R. POTONIÉ from the Upper Oligocene—Lower Miocene Rhine brown coal but mentioned its presence in the Geiseltal Eocene (R. POT. 1931, and R. POT. et GELL. 1933).

In Hungary it occurs in the Upper Oligocene and in the entire Neogene. In largest numbers (10—20) it came from the Middle Miocene. The Sarmatian — Pannonian specimens (2) may have been redeposited.

Already R. POTONIÉ mentioned in 1934 its natural relationship to the *Polypodiaceae*, notably *Polypodium vulgare* L., *Blechnum spicant* (L.) ROTH., *Lindsaya cultrata* and concluded it is closest to the *Polypodium* genus.

Polypodiisporites gemmatus (NAGY 1963) n. c.

Plate LI. Fig. 3—5.

1963. *Verrucatosporites gemmatus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. IX. 3—4. p. 305—306.

Specimens of 50—65 μ length were found in the Pannonian — Hidas 53.

They are probably related to the *Polypodiaceae*.

Polypodiisporites histiopteroides (W. KR. 1962) NAGY 1973 ssp. histiopteroides

Plate LI. Fig. 6—8.

1962. *Verrucatosporites histiopteroides* n. fsp. — W. KR., Geol. 11. 3. p. 269. Taf. II. Fig. 1—6.
1967. *Verrucatosporites histiopteroides* W. KR. 1962a subsp. *histiopteroides* — W. KR., Atlas IV—V. p. 200. Taf. 76. 1—8.
1969. *Verrucatosporites histiopteroides* W. KR. 1962. f. *major* n. f. — NAGY, MÁFI Évk. 52. 2. p. 157.
1973. *Polypodiisporites histiopteroides* (W. KR. 1962) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1—4. p. 457.

Specimens of 51—107 μ were found in the Egerian — Fót 1, 196.4—357.0 m, in the Eggenburgian — Püspökhatvan 4, 201.0—293.0 m, Fót 1, 166.0—168.0 m, in the Ottningian — Zengővárkony 45, 16.4—17.2 m, Pusztakisfalva VI. 10.5—15.0 m, Alsóvadász 1, 1029.0—1034.6 m, Tekeres 1, 883.2—884.0 m, in the Karpathian — Hidas 53, 1017.0—1019.0 m, Fót 1, 121.0—123.0 m, Püspökhatvan 4, 132.4—136.0 m, Litke 17, 153.3—214.0 m, Várpálotya 133, 166.0—167.7 m, in the Lower Badenian — Zengővárkony 59, 30.9—34.0 m, Szokolya 2, 71.9—104.7 m, Tar 34, 519.0—521.0 m, in the Upper Pannonian — Naszály 1, 93.4—104.6 m, which last was certainly redeposited.

Remark: KRUTZSCH separated in 1962 45—65 μ spores then in 1967 those of 50—75 μ due to "bastionartigen Skulptur" from other species of the genus. He described the species from the Lower Miocene.

In 1969 I separated the bigger specimens, on the basis of KRUTZSCH's data, as f. *major*. Most of them may be brought under the size range of KRUTZSCH and it has not much sense to set up a new subspecies due to some really bigger specimens. The species obtained its name due to its similarity to *Histiopteris incisa* (THUNB.) AG. — *Polypodiaceae* — a tropical fern living in South America, West Africa, Madagascar, Himalaya and New South Wales in Australia.

Polypodiisporites histiopteroides (W. KR. 1962) NAGY 1967 subsp. **minor** W. KR. 1967

Plate LI. Fig. 9—11.

1967. *Verrucatosporites histiopteroides minor* n. subsp. — W. KR., Atlas IV—V. p. 200. Taf. 76. Fig. 9—10.

Specimens of 35—47 μ were found in the Ottnangian — Fót 1, 168.0—169.3 m, Püspökhatvan 4, 248.0—251.0 m, Alsóvadász 1, 1029.0—1034.6 m, in the Karpathian — Fót 1, 122.0—123.2 m, in the Lower Badenian — Tengelic 2, 850.0—851.3 m, Szokolya 2, 44.0—45.5 m.

Remark: KRUTZSCH assigned forms under 50 μ to this form-subspecies of *histiopteroides*. As it occurs together with the basic species from the mid Chattian to the Upper Miocene, the separation is rather fictive. In Hungary the smaller subspecies occurs more rarely than the bigger specimens.

Polypodiisporites inangahuensis (COUPER 1953) NAGY 1973

Plate LII. Fig. 1—3.

1953. *Polypodiidites inangahuensis* n. sp. — COUPER, New. Zeal. Geol. Surv. Pal. Bull. 22. p. 29. Pl. 2. Fig. 16

1959. *Verrucatosporites inangahuensis* (COUPER 1953) n. c. — W. KR., Geol., Beih. 21/22. p. 205.

1967. *Verrucatosporites inangahuensis* (COUPER 1953) W. KR. 1959b — W. KR., Atlas IV—V. p. 196. Taf. 74. Fig. 1.

1973. *Polypodiisporites inangahuensis* (COUPER 1953) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1—4. p. 457.

Some specimen, 90 μ , were found in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Lower Badenian — Szokolya 2, 75.1—104.7 m, in the Sarmatian — Cserhátszentiván 1, 101.6—104.0 m, in the Pannonian — Tata (TVG) 26, 33.0—35.0 m.

Remark: My published specimen is similar to COUPER's (1960, Pl. 1.), the others to that of HACAERT (W. KR. Atlas IV—V. Taf. 74. Fig. 1.).

COUPER mentioned in 1953 Miocene—Pliocene spores of 57—74 μ length. KRUTZSCH wrote about 75—100 μ specimens in 1967, which is a considerable difference. COUPER's drawing in 1953 showed no radially situated verrucae and even in 1960 just slightly so. According to the statement of KRUTZSCH it is "schwach radial gestreckt" but on his specimen from HACAERT (Plate 74. Fig. 1.) the verrucae are arranged in distinct radial rows.

Polypodiisporites irregularis (W. KR. 1967) NAGY 1973

Plate LII. Fig. 4—5.

1967. *Verrucatosporites irregularis* n. sp. — W. KR., Atlas IV—V. p. 192. Taf. 72. 6—8.

1973. *Polypodiisporites irregularis* (W. KR. 1967) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1—4. p. 458.

One rather corroded 65 μ specimen from Tar-Fenyvespuszta district, surface exposure, one 45 μ specimen from Litke 17, 230.0—232.0 m — both in the Karpathian formations.

KRUTZSCH mentioned 45—55 μ specimens from the Pliocene of Germany.

Polypodiisporites keszoeensis n. sp.

Plate LII. Fig. 6—7.

Holotypus: Vkt. 1. sample N° 10., slide N° 1., 111.1×9.0, Plate LII. Fig. 6—7.

Locus typicus: Várkesző 1, 17.0—18.0 m

Stratum typicum: Upper Pannonian; huminitic bentonite

Diagnosis: Monolete bean-shaped spores. The ornamentation consist of 2—6 μ high verrucae. The verrucae are 4—6 μ high distally, shorter proximally. They are separated and do not form reticulum, covering the surface densely. The dehiscence line is 2/3—3/4 of the proximal side.

Dimensions: The holotype is 62 μ long, 37 μ broad.

Differential diagnosis: *Polypodiisporites keszoeensis* n. sp. is similar to *P. scutulum* (NAKOMAN 1965) n. c.* This similarity is expressed in verrucae height, irregular distribution and spore size.

* Basionym: 1965. *Verrucatosporites scutulum* n. sp. — NAKOMAN, E.: Étude palynologique de quelques échantillons etc. — Ann. Soc. Géol. du Nord. T. LXXXIV. p. 292. Pl. XII. Fig. 5—7. Lille.

P. keszoensis n. sp. differs from it, however, by its slim shape and thinner, otherwise formed verrucae.

Besides the holotype one specimen (60 μ) was found in the Pannonian — Tata (TVG) 26, 33.0—35.0 m.

***Polypodiisporites margaënsis* (W. KR. 1967) NAGY 1973**

Plate LII. Fig. 8.

1967. *Verrucatosporites margaënsis* n. fsp. — W. KR., Atlas IV—V. p. 180. Taf. 66. 14—15.

Some specimens, 62—65 μ , were found in the Egerian — Fót 1, 348.0—349.5 m, in the Lower Badenian — Balatonkenese I, 67.8—68.0 m, the latter was probably redeposited.

KRUTZSCH described the species from the Middle Miocene of Germany.

***Polypodiisporites maximus* (NAGY 1969) n. c.**

Plate LIII. Fig. 1—5.

1969. *Polypodiisporites maximus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 136—137. Pl. XXVII. Fig. 1., 5.

Specimens of 57—75 μ were encountered in the Egerian — Fót 1, 234.0—235.0 m, 196.4 m, in the Ottnangian — Pusztakisfalu VI, 10.5—12.5 m (holotype), Alsóvadász 1, 1029.0—1034.6 m, in the Karpathian — Litke 17, 210.0—212.0 m, in the Upper Badenian — Tengelic 2, 805.0—808.0 m, in the Sarmatian — Cserhátszentiván 1, 136.0—138.0 m.

***Polypodiisporites megabalticus* (W. KR. 1967) NAGY 1973**

Plate LIII. Fig. 6—7.

1967. *Verrucatosporites megabalticus* n. fsp. — W. KR., Atlas IV—V. p. 180. Taf. 66. Fig. 1—13.

Spores of 40—55 μ length were found in the Egerian — Fót 1, 236.0—348.0 m, in the Ottnangian — Pusztakisfalu VI, 12.5—15.0 m, in the Karpathian — Fót 1, 119.0 m, Litke 17, 252.0—254.0 m, Magyaregregy-Almásfata, surface exposure.

KRUTZSCH mentioned it from the Middle—Upper Oligocene and Lower Miocene of Germany.

***Polypodiisporites megafavus* (W. KR. 1967) NAGY 1973**

Plate LIII. Fig. 10—11.

1967. *Verrucatosporites megafavus* n. fsp. — W. KR., Atlas IV—V. p. 194. Taf. 73. 10—11.

1973. *Polypodiisporites megafavus* (W. KR. 1967) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1—4. p. 458.

Specimens of 55—75 μ were found in the Egerian — Fót 1, 222.5—225.5 m, in the Eggenburgian — Fót 1, 169.3—171.7 m, in the Karpathian — Litke 17, 142.0—144.0 m, 152.0—154.0 m, 220.0—222.0 m, in the Lower Badenian — Hidas 53, 672.5—676.0 m, Szokolya 2, 81.5—82.3 m, in the Upper Pannonian — Naszály 1, 40.2—41.8 m.

KRUTZSCH applied the name to 50—55 μ specimens collected in the Lower Miocene of Germany.

***Polypodiisporites multiverrucosus* (NAGY 1963) n. c.**

Plate LIII. Fig. 8—9., Plate LIV. Fig. 1—2.

1963. *Polypodiidites multiverrucosus* n. sp. — NAGY, Pollen et Spores, Vol. V. No. 2. p. 404. Pl. II. Fig. 9—11.

Some specimens, 33—54 μ , were found in the Egerian — Eger, Wind brickyard pit, layer "u", sample 7, 21, 29, Fót 1, 228.2—370.5 m, in the Eggenburgian — Püspökhátvan 4, 227.0—230.0 m, in the Ottnangian — Zengővárkony 45, 16.4—17.2 m, Pusztakisfalu VI, 6.3—7.8 m, Alsóvadász 1, 1029.0—1034.6 m, in the Karpathian — Magyaregregy, Farkasordító-árok, surface exposure, Zengővárkony 59, 56.0—60.9 m, Litke 17, 206.0—208.0 m.

Remark: KRUTZSCH (1967) regarded this species as a synonym of *Reticuloidosporites* (*Polypodiisporites*) *balticus* W. KR. 1962. The dimensions of its holotype are identical with this species, but

there the decoration is characteristically angular distinctly different from *P. multiverrucosus* which is covered by well-rounded verrucae.

In my view, on the basis of the holotype, the species *P. balticus* comprises specimens with polygonal verrucae.

Polypodiisporites poriacus (W. KRUTZSCH 1959) NAGY 1973

Plate LIV. Fig. 3–6.

1959. *Reticuloidosporites (Acusporis) poriacus* n. fsp. — W. KR., Geol., Beih. 21/22. pp. 219–220. T. 43. Fig. 475–476.

1967. *Verrucatosporites poriacus* (W. KR. 1959b) n. c. subfsp. *poriacus* et n. subfsp. *microporiacus* — W. KR., Atlas IV–V. p. 188. Taf. 70.

Three specimens were found, 50–56 μ , in the Karpathian — Litke 17, 220.0–222.0 m, in the Lower Badenian — Tengelic 2, 798.0–798.5 m, in the Upper Pannonian — Hidas 53, 135.5–137.0 m. The last may have been redeposited.

KRUTZSCH described the species as Eocene–Miocene.

Polypodiisporites potoniei NAGY 1969

Plate LIV. Fig. 7–10.

1969. *Polypodiisporites potoniéi* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 135–136. Pl. XXVI. Fig. 2–3.

Some specimens, 61–73 μ , were found in the Karpathian — Zengővárkony 59, 60.9–63.0 m, in the Badenian — Szokolya 2, 95.0–96.6 m, 35.0–36.0 m, Tar 34, 519.0–521.0 m.

It belongs probably to the *Polypodiaceae*.

Polypodiisporites pseudoalienus (W. KR. 1957) NAGY 1973

Plate LV. Fig. 1–2.

1967. *Verrucatosporites pseudoalienus* n. fsp. — W. KR., Atlas IV–V. p. 198. Taf. 75. Fig. 8–13.

Spores of 56–69 μ in low numbers occurring from the Egerian up to the Karpathian. KRUTZSCH mentioned these forms to occur from the Chattian to the Miocene.

Polypodiisporites pseudoregulatus (W. KRUTZSCH 1967) NAGY 1973

Plate LV. Fig. 3.

1967. *Verrucatosporites pseudoregulatus* n. fsp. — W. KR., Atlas IV–V. p. 192. Taf. 72. Fig. 1–4.

1973. *Polypodiisporites pseudoregulatus* (W. KR. 1967) n. c. — NAGY, Acta Bot. Acad. Sci. Hung. 19. 1–4. p. 458.

Few specimens of 40–49 μ were found in the Egerian — Eger, Wind brickyard pit layer “x₂”, in the Ottnangian — Rákoskeresztúr I, 204.0–205.1 m, in the Upper Badenian — Tengelic 2, 751.0–755.0 m. The Upper Pannonian specimen — Hidas 53, 134.8–135.5 m is probably redeposited.

Polypodiisporites repandus TAKAHASHI 1964

Plate LV. Fig. 4–5.

1964. *Polypodiisporites repandus* n. sp. — TAKAHASHI, Memoirs of Fac. Sci. Kyushu Univ. XIV. 3. p. 217. Taf. 30. 5. a, b.

Specimens of 31–46 μ were found in the Eggenburgian — Fót 1, 173.2–176.7 m, Püspökhatvan 4, 230.0–233.0 m, in the Badenian — Szokolya 3, 28.0–28.2 m, Nógrádszakál 2, 95.0–96.5 m, in the Upper Pannonian — Naszály 1, 38.0–39.9 m.

The specimens found in the Badenian and Upper Pannonian may have been redeposited.

According TAKAHASHI's diagnosis specimens of 40–52 μ belong to this species. KRUTZSCH (1967, p. 166.) accepted 30–52 μ ones and he reallocated the species to the *Polypodioidites*.

In my view those forms belong here which are less regularly ornamented than *P. favus* and are covered by rarely projecting verrucae. The spore outline reminds rather *alienus*, the surface network *favus*.

In KRUTZSCH's opinion it occurred in the Mid-Tertiary.

Polypodiisporites secundus (R. POT. 1934) R. POT. 1956

Plate LV. Fig. 6—8.

1934. *Sporites secundus* n. sp. — R. POT., Arb. Inst. Paläobot. 4. p. 39. Taf. 6. Fig. 7.
1934. *Sporites secundus* R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 13. Taf. 1. Fig. 12.
1953. *Reticuloideosporites secundus* (R. POT.) n. c. — TH. et FR., Palaeontogr. 94. B. p. 60.
1956. *Polypodiisporites secundus* (R. POT. 1934) n. c. — R. POT., Synopsis, I. p. 79.
1959. *Verrucatosporites secundus* (R. POT. 1934) n. c. — W. KR., Geol. Beih. 21/22. p. 206. Taf. 40. Fig. 450.
1959. *R. (Polypodiisporites) pseudosecundus* n. fsp. nom. — W. KR., Geol. Beih. 21/22. p. 214.
1967. *Verrucatosporites favus pseudosecundus* (W. KR. 1959) n. c. et em. — W. KR., Atlas IV—V. p. 186.

Variable spores of 32—59 μ , found in the Egerian — Eger, Wind brickyard pit layer "u", sample 13, in the Eggenburgian — Fót 1, 142.0—182.7 m, Püspökhatvan 4, 230.0—281.0 m, in the Ottnangian — Tekeres 1, 881.9—882.2 m, in the Karpathian — Tekeres 1, 855.0—859.0 m, Tököl 1, 845.5—846.0 m, Püspökhatvan 4, 124.4—128.4 m, Litke 17, 212.0—228.0 m, in the Lower Badenian — Nógrádszakál 2, 99.5—101.0 m, Szokolya 2, 33.5—46.3 m, in the Upper Pannonian — Balatonkenese 1, 63.5—63.8 m, Szederkény 8303, 14.6—15.9 m, the two latter are probably redeposited.

Polypodiisporites secundus (R. POT. 1934) R. POTONIÉ 1956. ssp. parasecundus W. KR. 1959

Plate LV. Fig. 9—10.

1959. *Verrucatosporites secundus* (R. POT. 1934b) n. c. subfsp. *parasecundus* n. subfsp. — W. KR., Geol., Beih. 21/22. p. 208.
1967. *Polypodiisporites secundus parasecundus* W. KR. 1959b — W. KR., Atlas IV—V. p. 168. Taf. 63. 1—10.

Specimens of 33 μ were found in the Egerian — Felsőpetény mine, sample 1, Fót 1, 206.0—209.5 m, in the Eggenburgian — Püspökhatvan 4, 192.8—195.0 m.

The form described from the Eocene of Geiseltal KRUTZSCH mentioned as occurring in the Oligocene and Lower Miocene (1967, see above).

Subclassis: Hydropterides

Ordo: Salviniales

Familia: Salviniaceae

Genus: Hydrosporis W. KRUTZSCH 1962

1962. *Hydrosporis* n. fsp. W. KR., Atlas I. p. 11.

Generotypus: *Hydrosporis azollaënsis* W. KR. 1962

According to KRUTZSCH the genus *Hydrosporis* includes spores of *Azolla* and *Salvinia* species.

Hydrosporis azollaënsis W. KR. 1962 ssp. azollaënsis

Plate LV. Fig. 11—13.

1962. *Hydrosporis azollaënsis azollaënsis* n. fsp. et subfsp. — W. KR., Atlas I. p. 64. Taf. 27. 1—24.

One 16 μ specimen was found in the Ottnangian — Tekeres 1, 886.7—886.9 m.

KRUTZSCH described the species from the Chattian and mentioned it from the Pannonian of Czechoslovakia (see above).

Hydrosporis levis W. KR. 1962

Plate LV. Fig. 16—17.

1962. *Hydrosporis levis* n. fsp. — W. KR., Atlas I. p. 66 Taf. 26.

One 25 μ specimen was found in the Karpathian — Tököl 1, 823.8—824.3 m.

Hydrosporis miocaenicus NAGY 1969 emend.

Plate LV. Fig. 14—15.

1969. *Hydrosporites miocaenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 139. Pl. XXVII. Fig. 8.

Diagnosis emendation: Rounded microspores. The exosporium is smooth, chagrenate or intragranulate. Exosporium thickness 1.5—2 μ . The dehiscence line is thin cca. 2/3 of the radius, accompanied by a dark line which is cca. 1—1.5 μ broad.

Dimensions: The holotype is 27 μ in size.

Remark: The diagnosis needed amendment as the holotype (Hidas 53, 558.0—561.0 m) did not show this fine intragranulate structure which could be studied on the later found specimen (Naszály 1, 17.0—18.0 m). It is possible that the fine structure became visible due to corrosion.

PHYLUM: GYMNOSPERMAE
SUBPHYLUM: PTERIDOSPERMOPHYTINA
Classis: *Cycadopsida*
Ordo: *Cycadales*

Genus: *Cycadopites* WODEHOUSE 1953 ex WILSON et WEBSTER 1946

1933. *Cycadopites* gen. nov. — WODEHOUSE, Tertiary pollen. II. Bull. — Torrey Bot. Club. Vol. 60. pp. 483—484.

Remark: WODEHOUSE described in 1953 (pp. 483—484.) the morphological characters of pollens which he assigned to the *Cycadopites* genus but as he considered that even recent *Cycadaceae* pollens were not separable he neither mentioned a species name nor fixed a holotype. The genus is validated by WILSON et WEBSTER (1946, p. 274.) by describing *C. follicularis* from the Tertiary of Montana.

Generotypus: *Cycadopites follicularis* WILSON et WEBSTER 1946

Cycadopites* cf. *follicularis WILSON et WEBSTER 1946

Plate LVI. Fig. 1—2.

1946. *Cycadopites follicularis* sp. nov. — WILSON et WEBSTER, Am. Journ. Botany, 33. p. 4. 274. Fig. 7.

Pollens of 40—50 μ length, 16—22 μ breadth, (the holotype is slightly smaller) found in the Egerian — Fót 1, 214.0—216.5 m, in the Ottnangian — Pusztakisfalu VI, 12.5—15.0 m, in the Lower Badenian — Szokolya 3, 40.0—40.8 m.

Cycadopites gracilis W. KRUTZSCH 1970

Plate LVI. Fig. 3—4.

1970. *Cycadopites gracilis* n. sp. — W. KR., Atlas VII. p. 94. Taf. 18. 1—3.

Some specimens of 39—50 μ length, found in the Egerian — Rákoskeresztúr I, 535.0—537.0 m, in the Ottnangian — Pusztakisfalu VI. 10.5—12.5 m, Felsőnyárad 214, 189.7—189.8 m, in the Lower Badenian — Szokolya 3, 47.0—48.5 m.

KRUTZSCH described the species from the Miocene of Germany.

Cycadopites intrastructus W. KR. 1970

Plate LVI. Fig. 5.

1970. *Cycadopites intrastructus* n. sp. — W. KR., Atlas VII. p. 92. Taf. 17. 7—10.

Two specimens, 44—51 μ were found in the Lower Badenian — Szokolya 2, 82.3—83.1 m. KRUTZSCH described it from the Pliocene of Germany: "kompakte Scholle im Pleistozän".

Cycadopites microsculptus W. KR. 1970

Plate LVI. Fig. 6—7.

1970. *Cycadopites microsculptus* n. sp. — W. KR., Atlas VII. p. 92. Taf. 17. 11—16.

Some specimens of 31—34 μ , found in the Lower Badenian — Szokolya 2, 38.3—82.3 m. KRUTZSCH mentioned it from the Middle Miocene of Germany.

Cycadopites miocaenica NAGY 1969

Plate LVI. Fig. 8—9.

1969. *Cycadopites miocaenica* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 140. Pl. XXVIII. Fig. 13.

A 34 μ long specimen (holotype) — Zengővárkony 59, 30.9—34.0 m, and a 42 μ specimen — Szokolya 2, 78.8—79.1 m, the latter from the Lower Badenian.

Remark: This species reminds the recent *Zamia obidensis* DUCKE. The epidermis remnant from Zengővárkony 59, 46.8—48.5 m suggest also the presence of *Cycadales* as the stoma is very similar to *Macrozamia miqueli* A. DC. (1969, Pl. XXVIII. 4—5., XXX. Fig. 1—2.).

KRUTZSCH (1970 Atlas VII. pp. 96—97.) published the morphological parameters of the genus *Cycadopites*. In the Hungarian specimens the length/width ratio is 1.9—2.1, the sulcus is 5—7 μ broad, the exine 1—1.5 μ thick.

SUBPHYLUM: CONIFEROPHYTINA

Classis: Ginkgoales

Familia: Ginkgoaceae

Genus: *Ginkgoretectina* MALJAVKINA 1953 ex R. POT. 1958

1949. *Retectina* gen. nov. MALJAVKINA — MALJ., Trudy VNIGRI 33. p. 115.

1953. *Ginkgoretectina* gen. MALJAVKINA — MALJ., Trudy VNIGRI N. Sz. B. 75. p. 136.

1958. *Ginkgoretectina* MALJAVKINA 1953 — R. POT., Synopsis II. pp. 94—95.

Generotypus: *Ginkgoretectina punctata* MALJ. 1953 ssp. *punctata*

Remark: MALJAVKINA described a genus as *Retectina* in 1949. The pollens of these she related to the *Ginkgo* (p. 115.). In 1953 she used the term "pollen typus" referring to *Retectina* in the sense of higher taxonomical category. She classified here only one genus as *Ginkgoretectina*. The type was fixed only later by R. POTONIE in 1958.

Ginkgoretectina neogenica NAGY 1969

Plate LVI. Fig. 10—12.

1969. *Ginkgoretectina neogenica* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 141. Pl. XXX. Fig. 2—3.

Pollens of 21—49 μ , found in low numbers in the Egerian — Fót 1, 216.5—301.0 m, Eger, Wind brickyard pit layer "u", in the Eggenburgian — Szászvár 8, 433.6—433.8 m, in the Karpathian — Rákoskeresztúr I, 148.0—150.0 m, in the Badenian — Hidas 53, 665.1—759.0 m, Hidas mine, II. seam, sample 1, in the Sarmatian — Hidas 53, 479.1—496.0 m, in the Upper Pannonian — Tata, mapping 26, 16.8—24.6 m.

Classis: Coniferopsida
Ordo: Pinales (Coniferales)
Familia: Abietaceae — Pinaceae
Subfamilia: Pinoideae

Genus: *Pinuspollenites* (RAATZ 1937) R. POTONIÉ 1958

1937. *Pinuspollenites*... — RAATZ, Abh. Preuss. Geol. L. A. N. F. H. 183. pp. 15—16.

1958. *Pinuspollenites* RAATZ 1937 — R. POT., Synopsis II. p. 62.

Generotypus: *Pinuspollenites labdacus* (R. POT. 1932) R. POT. 1958

Remark: The name *Pinuspollenites* was used first by RAATZ in 1937 but it was invalid, having no generic diagnosis and being not monotypic. It was validated by R. POTONIÉ in 1958 when diagnosed according to the Code (Art 32). At the same time R. POTONIÉ determined the generotype (Art 37).

Instead of the name *Pityosporites*, introduced by THOMSON et PFLUG into the literature, it is better to use *Pinuspollenites*, as:

- 1) The pollens of this genus are considered generally to belong to the *Pinus* but at least to the *Pinoideae* subfamily.
- 2) The genus *Pityosporites* was set up by SEWARD in 1914 on the basis of a pollen from the silicified intrusion of a probably Triassic macrofossil, found in a glacier in Antarctica. The form may be studied in the section according to MANUM (1960, p. 14.).

According to the photos and drawings of MANUM, made on SEWARD's generotype *Pityosporites antarcticus*, it may be related to *Podocarpus* as the loose air-sack structure suggest.

The distance in time and space, the not certainly discernible morphological features and the uncertainty as to its natural relations — all these factors advise the name *Pinuspollenites* to be preferable.

***Pinuspollenites eocaenicus* (W. KR. 1971) n. c.**

Plate LVI. Fig. 13—16.

1971. *Podocarpidites eocaenicus* n. sp. — W. KR., Atlas VI. p. 130. Taf. 33. 12—14.

Some 53—70 μ specimens, found in the Egerian — Fót 1, 348.0—349.5 m, in the Badenian — Szokolya 2, 53.5—54.3 m.

Remark: KRUTZSCH mentioned pollens of 75 μ which came from the Middle Eocene of Geiseltal. The well-developed reticulum on the air-sack and the shape, the attachment like *Pinus sylvestris* underline its proper classification to *Pinuspollenites*.

***Pinuspollenites labdacus* (R. POT. 1932) R. POTONIÉ 1958**

Plate LVI. Fig. 17—20., Plate LVII. Fig. 3—4.

1932. *Pollenites labdacus* n. sp. — R. POT., Jb. Preuss. Geol. L. A. 52. p. 3. Abb. 32. (Holotypus)

1934. *Pollenites labdacus* R. POT. — R. POT., Arb. Inst. Paläobot. Bd. 4. pp. 49—50. Taf. 6. Fig. 8.

1934. *Pollenites labdacus* R. POT. — R. POT. et VEN., Arb. Inst. Pal. Bd. 5. p. 20. Taf. 2. Fig. 25. (Lectotypus)

1935. *Pinus sylvestris* typus — RUDOLPH, B. B. C. 54. Abt. B. p. 254. Taf. 4.

1937. *Pinuspollenites labdacus* R. POT. — RAATZ, Abh. Preuss. Geol. L. A. N. F. H. 183, p. 16.

1953. *Pityosporites labdacus* (R. POT.) n. c. — TH. et PF., Palaeontogr. B. 94. p. 68. Taf. 5. Fig. 60—62.

1958. *Pinuspollenites* (al. *Pollenites*) *labdacus* (R. POT. 1931) RAATZ 1937 — R. POT., Synopsis II. p. 62.

It is found throughout the Neogene of Hungary as 50—80 μ pollens in varying quantities according to the distance from the shore.

On Plate LVII. Fig. 3—4. there are specimens grown into each other, similar ones were published by KRUTZSCH (Atlas VI, p. 82. 1971).

Remark: It was R. POTONIÉ (1932) who first used the name *Pollenites labdacus* and provided it with morphological signs. The first description was published in 1934 (tome 4.) and in the same year R. POTONIÉ published the Miocene lectotype again, repeating the essentials from the previous description. THOMSON et PFLUG reclassified the species as *Pityosporites* in 1953. In 1934 R. POTONIÉ mentioned *Pinus flexilis* JAMES as natural relationship and *Pinus sylvestris* is mentioned by him only in 1958 (Synopsis II. p. 62.). In my view, the *P. sylvestris* pollen forms include many species. Accordingly ecological conclusions can be drawn only very cautiously.

Pinuspollenites labdacus (R. POT. 1932) R. POTONIÉ 1958 ssp. *reticulatus* (DOKT.-HREBN. 1960)
W. KR. 1971

Plate LVII. Fig. 1–2.

1960. *typ. Pinus sylvestris* RUDOLPH II. forma *reticulata* — DOKT.-HREBN., Fig. 24. Z Badan Trzeciorzedu w Polsce, Inst. Geol. B. 157. p. 77.

1971. *Pityosporites labdacus* subsp. *reticulatus* (DOKT.-HREBN. 1960) n. comb. [*Pinus labdaca* subsp. *reticulata* (DOKT.-HREBN. 1960)] n. comb. — W. KR., Atlas VI. p. 66.

56–59 μ long pollens were found in few specimens in the Egerian — Eger, Wind brickyard pit layer “k”, in the Upper Badenian — Tengelic 2, 820.0–823.4 m.

The species is mentioned from the Middle Miocene of Poland and Middle–Upper Miocene of Germany.

Pinuspollenites latisaccatus (TREVISAN 1967) n. c. ssp. *latisaccatus*

Plate LVII. Fig. 5–6.

1967. *Pityosporites latisaccatus* n. fsp. et subfsp. — TREVISAN, p. 21. Tav. XII. Fig. 4., Tav. XIII., Fig. 1–2.

Pollens of 75–105 μ diameter, found in low numbers in the Egerian — Fót 1, 201.0–294.0 m, in the Karpathian — Hidas 53, 171.0–172.5 m, Zengővárkony 59, 67.8–70.5 m, in the Lower Badenian — Hidas 53, 683.0–738.0 m, Szokolya 2, 37.9–87.1 m, in the Sarmatian — Cserhátszentiván 1, 161.0–163.0 m (106 μ diameter), in the Pannonian — Vigántpetend 1, 86.0–86.2 m.

Remark: KRUTZSCH reclassified TREVISAN's species into the *Abiespollenites* (1971 Atlas VI. p. 88.). The size is, however, erroneous though they were correctly given by TREVISAN and may be checked upon in the figure, magnified 1000 \times , so it is 105 μ and not 118 μ as mentioned by KRUTZSCH (Atlas VI. p. 100.).

TREVISAN is probably right in mentioning its relationship to the *Pinus taeda* section (1967, p. 21., 65.).

Pinuspollenites latisaccatus (TREVISAN 1967) n. c. ssp. *medius* TREVISAN 1967

Plate LVII. Fig. 7., Plate LVIII. Fig. 1.

1967. *Pityosporites latisaccatus medius* n. subfsp. — TREVISAN, p. 22. Tav. XIII. Fig. 3–4.

Few specimens were found, full diameter 72–75 μ , in the Egerian — Eger, Wind brickyard pit layer “u”, Fót 1, 209.0–212.6 m, in the Sarmatian — Hidas 53, 630.0–632.0 m, in the Upper Pannonian — Hidas 53, 126.8–132.5 m, Naszály 1, 29.7–32.0 m.

TREVISAN described the species from the Upper Miocene of Toscana (Italy).

Pinuspollenites longus n. sp.

Plate LVIII. Fig. 2–6.

Holotypus: F. 1, sample No 22., slide No 1., 104.8 \times 21.4, Plate LVIII. Fig. 2–5.

Locus typicus: Fót 1, 290.5–294.0 m

Stratum typicum: Egerian; grey fine sand

Diagnosis: The pollen's body is rounded oval, the air-sack rigidly lateral, it is about as high as the body. The surface is densely punctate. The crest is 2.5 μ , 3 μ when meeting the air-sacks. The crest is tectate, below it a sexine of sparsely situated bacula and a thin but discernible nexine. The exine thins out at the distal germ-pore, covered by large-grained, sparse granula. The air-sack is covered by a reticulum which is 2 μ at the edges and 4–5 μ across in the center.

Dimensions: The holotype, full length 70 μ
body length 55 μ
body height 36 μ
air-sack height 34 μ
air-sack width 30 μ

Differential diagnosis: *Pinuspollenites longus* n. sp. is similar to the photos of *Pityosporites* cf. *medius* TREVISAN 1967, published in KRUTZSCH's Atlas (1971, Atlas VI. p. 68. Pl. 9. Fig. 8–11.).

The air-sacks on the photos are not so decurrent as in the new species and their exine structure is finer. On the other side the body is more ornamented and shows a thick crest.

Remark: Due to the thin exine the body and the air-sack are almost invariably crumpled.

More single specimens, 68–102 μ long, were found in the Egerian — Fót 1, 290.5–355.0 m, in the Eggenburgian — Fót 1, 162.0–164.0 m, in the Karpathian — Püspökhatvan 4, 169.0–172.5 m, Fót 1, 130.5–131.5 m, in the Lower Badenian — Szokolya 2, 75.1–75.9 m, in the Sarmatian — Cserhátszentiván 1, 188.0–190.0 m.

Pinuspollenites microinsignis (W. KRUTZSCH 1971) n. c.

Plate LVIII. Fig. 7.

1971. *Pityosporites microinsignis* n. sp. — W. KR., Atlas VI. pp. 58–59. Taf. 5. Fig. 12–21.

One specimen, body 30 μ , air-sack 22 μ , was found in the Egerian — Fót 1, 349.5–354.0 m. The air-sacks are pressed against the body as seen also on specimens published by KRUTZSCH (Taf. 5. Fig. 17–21.).

KRUTZSCH considered it a rare species from the Upper Oligocene through Middle Miocene to the Pliocene.

Pinuspollenites minutus (ZAKLINSKAIA 1957) n. c.

Plate LVIII. Fig. 8–9.

1957 *Pinus minutus* sp. nov. (pollen) — ZAKLINSKAIA, Trudy Geol. Inst. Akad. Nauk. URSS, B. 6. pp. 155–156. T. XIV. Fig. 4.

1971. *Pityosporites minutus* (ZAKL. 1957) n. comb. [= *Pinus minuta* ZAKL. 1957] — W. KR., Atlas VI. p. 70. T. 10. F. 19.

Pollens in 39–50 μ full length and 25–35 μ body length. The Hungarian specimens have a slightly smaller lower range than given by ZAKLINSKAIA (45–50 μ) but the morphology supports their belonging here.

Moderately common specimens found in the Egerian — Eger, Wind brickyard pit, layers "k" and "u", Fót 1, 196.4–228.2 m, in the Badenian one specimen — Szokolya 2, 80.7–81.5 m which may have been redeposited.

ZAKLINSKAIA found it in Siberia in Middle Oligocene and late Lower Oligocene layers (p. 153–154.). KRUTZSCH mentioned it even from Miocene and even Plio–Pleistocene layers (p. 70.). These are probably redeposited.

Pinuspollenites miocaenicus n. sp.

Plate LIX. Fig. 1–8.

Holotypus: Szk. 2, sample N° 100., slide N° 1., 116.7×8.9, Plate LIX. Fig. 1–3.

Locus typicus: Szokolya 2. 95.0–96.6 m

Stratum typicum: Lower Badenian mid-grained andezitic sand

Diagnosis: Disaccate, labdacus-type pollens with a relatively long body (body: air-sack ratio 1.5–1.9). Shape oblate. The exine is proximally tectate, the sexine is made up of bacula. The body surface is microreticulate. The two air-sacks are reticulate, centrally the reticulum lumen diameter reaches 5 μ , on the margin 1–2 μ , it is fine-grained. The air-sack exine is thin.

<i>Dimensions:</i> The holotype, full length	90 μ
body length	58 μ
body width	28 μ
proximal exine thickness cca.	1.5 μ
air-sack diameter	35–40 μ

Differential diagnosis: *Pinuspollenites miocaenicus* n. sp. is close to *P. labdacus* but the exine structure, the elongate body and the shape of the air-sack differentiate them. The body length: air-sack ratio is 1 in *P. labdacus* and 1.5–2 in *P. miocaenicus*.

Remark: I included here pollens with elongate body according the morphology of *Pityosporites labdacus* (R. POT. 1932) TH. et PF. 1953 "Type C" (1969, p. 143. Pl. XXIX. Fig. 4.).

The full length of the pollens is 58–95 μ , the exine thickness also changes in accordance to pollen length. In many cases it is thinner than in the holotype and such specimens get easily crumpled.

The species occurs from the late Egerian through the whole Neogene, being most frequent in the Karpathian and Lower Badenian but is not missing from the Pliocene, either.

***Pinuspollenites pristinipollinius* (TRAVERSE 1955) n. c.**

Plate LX. Fig. 1.

1955. *Pinus pristinipollinia* sp. nov. — TRAVERSE, Bur. Min. Ref. Investig. 5151. p. 42. Fig. 9., 20.

1971. *Pityosporites pristinipollinius* (TRAV. 1955) n. c. (*Pinus pristinipollinia* TRAV. 1955) — W. KR., Atlas VI. pp. 82–73.

66–78 μ pollens in low numbers, found in the Egerian — Eger, Wind brickyard pit, layer "k", Fót 1, 214.0–216.5 m, in the Lower Badenian — Tengelic 2, 830.0–833.0 m.

The species was described by TRAVERSE from the Upper Oligocene lignite of Brandon. KRUTZSCH mentioned it from the Oligocene and Miocene of Germany.

***Pinuspollenites thunbergiiformis* (NAGY 1969) n. c.**

Plate LX. Fig. 2–4.

1969. *Pityosporites thunbergiiformis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 143–144. Pl. XXX. Fig. 1., 4.

It occurs in low numbers, size 66–104 μ , from the Egerian to the Pliocene, though the latter ones may have been redeposited as they are rather damaged. Found in the Egerian — Eger, Wind brickyard pit, layer "x", Fót 1, 195.5–352.5 m, in the Eggenburgian — Várpalota 133, 220.0–222.7 m, in the Lower Badenian — Zengővárkony 59, 30.9–56.0 m (holotype), Szokolya 2, 51.9–83.1 m, in the Upper Pannonian — Hidas 53, 126.8–132.5 m.

Remark: MIYOSHI published SEM photos (1980, pl. III. 4, a, b, c.) of the recent Japanese *Pinus thunbergi* PARL. The coarse surface ornaments on the body of the pollen are characteristic in contrast to the smooth surface of the air-sacks. The connective between the air-sacks is well visible distally. This SEM photo supports LM observations providing a clue to the natural relationship of the species.

***Pinuspollenites verruculatus* (TREV. 1967) n. c.**

Plate LX. Fig. 7–9.

1967. *Pityosporites verruculatus* n. fsp. — TREVISAN, Pal. Ital. LXII. (N. S. XXXII.) pp. 24–25. T. XV. Fig. 2.

1971. *Podocarpidites* cf. *verruculatus* (TREVISAN 1967) n. c. — W. KR., Atlas VI. p. 136–138.

Specimens of 48–52 μ full length were found in the Egerian — Eger, Wind brickyard pit, layers "x₂" and "u", Fót 1, 237.5–238.0 m, in the Badenian — Szokolya 3, 39.9–40.7 m, Tar 34, 530.0–533.0 m, Tengelic 2, 826.5–830.0 m, in the Lower Pannonian — Naszály 1, 37.2–38.0 m.

TREVISAN found two specimens of the species in Toscana's Messinian. KRUTZSCH classified one specimen as cf. from the Lower Miocene of Germany.

***Pinuspollenites zaklinskaiana* (NAGY 1969) n. c.**

Plate LX. Fig. 5–6., Plate LXI. Fig. 1–2.

1969. *Pityosporites zaklinskaiana* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 144. Pl. XXXI. Fig. 1., 2.

Pollens of 61–89 μ full length in single specimens found in the Egerian — Fót 1, 357.0–358.5 m, but its acme was in the Middle Miocene (Karpathian) — Fót 1, 129.5–130.5 m, Zengővárkony 59, 30.9–34.0 m, Szokolya 2, 95.0–96.6 m, Tar 34, 589.0–591.0 m, Tengelic 2, 839.0–842.0 m.

Remark: KRUTZSCH thought it to be identical with *Pinus scopulipites* WODEHOUSE (Atlas VI. p. 72.). A small line drawing from WODEHOUSE (1933, 485.), however, contradicts this assumption, as there the pollen body and air-sack ratio is different and the coarse reticulate structure of the air-sack differ, too. WODEHOUSE found *Pinus scopulipites* in many specimens in the Eocene of Green River. He described it as 44–60 μ long, so that even the size is different.

ZAKLINSKAIA published a similar species as *Pinus* sectio *Banksiana* (1953, Tab. I. Fig. 11–12.) from the Cretaceous and Paleogene of Kazakhstan (USSR).

Genus: *Abietinaepollenites* R. POT. 1951 DELCOURT et SPRUM. 1955

1951. *Abietinaepollenites* R. POT. — Palaeontogr. 91. B. p. 142., 144.

1955. *Abietinaepollenites* R. POT. 1955 (p. 144) — DELC. et SPRUM., Mém. Soc. Belge Géol. N. S. 4–5. p. 51.

1958. *Abietinaepollenites* R. POT. 1951 S. 144. — R. POT., Synopsis II. p. 61.

Generotypus: *Abietinaepollenites microalatus* (R. POT. 1931) R. POT. 1951.

It was R. POTONIÉ who used this generic name first in 1951 and he connected it already to the generotype (p. 142.). DELCOURT et SPRUMONT fixed the generotype in 1955 — the figure of R. POTONIÉ, 1931 — and gave diagnosis and differential diagnosis as well.

***Abietinaepollenites fotensis* n. sp.**

Plate LXI. Fig. 3–5.

Holotypus: F. 1., sample N° 42., slide N° 1., 106.8×13.6, Plate LXI. Fig. 3–5.

Locus typicus: Fót 1, 209.5–209.9 m

Stratum typicum: Egerian; clayey gravel

Diagnosis: Disaccate, rounded pollen of moderate size. The pollen body is granulate. The air-sacks are attached at 1/3 of the body the less than semi-circular air-sacks follow the outline of the body. The reticulum on the air-sack is fine-grained, the lumens are cca. 1 μ small.

Dimensions: The holotype's full diameter is 61 μ , in distal polar position, and 46 μ high. The body is 50 μ broad, 45 μ high, the air-sack 16 μ . The dehiscence of air-sacks at mid-distal side is 27 μ , on the margin 5 μ .

Differential diagnosis: *Abietinaepollenites fotensis* n. sp. is close to *A. microalatus* (R. POT. 1932) R. POT. 1951 ex DELC. et SPRUM. 1955 ssp. *microalatus*. The finely structured air-sacks and their position in the new species are, however, different.

Quite a lot of specimens were found, 56–74 μ , in the Egerian — Fót 1, 209.5–332.8 m, in the Eggenburgian — Szászvár 8, 432.5–432.7 m, some were found in the Karpathian — Tekeres 1, 855.0–859.0 m, in the Lower Badenian — Szokolya 2, 51.1–51.9 m.

***Abietinaepollenites inclinatus* (NAGY 1969) n. c.**

Plate LXI. Fig. 6–7.

1969. *Dacrydiumites inclinatus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 161–162. Pl. XXXVIII. Fig. 1–2.

Some specimens, 63–88 μ , were found in the Karpathian — Zengővárkony 59, 51.3–63.0 m.

Remark: It differs from other *Abietinaepollenites* by the structural differences in the body and air-sacks and their attachment.

Abietinaepollenites microalatus* (R. POT. 1932) R. POT. 1951 ex DELC. et SPRUM. 1955 ssp. *microalatus

Plate LXI. Fig. 8., Plate LXII. Fig. 3–4.

1932. *Piceae-pollenites microalatus* n. sp. — R. POT., Jb. Preuss. L. A. Jhg. 1931. p. 5. Abb. 34.

1934. *Pollenites microalatus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 49. Taf. 2. Fig. 4.

1951. *Abietinaepollenites microalatus* R. POT. — R. POT., Palaeontogr. 91. B. p. 142.

1955. *Abietinaepollenites microalatus* R. POT. 1951 — DELC. et SPRUM., Mém. Soc. Belge Géol. 4–5. p. 51. Pl. IV. Fig. 7.

1958. *Abietinaepollenites* (al. *Piceapollenites*) *microalatus* (R. POT. 1932) R. POT. 1951 — R. POT., Synopsis II. p. 61.

Specimens of 50–66 μ were found in highest numbers in the Egerian — Eger, Wind brickyard pit, Fót 1, and in the Eggenburigan — Szászvár 8, Püspökhátvan 4, Budajenő 2. It decreases in numbers towards the younger Neogene though it may be found even in the Upper Pannonian (NAGY, 1958).

Remark: R. POTONIÉ published it 1932 as *Piceapollenites microalatus*. In 1934 it was *Pollenites* and in 1951 at last *Abietinaepollenites*. The species itself was described in 1934 and its single photo is the holotype. DELCOURT et SPRUMONT accepted the drawing from 1932 (Jb. Geol. L. A.) as holotype reflected in R. POTONIÉ's work (Synopsis II. p. 61.).

***Abietinaepollenites microalatus* (R. POT. 1932) R. POT. 1951 major R. POT. 1951**

Plate LXII. Fig. 5—6.

1951. *Abietinaepollenites microalatus* (R. POT. 1932) R. POT. 1951 f. *major* R. POTONIÉ 1951 — R. POT., Palaeontogr. 91. Abt. B. p. 145.

The species occurs in Hungary from the Oligocene onwards, becoming most frequent in the Badenian but found up to the Upper Pannonian.

Remark: R. POTONIÉ distinguished already in 1951 a forma *major*, beside the *Abietinaepollenites microalatus* (R. POT. 1932) R. POT. 1951 forma *minor*, where specimens over 80 μ were meant. I considered in 1969 not only the size but the attachment point of the air-sacks as well and classified here specimens between 70—103 μ with the attachment point farther, 15—20 μ , than in *A. microalatus* ssp. *microalatus*, where it is 5—8 μ .

***Abietinaepollenites neogenicus* NAGY 1969**

Plate LXII. Fig. 7—8., Plate LXIII. Fig. 1—4.

1969. *Abietinaepollenites neogenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 145—146.

Single specimens were found, 65—85 μ , in the Egerian — Fót 1, 275.0—278.7 m, in the Ottangian — Tekerés 1, 874.0—874.5 m. The species had its acme in the Middle Miocene, where it is frequent in the Karpathian — Zengővárkony 45, 13.2—13.7 m, Zengővárkony 59, 51.3—56.0 m, Püspökhatvan 4, 151.0—153.0 m, Nógrádszakál 2, 287.0—290.0 m, in the Badenian — Hidas 53, 667.2—713.0 m, Szokolya 3, 71.2—74.5 m, Szokolya 2, 51.1—106.7 m. Single specimens occurred in the Upper Pannonian — Hidas 53, 132.5—135.5 m, Tata mapping borehole No 26, 4.5—10.5 m.

***Abietinaepollenites* sp.**

Plate LXIII. Fig. 5—6., Plate LXIV. Fig. 1.

1962. *Dacrycarpites hungaricus* n. g. n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. VIII. 1—2. pp. 154—156. Taf. I—II.

Specimens with three air-sacks, measuring 100—120 μ were found in the Neogene of Hungary, in Karpathian, Badenian and Pannonian layers. On the basis of three air-sacks I classified them as new species with the genera *Dacrycarpites* COOKSON et PIKE 1953 (*D. hungaricus* n. sp., Várpalota 133, 166.0—167.7 m). Later specimens and literature data however convinced me that their morphology is *Abietacean* and are certainly aberrant pollens (Komló 120, 178.0—178.8 m, Hidas 53, 135.5—137.0 m, 667.2—669.7 m).

A different aberrant form when the air-sack surrounds more or less the pollen body (see VAN CAMPO-DUPLAN 1959, p. 53. etc.).

This effect showed, on some specimens, similarity to the photo and drawing of *Dacrydium guillaumini* BUCHHOLZ (ERDTMAN 1957, p. 17.) which is a recent species. Studying fossils and the recent species it became clear that the fossils can not be *Dacrydium* but most probably aberrant forms of the family *Abietinae*.

Genus: *Cathaya* CHUN et KUANG

***Cathaya gaussenii* SIVAK 1976**

Plate LXIV. Fig. 2—7.

1976. *Cathaya gaussenii* sp. nov. — SIVAK, Pollen et Spores, Vol. XVIII. N. 2. pp. 266—268. (Pl. IX. et X., Holotypus).

Disaccate, haploxyton pollen with 58 μ longer diameter. Body diameter 35 μ , body width 35 μ , air-sack thickness 38 μ , width of alveolar system 1.5 μ . There were about 21, 3—4.5 μ thick-walled

reticula-oculi at mid air-sack. The two air-sack are cca. 10 μ apart. It came from the Egerian — Eger, Wind brickyard pit, layer "u", sample 18. One 66 μ specimen was found in the Badenian — Hidas 53, 667.2—669.7 m. In the Karpathian — Fót 1, 130.5—131.5 m was found also a *Cathaya* pollen but it is crumpled and covered partially by coaly material so that it can not be determined.

SIVAK described the species from the Oligo—Miocene of Southern France.

Cathaya pseudocristata (DOKT.-HREBN. 1960) n. c.

Plate LXIV. Fig. 8—9.

1960. typ. *Pinus silvestris* RUDOLPH III. forma *pseudocristata* — DOKT.-HREBN., Z Badan Trzeciorzedu w Polsce, Inst. Geol. B. 157. pp. 77—78. Fig. 25., 26., 26a.

1971. *Pityosporites labdacus* ssp. *pseudocristatus* (DOKT.-HREBN. 1960) n. c. [= *Pinus labdacus* subsp. *pseudocristata* (DOKT.-HREBN. 1960) n. c.] — W. KR., Atlas VI. p. 66.

A very characteristic 78 μ *Cathaya* pollen. It was found in the Lower Badenian — Szokolya 2, 82.1—83.9 m.

DOKTOROVICZ-HREBNICKA described it from the Middle Miocene of Poland, near Poznan, KRUTZSCH mentioned from the Miocene of Germany.

Cathaya pulaënsis n. sp.

Plate LXV. Fig. 1—5.

Holotypus: Pula 3, sample N° 14., slide N° 1., 108.8×9.1, Plate LXV. Fig. 1—3.

Locus typicus: Pula 3, 13.5—14.0 m

Stratum typicum: Upper Pannonian; silt

Diagnosis: Disaccate pollen with rounded body. Body height is less than air-sack height. The thick exine of the body is made up by fused verrucae. The two air-sacks are rounded like in *Pinus silvestris*, they are 10—12 μ apart at mid sack. The lumen of reticula are dense and parallel at the attachment point. The air-sacks are covered by reticula which are large with thick wall, becoming smaller on the margin.

Dimensions: The holotype full length 58 μ
body height 26 μ
air-sack height 37 μ
air-sack width 27 μ
exine thickness 1—1.5 μ

Differential diagnosis: *Cathaya pulaënsis* n. sp. is sized like *C. potonitzi* SIVAK 1976 or *C. tingi* SIVAK 1976. It differs first of all in the air-sack and body ratio, i.e. the body is bigger in both other species and the reticula-oculi have stronger wall.

Some specimens were found in the Upper Pannonian — Pula 3, 13.5—14.0 m (besides the holotype), one from 14.0—14.5 m, sized 82 μ and showing less size-difference of body and air-sack.

Subfamilia: *Abietoideae*

Genus: *Tsugaepollenites* R. POT. et VENITZ 1934

1933. *Tsuga* — WODEHOUSE, Tertiary Pollen, II. p. 491.

1934. *Tsugaepollenites* — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 17.

1953. *Zonalapollenites* n. g. (PFLUG) — TH. et PF., Palaeontogr. 94. B. p. 66.

1971. *Zonalapollenites* PF. 1953 — W. KR., Atlas VI. pp. 28—31.

Generotypus: *Tsugaepollenites igniculus* (R. POT. 1931) R. POT. et VENITZ 1934

Remark: The genus *Tsugaepollenites* is valid as a monotypic genus since the description of *T. igniculus* (R. POT. 1931) R. POT. et VENITZ 1934, according to Code, Art 42.2. The description was provided a diagnosis and figure. THOMSON et PFLUG set up in 1953 an artificial taxonomy where it is mentioned as *Zonalapollenites*.

In the case of *Tsugaepollenites igniculus* the generotype was mentioned as *Sporonites igniculus* as R. POTONIE used the name "*Sporonites*", "*Pollenites*" exclusively as spore-pollen. Although his

sign system can not be accepted as a description* his species name may be adopted, due to the good illustration.

In the later work of R. POTONIÉ et VENITZ (1934) the *Tsugaepollenites igniculus* was already a monotypical generic name, and thus according to Art 42. it is valid. That's why I use the generic name *Tsugaepollenites* R. POT. et VENITZ 1934.

***Tsugaepollenites gracilis* (W. KR. 1971) n. c.**

Plate LXV. Fig. 6.

1971. *Zonalapollenites gracilis* n. sp. [= *Tsuga gracilis* n. sp.] — W. KR., Atlas VI. p. 142. Taf. 38. Fig. 1—15.

Rare specimens of 52—57 μ were found in the Lower Badenian — Szokolya 2, 46.3—47.0 m, in the Upper Pannonian — Gércé 1, 31.0—31.5 m, Várkeszó 1, 17.0—18.0 m.

KRUTZSCH described the species from the Middle Miocene of Germany but indicated its occurrence from the Middle Oligocene to the Pliocene and from the Pannonian of Czechoslovakia.

***Tsugaepollenites helenensis* (W. KR. 1971) n. c.**

Plate LXV. Fig. 7.

1971. *Zonalapollenites helenensis* n. sp. [= *Tsuga helenensis* n. sp.] — W. KR., Atlas VI. p. 166. Taf. 50. Fig. 1—9.

Specimens of 76—90 μ were found in the Sarmatian — Hidas 53, 545.0—546.5 m, in the Upper Pannonian — Pula 3, 13.5—14.0 m.

KRUTZSCH described the species from the Middle Miocene but indicated it from the Pliocene, too. As to its connections he mentioned *Tsuga dumosa* and *T. chinensis* (FRANCH.) PRITZ. after ERDTMAN 1957.

***Tsugaepollenites igniculus* (R. POT. 1931) R. POT. et VENITZ 1934**

Plate LXV. Fig. 8—10., Plate LXVI. Fig. 3.

1931. *Sporonites igniculus* n. sp. — R. POT., Braunkohle, H. 27. p. 556. Abb. 2.

1934. *Tsugae-pollenites igniculus* R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. pp. 17—18. Taf. 1. Fig. 8.

1953. *Zonalapollenites igniculus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. B. 1—4. pp. 66—67. Taf. 4. Fig. 75—79.

1958. *Tsugaepollenites* POT. et VEN. 1934 — R. POT., Synopsis II. p. 48.

1963. *Tsugaepollenites* POTONIÉ et VENITZ emend. POTONIÉ 1958, p. 48. — DETTMAN, Roy. Soc. Vic. 77. 1. pp. 99—100.

1971. *Zonalapollenites igniculus* (R. POT. 1931c) TH. et PF. 1953 [= *Tsuga ignicula* (R. POT.) KИРЧЕН. 1934] — W. KR., Atlas VI. pp. 138—140. Taf. 37. Fig. 1—23.

A few specimens, 38—58 μ , were found in the Egerian — Eger, Wind brickyard pit, layer "u", sample 10, Fót 1, 209.5—355.0 m, in the Eggenburgian — Fót 1, 146.5 m, in the Lower Badenian — Szokolya 2, 71.9—72.4 m, in the Sarmatian — Hidas 53, 534.0—537.0 m, in the Lower Pannonian — Tihany 62, 161.4—161.7 m, in the Upper Pannonian — Várkeszó 1, 34.0—39.0 m, Pula 3, 14.0—36.5 m, Naszály 1, 131.5—150.0 m.

This species was described from the Middle Miocene of Germany, but it occurs from the Oligocene up to the Pleistocene. It is related to the *Tsuga diversifolia* type pollen group.

***Tsugaepollenites maximus* (RAATZ 1937) n. c.**

Plate LXVI. Fig. 1—2.

1937. *Tsuga-pollenites igniculus* R. POT. f. *magna* n. f. — RAATZ, Abh. Preuss. Geol. L. A. N. F. H. 183. p. 15.

1971. *Zonalapollenites maximus* (RAATZ 1937) n. c. [= *Tsuga maxima* (RAATZ) n. c.] — W. KR., Atlas VI. p. 138. T. 36. Fig. 1—8.

* According to the Code, Art 23.3.: ... "Symbols forming part of specific epithets proposed by LINNAEUS must be transcribed."

Some specimens, 60–103 μ , were found in the Eggenburgian — Fót 1, 169.3–171.7 m, Püspökhatvan 4, 257.5–260.0 m, in the Upper Badenian — Hidas 53, 572.0–575.0 m, in the Upper Pannonian — Várkesző 1, 36.0–37.0 m, Kőbánya profile IV., sample 108.

RAATZ described it from the Middle Miocene of Germany, KRUTZSCH mentioned it from the Middle Oligocene and Miocene.

***Tsugaepollenites minimus* (W. KR. 1971) n. c.**

Plate LXVI. Fig. 4–6.

1971. *Zonalapollenites minimus* n. sp. (= *Tsuga minima* n. sp.) — W. KR., Atlas VI. p. 150. Taf. 42. Fig. 1–20.

Some specimens were found, 42–59 μ , in the Eggenburgian — Fót 1, 172.7 m, in the Lower Badenian — Szokolya 2, 49.5–51.9 m, in the Middle Badenian — Hidas 53, 600.5–602.3 m, in the Upper Badenian — Hidas 53, 557.0–561.0 m.

***Tsugaepollenites multispinus* (W. KR. 1971) n. c.**

Plate LXVI. Fig. 7–8.

1971. *Zonalapollenites multispinus* n. sp. (= *Tsuga multispina* n. sp.) — W. KR., Atlas VI. p. 162. Taf. 48. Fig. 1–11.

One specimen, 56 μ , was found in the Badenian — Tar 34, 530.0–533.0 m. KRUTZSCH found it in the Miocene and Pliocene of Germany and other regions of Central Europe.

***Tsugaepollenites robustus* (W. KR. 1971) n. c.**

Plate LXVII. Fig. 1.

1971. *Tsugaepollenites robustus* n. sp. (= *Tsuga robusta* n. sp.) — W. KR., Atlas VI. p. 158. Taf. 46. 1–9.

One 75 μ specimen from the Upper Pannonian — Várkesző 1, 38.0–39.0 m.

KRUTZSCH described it from the Upper Pliocene; he found some specimens also in the Lower Miocene of Germany.

***Tsugaepollenites rueterbergensis* (W. KR. 1971) n. c.**

Plate LXVI. Fig. 9.

1971. *Zonalapollenites rueterbergensis* n. sp. (= *Tsuga rueterbergensis* n. sp.) — W. KR., Atlas VI. p. 156. Taf. 45. 1–8.

Pollens of 72–90 μ , found in the Upper Pannonian — Kőbánya surface exposure, Pula 3, 16.5–17.0 m.

KRUTZSCH described it from the Pliocene of Germany. Its other occurrences are also of Plio–Pleistocene age.

***Tsugaepollenites spinulosus* (W. KR. 1971) n. c.**

Plate LXVII. Fig. 2.

1971. *Zonalapollenites spinulosus* n. sp. (= *Tsuga spinulosa* n. sp.) — W. KR., Atlas VI. p. 148. Taf. 41.

One specimen, 65 μ , was found in the Eggenburgian — Fót 1, 166.0–168.0 m.

KRUTZSCH mentioned it from the Middle Miocene and Upper Pliocene of Germany, and from the Pannonian of Czechoslovakia.

Tsugaepollenites verrucatus (W. KR. 1971) n. c.

Plate LXVII. Fig. 3—4.

1971. *Zonalapollenites verrucatus* n. sp. (= *Tsuga verrucata* n. sp.) — W. KR., Atlas VI. p. 144. Taf. 39. 1—10.

Few specimens, 54—81 μ , were found in the Egerian — Fót 1, 228.0—236.0 m, in the Eggenburgian — Püspökhatvan 4, 278.0—281.0 m, in the Karpathian — Fót 1, 122.0—123.2 m, in the Sarmatian — Hidas 53, 534.0—537.0 m, in the Upper Pannonian — Hidas 53, 118.0—126.8 m, Gércé 1, 34.5—37.5 m.

KRUTZSCH described the species from the Middle Miocene and mentioned it from the Oligocene and Pliocene of Central Europe.

Tsugaepollenites viridifluminipites (WODEHOUSE 1933) R. POT. 1958

Plate LXVII. Fig. 5—6.

1933. *Tsuga viridi-fluminipites* sp. nov. — WODEHOUSE, Tertiary Pollen II. p. 491. Fig. 14.

1953. *Zonapollenites-Tsuga viridifluminipites* (WODEH.) n. c. — TH. et PF., Palaeontogr. 94. B. p. 67.

1958. *Tsugaepollenites* (al. *Tsuga*) *viridifluminipites* (WODEHOUSE) in. TH. et PF. 1953 — R. POT., Synopsis II. p. 48.

A few specimens, 64—100 μ , were found in the Eggenburgian — Budajenő 2, 544.4—548.7 m, in the Otnangian (cf.!) — Nagygörbő 1, 903.2—908.5 m, in the Karpathian — Fót 1, 119.0 m, in the Lower Pannonian — Tata, mapping borehole 26, 4.5—10.5 m, Megyaszó 1, 200.0—206.5 m, in the Upper Pannonian — Naszály 1, 41.8—42.4 m, 93.4—104.6 m.

WODEHOUSE described the species from the Paleocene of the Green River Formation and identified it as *Tsuga canadensis* CARR. The European authors mentioned it from the Paleocene, the Eocene (MANUM 1962) and the Neogene, mainly Pliocene (WOLFF 1934, RUDOLPH 1935, R. POTONIÉ 1951, NAGY 1958, 1969).

Genus: *Piceapollenites* THIERGART 1937

1931. *Piceae-pollenites* — R. POT., Sitzg. Naturf. Fr., Erklärung zu Tafel II.

1932. *Piceae-pollenites* — R. POT., Jb. Preuss. Geol. L. A. p. 5.

1934. *Piceae?-pollenites* — R. POT., Arb. Inst. Paläont. 5. p. 18.

1937. *Picea-pollenites* — THIERGART, Jb. Preuss. Geol. L. A. Bd. 8. p. 306.

Remark: The similarity of fossil pollens to those of the genus *Picea* induced R. POTONIÉ to use the above name already in 1931. The species itself was described by him in 1934 as *Piceae?-pollenites alatus*. In this way the generic name was not valid. It became valid, however, in 1937, when THIERGART published the monotypic name of the genus.

Genotype: *Piceapollenites alatus* (R. POT. 1934) THIERG. 1937

Piceapollenites alatus (R. POT. 1931) THIERG. 1937

Plate LXVIII. Fig. 1., 3.

1931. *Piceae-pollenites alatus* n. sp. — R. POTONIÉ, Sitzg. Ber. Naturf. Fr., Berlin, Nr. 1—3. Erklärung zu Taf. II.

1934. *Piceae?-pollenites alatus* R. POT. — R. POTONIÉ et VENITZ, Arb. Inst. Paläont. 5. pp. 18—19.

1937. *Picea-pollenites alatus* R. POT. — THIERGART, Jb. Preuss. Geol. L. A. Bd. 58. p. 306. Taf. 24. Fig. 5.

Specimens of 70—109 μ were found in the Egerian — Eger, Wind brickyard pit, layer "u", in the Eggenburgian — Várpalota 133, 214.2—222.7 m, Fót 1, 146.5 m, in the Otnangian — Tekeres 1, 908.4—911.4 m, in the Karpathian — Fót 1, 169.3—171.7 m, in the Badenian — Hidas 53, 558.0—688.5 m, Szokolya 2, 49.5—63.1 m, in the Lower Pannonian — Hidas 53, 298.0—299.1 m, Tata (TVG) 26, 35.0—39.0 m, in the Upper Pannonian — Hidas 53, 134.8—135.5 m.

Remark: It differs from *P. neogenicus* NAGY 1969 by the 5 μ thick crest, the slightly thicker and coarser network of the air-sacks. This is a less frequent species.

Piceapollenites neogenicus NAGY 1969 emend.

Plate LXVIII. Fig. 2., 4—5.

1969. *Piceapollenites neogenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 147. Pl. XXXII. Fig. 1.

Diagnosis emendation: The shape is oval in lateral position, the air-sacks are just a little broader. The exine structure is fine-grained on the body, the proximal crest is not thicker than 2—2.5 μ , its margin is smooth, tectate. The columella layer is well separated and the layer is visible too. The exine becomes thin towards the distal side as the germ-pore between the two air-sacks, distally and laterally, appears as an exine thinning between the sack and the body. The air sack structure is a fine-grained reticulum which, especially proximally, almost fuses into the body exine. The reticulum of the air-sack are distally slightly larger. The reticulum walls are thin.

Dimensions: Holotype: full length 112 μ , full height 72 μ , pollen body length 90 μ , width 65 μ . Exine proximal thickening 2.5 μ . Maximal air-sack width 63 μ , maximal height 40 μ . Reticulum diameters cca. 2—3 μ and the smaller cca. 1 μ .

Remark: KRUTZSCH regarded *P. neogenicus* NAGY 1969 as synonym for *P. tobolicus* PANOVA 1966 (Atlas VI. 1971). I can not accept his opinion as the differences between the two species exclude their fusion. The most important are the differences in size and the fact that *P. neogenicus* lacks any thickening of crest or wall of network lumen on the air-sacks whereas in *P. tobolicus* both crest and network laths show up.

The specimens in KRUTZSCH 1971, Atlas VI. Pl. 22. Fig. 2., 4., 5. are identical to *P. neogenicus*. On Fig. 3. the crest width can not be measured well unlike on Fig. 6. Accordingly the first may be taken as "cf.", while the second as certainly identical to *P. alatus* (R. POT. 1931) THIERG. 1937.

Frequent species of 80—130 μ , occurring in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 194.4—372.0 m, in the Eggenburgian — Szászvár 8, 433.6—434.1 m, Várpalota 133, 208.3—222.7 m, Budajenő 2, 538.4—575.9 m, Püspökhatvan 4, 163.0—239.0 m, in the Karpathian — Magyarereggy, Leánykő surface exposure, Farkasordító, Mecseknádasd, surface exposures, Zengővárkony 59, 51.3—63.0 m, Litke 17, 166.0—234.0 m, in the Lower Badenian — Zengővárkony 59, 39.8—41.8 m, Hidas 53, 688.0—759.0 m, probably Badenian tuff-sequence — Fót 1, 42.2 m, in the Lower Pannonian — Petőfibánya, Tata, in the Upper Pannonian — Pula, Gérece.

Piceapollenites planoides (W. KRUTZSCH 1971) n. c.

Plate LXIX. Fig. 1.

1971. *Piceapollis planoides* n. sp. (= ?*Picea planoides* n. sp.) — W. KR., Atlas VI. p. 110. Taf. 25. 1—4.

Some specimens, 97—114 μ , were found in the Eggenburgian — Várpalota 133, 208.3—214.2 m, in the Middle Miocene — Győrszemere, thermal water well 1207.0—1209.0 m, in the Upper Pannonian — Hidas 53, 147.5—148.5 m.

Piceapollenites sacculiferoides (W. KR. 1971) n. c.

Plate LXIX. Fig. 2—5.

1971. *Piceapollis sacculiferoides* n. sp. (= ?*Picea sacculiferoides* n. sp.) — W. KR., Atlas VI. p. 108. Taf. 24. Fig. 1—8.

Pollens of 70—80 μ , found singly in the Egerian — Fót 1, 328.0—332.8 m, in the Upper Badenian — Hidas 53, 558.0—561.0 m, in the Upper Pannonian — Megyaszó 1, 25.0—32.0/6 m.

KRUTZSCH described the species from the Lower Miocene of Germany and mentioned it from the Pliocene of Czechoslovakia as well.

Piceapollenites tobolicus (PANOVA 1966) n. c.

Plate LXX. Fig. 1.

1966. *Picea tobolica* PANOVA sp. nov. — PANOVA, in Paleopalynologia Tom. I. p. 220., Tom. II. pp. 212—213. Tab. 105. Fig. 4.

1971. *Piceapollis tobolicus* (PANOVA 1966) n. c. (= *Picea tobolica* PANOVA 1966) — W. KR., Atlas VI. p. 104.

A few specimens, 138—158 μ , were found in the Upper Pannonian — Hidas 53, 73.3—148.5 m, Pula 3, 14.5—15.0 m.

PANOVA described the species from the Oligocene of Siberia.

Genus: *Pseudotsugoidites* (R. POT., THOMS. et THIERG. 1950) NAGY 1969

1950. *Pseudotsugoidites* — R. POT., THOMSON et THIERG., Geol. Jb. 65. p. 48. (nomen nudum)

1969. *Pseudotsugoidites* (R. POT., THOMSON et THIERG.) emend. — NAGY, MÁFI Évk. 52. 2. p. 148.

The generic name was validated by me_i in 1969. It was not emended but diagnosed and a generotype was established.

Generotypus: *Pseudotsugoidites mecsekensis* NAGY 1969

***Pseudotsugoidites mecsekensis* NAGY 1969**

Plate LXX. Fig. 3.

1969. *Pseudotsugoidites mecsekensis* n. sp. — NAGY, MÁFI Évk. 52. 2. Pl. XXIX. Fig. 5.

Beside the holotype (in the Karpathian of a Mecseknádasd surface exposure) no new specimen was found.

Genus: *Abiespollenites* THIERGART 1937

1937. *Abiespollenites* THIERGART — RAATZ, Abh. Preuss. Geol. L. A. N. F. 183. p. 26. Fig. 11.

Generotypus: *Abiespollenites absolutus* THIERGART 1937

***Abiespollenites absolutus* THIERGART 1937**

Plate LXX. Fig. 2., Plate LXXI. Fig. 1—2.

1937. *Abiespollenites absolutus* THIERGART — in RAATZ, Abh. Preuss. Geol. L. A. N. F. 183. p. 16. Fig. 11.

1953. *Pityosporites absolutus* (THIERG.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. 1—4. p. 68.

It occurs frequently in low numbers, 80—110 μ , in the Neogene of Hungary.

Remark: *A. absolutus* was described by RAATZ (1937, p. 16.) from the Miocene brown coal of Oberlausitz. THIERGART reported it in the same year from the brown coal of Niederlausitz. THOMSON et PFLUG (1953, p. 68.) described the species in detail from the Plio—Pleistocene, KRUTZSCH mentioned it (Atlas VI. p. 80.) from Middle Miocene and Pliocene localities.

***Abiespollenites crassus* NAGY 1969**

Plate LXXI. Fig. 3—5.

1969. *Abiespollenites crassus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 149. Pl. XXXIV. Fig. 2.

Some specimens, 80—116 μ , were found in the Eggenburgian — Budajenő 2, 556.5—557.7 m, in the Karpathian — Zengővárkony 59, 60.9—70.5 m, in the Lower Badenian — Szokolya 2, 69.5—90.3 m, in the Lower Pannonian — Hidas 53, 364.2—367.0 m, in the Upper Pannonian — Várkesző 1, 36.0—39.0 m.

Remark: KRUTZSCH believed *A. crassus* NAGY 1969 was a synonym for *Pityosporites cedroides* THOMSON 1963.

THOMSON's description and drawing (TH. et PF. 1953, p. 68. Pl. 5. Fig. 46.) contradict this opinion: "Luftsäcke unterhalbkugelig grösser als das Korn . . . Stäbchenelemente in Korn fein rugulat bis radial geordnet" — in KRUTZSCH's description "überhalbkugelig" and the pollen body is "multi-cristatus" (KRUTZSCH 1971, p. 100.).

According to the above the lateral specimens in KRUTZSCH's study belong to this species.

This species helps to follow the paleogeographical connections in Germany and Czechoslovakia through the Middle Miocene and the Pliocene.

***Abiespollenites maximus* W. KR. 1971**

Plate LXXII. Fig. 1.

1953. *Pityosporites absolutus* (THIERG.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. Lief. 1—4. p. 68.

1971. *Abiespollenites maximus* n. sp. (= *Abies maximus* n. sp.) — W. KR., Atlas VI. p. 92. Taf. 18. 1—4.

Sparse pollens of 120—190 μ , found in the Eggenburgian — Várpalota 133, 208.3—214.2 m, Budajenő 2, 575.5—575.9 m, in the Sarmatian — Cserhátszentiván 1, 165.0—167.0 m.

It is more frequent in richer samples in the Lower Pannonian — Vigántpetend 1, 86.0—86.2 m, Hidas 53, 364.2—367.0 m, in the Upper Pannonian — Hidas 53, 73.3—89.5 m, 298.0—299.1 m, Budapest, Kőbánya profile N° I., Várkesző 1, 34.0—35.0 m, 38.0—39.0 m.

Abiespollenites sivaki n. sp.

Plate LXXII. Fig. 2—3., Plate LXXIII. Fig. 1—4.

Holotypus: Vkt. 1, sample N° 18., slide N° 1., 105×12.1, Plate LXXII. Fig. 2—3., Plate LXXIII. Fig. 1—2.

Locus typicus: Várkesző 1, 36.0—37.0 m

Stratum typicum: Upper Pannonian; greenish-grey bentonite

Diagnosis: Bisaccate pollen. The body is oval, exine thick. The crest sexine is tectate, below a baculum layer and thin base-layer. The crest displays a sinus at the center of the proximal side. The body surface is coarsely granulate, distally the exine is almost smooth between the two air-sacks, where it becomes thin at the germ-pore (leptome). The air-sack is laterally ventral, as characteristic for *Abies*; the lumen of reticula are finer on the margin and bigger in the center.

Dimensions: the holotype full length 100 μ , full width cca. 56 μ , body 58×45 μ , the exine proximally is 4 μ . Air-sack width in lateral position 45 μ , height 34 μ .

Differential diagnosis: The new species is similar to *Abiespollenites crassus* NAGY 1969 in size but differs from it by its stronger crest and slightly more even surface.

Remark: SEM photos show the coarse tectate structure of the body and the much smoother air-sack, with large lumen of reticula (Plate LXXIII. Fig. 4.).

On a LM photo of *Abies veitchii* LINDLEY (J. SIVAK, Pollen et Spores XVII. No. 3. 1975, p. 368. Plate VI. Fig. 1.) shows well that the crest is thinner at the middle of the proximal side than near the air-sacks.

Specimens of 71—103 μ were found in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 209.9—328.0 m, in the Sarmatian — Hidas 53, 494.8—496.0 m, in the Lower Pannonian — Hidas 53, 298.0—299.1 m, in the Upper Pannonian — Várkesző 1, 34.0—37.0 m.

Genus: *Keteleeriaepollenites* NAGY 1969

1969. *Keteleeriaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 149. Pl. XXXIV. Fig. 1.

Genotype: *Keteleeriaepollenites komloënsis* NAGY 1969

***Keteleeriaepollenites komloënsis* NAGY 1969**

Plate LXXIV. Fig. 1.

1969. *Keteleeriaepollenites komloënsis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. Pl. XXXIV. Fig. 1.

Remark: KRUTZSCH in 1971 reallocated *Keteleeriae dubia* CHLONOVA (1960, p. 59—60. Pl. IX. Fig. 5.) to the *Abiespollenites* by a question mark: "vielleicht auch hierher gehört" he remarked. He thought *K. komloënsis* NAGY 1969 belongs also there. This idea is unacceptable on the basis of differences between the two genera.

Pollens of 70—135 μ in moderate numbers, found from the Egerian to the Upper Pannonian with a peak in the Badenian. Found in the Egerian — Fót 1, 349.5—354.0 m, in the Eggenburgian — Budajenő 2, 544.4—548.7 m, Várpalota 133, 208.3—214.2 m, in the Karpathian — Komló 120, 178.0—178.8 m, Zengővárkony 59. 51.3—70.5 m, Tekeres 1, 855.0—859.0 m, Hidas 53, 837.9—839.0 m, Komló, Magyaregregy, Mecseknyádasd surface exposures, Püspökhatvan 4, 146.0—149.0 m, in the Badenian — Hidas 53, 630.8—686.8 m, Győrszemere thermal water borehole, 1207.0—1209.0 m, Szokolya 2, 51.1—83.1 m, in the Sarmatian — Hidas 53, 494.8—546.5 m, in the Lower and Upper Pannonian — Hidas 53, 118.0—367.0 m, Szederkény 8303, 63.6—67.0 m, Tata (TVG) 26, 35.0—39.0 m, Tata (TVG) 27, 8.5—18.3 m, Naszály 1, 17.0—18.0 m, 131.5—150.0 m, Várkesző 1, 15.0—16.0 m.

Genus: *Laricispollenites* n. gen.

Genotype: *Laricispollenites gerceensis* n. g. n. sp.

Diagnosis: Large, spheroidal pollens without air-sacks. The sexine of the exine is thicker than the nexine. The sexine is finely ornamented by sparsely set bacula.

Differential diagnosis: *Laricispollenites* n. g. differs from *Pseudotsugoidites* (R. POT., THOMS. et THIERG. 1950) NAGY 1969 by its slightly smaller size, relatively thinner and less ornamented exine.

Remark: Only those specimens are assigned to this group which may belong to the genus *Larix*. These are large, not hyalinic and plancton-like, but show exine layers and are finely ornamented.

Descriptions and figures of ERDTMAN made clear the dimensional and morphological differences existing among *Larix* species (ERDTMAN 1957, 1965) and by Chinese authors: "Pollen Morphology of Chinese Plants" (1960).

In forming the name one had to regard the numerous combinations of *Larix* (*Larixpollenites* 1937, *Laricoidites* 1950, *Laricoipollenites* 1951) which can not be used as they were based on "magnus" which was found late by KRUTZSCH to be a planctonic form (KRUTZSCH 1962, 1971).

Tertiary macrofossils of *Larix* are very rare according to ANDREÁNSZKY (1954, p. 148.). Nevertheless one may not doubt its presence in the Upper Pannonian.

Laricispollenites gerceensis n. g. n. sp.

Plate LXXIV. Fig. 2—5.

Holotypus: Gét 1, sample No 21., slide No 1., 109.1×18.2, Plate LXXIV. Fig. 3.

Locus typicus: Gécse 1, 31.0—31.5 m

Stratum typicum: Upper Pannonian; silty dolomit-marl

Diagnosis: Large, spheroidic pollens. The exine is composed of thicker exine and thinner nexine. The exine is finely ornamented. Among sparse, tiny (0.5 μ) granula there are rare bigger ones. Due to the thin exine secondary folds on the body surface.

Dimensions: Holotype 88 μ , exine thickness 2 μ .

Besides the holotype one 56 μ specimen in the Ottnangian — Tekeres 1, 850.0—855.0 m, and in the Upper Pannonian — Naszály 1, 26.7—29.7 m.

Genus: *Cedripites* WODEHOUSE 1933

1933. *Cedripites* gen. nov. — WODEHOUSE, Tertiary Pollen II. p. 490.

Generotypus: *Cedripites eocenicus* WDH. 1933

Cedripites balansaeformis (NAGY 1969) n. c.

Plate LXXV. Fig. 4—8.

1969. *Dacrydiumites balansaeformis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 160. Pl. XXXIX. Fig. 3—4.

Remark: The shape, morphology, air-sack position of the fossil species closely resemble *Dacrydium balansae* BRONG. et GRIS. illustrated by COOKSON et PIKE (1953, Pl. 3. Fig. 36—37.). On this basis I allocated the species to *Dacrydiumites* in 1969. During further study of the type specimen considerable morphological differences were stated. The exine structure of *Dacrydium balansae* is different from the fossil species even at 600× magnification. The fossil species is "cedroid" and does not belong to the genus *Dacrydium* of characteristic scaly exine structure. The proximally fish-bone-like exine structure of air-sack in recent *Cedrus brevifolia* HENRY is similar to that of the fossil species. Laterally also the position of air-sack is similar to that of the fossil species. Thus I considered right to reallocate the species to *Cedripites*.

Specimens full length 74—90 μ were found in the Lower Badenian — Zengővárkony 59, 34.0—37.5 m, Szokolya 2, 90.3—91.1 m.

Cedripites crassiundulicristatus (TREVISAN 1967) W. KR. 1971

Plate LXXIV. Fig. 6., Plate LXXV. Fig. 1—3.

1967. *Pityosporites crassiundulicristatus* n. fsp. — TREVISAN, Palaeont. Ital. LXII. (n. ser. XXXII.) pp. 20—21. T. XI. Fig. 3., T. XII. Fig. 1—3.

1971. *Cedripites crassiundulicristatus* (TREVISAN 1967) n. c. — W. KR., Atlas VI. p. 118.

Few specimens of 55—80 μ were found in the Egerian — Eger, Wind brickyard pit layer "u", sample 8, Fót 1, 275.0—355.0 m, in the Eggenburgian — Szászvár 8, 432.5—432.7 m, Püspökhatvan

4, 198.0—201.0 m, in the Ottnangian — Nagyörbő 4, 977.2—979.2 m, in the Badenian — Szokolya 2, 59.9—85.5 m, Hidas 53, 572.0—763.3 m, in the Lower Pannonian — Tata (TVG) 26, 11.0—15.0 m, in the Upper Pannonian — Naszály 1, 37.2—66.0 m, Várkesző 1, 17.0—18.0 m.

TREVISAN described it from Messinian layers in Italy, marking it cf. *Cedrus*.

***Cedripites crassus* NAGY 1969**

Plate LXXVI. Fig. 1.

1969. *Cedripites crassus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 151—152. Pl. XXXV. Fig. 1.

Pollens of 110—114 μ , found in the Upper Pannonian — Hidas 53, 73.3—89.5 m.

***Cedripites deodaraesimilis* (NAGY 1969) nov. nom.**

Plate LXXVI. Fig. 2—5.

1969. *Cedripites deodaraeformis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 151. Pl. XXXV. Fig. 2.

BOLCHOVITINA described a species in 1953 as *Cedrus (Oedemosaccus) deodaraeformis* n. sp. and related it to *Cedrus deodara* LOUD. recent species. It is different from *Cedripites deodaraeformis*, described by me in 1969 although we both related them to *Cedrus deodara* LOUD. I think it is better to change the name of the later described species as *Cedrus* and *Cedripites* may be understood as ortographical variants of the same name. To exclude homonymy according Code, Art. 64.2. I re-baptized this species which is very widespread in the Neogene.

KRUTZSCH regarded it a synonym to *Cedripites* sp. B. (aff. *densireticulata* ZAUER 1954) in Atlas VI. p. 120. on the basis of the illustrated holotype (NAGY 1969). On the basis of differences between the two species this is evidently not the case.

The species was found, 53—112 μ , in the Ottnangian — Rákoskeresztúr I, 204.0—205.0 m, in the Karpathian — Zengővárkony 59, 48.5—67.0 m, Komló 120, 17.8—27.8 m, 372.0—376.0 m, Fót 1, 130.5—131.5 m, in the Badenian — Hidas 53, 545.4—759.4 m, Tengelic 2, 820.0—823.4 m, Szokolya 2, 44.7—87.9 m, Szederkény 8303, 63.0—67.0 m, in the Sarmatian — Hidas 53, 444.0 m, 545.4—546.5 m, Cserhátszentiván 1, 185.0—185.5 m, in the Lower Pannonian — Tata (TVG) 26, 33.0—35.0 m, in the Upper Pannonian — Hidas 53, 126.6—137.0 m, Várkesző 1, 41.0—42.0 m, Pula 3, 14.0—15.0 m, 36.5 m, Tata (TVG) 27, 8.5—18.3 m.

***Cedripites eocaenicus* WODEHOUSE 1933**

Plate LXXVII. Fig. 1—5.

1933. *Cedripites eocaenicus* sp. nov. — WODEHOUSE, Tertiary Pollen II. pp. 490—491. Fig. 13.

54—80 μ specimens were found in higher numbers only in the Lower Miocene. The Upper Neogene contained only sporadic specimens. In the Kiscellian — Eger, Wind brickyard borehole, lower layers, in the Egerian — Eger, Wind brickyard pit, layers "x" and "u", Fót 1, 209.9—355.0 m, Felsőpetény mine, sample 1, Püspökhatvan 4, 245.0—296.0 m, in the Eggenburgian — Szászvár 8, 433.6—434.1 m, in the Karpathian — Komló 120, 374.7 m, in the Sarmatian — Cserhátszentiván 1, 198.0—200.0 m.

Remark: WODEHOUSE related it to *Cedrus libani* RICH. which is characteristic in the Eastern Mediterranean.

***Cedripites grandis* (NAGY 1969) n. c.**

Plate LXXVII. Fig. 6—8.

1969. *Phyllocladipollenites grandis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 162. Pl. XXXIX. Fig. 1—2.

It was found in the Karpathian — Zengővárkony 59, 65.0—67.0 m (88 μ , Holotype), in the Badenian — Szokolya 2, 38.3—39.1 m, 42.3—43.1 m (102 μ).

Remark: In spite of the characteristic projection on the crest, reminding *Phyllocladus*, it is not identical with *Phyllocladus* neither in size nor in structure (ERDTMAN 1957, p. 31. Fig. 51.; ERDTMAN 1965, p. 53—54.; SIVAK 1975, XII. 1., 2. and XVI. 1., 2.).

On the basis of its other character, i.e. that the crest without joins the air-sack transition, it is preferable to group it with *Cedripites*.

***Cedripites hidasensis* n. sp.**

Plate LXVIII. Fig. 5—6.

1969. *Pityosporites labdacus* (R. POT. 1931) TH. et PF. 1953 type "B" — NAGY, MÁFI Évk. 62. 2. pp. 142—143. Pl. XXIX. Fig. 3., Pl. XXX. Fig. 6.

Holotypus: H. 53, sample N° 28., slide N° 1., 10.8×76.3, Plate LXXVIII. Fig. 5—6.

Locus typicus: Hidas 53, 630.0—632.0 m

Stratum typicum: Badenian; lignitic clay

Diagnosis: Bisaccate pollens with irregular, rounded body, air-sacks rather apart. The body exine thickness on proximal side is cca. 1.5 μ (crest), distally thinner. The body is unevenly covered by granules. The air-sack exine is cca. 0.5 μ , consequently it is, as a rule, secondarily folded.

Dimensions: Holotype: full length 65 μ , height 50 μ , body height 45 μ , width 40 μ , air-sack height 43 μ , width 28 μ . The diameter of reticula-lumen on the air-sacks is cca. 3—4 μ in the center, 1 μ on margin.

Differential diagnosis: *Cedripites hidasensis* n. sp. is similar in body size and exine structure to *C. lusaticus* W. KR. 1971 but differs from it in air-sack position, size and structure.

These pollens are most frequent in the Middle Miocene, but they occur in other formations too, sized 54—80 μ , as in the Eggenburgian — Szászvár 8, 432.5—432.7 m, in the Karpathian — Hidas 53, 971.0—972.5 m, Komló 120, 367.0—374.7 m, in the Badenian — Hidas 53, 630.8—763.3 m, Zengővárkony 59, 41.8—44.4 m, Szokolya 2, 53.5—54.3 m, in the Sarmatian — Hidas 53, 494.8—496.0 m.

***Cedripites lusaticus* W. KR. 1971**

Plate LXXVII. Fig. 9., Plate LXXVIII. Fig. 1—2.

1971. *Cedripites lusaticus* n. sp. — W. KR., Atlas VI. p. 118. Taf. 28. 1—4.

Some specimens, 39—47 μ , were found in the Middle Oligocene — Eger, Wind brickyard borehole, in the Egerian — Fót 1, 195.5 m, in the Lower Badenian — Szokolya 2, 44.7—45.5 m, Tengelic 2, 823.4—826.5 m.

KRUTZSCH mentioned it as a rare species from the Middle Miocene of Germany and Poland.

Cedripites maximus* n. sp.

Plate LXXVIII. Fig. 3—4., Plate LXXIX. Fig. 1.

Holotypus: Zv. 59, sample N° 23., slide N° 1., 113.8×38.7, Plate LXXVII. Fig. 5—6., Plate LXXIX. Fig. 1.

Locus typicus: Zengővárkony 59, 56.0—60.9 m

Stratum typicum: Karpathian; silty clay-marl

Diagnosis: Pollens of large size with rounded body and distinctly but rather finely reticulate surface. The crest is relatively thin. The air-sack is narrow, its reticula are slightly larger than on the body.

Dimensions: The holotype: full length 90 μ , body 83×75 μ , reticulum diameter 1 μ . The exine thickness on the margin of the body is cca. 2—3 μ , proximally at the crest thinner, on the sides thicker. Air-sack size 70×30 μ , reticula diameter cca. 1.5—3 μ .

Differential diagnosis: *Cedripites maximus* n. sp. differs from *C. szaszvarensis* NAGY 1969 by its bigger size and by its body shape. *C. crassus* NAGY 1969 is of similar size but the pollen body is differently formed and the crest is thicker and dissimilar.

* The species was listed in the manuscript of my study in 1969, but the description was omitted from the definitive, published text although the photo of the holotype was there (1969, Plate. XXXIII. Fig. 1.) shown erroneously as *Piceapollenites neogenicus* n. sp. in the legend.

Remark: The holotype turned slightly proximal during fossilization and so the position of the air-sack is well characterized by WODEHOUSE's description of the genus *Cedripites* (1933, p. 490.).

Some specimens of 68–106 μ were found in the Ottnangian — Zengővárkony 45, 16.4–17.2 m, in the Karpathian — Zengővárkony 59, 56.0–60.9 m, Almáspatak I, Magyaregregy-Kisréti árok, Komló-Zobákpusztá, surface exposures, in the Badenian — Szokolya 3, 60.1–74.5 m, in the Upper Pannonian — Hidas 53, 134.8–135.5 m.

Cedripites szaszvarensis NAGY 1969

Plate LXXVIII. Fig. 7–8., Plate LXXIX. Fig. 2.

1969. *Cedripites szaszvarensis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 150–151. Pl. XXXIII. Fig. 2.

Pollens of 53–88 μ were found most frequently in the Lower Miocene; they occurred also in the Egerian — Eger, Wind brickyard layer "u", sample 7, 13, Fót 1, 194.5–358.5 m, in the Eggenburgian — Fót 1, 132.5–133.4 m, Várpálya 133, 220.0–222.7 m, Szászvár 8, 433.0–434.1 m (holotype and isotype), in the Ottnangian — Zengővárkony 45, 16.4–17.2 m, in the Karpathian — Tekeres 1, 855.0–859.0 m, Püspökhatvan 4, 160.0–163.0 m.

Remark: The 1969 diagnosis become somewhat distorted in translation. Instead of "provided with roundish bladder" should read "with roundish shape".

Cedripites taxoidiformis NAGY 1969 n. c.

Plate LXXIX. Fig. 3–7.

1969. *Dacrydiumites taxoidiformis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 160–161. Pl. XXXVIII. Fig. 3–4.

Some specimens, 63–96 μ length, were found in the Lower Badenian — Zengővárkony 59, 30.9–34.0 m, in the Upper Pannonian — Hidas 53, 73.3–89.5 m.

Remark: Its shape and size are similar to those of the recent *Dacrydium taxoidea* BRONG. et GRIS. (ERDTMAN 1965, p. 35. Fig. 11.) but the exine structure on the air-sacks and body more densely reticulate and the proximal pole has a thickened exine. Accordingly, it is preferable to group it with *Cedripites*.

Familia: Taxodiaceae

Genus: *Taxodiaceapollenites* KREMP 1950

1950. *Taxodiaceae* — *Poll. hiatus* R. POT. — KREMP, Palaeontogr. 90. p. 59.

Genotypus: *Taxodiaceapollenites hiatus* (R. POT. 1931) KREMP 1950

KREMP used the generic name in this above form, as *Pollenites hiatus* was described already by R. POTONIÉ in 1931 by signs and 1934 in words. I do not use the name *Pollenites hiatus*, as mentioned already in 1969, because any round pollen or plancton may be teared up in a similar way, thus it is a name for a state of preservation rather than for a taxon.

Taxodiaceapollenites sp.

Plate LXXIX. Fig. 8–9., Plate LXXX. Fig. 1–2.

I classify as *Taxodiaceapollenites* pollens which have thick wall and are generally granulate without an apparent papilla (ligula) or a very small one only. This size varies between 16–35 μ . They show, as a rule, secondary folds. This may conceal the ligula in certain cases.

They are found in coal-bearing facies of the Hungarian Neogene. They occur in moderate quantities in the Egerian, Eggenburgian, Ottnangian, Karpathian stages, are common in the Badenian, scarce in the Sarmatian, then again more abundant in the Lower and especially in the Upper Pannonian coal-bearing layers.

Genus: *Sequoiapollenites* THIERGART 1937

1937. *Sequoia-pollenites* — THIERGART, Jb. Preuss. Geol. L. A. 58. p. 301.

Genotype: *Sequoiapollenites polyformosus* THIERG. 1937

Since 1937, according to the monotypic species description of THIERGART, the generic name is valid. KRUTZSCH assigned in 1971 this genus among the bladderless ones, which show considerable ligula "kugelige Pollenformen mit deutlicher, z. T. bis sehr grosser Ligula und freier Schulter" (KRUTZSCH, Atlas VI. p. 44.). As botanical relationship, several genera like *Sequoia*, *Sequoiadendron*, *Metasequoia*, *Cryptomeria* etc., are given. Within the genus an attempt was made by KRUTZSCH to delimit species.

***Sequoiapollenites gracilis* W. KR. 1971**

Plate LXXX. Fig. 3.

1971. *Sequoiapollenites gracilis* n. sp. — W. KR., Atlas VI. p. 214. Taf. 69. 1—34.

One 18 μ specimen was found in the Lower Miocene — Szászvár 8, 434.5—435.0 m. KRUTZSCH found 20—35 μ specimens in Germany from the Eocene up to the Middle Miocene.

***Sequoiapollenites macropapillatus* (TREVISAN 1967) n. c.**

Plate LXXX. Fig. 5.

1967. *Inaperturopollenites macropapillatus* n. fsp. — TREVISAN, Palaeontogr. Ital., LXII. (N. S. XXXII.), p. 15. T. VI. Fig. 7—8.

One 39 μ specimen was found in the Sarmatian — Cserhátszentiván 1, 163.0—165.0 m.

The species was described by TREVISAN from the Messinian of Italy near Gabbro (Toscana) as of 38—40 μ in size. The exine is densely ornamented by pilae or granula. It was probably due to the poor state of preservation of the specimen that TREVISAN did not observe the exine layers. On our specimen it is also very thin but in oil-immersion it is discernible by LM.

***Sequoiapollenites major* W. KRUTZSCH 1971**

Plate LXXX. Fig. 4., 6—7.

1971. *Sequoiapollenites major* n. sp. — W. KR., Atlas VI. p. 200. Taf. 72.

Moderately frequent; 30—44 μ forms were found in the Egerian — Fót 1, 288.0—358.5 m, in the Lower Badenian — Szokolya 3, 52.6—53.6 m, in the Sarmatian — Cserhátszentiván 1, 122.0—169.0 m.

Remark: I grouped here specimens of 30—44 μ which are granulated, with thick exine and small (4 μ) and mid-sized (8 μ) papillae and decolté around the former. The granulation and papilla-length are both connected to the state of preservation. BEUG mentioned too (BEUG 1963, p. 22—23.) that the sculptural elements got easily disconnected, the long papillae even more easily may break off.

KRUTZSCH described the species from the Middle Miocene but his other illustrated specimens came primarily from the Oligocene or were redeposited, as those from the Plio—Pleistocene.

***Sequoiapollenites megaligulus* W. KR. 1971**

Plate LXXX. Fig. 8.

1971. *Sequoiapollenites megaligulus* n. sp. — W. KR., Atlas VI. p. 222. Taf. 73. Fig. 25—35.

One 24 μ specimen was found in the Egerian — Fót 1, 288.0—290.5 m. KRUTZSCH mentioned it from the Oligo—Miocene boundary and from the Lower Miocene.

***Sequoiapollenites polyformosus* THIERGART 1937 ex R. POTONIÉ 1958**

Plate LXXX. Fig. 9—13.

1937. *Sequoia-pollenites polyformosus* n. sp. — THIERG., Jb. Preuss. Geol. L. A., Band 58. pp. 301—302.

1953. *Inaperturopollenites polyformosus* (THIERG.) n. comb. — THOMSON et PF., Palaeontogr. 94. B. p. 65.

1958. *Sequoiapollenites* THIERGART 1937, 1938. — R. POTONIÉ, Synopsis II. p. 79. Taf. 10. Fig. 104. (Typ.).

Pollens of 17–30 μ were found in low numbers in the Egerian — Fót 1, 195.4–354.0 m, in the Eggenburgian — Várpalota 133, 208.3–226.3 m, Fót 1, 142.0–182.7 m, Püspökhatvan 4, 257.0–263.0 m, in the Ottnangian — Pusztakisfalva VI, 10.5–12.5 m, in the Lower Badenian — Szokolya 2, 87.2–115.3 m, in the Middle Badenian — Hidas 53, 590.2–669.2 m, in the Sarmatian — Hidas 53, 479.1–482.0 m, Cserhátszentiván 1, 136.0–185.5 m.

Remark: I fully agree with THIERGART that this species is an “agglomeration”, a collective taxon. I classed here those pollens which are rounded, with papillae and were not ranged among other taxa.

Sequoiapollenites rotundus W. KR. 1971

Plate LXXX. Fig. 14.

1971. *Sequoiapollenites rotundus* n. sp. — W. KR., Atlas VI. p. 222. Taf. 73. Fig. 1–24.

Specimens of 26–29 μ were found in the Lower Pannonian — Bogács 9/5, 151.0–151.5 m, in the Upper Pannonian — Pula 3, 36.5 m.

KRUTZSCH described the species from the Middle Miocene but it occurred also in the Pliocene of Germany.

Genus: *Cunninghamiaepollenites* (WODEHOUSE 1933) NAGY 1969

1933. *Cunninghamia* — WODEHOUSE, Tertiary Pollen II. p. 495. Fig. 17.

1969. *Cunninghamiaepollenites* (WODEHOUSE 1933) n. c. — NAGY, MÁFI Évk. 52. 2. p. 153.

Genotype: *Cunninghamiaepollenites lignitus* NAGY 1969.

Cunninghamiaepollenites lignitus NAGY 1969

Plate LXXX. Fig. 15.

1969. *Cunninghamiaepollenites lignitus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 153–154, Pl. XXXIV. Fig. 6.

1971. *Inaperturopollenites radiatus* n. sp. — W. KR., Atlas VI. p. 199. Taf. 63. Fig. 1–19.

The pollen grain of this species, described from the Middle Badenian coal-bearing sequence of Hungary is identical in size (32 μ) and morphology to the recent *Cunninghamia lanceolata* HOOK. (ERDTMAN 1954, Pl. XXII. Fig. 401).

One further specimen was found in the Karpathian — Hidas 53, 837.9–839.0 m.

KRUTZSCH mentioned and illustrated more specimens from the German Lower Miocene, mainly from coal-bearing sequences.

Genus: *Sciadopityspollenites* RAATZ 1937

1937. *Sciadopitys-pollenites serratus* R. POT. et VENITZ — RAATZ, Abh. Preuss. Geol. L. A. N. F. 183. p. 13.

1937. *Sciadopitys-pollenites serratus* R. POT. — THIERG. Jb. Preuss. Geol. L. A. B. 58. p. 302.

1958. *Sciadopityspollenites* RAATZ 1937 — R. POTONIÉ, Synopsis II. p. 81.

1971. *Sciadopityspollenites* RAATZ resp. THIERG. 1937 ex R. POT. 1958 — W. KR., Atlas VI. p. 32.

Genotype: *Sciadopityspollenites serratus* (R. POT. et VENITZ 1934) RAATZ 1937

Sciadopityspollenites catenatus (R. POT. 1931) W. KR. 1971

Plate LXXX. Fig. 16–17.

1931. *Sporonites* (?) *catenatus* n. sp. — R. POT., Braunkohle, H. 27. p. 556. Abb. 16.

1971. *Sciadopityspollenites catenatus* (R. POT. 1931) n. c. — W. KR., Atlas VI. p. 176. Taf. 53. Fig. 16.

Pollens of 38–39 μ in low numbers were found in the Karpathian — Zengővárkony 59, 56.0–60.9 m, in the Upper Pannonian — Kaposcs 2, 34.0–34.5 m.

Sciadopityspollenites quintus W. KRUTZSCH 1971

Plate LXXX. Fig. 23—24.

1971. *Sciadopityspollenites quintus* n. sp. — W. KR., Atlas VI. p. 180. Taf. 55. Fig. 1—16.

Some specimens, 38 μ , were found in the Egerian — Fót 1, 294.0—301.0 m, in the Lower Badenian — Szokolya 3, 58.7—59.9 m.

KRUTZSCH mentioned it occurs from the Upper Eocene to the Middle Miocene in Germany.

Sciadopityspollenites serratus (R. POT. et VEN. 1934) RAATZ 1937

Plate LXXX. Fig. 18—22.

1934. *Sporites serratus* n. sp. — R. POT. et VENITZ, Arb. Inst. Pal. Bd. 5. p. 15. Taf. 1. Fig. 6—7.

1937. *Sciadopityspollenites serratus* R. POT. et VENITZ — RAATZ, Abh. Preuss. Geol. L. A. N. F. H. 183. p. 13. Fig. 16.

Very few specimens, 35—53 μ , were found in the Eggenburgian — Szászvár 8, 433.8—434.1 m, in the Karpathian — Zengővárkony 59, 53.1—78.0 m, in the Lower Badenian — Magyaregregy surface exposures, in the Badenian — Hidas 53, brown-coal seams, in the Sarmatian — Hidas 53, 545.0—546.5 m, Tar 34, 450.0—454.0 m, in the Upper Pannonian — Tata (TVG) 26, 35.0—39.0 m, Hidas 53, 73.3—148.0, mine Petőfibánya.

The only recent species of this genus *Sciadopitys verticillata* SIEB. et ZUCC. lives in subtropical, wet montane forests in Japan.

Sciadopityspollenites tuberculatus (ZAKLINSK. 1957) W. KR. 1971

Plate LXXXI. Fig. 1—2.

1957. *Sciadopitys tuberculata* sp. nov. (pollen) — ZAKLINSKAIA, Trud. Geol. Inst. 6. pp. 165—166. Tabl. XVI. Fig. 3.

1971. *Sciadopityspollenites tuberculatus* (ZAKL. 1957) n. c. — W. KR., Atlas VI. p. 182. T. 56. Fig. 1—9.

One specimen occurred, the size exactly as given by ZAKLINSKAIA, 46 μ , Karpathian — Zengővárkony 59, 51.3—56.0 m.

ZAKLINSKAIA described it from the Upper Oligocene. KRUTZSCH found it in the Middle Oligocene, DOKTOROWICZ-HREBNICKA in the Miocene.

Sciadopityspollenites varius W. KR. 1971

Plate LXXXI. Fig. 3.

1971. *Sciadopityspollenites varius* n. sp. — W. KR., Atlas VI. p. 188. T. 59. Fig. 1—12.

Some specimens, 54—59 μ , were found in the Karpathian — Zengővárkony 59, 76.0—78.0 m. Mecseknádasd surface exposure, in the Lower Badenian — Szokolya 3, 47.0—48.5 m.

KRUTZSCH described the species as occurring from the Upper Eocene up to the Middle Miocene of Germany.

Sciadopityspollenites verticillatiformis (SAUER 1960) W. KR. 1971

Plate LXXXI. Fig. 4—5.

1960. *Sciadopitys verticillatiformis* SAUER sp. nov. — POKROVSKAIA, STELMAK et al., Atlas Trud. Nov. Ser. 30. Leningrad, p. 410. T. V. Fig. 6. p. 444.

1971. *Sciadopityspollenites verticillatiformis* (ZAUER 1960) n. c. — W. KR., Atlas VI. p. 178. Taf. 54. Fig. 7—24.

Specimens of 45—55 μ were found in the Karpathian — Zengővárkony 59, 76.0—78.0 m, in the Lower Badenian — Szokolya 11, 26.0 m, Magyaregregy-Leánykő main bed, sample 27.

The species was described from the Paleogene (and Neogene) of the Baltic area of the USSR. INGVERSEN (1954, p. 43) mentioned the same species from the Miocene of Denmark as *Sciadopitys* cf. *verticillata* S. et Z. denoting that it is a rare species of 42—49 μ .

Genus: *Cupressacites* (BOLCHOVITINA 1956) W. KRUTZSCH 1971 emend.

1956. *Cupressacites* BOLCHOVITINA — BOLCHOVITINA, Atlas spori i pilci, Akad. Nauk USSR. Trud. Geol. Inst. V. 2. p. 84.

1971. *Cupressacites* BOLCHOVITINA 1956 — W. KR., Atlas VI. pp. 40–42.

Genotype: *Cupressacites coriaceus* (NAUMOVA 1937) BOLCH. 1956

Diagnosis emendation: Small, 40–50 μ , rounded spores with hardly discernible pore. The wall is thin, hardly structured, sculptured, almost smooth.

Differential diagnosis: It differs from *Taxodiaceapollenites* KREMP by the thin exine, causing a generally folded appearance. Further it differs from *Taxodiaceapollenites* and *Sequoiapollenites* by the lack of papillae.

***Cupressacites bockwitzensis* W. KR. 1971**

Plate LXXXI. Fig. 6–7.

1971. *Cupressacites bockwitzensis* n. sp. — W. KR., Atlas VI. p. 196. Taf. 62. 19–25.

Pollens of 27–40 μ , frequently with torn exine. They occur in low or moderate numbers from the Egerian up to the Upper Pannonian, found generally in coal-bearing sequences (Eger, Szászvár, Hidas, mine Petőfibánya).

***Cupressacites* cf. *cuspidataeformis* (ZAKL. 1957) W. KR. 1971**

Plate LXXXI. Fig. 8.

1957. *Taxus cuspidataeformis* sp. nov. (pollen) — ZAKLINSKAIA, Akad. Nauk USSR. Trud. Geol. Inst. 6. p. 96. Tabl. I. Fig. 17, 18.

1971. *Cupressacites cuspidataeformis* (ZAKL. 1957) n. c. — W. KR., Atlas VI. p. 196. Taf. 62. Fig. 9–18.

One 20 μ , rounded, crumpled specimen represents this species as cf. from the Lower Badenian — Hidas 53, 708.1–708.5 m.

ZAKLINSKAIA described it from the Upper Cretaceous. KRUTZSCH mentioned it from the Middle Miocene of Germany and from the Pleistocene of Czechoslovakia.

***Cupressacites insulipapillatus* (TREVISAN 1967) W. KR. 1971**

Plate LXXXI. Fig. 9–11.

1967. *Inaperturopollenites insulipapillatus* n. fsp. TREVISAN, Paleontogr. Ital. LXII. (n. s. XXXII), p. 16. T. VII. Fig. 1–2.

1971. *Cupressacites insulipapillatus* (TREVISAN 1967) n. c. — W. KR., Atlas VI. p. 196. Taf. 62. Fig. 1–8.

Few specimens of 27–39 μ were found in the Eggenburgian — Szászvár 8, in the Ottnangian — Tekerés 1, 908.0–911.4 m, in the Badenian — Hidas 53.

TREVISAN described the species from the Messinian of Toscana, Italy. KRUTZSCH mentioned it from the Middle Eocene up to the Upper Miocene.

TREVISAN related it to the *Taxodiaceae*, *Cupressaceae* and *Taxaceae* families, KRUTZSCH considered it of *Juniperus* type.

***Cupressacites* sp.**

Plate LXXXI. Fig. 12–13.

Rounded, 17–30 μ pollens with thin, crumpled exine are classified here. Some specimens occur from the Egerian with a peak in the Badenian, mainly from coal-bearing sequences (Hidas 53, Szokolya 2.).

Genus: *Chamaecyparidipollenites* NAGY 1969

1969. *Chamaecyparidipollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 154–155.

Genotype: *Chamaecyparidipollenites flexuosus* NAGY 1969

Chamaecyparidipollenites flexuosus NAGY 1969

Plate LXXXI. Fig. 14–18.

1969. *Chamaecyparidipollenites flexuosus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 155. Pl. XXXV. Fig. 3.

The holotype, 27 μ , came from the Sarmatian — Hidas 53, 444.0 m, then a 34 μ one from the Upper Pannonian — Megyaszó 1, 28.0–32.0/1 m.

Família: Podocarpaceae

Genus: *Podocarpidites* COOKSON 1947 ex COUPER 1953

1947. *Disaccites (Podocarpidites)* n. spt. — COOKSON, B.A.N.Z.A.R.E. Rep. Ser. A. Vol. II. Part. 8. p. 131.

1953. *Podocarpidites* COOKSON ex COUPER — COUPER, New Zeal. Geol. Surv. Pal. Bull. 22. p. 35.

Generotypus: *Podocarpidites ellipticus* (COOKSON 1947) COUPER 1953

Podocarpidites acmopyleformis NAGY 1969

Plate LXXXII. Fig. 1–4.

1969. *Podocarpidites acmopyleformis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 157–158. Pl. 38. Fig. 3–4.

Specimens of 54–81 μ were found in the Egerian — Eger, Wind brickyard borehole 8.2–9.2 m, Fót 1, 196.4–349.5 m, in the Eggenburgian — Szászvár 8, 433.8–434.1 m, in the Karpathian — Zengővárkony 59, 51.3–56.0 m, Nógrádszakál 2, 231.0–287.0 m, Fót 1, 121.0–122.0 m. Further, poorly preserved, probably redeposited specimens: Badenian — Hidas 53, 757.0–759.0 m, Sarmatian — Hidas 53, 444.0 m, 558.0–561.0 m.

cf. *Podocarpidites gigantea* (ZAKL. 1957) n. c.

Plate LXXXII. Fig. 5.

1957. *Podocarpites gigantea* sp. nov. (pollen) — ZAKLINSKAIA, Trudy Geol. Inst. A. N. USSR. 6. pp. 109–110. T. III. 1–4.

Some pollens of 84–97 μ were found in the Karpathian — Zengővárkony 59, 71.4–73.0 m, in the Lower Badenian — Szokolya 3, 71.2–74.5 m.

Remark: These specimens are similar to the above species from the Upper Oligocene of Siberia but their size is smaller (not 112–120 μ), the air-sacks are attached more apart (8 μ) than given by ZAKLINSKAIA (3–5 μ). So I preferred to mark it cf.

Podocarpidites libellus (R. POT. 1932) W. KR. 1971

Plate LXXXII. Fig. 6–9.

1932. *Pini (?) -pollenites libellus* n. sp. — R. POT., Jb. Preuss. Geol. L. A. Jg. 1931, Bd. 52. p. 5. Fig. 33.

1937. *Podocarpus* — THIERGART, Jb. Preuss. Geol. L. A. Bd. 58. p. 300. Taf. 24. Fig. 7.

1971. *Podocarpidites libellus* (R. POT. 1931b) n. c. — W. KR., Atlas VI. p. 128. Taf. 32. 1–22.

Specimens of 37–63 μ are common in the Egerian–Eggenburgian; in younger layers they are sparse. Found in the Egerian — Eger, Wind brickyard layer “u”, Fót 1, 194.4–278.7 m, in the Eggenburgian — Szászvár 8, 432.5–434.5 m, Fót 1, 160.0–176.7 m, in the Ottnangian — Zengővárkony 45, 16.4–17.2 m, Nagygörbő 1, 903.2–908.5 m, in the Karpathian — Tekerés 1, 863.0–868.0 m, Litke 17, 55.0–57.0 m, in the Badenian — Hidas 53, 600.5–602.3 m, Tengelic 2, 850.0–851.3 m, Szokolya 3, 63.0–64.7 m, Szilvássvár 1, 130.0 m, in the Sarmatian — Vajta water exploratory borehole, probe 724.0–728.0 m, in the Pannonian — Szirma 2, 47.9–48.4 m.

R. POTONIÉ found the species in the Lower Miocene of Germany, other German scientists mentioned it from the whole Miocene; DOKTOROWICZ-HREBNICKA and MAMCZAR described it from the Miocene of Poland.

Podocarpidites macrophylliformis NAGY 1969

Plate LXXXIII. Fig. 1–4.

1969. *Podocarpidites macrophylliformis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 158–159. Pl. XXXIII. Fig. 3. Pl. XXXVI. Fig. 7.

Specimens of 55–90 μ , frequent in the Middle Miocene. Found in the Eggenburgian — Szászvár 8, 432.5–432.7 m, in the Karpathian, Komló 120, 178.0–178.8 m, Zengővárkony 59, 51.3–60.9 m, in the Badenian — Hidas 53, 600.5–602.3 m, Szokolya 2, 71.9–118.0 m, Szokolya 3, 58.7–59.9 m, in the Pannonian — Hidas 53, 364.2–367.0 m, Naszály 1, 51.0–131.5 m, Tata (TVG) 26, 16.8–24.6 m.

Remark: Its size and morphology relates it to *Podocarpus macrophyllus* var. *maki* ENDL. (Pollen morphology of Chinese Plants 1960, Pl. IV. Fig. 1–2).

Podocarpidites microreticuloidata (COOKSON 1947) NAGY 1969

Plate LXXXIII. Fig. 5–6.

1947. *Disaccites* (*Podocarpidites*) *microreticuloidata* n. spm. — COOKSON, B.A.N.Z.A.R.E., A. II. 8. p. 131. Pl. XIII. Fig. 8–11.

1969. *Podocarpidites microreticuloidata* COOKSON — NAGY, MÁFI Évk. 52. 2. p. 157. Pl. XXXVI. Fig. 4–5.

Few specimens, 57–78 μ , were found in the Egerian — Fót 1, 214.0–372.0 m, in the Ottnan-gian — Zengővárkony 45, 13.2–13.7 m, in the Lower Badenian — Zengővárkony 59, 28.6–28.8 m, in the Sarmatian — Cserhátszentiván 1, 19.0–21.0 m, in the Pannonian — Pápa 2, 161.1–163.8 m, Alsóvadász 1, 212.2–219.0 m.

Podocarpidites multicristatus (TREVISAN 1967) n. c.

Plate LXXXIV. Fig. 1–3.

1967. *Pityosporites multicristatus* n. f-sp. TREVISAN, Pal. Ital., Vol. LXII (n. s. Vol. XXXII) p. 24. T. XV. Fig. 3. T. XVI. Fig. 1. T. XVII. Fig. 1.

Some specimens, 66–106 μ long, were found in the Egerian — Fót 1, 209.9–278.7 m, Eger, Wind brickyard pit, layer “u”, in the Eggenburgian — Fót 1, 139.0 m, Püspökhatvan 4, 153.3–157.0 m.

TREVISAN found and described the species based on two specimens from the Upper Miocene of Toscana.

Remark: KRUTZSCH considered this species to be the same as *Pityosporites cedroides* THOMSON 1953. These two, however, differ considerably in morphology. On *P. cedroides* the air-sacks are larger than semi-globose (1971, Atlas VI. Pl. 20). In *P. multicristatus* the air-sacks are podocarpoid (see also *Abiespollenites crassus*). The main feature of this species is its being “*multicristatus*”.

Podocarpidites nageiaformis (ZAKLINSKAIA 1957) W. KR. 1971

Plate LXXXIII. Fig. 7–8. Plate LXXXV. Fig. 1.

1957. *Podocarpus nageiaformis* sp. nov. (pollen) — ZAKL., Trud Geol. Inst. Akad. Nauk USSR. 6. pp. 106–108. II. Fig. 8–11.

1958. *Pityosporites podocarpoides* n. sp. — THIERG., Fortschr. Geol. Rheinl. Westf. 1–2. p. 449. T. 1. Fig. 15.

1969. *Podocarpidites papilionis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 157. Pl. 37. Fig. 1–2.

1971. *Podocarpidites nageiaformis* (ZAKL. 1957) n. c. — W. KR., Atlas VI. pp. 130–132. Taf. 34.

1971. *Podocarpidites podocarpoides* (THG. 1958) n. c. — W. KR., Atlas VI. p. 130. Taf. 33. Fig. 1–11.

Few specimens, 69–85 μ , were found in the Egerian — Eger, Wind brickyard borehole 8.3–9.2 m, Fót 1, 209.9–357.0 m, in the Karpathian — Fót 1, 131.5–132.5 m, Mecseknádasd surface exposures, Várpalota 133, 166.0–167.7 m, in the Lower Badenian — Zengővárkony 59, 34.0–37.5 m, Szokolya 2, 87.2–87.9 m, Szokolya 11, 26.0 m, Upper Badenian — Tengelic 2, 814.0–817.0 m, in the Upper Pannonian — Hidas 53, 298.0–299.1 m, Beremend 9, 76.0 m, Pápa 2, 5.0 m.

Podocarpidites piniverrucatus W. KR. 1971

Plate LXXXV. Fig. 2—4.

1971. *Podocarpidites piniverrucatus* n. sp. — W. KR., Atlas VI. p. 132. Taf. 35. Fig. 1—12.

Some specimens, 53—62 μ , were found in the Egerian — Fót 1, 346.5—348.0 m, 364.5—367.5 m, in the Pannonian — Budapest, Kőbánya, section I. (may be secondary).

KRUTZSCH mentioned it from the Upper Oligocene to the Middle Miocene of Germany.

Genus: *Dacrycarpites* COOKSON et PIKE 1953

1953. *Dacrycarpites* n. spm. — COOKSON et PIKE, Austr. Journ. of Bot., Vol. 1. N° 1. p. 77.

Generotypus: *Dacrycarpites australiensis* COOKSON et PIKE 1953

Dacrycarpites cf. australiensis COOKSON et PIKE 1953

Plate LXXXVI. Fig. 2—3.

1953. *Dacrycarpites australiensis* n. spm. — COOKSON et PIKE, Austr. Journ. of Bot. Vol. 1. N° 1. pp. 78—79. Pl. 2. Fig. 27—31. Pl. 3. Fig. 46—51.

One 59 μ specimen was found. The shape is triangular, the three air-sacks measure 37—40 \times 17—20 μ . They cover the body and the attachment point cannot be studied. The body structure is similar to *D. australiensis*, except the thinner (1.5 μ) exine edge. Accordingly it was taken as cf.

It was found in the Karpathian — Fót 1, 121.0—122.0 m. Another specimen came from Cserhát-szentiván 1, 30.0—32.5 m. It is rather corroded, probably redeposited.

Genus: *Dacrydiumites* COOKSON 1953 emend. NAGY 1969

1953. *Dacrydiumites mawsonii* — COOKSON, Austr. Journ. Bot., Vol. 1. N° 1. p. 66.

1969. *Dacrydiumites* COOKSON emend. — NAGY, MÁFI Évk. 52. pp. 159—160.

Generotypus: *Dacrydiumites mawsonii* (COOKSON 1947) COOKSON 1953

Dacrydiumites elegans n. sp.

Plate LXXXV. Fig. 5—10., Plate LXXXVI. Fig. 1.

Holotypus: F. 1., sample N° 30., slide N° 1., 106.8 \times 19.5, Plate LXXXV. Fig. 5—10.

Locus typicus: Fót 1, 237.5—238.0 m

Stratum typicum: Egerian; silty clay-marl

Diagnosis: The body is rounded-oval with two small saccae and 2 sacculae. The pollen body exine is granulate, coarser proximally, finer distally, between the air-sacks. The crest is relatively thick, consisting of fine baculae reaching over the body's side, towards the air-sacks which are finely reticulate.

Dimensions: The holotype is laterally situated, full diameter 73 μ , height 58 μ , body length 54 μ , height 41 μ , air-sack length 34 μ , width 15 μ , sacculae 5 μ high and 6—7 μ long. The exine is 2.5—3 μ thick.

Differential diagnosis: *Dacrydiumites elegans* n. sp. reminds by the sacculae and their position *Dacrydiumites mawsonii* (COOKSON 1947) COOKSON 1953. The difference is in the size (the new species is bigger) and in the surface ornaments. This species shows a very distinct exine, consisting of thick baculae and well-developed fine-grained reticulum on the air-sacks, too.

Besides the holotype some 38—62 μ specimens were found in the Egerian — Fót 1, 194.4—238.0 m.

Remark: SIVAK (Montpellier) thinks the species belongs to a new fossil genus (personal communication).

Dacrydiumites cf. mawsonii (COOKSON 1947) COOKSON 1953

Plate LXXXVI. Fig. 4—10.

1947. *Disaccites* (*Phyllocladidites*) *Mawsonii* n. spm. — COOKSON, B.A.N.Z.A.R.E., A. II. 8. 9. 133., Pl. 14. Fig. 22—28.

1953. *Dacrydiumites mawsonii* — COOKSON, Austr. Journ. of Bot., Vol. 1. N° 1. p. 66. Pl. I. Fig. 9—26.

Some 38—48 μ specimens were found in the Egerian — Eger, Wind brickyard borehole 9.2—9.7 m, Fót 1, 216.5—230.0 m, in the Eggenburgian — Püspökhatvan 4, 266.0—269.0 m, in the Karpathian — Tekeres 1, 850.0—855.0 m, Császár 1, 99.5 m, in the Lower Badenian — Szokolya 2, 37.9—81.5 m.

Familia: Ephedraceae

Genus: *Ephedripites* BOLCH. 1953 ex R. POT. 1958

1953. *Ephedripites*. . . BOLCHOVITINA — BOLCHOV., Trud. Inst. Geol. Nauk B. 145. Geol. Ser. (No. 61) p. 60.

1958. *Ephedripites* BOLCHOVITINA 1953 — R. POT., Synopsis II. pp. 88—89.

Generotypus: *Ephedripites mediolobatus* BOLCH. 1953

BOLCHOVITINA published two species in 1953 as *Ephedripites*. There was no generic diagnosis, thus the name is not valid. In 1958 POTONIÉ denotes the generotype, providing also a diagnosis. KRUTZSCH differentiated subgenera in 1961 (W. KR. 1961, Geologie, p. 19.) and in 1970 amended it (Atlas VII. p. 154—171) with new species or rather gave new diagnosis to his old species.

Subgenus: *Ephedripites* BOLCH. 1953 ex R. POT. 1958 sg. *Ephedripites* W. KR. 1961

1961. Subgen.: *Ephedripites* (*Ephedripites*) — W. KR., Geol., Beih. 32. p. 20.

Ephedripites sg. *Ephedripites boersoenyensis* n. sp.

Plate LXXXVI. Fig. 11—15.

Holotypus: Szk. 3., sample No 47., slide No 1., 116.9×13.2, Plate LXXXVI. Fig. 11—15.

Locus typicus: Szokolya 3, 52.6—53.6 m

Stratum typicum: Lower Badenian; diatomic clay-marl

Diagnosis: Large "ephedroid" pollens. Length 59—65 μ , width 21—25 μ . Length—width rate 2.8. The pollen wall is thin, 3/4—1/2 μ . There are 14—15 ribs, 1.5 μ broad with an edge in the middle; the space between the ribs is 1.5—3 μ broad. The second and third ribs slightly thicken towards the angles, forming a small peak.

Dimensions: The holotype is 65 μ long, 25 μ broad with 14 ribs.

Differential diagnosis: Among the species of the *Ephedripites* sg. *Ephedripites* it stands close to *E.* sg. *E. regularis* cf. HOECKEN-KLINKENBERG 1964* in size and number of ribs, but differs by lesser wall thickness, and thinner ribs. *E.* sg. *E. regularis* is more sturdy (length—width ratio 2.0). The inter-rib spaces are broader in the new species, both slightly sinuous due to the thin exine.

Beside the holotype only one specimen was found in the Lower Badenian — Szokolya 3, 63.0—64.7 m.

Ephedripites sg. *Ephedripites crassoides* W. KR. 1961

Plate LXXXVII. Fig. 1—2.

1961. *Ephedripites* (*Ephedripites*) *crassoides* n. fsp. — W. KR., Geol., Beih. 32. p. 24. Taf. II. Fig. 18—21.

One specimen (42×25 μ) was found in the Egerian — Fót 1, 194.4 m, and an other, damaged, probably redeposited specimen in the Upper Pannonian — Naszály 1, 104.0—106.0 m.

KRUTZSCH described the species from the Upper Oligocene of Germany.

Ephedripites sg. *Ephedripites hungaricus* NAGY 1963

Plate LXXXVII. Fig. 3—7.

1963. *Ephedripites* (*Ephedripites*) *hungaricus* n. sp. — NAGY, Grana Palyn., Vol. 4.: 2, p. 278. et 4.: 3, p. 280a, b, c. Fig. 11. 4—7, Fig. 12. A, a, b.

1969. *Ephedripites* sg. *Ephedripites hungaricus* NAGY, 1963 — NAGY, MÁFI Évk. 52. 2. p. 163. Pl. XL. Fig. 3—4.

* According to their data (Pollen et Spores 1964 p. 228).

Some specimens (47–51 μ) were found in the Eggenburgian — Szászvár 8, 432.5–432.7 m, (holotype), in the Lower Badenian — Szokolya 2, 93.0–118.3 m, in the Upper Pannonian — Naszály 1, 60.0–66.0 m.

Remark: W. KRUTZSCH (1970, Atlas VII. p. 164) regards *E. sg. E. hungaricus* NAGY 1963 as synonym for *E. sg. E. wolkenbergensis*. Due to basic differences this view is unacceptable. *E. sg. E. hungaricus* is of 47–51 μ size, i.e. bigger than *E. sg. E. wolkenbergensis* (40–45 μ). The latter has dense ribs, the pollen is broader. *E. sg. E. hungaricus* is slimmer, thus generally peaked and if so the ribs are obliquely turned.

Ephedripites sg. **Ephedripites landenensis** W. KR. 1977

Plate LXXXVII. Fig. 8–9.

1973. *Ephedripites (Ephedripites) landenensis* W. KR. 1970 — W. KR., Atlas VII. p. 166. T. 49. Fig. 11–13.

1977. *Ephedripites (Ephedripites) landenensis* n. fsp. — W. KR. et R. VANHOORNE, Palaeontogr. B., 163. 1–4. pp. 23–24. Taf. 49. Fig. 11–13.

Some 40–44 μ long, 19–20 μ broad specimens were found in the Badenian — Nógrádszakál 2, 91.4–95.5 m.

Remark: KRUTZSCH characterized the species in 1973 in Atlas VII. Plate 7. p. 170, but the type and the diagnosis appeared in 1977. Consequently, the valid publication date is the latter (Code, Art. 37, 38).

The holotype was described from the Eocene of Belgium. In Germany, however, it was found in the Oligocene and mainly in the Miocene (KRUTZSCH, Atlas VII).

Ephedripites sg. **Ephedripites mecsekensis** NAGY 1963

Plate LXXXVII. Fig. 10–13.

1963. *Ephedripites (Ephedripites) mecsekensis* n. sp. — NAGY, Grana Palyn., 4:2, p. 278–279, 4:3, p. 280a, 4–7, p. 280b B, a, b.

Some specimens (45–60 μ) were found in the Karpathian — Mihálygerge, Ipolytarnóc-Mihálygerge surface exposures, in the Badenian — Hidas 53, 590.7–592.3 m, Szilvásvárad 1, 130.0 m, in the Sarmatian — Hidas 53, 479.1–482.0 m. Length—width ratio: 3.

Remark: KRUTZSCH regarded *Ephedripites* sg. *Ephedripites mecsekensis* NAGY 1963 as synonym for *E. sg. E. treplinensis* W. KR. 1961 (1970, Atlas VII. p. 168). The two species, however, show considerable differences.

E. sg. E. treplinensis W. KR. 1961 is

- smaller (35–47 μ);
- length—width ratio 2.5–3;
- rib number 11 or more (*E. sg. E. mecsekensis* 9–10);
- rib width 1 μ (*E. sg. E. mecsekensis* 2 μ , at the corners even 1.5 μ);
- rib distance 1–2 μ (in *E. sg. E. mecsekensis* 0.5 μ , always lower than 1 μ).

Ephedripites sg. **Ephedripites treplinensis** W. KR. 1961

Plate LXXXVII. Fig. 14–18.

1961. *Ephedripites (Ephedripites) treplinensis* n. fsp. — W. KR., Geol., Beih. 32. p. 22. Taf. II. Fig. 6–12.

Specimens of 30–44 μ were found in the Egerian — Fót 1, 209.5–328.0 m, in the Lower Badenian — Nógrádszakál 2, 95.0–96.5 m, in the Sarmatian — Cserhátszentiván 1, 185.5–188.0 m.

Ephedripites sg. **Ephedripites cf. viesensis** W. KR. 1961

Plate LXXXVII. Fig. 19–22.

1961. *Ephedripites (Ephedripites) viesensis* n. fsp. — W. KR., Geol., Beih. 32. pp. 21–22. Taf. II. Fig. 1–5.

Two specimens (25–27 μ) were found in the Ottnangian — Alsóvadász 1, 1029.0–1034.6/16 m, in the Badenian — Nógrádszakál 2, 121.2–122.0 m.

KRUTZSCH described the species from the Paleocene. Thus these specimens may have been redeposited.

Ephedripites sg. **Ephedripites wolkenbergensis** W. KR. 1961

Plate LXXXVII. Fig. 23—25.

1961. *Ephedripites (Ephedripites) wolkenbergensis* n. fsp. — W. KR., Geol., Beih. 32. p. 23. Taf. II. Fig. 33—36.

Few specimens (34—43 μ , length—width ratio: 1.9—2.5) were found in the Egerian — Fót 1, 222.5—225.5 m, in the Karpathian — Fót 1, 116.8 m, in the Lower Badenian — Szokolya 11, 26.0 m.

Subgenus: *Ephedripites* BOLCH. 1953 ex R. POT. 1958 sgen. *Distachyapites* W. KR. 1961

1961. *Ephedripites (Distachyapites)* n. subgen. — W. KR., Geol., Beih. 32. pp. 20—21.

Ephedripites sg. **Distachyapites bernheidensis** W. KR. 1961

Plate LXXXVII. Fig. 26—29.

1961. *Ephedripites (Distachyapites) bernheidensis* n. fsp. — W. KR., Geol., Beih. 32. pp. 25—26. Taf. II. Fig. 22—32.

Some specimens (50—55 μ) were found in the Karpathian — Zengővárkony 59, 76.0—78.0 m, in the Badenian — Hidas 53, 390.7—592.3 m, Nógrádszakál 2, 99.5—101.0 m, Szokolya 2, 100.0—101.0 m.

KRUTZSCH described it as occurring from the Middle Oligocene up to the Late Tertiary of Germany.

Ephedripites sg. **Distachyapites bicostatus** NAGY 1969

Plate LXXXVIII. Fig. 1—4.

1969. *Ephedripites* sg. *Distachyapites bicostatus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 164. Pl. XL. Fig. 7—9.

Some specimens (60—64 μ) were found in the Karpathian — Zengővárkony 59, 51.3—56.0 m, in the Lower Badenian — Szokolya 2, 115.3—118.3 m. Length—width ratio: 2.0—2.2.

Ephedripites sg. **Distachyapites ellipticus** NAGY 1969

Plate LXXXVII. Fig. 30, Plate LXXXVIII. Fig. 5.

1969. *Ephedripites* sg. *Distachyapites ellipticus* n. sp. — NAGY, MÁFI Évk. 52. 2. Pl. XL. Fig. 13—14.

Few specimens (47—50 μ , length—width ratio: 2.1—2.2) were found in the Karpathian — Zengővárkony 59, 48.5—51.3 m, in the Lower Badenian — Szokolya 3, 52.6—60.8 m.

Ephedripites sg. **Distachyapites fusiformis** (SHAKMUNDES 1965) W. KR. 1970

Plate LXXXVII. Fig. 31—32.

1965. *Ephedra fusiformis* sp. nov. — SHAKMUNDES, Trudy VNIGRI 239. p. 222. I. III. Fig. 1—6. (in: W. KR., Atlas VII. p. 160).

1970. *Ephedripites (Distachyapites) fusiformis* (SHAKMUNDES) 1965. n. c. — W. KR., Atlas VII. p. 160. Taf. 46. Fig. 1—31.

Very few specimens (35—47 μ) were encountered (length—width ratio: 3.1—3.9) in the Egerian — Fót 1, 214.0—244.0 m.

SHAKMUNDES (in W. KR.) described the species from the Middle Oligocene of the West-Siberian Lowlands. W. KRUTZSCH believed it occurred in Central Europe from the Eocene up to the Lower Miocene.

Ephedripites sg. **Distachyapites matraënsis** NAGY 1963

Plate LXXXVIII. Fig. 8—10.

1958. *Ephedra* sp. — NAGY, MÁFI Évk. 47. 1., p. 62. et 188., T. II. Fig. 7.

1963. *Ephedripites (Distachyapites) matraënsis* n. sp. — NAGY, Grana Palyn., Vol. 4: 2, pp. 279—280. Photos. Figs. 8—11., Figs. C. a—d.

Holotype from mine Petőfibánya, brown-coal seam, accompanying Upper Pannonian clay. Besides 34–48 μ specimens from the Badenian — Nógrádszakál 2, 98.0–123.0 m.

Remark: W. KRUTZSCH (1970, Atlas VII.) supposed that *E. sg. D. matraënsis* belongs to *E. sg. E. schoenewaldensis*. Due to well-defined differences between the two species I don't accept this opinion. The most significant difference is the Z line in *E. sg. D. matraënsis* NAGY 1963 which is a distinctive feature between the subgenera *Ephedripites* and *Distachyapites*. The length—width ratio is different too; in *E. sg. E. schoenewaldensis* it is 2.4–2.6, in *E. sg. D. matraënsis* — 1.5–1.8.

Ephedripites sgen. Distachyapites minimus NAGY 1969

Plate LXXXVIII. Fig. 12–15.

1969. *Ephedripites* sgen. *Distachyapites minimus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 166.

Some specimens (34–37 μ long, 10–14 μ broad, length—width ratio: 2.4–3.7) were found in the Eggenburgian — Budajenő 2, 538.4–539.4 m, in the Ottnangian — Pusztakisfalu VI, 22.5–25.0 m, in the Badenian — Szokolya 2, 102.2–104.7 m, in the Upper Pannonian — Naszály 1, 19.0–20.5 m. The last was probably redeposited.

Ephedripites sg. Distachyapites miocaenicus NAGY 1969

Plate LXXXVIII. Fig. 6–7., 11.

1969. *Ephedripites* sgen. *Distachyapites miocaenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 166, Pl. XL. Fig. 11–12.

Few specimens were found (46–53 μ long, 21–27 μ broad, length—width ratio: 2.0–2.2) in the Karpathian — Zengővárkony 59, 51.3–56.0 m, in the Lower Badenian — Szokolya 3, 51.6–52.6 m.

Ephedripites sg. Distachyapites tertiaris W. KR. 1970

Plate LXXXVIII. Fig. 19–20.

1970. *Ephedripites (Distachyapites) tertiaris* n. sp. — W. KR., Atlas VII. p. 156, Taf. 44. Fig. 1–21.

One 43 μ specimen was found in the Upper Pannonian — Budapest-Kőbánya profil IV., sample 112. It may be redeposited.

KRUTZSCH indicated the species from the Middle Eocene up to the Middle Miocene of Germany.

Ephedripites sg. Distachyapites sp.

Plate LXXXVIII. Fig. 16–18.

1970. *Ephedripites (Distachyapites) sp. (? nov. sp.)* — W. KR., Atlas VII. p. 156, Taf. 43. Fig. 10–14.

Specimens possibly belonging here are sized 61–75 μ and occur in the Badenian — Nógrádszakál 2, 95.0–95.5 m, in the Upper Pannonian — Naszály 1, 15.1–17.0 m.

KRUTZSCH mentioned it as a probably new species from the Paleogene from Belgium to West-Siberia, sized 75–90 μ .

PHYLUM: ANGIOSPERMAE, ANGIOSPERMATOPHYTA

Classis: Dicotyledonopsida (Dicotyledones)

Subseries: Polycarpicae-Rubiales

Ordo: Magnoliales

Subordo: Magnoliinae

Familia: Magnoliaceae

Genus: Magnoliaepollenites NAGY 1969

1969. *Magnoliaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 166.

1970. *Magnoliapollis* n. fgen. — W. KR., Atlas VII. p. 32.

Generotypus: *Magnoliaepollenites simplex* NAGY 1969

Magnoliaepollenites simplex NAGY 1969

Plate LXXXIX. Fig. 1—2.

1969. *Magnoliaepollenites simplex* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 167. Pl. XLI. Fig. 1, 4.

Few specimens, 46—50 μ , were found in the Egerian — Eger, Wind brickyard borehole 8.3—9.2 m, in the Ottnangian — Tekerés 1, 855.0—859.0 m, Felsőnyárád, coalsheet, sample 166/v, in the Badenian — Hidas 53, 590.7—666.8 m.

Genus: *Liriodendronpollenites* (WODEHOUSE 1933) n. c.

1933. *Liriodendron* — WODEHOUSE, Tertiary Pollen II. — Bull. Torr. Bot. Club, p. 501.

1970. *Liriodendroipollis* n. g. — W. KR., Atlas VII. p. 32.

Generotypus: *Liriodendronpollenites psilopites* (WODEHOUSE 1933) n. c.

Remark: WODEHOUSE published this species as monotypic in 1933, now taken as generotype. He considered it to be so close to *Liriodendron* that he neglected the term “pites”; this makes it, however, no less valid (WODEHOUSE 1933, p. 482). Accordingly KRUTZSCH's name is only a late homonym.

Liriodendronpollenites semiverrucatus (W. KR. 1970) n. c. ssp. **semiverrucatus**

Plate LXXXIX. Fig. 8—9.

1970. *Liriodendroipollis semiverrucatus semiverrucatus* n. sp. et subsp. — W. KR., Atlas VII. p. 138. Taf. 35.

Specimens of 96—103 μ were found in the Eggenburgian — Fót 1, 142.8—144.0 m, in the Lower Badenian — Szokolya 2, 81.6—82.5 m.

KRUTZSCH described the species from the Lower Miocene of Germany, but found it throughout the Miocene and Pliocene, and compared it to *Liriodendron chinense* SARG.

Familia: Tetracentraceae

Genus: *Tetracentracearumpollenites* NAGY 1969

1969. *Tetracentracearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 167.

Generotypus: *Tetracentracearumpollenites minimus* NAGY 1969

Tetracentracearumpollenites komlóensis NAGY 1969

Plate LXXXIX. Fig. 3—4.

1969. *Tetracentracearumpollenites komlóensis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 168. Pl. XL. Fig. 18—20.

A few specimens, 14—20 μ , were found in the Egerian — Fót 1, 201.0—209.5 m, in the Eggenburgian Fót 1, 160.0—169.3 m, in the Ottnangian — Pusztakisfalu VI. 22.5—25.0 m, in the Karpathian — Fót 1, 119.0 m, Komló 120, 372.0—374.7 m, Litke 17, 49.0—51.0 m, in the Lower Badenian — Szokolya 3, 41.0—42.8 m, Szokolya 2, 102.2—106.4 m, Nógrádszakál 2, 91.4—93.0 m, Hidas 53, 753.0—738.0 m, in the Middle Badenian — Hidas 53, 667.2—669.2 m, 683.0—686.5 m, mine Hidasbánya II. seam.

The species was most abundant in the Karpathian.

Tetracentracearumpollenites minimus NAGY 1969

Plate LXXXIX. Fig. 5—7.

1969. *Tetracentracearumpollenites minimus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2., p. 167—167. Pl. XL. Fig. 15—17.

Specimens of 14—28 μ were found. The species had its peak in the Egerian—Eggenburgian. The occurrences are frequent in specimens though never dominantly. In the Egerian — Fót 1, 206.0—

305.0 m, Eger, Wind brickyard pit, in the Eggenburgian — Fót 1, 162.0—164.0 m, Püspökhatvan 4, 227.0—257.0 m, Szászvár 8, 433.8—434.1 m, Várpalota 133, 214.2—217.0 m, in the Ottnangian — Pusztakisfalva VI, 10.5—25.0 m, Nagygörbő 1, 903.2—908.5 m, Várpalota 219, 201.0 m. In ones-tuos found in the Badenian — Hidas 53, 735.0—738.0 m, Tengelic 2, 817.0—820.0 m, Szokolya 2, 115.3—118.3 m, in the Upper Pannonian — Hidas 53, 132.5—134.8 m, Alsóvadász 1, 94.4—101.0 m, which are probably redeposited.

Ordo: Nymphaeales

Familia: Nymphaeaceae

Genus: *Nupharipollenites* NAGY 1969

1969. *Nupharipollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 168.

Generotypus: *Nupharipollenites kedvesi* NAGY 1969

Nupharipollenites kedvesi NAGY 1969

Plate LXXXIX. Fig. 12—15.

1969. *Nupharipollenites kedvesii* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 169. Pl. XLI. Fig. 2, 3, 8.

A few specimens of 48—53 μ were found in the Karpathian — Zengővárkony 59, 60.9—63.0 m, in the Badenian — Tengelic 2, 771.0—845.0 m, in the Upper Pannonian — Hidas 53, 298.0—299.1 m, Naszály 1, 14.9—15.1 m.

Genus: *Nymphaeapollenites* NAGY 1969

1969. *Nymphaeapollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 169.

I identified the new genus, described in 1969, in the footnote with *Nymphaeacidites* (SAH, 1967, p. 108) from Africa, according to SAH's diagnosis: "ornamentation reticulate or occasionally spiniferous or baculate".

No one of the fossil *Nymphaeaceae* pollens showed reticulate structure, including the recent species, too. Thus no Hungarian species may be allocated to the *Nymphaeacidites* genus.

Nymphaeapollenites minor n. sp.

Plate LXXXIX. Fig. 10—11., Plate XC. Fig. 1—3., 5—11.

Holotypus: Vkt. 1, sample 9., 109.4 \times 18.3, Plate XC. Fig. 1—3.

Locus typicus: Várkesző 1, 15.0—16.0 m

Stratum typicum: Upper Pannonian lignitic clay

Diagnosis: Rounded, zonisulcate, spiny pollen grains with thin exine. The echini are relatively thin and regularly spaced.

Dimensions: Holotype, diameter 21 μ , exine thickness under 1 μ , echinus length cca. 2 μ , base distance between 1—2.5 μ .

Differential diagnosis: *Nymphaeapollenites minor* n. sp. is smaller than *N. pannonicus* NAGY 1969, its exine is thinner, the echini are more regularly and densely spaced.

Few specimens were found, 17—25 μ , in the Lower Badenian — Szokolya 2, 49.5—83.1 m, in the Sarmatian — Hidas 53, 479.1—483.0 m, Cserhátszentiván 1, 136.0—161.0 m, in the Lower Pannonian — Tata (TVG) 26, 8.5—18.3 m, Megyaszó 1, 15.0—16.0 m, in the Upper Pannonian — Naszály 1, 14.9—93.4 m.

Nymphaeapollenites pannonicus NAGY 1969

Plate XC. Fig. 12—15.

1969. *Nymphaeapollenites pannonicus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 170. Pl. XLI. Fig. 5.

Specimens in moderate quantities were found in the Badenian — mine Hidasbánya, II. seam (holotype), Szokolya 3, 31.0—32.0 m, in the Lower Pannonian — Bogács 9/5, in the Upper Pannonian — Naszály 1, Megyaszó 1.

Ordo: Piperales
Familia: Chloranthaceae

Genus: *Chloranthacearumpollenites* NAGY 1969

1969. *Chloranthacearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 170.

Generotypus: *Chloranthacearumpollenites dubius* NAGY 1969

***Chloranthacearumpollenites dubius* NAGY 1969**

Plate XC. Fig. 16—17.

1969. *Chloranthacearumpollenites dubius* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 170—171. Pl. XLI. Fig. 6, 7, 12.

Three specimens, 21—27 μ , were found in the Badenian — Hidas 53, 669.2—669.8 m, 672.5—676.0 m, in the Sarmatian — Hidas 53, 534.0—537.0 m.

The morphology suggests the family *Chloranthaceae*, a subtropical-tropical group containing trees, shrubs and herbs (WILLIS 1966).

Ordo: Hamamelidales
Familia: Hamamelidaceae

Genus: *Liquidambarpollenites* RAATZ 1937

1937. *Liquidambar-pollenites* ... RAATZ, Abh. Preuss. Geol. L. A. N. F. H. 183. p. 17.

Generotypus: *Liquidambarpollenites stigmus* (R. POT. 1931) RAATZ 1937

***Liquidambarpollenites formosanaeformis* NAGY 1969**

Plate XC. Fig. 18—20.

1969. *Liquidambarpollenites formosanaeformis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 172—173. Pl. XLI. Fig. 9, 14.

Few specimens, 31—48 μ , were found in the Egerian — Fót 1, 294.0—352.5 m, in the Ottnangian — Tekeres 1, 870.0 m, in the Karpathian — Litke 17, 236.0—238.0 m, Komló 120, 178.0—178.8 m, Zengővárkony 59, 51.3—56.0 m, in the Badenian — Szilvásvár 1, 130.0 m, Alsóvadász 1, 723.5—730.4 m, Herend 53, 69.8—73.6 m, Szokolya 2, 115.3—118.3 m, in the Lower Pannonian — Megyaszó 1, 140.3—146.3 m, in the Upper Pannonian — Naszály 1, 18.0—106.0 m.

***Liquidambarpollenites orientalisformis* NAGY 1969**

Plate XC. Fig. 21—22., Plate XCI. Fig. 1.

1969. *Liquidambarpollenites orientalisformis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 171—172. Pl. XLII. Fig. 1—2.

Few specimens, 33—50 μ , were found, with a peak in the Karpathian — Zengővárkony 59, 56.0—73.0 m, Komló 120, 178.0—178.8 m, Magyaregregy area surface exposures, Tar-Fenyvespuszta area, sample 27; in the Lower Badenian — Szokolya 3, 45.6—59.9 m; in the Upper Pannonian — Hidas 53, 132.5—134.8 m.

***Liquidambarpollenites styracifluaeformis* NAGY 1969**

Plate XCI. Fig. 2—4.

1969. *Liquidambarpollenites styracifluaeformis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 172.

Moderate quantities of 27—50 μ pollen were found in the Egerian — Eger, Wind brickyard pit, layers "u", Fót 1, 266.0—355.0 m, in the Eggenburgian — Fót 1, 169.3—171.7 m, Pápa 2, 240.0—

242.0 m, in the Eggenburgian—Karpadian boundary — Pápa 2, 131.5—132.5 m, in the Karpadian — Zengővárkony 59, 51.3—73.0 m, Magyaregregy area surface exposures, Tekeres 1, 845.0—850.0 m, in the Lower Badenian — Szokolya 3, 71.2—74.5 m, Szokolya 2, 48.7—111.2 m, in the Sarmatian — Cserhátszentiván 1, 180.7—194.0 m, in the Lower Pannonian — Tata (TVG) 26, 10.5—14.6 m, in the Upper Pannonian — Naszály 1, 17.0—112.0 m.

Ordo: Fabales

Familia: Mimosaceae

Genus: *Acaciapollenites* MILDENHALL 1972

1972. *Acaciapollenites* gen. nov. — MILDENHALL, New Zeal. Journ. of Bot. Vol. 10. No. 3. p. 490.

Generotypus: *Acaciapollenites myriosporites* (COOKSON 1954) MILDENHALL 1972

***Acaciapollenites varpalotaënsis* (NAGY 1962) n. c.**

Plate XCI. Fig. 5.

1962. *Polyadopollenites varpalotaënsis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. VIII. Fasc. 1—2.

Two specimens, 90 μ , were found in the Eggenburgian — Várpalota 133, 208.3—214.3 m, in the Karpadian — Várpalota 133, 166.0—167.7 m.

L. RÁKOSI kindly reported one further found in a borehole at Várpalota.

Remark: I am not quite sure these pollens belong to the *Acacia*, rather suppose a relationship with *Mimosaceae* in a wider sense, with special regard to the studies of PH. GUINET (GUINET 1962, Pl. 26, 27, and GUINET 1969, Pl. III., V, VII, XIII, XV).

Familia: cf. Caesalpinaceae

Genus: *Tricolporopollenites* TH. et PF. 1953

Due to uncertainties of this family I allocated the following species to the artificial genus of THOMSON et PFLUG.

***Tricolporopollenites caesalpinaceaeformis* NAGY 1969**

Plate XCI. Fig. 6—7.

1969. *Tricolporopollenites caesalpinaceaeformis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 173—174. Pl. XLII. Fig. 6—7.

One 35 μ specimen was collected from the Ottnangian — Zengővárkony 45, 14.0—14.5 m. On morphological grounds I concluded it is related to the *Caesalpinaceae*.

Ordo: Myrtales

Subordo: Thymelacineae

Familia: Elaeagnaceae

Genus: *Slovakipollis* W. KR. 1962

1962. *Slovakipollis* n. fgen. — W. KR., Geol., Beih. Jhg 11. H. 3. pp. 272—273.

Generotypus: *Slovakipollis cechovici* (PACLT. 1958) W. KRUTZSCH 1962

Slovakipollis cechovici (PACL. 1958) W. KR. 1962

Plate XCI. Fig. 8—9.

1958. *Porocolpopollenites cechoviči* n. sp. — PACLT., Cas. min. geol. ročník III. 3. Praha. p. 298. Pl. 12. Fig. 5, 6.
1962. *Slovakipollis cechoviči* (PACL. 1958) n. c. — W. KR., Geol., Jhg. 11. H. 3. p. 273.

Rare specimens of 32—44 μ were found in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Badenian — Alsóvadász 1, 723.0—730.4 m, Szokolya 2, 49.5—50.3 m, in the Lower Pannonian — Megyaszó 1, 200.0—206.5 m, in the Upper Pannonian — Gérce 1, 73.6—74.0 m, Naszály 1, 104.0—106.0 m.

Slovakipollis elaeagnoides W. KR. 1962

Plate XCI. Fig. 10—11., 15.

1962. *Slovakipollis elaeagnoides* n. fsp. — W. KR., Geol., Jhg. 11. H. 3. p. 274. Taf. IV. B. 16—23.

A few specimens, 22—40 μ , were found in the Badenian — Szokolya 3, 71.2—74.5 m, Szokolya 2, 34.0—90.3 m, in the Sarmatian — Tengelic 2, 726.4—730.2 m, Cserhátszentiván 1, 116.0—183.7 m, in the Lower Pannonian — Tököl 1, 746.9—747.2 m.

Common in the Upper Pannonian — Naszály 1, 14.9—51.0 m, Kapolcs 2, 47.7 m, Várkesző 1, 36.0—37.0 m, Budapest-Kőbánya, surface exposure.

Slovakipollis mecsekensis NAGY 1969

Plate XCI. Fig. 12—14.

1969. *Slowakipollenites mecsekensis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 175. Pl. XLI. Fig. 15—17.

Some specimens, 20 and 28 μ , were found in the Karpathian — Zengővárkony 59, 67.5—70.5 m, in the Badenian — Szokolya 3, 48.6—50.6 m.

It is similar to the *Elaeagnus argenteus* PURSH pollen, but that is bigger, — 40 μ .

Slovakipollis neogenicus NAGY 1969

Plate XCI. Fig. 16—18.

1969. *Slowakipollenites neogenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 174—175. Pl. XLII. Fig. 3—4.

Some specimens, 22—24 μ , were found in the Eggenburgian — Budajenő 1, 518.2—523.0 m, in the Karpathian — Zengővárkony 59, 63.0—65.0 m. It is probably related to *Hippophaë*.

Subordo: Myrtinae

Familia: Alangiaceae

Genus: *Alangiopollis* (TRAVERSE 1955) W. KR. 1962

1955. *Alangium*, LAM. — TRAVERSE, Bur. Min. Rep. Invest. 5151 p. 64.

1962. *Alangiopollis* n. fgen. — W. KR., Geol., 11. 3. pp. 279—280.

Generotypus: *Alangiopollis barghoornianum* (TRAVERSE 1955) W. KR. 1962

***Alangiopollis barghoornianum* (TRAVERSE 1955) W. KR. 1962**

Plate XCII. Fig. 1—4.

1955. *Alangium barghoornianum* sp. nov. — TRAVERSE, Bur. Min. Rep. Invest., 5151, pp. 64, 66. Fig. 12., 102.

1962. *Alangiopollis* (al. *Alangium*) *barghoornianum* (TRAVERSE 1955) n. c. — W. KR., Geol., 11. 3. p. 280. T. VII. Fig. 1—9.

Few specimens, 57–94 μ , were found in the Eggenburgian — Várpalota 133, 208.5–214.2 m, in the Eggenburgian–Karpadian boundary — Fót 1, 131.5–132.5 m, in the Badenian — Fót 1, 120.0–121.0 m, Szokolya 11, 26.0 m, Hidas 53, 667.2–669.2 m, in the Pannonian — Alsóvadász 1, 155.8–163.1 m, Naszály 1, 17.0–18.0 m.

Remark: This species reminds best the recent *Alangium kurzii* CRAIB. published by REITSMA in 1970 (pp. 306–309). According to the distribution map it lives in southeastern China, Southeast-Asia and in the Eastern Archipelago.

Alangiopollis simplex NAGY 1969

Plate XCII. Fig. 5–6.

1969. *Alangiopollenites simplex* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 176–177. Pl. XLII. Fig. 9.

Very low numbers, 63–77 μ , were found in the Karpadian — Zengővárkony 59, 63.0–65.0 m, in the Lower Badenian — Szokolya 2, 71.9–72.4 m.

Remark: Morphologically it reminds *Alangium chinense* (REITSMA 1970, Pl. II. B).

Familia: Nyssaceae

Genus: *Nyssapollenites* THIERGART 1937

1937. *Nyssapollenites* — THIERGART, Jb. Preuss. Geol. L. A. Bd. 58. p. 322.

Generotypus: *Nyssapollenites pseudocruciatus* (R. POT. 1931) THIERGART 1937

Nyssapollenites contortus (PF. et TH. 1953) n. c.

Plate XCIII. Fig. 1–3.

1953. *Tricolporopollenites kruschi* (R. POT.) n. c. ssp. *contortus* n. sp. (PF. et TH.) — TH. et PF., Palaeontogr. 94. Abt. B, Lief. 1–4. p. 104. Taf. 13. Fig. 25–26, 34–46.*

1969. *Nyssapollenites kruschi* (R. POT. 1934) ssp. *contortus* (PF. et TH. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 409.

PFLUG et THOMSON described it in 1953 as subspecies of *kruschi*. The differences between it and the *analepticus* type are the following: *Nyssapollenites contortus* is

- 1) bigger,
- 2) of secondary pear-shape,
- 3) of markedly intrarugulate structure.

These characters seem to justify the rank of a species.

Some specimens, 25–40 μ , were found in the Egerian — Eger, Wind brickyard pit, layer, “u”, Fót 1, 201.0–205.0 m, in the Karpadian — Zengővárkony 59, 63.0–65.0 m, in the Badenian — Hidas mine, Szokolya 2, 91.1–115.3 m, Szokolya 11, 26.0 m. Some specimens were found in younger layers; in the Sarmatian — Cserhátszentiván 1, 163.0–165.0 m, Lower Pannonian — Megyaszó 1, 52.0–54.5/2 m, Upper Pannonian — Naszály 1, 18.0–37.2 m. The species had its acme in the Badenian.

Nyssapollenites pseudocruciatus (R. POT. 1931) THIERGART 1937

Plate XCIII. Fig. 4–6.

1931. *Pollenites pseudocruciatus* n. sp. — R. POTONIÉ, Braunkohle, H. 16. p. 328. T. 1. Fig. 10.

1934. *Fagucene? Nyssaceae?? Pollenites pseudocruciatus* R. POT. — R. POT., Arb. Paläont. 4. p. 61. T. 2. Fig. 30.

1937. *Nyssa-pollenites pseudocruciatus* R. POT. — THIERG., Jb. Preuss. Geol. L. A. Bd. 38. pp. 322–323. T. 25. Fig. 32–34. T. 26. Fig. 1.

1958. *Nyssa kruschi* (R. POT.) n. c. — NAGY, MÁFI Évk. 47. 1. p. 65–66.

* The holotypus was fixed in this study (TH. et PF. 1953, Pl. 13. Fig. 37.).

A few specimens, 18–27 μ , were found in polar and lateral position, mainly in coal-bearing samples. In the Egerian — Eger, Wind brickyard borehole, 9.2–9.7 m, Felsőpetény, sample 1, in the Ottnangian — Zengővárkony 45, 16.0–16.4 m, Püspökatvan 4, 260.0–263.0 m, in the Karpathian — Fót 1, 131.5–132.5 m, Komló 120, 178.0–178.8 m, Zengővárkony 59, 63.0–65.0 m, in the Badenian — Hidas 53, 572.0–575.0 m, 667.2–669.0 m, 761.0–763.3 m, Szokolya 2, 72.7–104.7 m, in the Sarmatian — Hidas 53, 479.1–482.0 m, Cserhátszentiván 1, 132.0–134.0 m, in the Lower Pannonian — Bogács 9/5, 151.0–151.6 m, in the Upper Pannonian — Naszály 1, 26.7–29.7 m, mine Petőfibánya, shaft.

Familia: Myrtaceae

Genus: *Myrtacidites* COOKSON et PIKE 1954

1954. *Myrtacidites* n. spt. — COOKS. et PIKE, Austr. Journ. Bot. Vol. 2. No. 2. p. 204.

1960. *Myrtacidites* (COOKS. et PIKE 1954) emend. — R. POT., Synopsis III. p. 120.

COOKSON et PIKE gave the generic diagnosis; they described some species and their formal varieties in 1954 but gave no holotype (it was not obligatory according to the Code until 1958. 01. 01). In 1960 R. POTONIÉ translated the diagnosis to German in his Synopsis III. and depicted one species as holotype but did not emend the genus.

Generotypus: *Myrtacidites mesonesus* COOKSON et PIKE 1954

Myrtacidites mesonesus COOKSON et PIKE 1954

Plate XCIII. Fig. 7–11.

1954. *Myrtacidites mesonesus* n. spm. — COOKS. et PIKE, Austr. Journ. Bot. Vol. 2. No. 2. pp. 205–206. Pl. I. Fig. 32–36.

Two 14 μ specimens were found in the Lower Badenian — Szokolya 2, 37.0–37.9 m, in the Lower Pannonian — Tihany 62, 161.4–161.7 m.

Myrtacidites myrtiformis SIMONCSICS 1964

Plate XCIII. Fig. 12–13.

1964. *Myrtacidites myrtiformis* n. sp. — SIMONCSICS, Fortschr. Geol. Rheinland u. Westf. 12. p. 103. Taf. 3. Fig. 17–18.

Some specimens, 19–21 μ , were found in the Egerian — Fót 1, 220.8–238.0 m, in the Ottnangian — Nagyörsbő 1, 911.0 m.

SIMONCSICS described the species from the Salgótarján Brown Coal Formation and found it in few specimens on more other places.

Familia: Onagraceae

Genus: *Jussiaepollenites* (TRAVERSE 1955) NAGY 1969

1955. Genus: *Jussiaea* LINN. — TRAVERSE, Bur. Min. Rep. 5151. p. 64.

1969. *Jussiaepollenites* (TRAVERSE 1955) n. c. — NAGY, MÁFI Évk. 52. 2. p. 177.

Generotypus: *Jussiaepollenites champlainensis* (TRAVERSE 1955) NAGY 1969

Jussiaepollenites champlainensis (TRAVERSE 1955) NAGY 1969

Plate XCIII. Fig. 14–17.

1955. *Jussiaea champlainensis* sp. nov. — TRAVERSE, Bur. Min. Rep. 5151. pp. 66–67.

1969. *Jussiaepollenites champlainensis* (TRAVERSE 1955) n. c. — NAGY, MÁFI Évk. 52. 2. pp. 177–178.

Some specimens, 34–63 μ , were found in the Eggenburgian — Szászvár 8, 433.6–433.8 m, in the Ottnangian — Nagyörbő 1, 908.0–914.0 m, in the Badenian — mine Hidasbánya II. seam, sample 6, 53, in the Lower Pannonian — Tata (TVG) 26, 15.0–18.0 m, Tata (TVG) 27, 8.5–18.3 m, in the Upper Pannonian — Vásárosnamény 1, 787.0–787.9 m, Budapest-Kőbánya, profil N° I.

Remark: The species occurred mainly in coal-bearing facies. The species of the recent genus live accordingly to WILLIS (1966, p. 673) in aquatic or marshy condition.

Familia: Trapaceae

Genus: *Sporotrapoidites* KLAUS 1954

1954. *Sporotrapoidites* n. g. — KLAUS, Bot. Not. H. 2. p. 114.

Generotypus: *Sporotrapoidites illingensis* KL. 1954

Sporotrapoidites erdtmani (NAGY 1979) n. c.

Plate XCIII. Fig. 18–20., Plate XCIV. Fig. 1–8.

1979. *Goerboepollenites erdtmanii* sp. nov. — NAGY, Grana, 18. p. 185. Fig. 3. E–N. Fig. 4. A–D.

Pollens occurring in numbers, sometimes dominantly, in samples of sweet-water origin in the Karpathian, size 36–43 μ . It is very abundant in Nagyörbő 1, 914.0 m. Some specimens occur also in the Badenian.

Sporotrapoidites hungaricus NAGY 1969

Plate XCV. Fig. 1–2.

1969. *Sporotrapoidites hungaricus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 178.

Some specimens, 35–49 μ , occurred in the Karpathian — Zengővárkony 59, 56.0–60.9 m, in the Upper Pannonian — Naszály 1, 60.0–66.0 m.

Familia: Haloragaceae

Genus: *Myriophyllumpollenites* NAGY 1969 emend.

1969. *Myriophyllumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 178.

Diagnosis emendation: Roundish, suboblate, aspidate pollen grains with broad or narrow margin with 3 or 4 or more pores. The surface is smooth, reticulate or rugulate.

Remark: The genus *Myriophyllumpollenites* differs from *Haloragacites* COUPER 1953 in showing no blotches.

COUPER (1953, p. 41) described the *H. trioratus* from the Lower/Middle Oligocene of Australia. From the Upper Miocene onwards he classifies *Myriophyllum* specimens as belonging to the recent genus.

Generotypus: *Myriophyllumpollenites quadratus* NAGY 1969

Myriophyllumpollenites balatonensis n. sp.

Plate XCV. Fig. 3–6.

Holotypus: Bk. I. sample N° 5., slide N° 1., 116.4×38.1, Plate XCV. Fig. 3–4.

Locus typicus: Balatonkenese 1, 65.9–66.4 m

Stratum typicum: Lower Pannonian; silty clay-marl

Diagnosis: Roundish, characteristically aspidate pollens with more pores. The exine is relatively thick, the surface is smooth. The sexine is thinner than the nexine, which is coarsely rugulate.

Dimensions: Holotype 26 μ in size. Exine thickness 1.5–2 μ , at the pore 3 μ . Number of pores 6.

Differential diagnosis: *Myriophyllumpollenites balatonensis* n. sp. differs from *M. quadratus* NAGY 1969 by its intrarugulate surface, from *M. minimus* n. sp. by its thicker exine and ornamentation.

Remark: On a specimen from Bk. I, 62.4–63.0 m, the pore-thickening is well-measurable on the pore facing (see Plate XCV. Fig. 5–6.).

Found in some specimens, 23–26 μ , in the Lower Pannonian — Nógrádszakál 2, 91.4–93.0 m, Balatonkenese I, in the Upper Pannonian — Naszály 1, 18.0–104.6 m.

Myriophyllumpollenites minimus n. sp.

Plate XCV. Fig. 7–13.

Holotypus: Eger, Wind brickyard pit, layer "u", sample N^o 11., slide N^o 1., 82.3×23.0, Plate XCV. Fig. 7–9.

Locus typicus: Eger, Wind brickyard pit, layer "u"

Stratum typicum: Egerian; sandy clay

Diagnosis: Small pollens with thin exine. The surface is smooth, finely intragranulate. The pollens are aspidate with more pores.

Dimensions: Holotype 23 μ . The exine 1 μ . The aspidate thickening cca. 2 μ .

Differential diagnosis: *Myriophyllumpollenites minimus* n. sp. differs by its distinctly thin wall, small size and surface ornamentation from *M. balatonensis* n. sp. and *M. quadratus* NAGY 1969.

Remark: Until now variations with 4–5–6 pores were found.

Some 18–25 μ specimens were found in the Egerian (most frequent here), Eger, Wind brickyard pit layer "u", samples 8, 11, 13. Further occurrences contain less numerous pollens in the Eggenburgian — Püspökhatvan 4, 299.0–302.0 m, in the Ottnangian — Nagyörbő 1, 903.2–908.5 m, in the Lower Badenian — Szokolya 2, 100.0–101.0 m, in the Lower Pannonian — Beremend 9, 76.0 m. The last one was probably redeposited.

Myriophyllumpollenites quadratus NAGY 1969

Plate XCV. Fig. 14–17.

1969. *Myriophyllumpollenites quadratus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 179. Pl. XLII. Fig. 10.

Moderate numbers, size 23–39 μ , were found in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 301.0–358.0 m, in the Eggenburgian — Püspökhatvan 4, 299.0–302.0 m, in the Lower Badenian — Nógrádszakál 2, 91.4–93.0 m, Szokolya 2, 43.1–101.0 m, in the Sarmatian — Cserhátszentiván 1, 139.0–196.0 m, in the Lower Pannonian — Tata (TVG) 26, 15.0–18.0 m, 31.0–36.2 m, Beremend 9, 76.0 m, in the Upper Pannonian — Hidas 53, 147.5–148.5 m.

Remark: Since the four-pored holotype was described some five and even six-pored pollens were found along with the standard ones.

Ordo: Terebinthales

Subordo: Rutinae

Familia: Rutaceae

Genus: *Rutacearumpollenites* NAGY 1969

1969. *Rutacearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 179.

Generotypus: *Rutacearumpollenites komloënsis* NAGY 1969

Rutacearumpollenites komloënsis NAGY 1969

Plate XCV. Fig. 18–20.

1969. *Rutacearumpollenites komloënsis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 179–180.

Pollens of 19–28 μ were found in few specimens in the Karpathian — Zengővárkony 59, 79.0–81.0 m, Komló 120, 178.0–178.8 m, in the Lower Badenian — Szokolya 2, 39.1–91.1 m, in the

Middle Badenian — mine Hidasbánya seam II. sample 53. The species had its prime in the Badenian.

Remark: Beside the tetracolporate form also some tricolporate ones were found.

Familia: Polygalaceae

Genus: *Polygalacidites* SAH et DUTTA 1966

1966. *Polygalacidites* gen. nov. — SAH et DUTTA, The Palaeobotanist, Vol. 15. Nos. 1—2. p. 81.

1969. *Polygalacearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 180.

Generotypus: *Polygalacidites clarus* SAH et DUTTA 1966

***Polygalacidites miocaenicus* (NAGY 1969) n. c.**

Plate XCV. Fig. 21—22.

1969. *Polygalacearumpollenites miocaenicus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 180. Pl. XLIII. Fig. 14.

Polycolporate, 19—28 μ , pollens in moderate quantities were found in the Ottnangian — Puskásfalú VI. 25.0—27.0 m, Alsóvadász 1, 1029.0—1034.6 m, in the Ottnangian—Karthian boundary — Zengővárkony 45, 13.2—13.7 m, in the Badenian — Nagyörzsöny 14, 770.0 m.

Familia: Anacardiaceae

Genus: *Rhoipites* WODEHOUSE 1933

1933. *Rhoipites* gen. nov. — WODEHOUSE, Bull. Torr. Bot. Club., Vol. 60. No 7. p. 513.

Generotypus: *Rhoipites bradleyi* WODEHOUSE 1933

***Rhoipites pseudocingulum* (R. POT. 1931) R. POT. 1960**

Plate XCV. Fig. 23—25.

1931. *Pollenites pseudocingulum* n. sp. — R. POT., Braunkohle H. 16. T. I. Fig. 3—4.

1934. *Pollenites pseudocingulum* R. POT. — R. POT., Arb. Inst. Paläobot. 4. pp. 74—75. T. 3. Fig. 27, 28, 31, 32, 34, 36.

1953. *Tricolporopollenites pseudocingulum* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. 1—4. p. 99 (pro parte) T. 12. Fig. 103, 106—107.

1960. *Rhoipites (Pollenites) pseudocingulum* (R. POT.) 1931 n. c. — R. POT., Synopsis III. p. 101. (Holotypus T. 6. Fig. 114.)

A species, 21—48 μ , occurring in moderate quantities, found from the Egerian up to the Pannonian, but mostly in the Egerian and Lower Badenian.

Remark: R. POTONIÉ classified and illustrated the species in 1931 as *Pollenites pseudocingulum*. Beside the two figures on the basic species numerous other species were shown, partly as subspecies, partly as species. These names were included in 1934 (p. 74) in *Pollenites pseudocingulum*. The basic species was described, with reference to the figures of 1931 and the forms considered to be subspecies were also described. In this study one finds the holotype among the illustrations (Pl. 6. Fig. 114).

THOMSON et PFLUG allocated the species in 1953 to an artificial morphological genus. In this work the authors mentioned specimens of 25—40 μ , instead of 20—32 μ , as given by R. POTONIÉ (1934) but among the figures only the compressed ones may be taken as such, on the basis of the original of R. POTONIÉ. The figures commented as *Tricolporopollenites pseudocingulum* are rather *Pollenites dolium* R. POT.

Rhoipites sp.

Plate XCV. Fig. 26—27.

Pollens of 20—42 μ diameter, allegedly *Rhus*, found in the Upper Pannonian — mine Petőfibanya, lower shaft (NAGY 1958, Pl. XIX. Fig. 16—21), in the Lower Pannonian — Tihany 62, 52.7—55.4 m, and in the Egerian — Tata (TVG) 27, 72.8—74.7 m.

Remark: As the striate-reticulate sculpture, characteristic for *Rhuspollenites* THIELE-PFEIFFER 1980 does not appear on these fossil specimens, they could not be allocated to this, otherwise probable, genus.

Familia: Aceraceae

Genus: *Aceripollenites* NAGY 1969

1969. *Aceripollenites* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 181.

Generotypus: *Aceripollenites reticulatus* NAGY 1969

Occurrences of *Acer* pollens in the Miocene seem highly reasonable, as many macro-fossils of the genus *Acer*, are known. For all these, *Aceripollenites* were rare in our samples.

The descriptions and figures of the numerous *Acer* pollens in the literature, are not easily comparable with the Hungarian forms.

THIELE-PFEIFFER (1980, p. 145) applied the generic name *Aceripollenites* NAGY. They took the generotype however, for a synonym of *Tricolporopollenites striatus* PFLUG 1959 from the Eocene of Iceland, transferring it into *Aceripollenites*. This would mean the end of this genus.

Regarding the synonym list of THIELE-PFEIFFER one may state the following: The pollens described by POKROVSKAIA in 1956 "Oligocene and Miocene Atlas" as *Acer* sp. are not identifiable on the basis of description and illustration with *Aceripollenites* species — as made by THIELE-PFEIFFER. Even SONTAG's illustrations, magnified by 500 \times (1966, Pl. 64. Fig. 1) do not allow to identify or differentiate the species.

The size of a specimen, marked in 1969 by SIMONCSICS as *Tricolporopollenites striatus* PFLUG 1959, complies with *Acer* sp. Some thin striae but without showing any further features are discernible, on the illustration.

A figure from TREVISAN (1967, p. 33, Pl. XXI. Fig. 6) proved undisputably the striate ornamentation of the pollen which is, however, different in position from the German species. The exine is thinner, the ornamentation does not form a reticulum.

STAHURSKA, SADOVSKA et DIYJOR (1973) published a species as *Acer* sp. from the Miocene, but the polarly situated specimen does not allow exact identification of the morphological features.

THIELE-PFEIFFER showed (1980, T. 11. Fig. 22—25) a distinctly more finely ornamented specimen than the *Aceripollenites reticulatus* holotype. This difference in ornamentation, however, cannot be regarded as a specific distinction and so THIELE-PFEIFFER's specimen (Fig. 22—24) may be included in the species *Aceripollenites reticulatus* NAGY 1969.

Aceripollenites reticulatus NAGY 1969

Plate XCV. Fig. 28—31.

1969. *Aceripollenites reticulatus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 182. Pl. XLIII. Fig. 10—11.

Found in few specimens 27—44 μ in the Egerian — Eger, Wind brickyard pit, layer "u", in the Eggenburgian — Várpalota 133, 208.3—214.2 m, in the Karpathian — Hidas 53, 755.0—757.0 m, Zengővárkony 59, 65.0—67.0 m (holotype), in the Sarmatian — Tengelic 2, 722.7—723.1 m.

The differential diagnosis was left out from the description of the holotype (NAGY 1969): "*Aceripollenites reticulatus* NAGY 1969 is well separable from *A. rotundus* NAGY 1969 by its narrower lobes and fine reticulate-striate structure".

Aceripollenites rotundus NAGY 1969

Plate XCVI. Fig. 1—4.

1969. *Aceripollenites rotundus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 182. Pl. XLIII. Fig. 10—11.

Specimens of 27—52 μ were found in the Eggenburgian — Várpalota 133, 208.3—214.2 m, in the Ottnangian — Zengővárkony 45, 16.0—16.4 m, in the Karpathian — Zengővárkony 59, 51.3—56.0 m, Mecseknádasd, Magyaregregy surface exposures, in the Badenian — Hidas mine, II. seam, sample 1, Szokolya 3, 50.6—51.6 m, in the Sarmatian — Cserhátszentiván 1, 188.0—190.0 m, in the Lower Pannonian — Tata 26 (mapping borehole), 35.0—39.0 m, in the Upper Pannonian — Kapolcs 2, 41.0—42.3 m.

Remark: The differential diagnosis was missing in the original description (NAGY 1969). It is given here: “*Aceripollenites rotundus* NAGY 1969 differs from *A. reticulatus* NAGY 1969 by its broader, rounded lobes. The tiny granula of the ornaments, due to their density, are situated reticulum-like without forming, however, striate rows.”

Subordo: Sapindineae

Familia: Balsaminaceae

Genus: *Hydrocerapollis* NAGY 1962

1962. *Hydrocerapollis* n. g. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. VIII. Fasc. 1—2. p. 158.

Generotypus: *Hydrocerapollis miocaenicus* NAGY 1962

Hydrocerapollis miocaenicus NAGY 1962

Plate XCVI. Fig. 5—6.

1962. *Hydrocerapollis miocaenicus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. VIII. Fasc. 1—2. pp. 158—159.

One specimen, 41 μ , was found in the Karpathian — Várpalota 133, 161.0—165.0 m.

Ordo: Celastrales

Familia: Aquifoliaceae

Genus: *Ilexpollenites* (THIERGART 1937) R. POTONIÉ 1960

1937. *Ilex-pollenites* THIERG., Jb. Preuss. Geol. L. A., B. 58. p. 321.

Generotypus: *Ilexpollenites iliacus* (R. POT. 1931) R. POT. 1960

Ilexpollenites iliacus (R. POT. 1931) R. POT. 1960

Plate XCVI. Fig. 7—13.

1931. *Pollenites iliacus* n. sp. — R. POT., Braunkohle, H. 27. p. 556. Fig. 5.

1934. *Pollenites iliacus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 72. T. 3. Fig. 17, 22—24.

1935. *Ilex-tipus* — RUDOLPH, Beih. Bot. Centrbl. 54. Abt. B. T. V. Fig. 1—2.

1937. *Ilex-pollenites iliacus* R. POT. — THIERG., Jb. Preuss. Geol. L. A. 58. p. 321. T. 25. Fig. 30.

1950. *Ilex-poll. iliacus* R. POT. — POTONIÉ, THOMSON, THIERGART, Geol. Jb. 65. p. 58. T. B. Fig. 45.

1951. *Ilicoipollenites iliacus* R. POT. — R. POT., Palaeontogr. 91. Abt. B. T. XXI. Fig. 109—112.

1953. *Tricolporopollenites iliacus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. p. 106. T. 14. Fig. 43—60.

1958. *Ilex pollen* (pro parte) — NAGY, MÁFI Évk. 47. 1. p. 71—72.

1960. *Ilexpollenites iliacus* (R. POT. 1934) THIERGART 1937 — R. POT., Synopsis III. p. 99.

Forms of 21—39 μ , found in few specimens in the Egerian — Fót 1, 352.5—354.0 m, 349.5—351.0 m, 241.6—243.2 m, 236.0—237.0 m, in the Eggenburgian — Szászvár 8, 433.6—433.8 m, in

the Karpathian — Zengővárkony 59, 65.0—67.0 m, in the Badenian — Tar 34, 530.0—533.0 m, Hidas mine II. seam, sample 1, Szokolya 2, 47.0—82.3 m, in the Sarmatian — Hidas 53, 534.0—546.5 m, Cserhátszentiván 1, 163.0—165.0 m, in the Lower Pannonian — Szederkény 8303, 14.8—15.9 m, in the Upper Pannonian — Hidas 53, 298.0—299.1 m, Naszály 1, 14.9—54.3 m.

Remark: The species name was given by R. POTONIE in 1931, the description in 1934 and the later description may be accepted in 1960 as generic diagnosis for *Ilexpollenites* by THIERGART, as he gave in 1937 no generic diagnosis or generotype and the name is not monotypic.

Ilexpollenites margaritatus (R. POT. 1931) R. POT. 1960

Plate XCVI. Fig. 14—16.

1931. *Pollenites margaritatus* n. sp. — R. POT., Braunkohle, H. 16. p. 328. T. 1. Fig. 32—33.
1934. *Pollenites margaritatus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 73. T. 3. Fig. 25, T. 6. Fig. 10.
1951. *Ilicoipollenites margaritatus* R. POT. — R. POT. Palaeontogr. 91. Abt. B. (pro parte), T. 21. Fig. 113.
1953. *Tricolporopollenites margaritatus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. (pro parte) p. 107. T. 14. Fig. 71—73.
1958. *Ilex pollen* (pro parte) — NAGY, MÁFI Évk. 47. 1. p. 71—72.
1960. *Ilexpollenites* (*Pollenites*) *margaritatus* (R. POT. 1934) RAATZ 1937, p. 25. — R. POT., Synopsis III. p. 99.

Occurring steadily in a few specimens of, 22—35 μ , from the Egerian to the Upper Pannonian, with the peak in the Lower Badenian.

Remark: R. POTONIE illustrated and denominated (by signs) the species in 1931, described it in 1934 and attached it in 1960 to the generic name *Ilexpollenites*. In 1953 it is included even *I. propinquus* by THOMSON et PFLUG into the *I. margaritatus* although the latter has been a valid species since 1934.

Ilexpollenites propinquus (R. POT. 1934) R. POT. 1960

Plate XCVI. Fig. 17—19.

1934. *Pollenites propinquus* n. sp. — R. POT., Arb. Inst. Paläobot. 4. p. 74. T. 3. 33.
1934. *Pollenites propinquus* R. POT. — R. POT. et VENITZ, Arb. Inst. Paläobot. 5. p. 35.
1937. *Ilex? -pollenites propinquus* R. POT. — THIERG., Jb. Preuss. Geol. L. A. 58. p. 322. T. 25. Fig. 31.
1960. *Ilexpollenites* (al. *Pollenites*) *propinquus* (R. POT. 1934) n. c. — R. POT., Synopsis III. p. 100.

16—23 μ pollens, occurring steadily though in low numbers in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 228.0—260.0 m, in the Eggenburgian — Pápa 2, 211.0—212.0 m, Ipolytarnóc—Mihálygerges urface exposures, Szászvár 8, 434.3—434.5 m, in the Ottnangian — Tekeres 1, 874.5—911.4 m, Szilvásvárad 1, 419.4 m, in the Karpathian — Zengővárkony 45, 13.6—13.7 m, Komló 120, 367.0—374.4 m, Zengővárkony 59, 71.4—73.0 m, in the Badenian — Hidas 88, 306.0 m, Hidas 53, 558.0—761.0 m, Szokolya 3, 51.6—52.6 m, in the Sarmatian — Hidas 53, 479.1—482.0 m, in the Lower Pannonian — Bogács 9/5, 151.0—151.5 m, in the Upper Pannonian — Hidas 53, 134.8—135.5 m, Tihany 62, 161.4—161.7 m.

Familia: Siphonodontaceae

Genus: *Siphonodontipollenites* NAGY 1969

1969. *Siphonodontipollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 184.

Generotypus: *Siphonodontipollenites hungaricus* NAGY 1969

Siphonodontipollenites hungaricus NAGY 1969

Plate XCVI. Fig. 20—21.

1969. *Siphonodontipollenites hungaricus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 184. Pl. XLII. Fig. 11—12.

17—19 μ pollens were found in the Karpathian — Tököl 1, 823.8—824.3 m, in the Lower Badenian — Hidas 53, 757.0—759.0 m.

Familia: Incertae sedis

Genus: *Spinuliferoideaepollenites* NAGY 1969

1969. *Spinuliferoideaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. pp. 184—185.

Generotypus: *Spinuliferoideaepollenites zolyomii* NAGY 1969

***Spinuliferoideaepollenites zolyomii* NAGY 1969**

Plate XCVII. Fig. 1—3.

1969. *Spinuliferoideaepollenites zolyomii* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 185.

A few specimens, 26—32 μ , in the Ottnangian — Pusztakisfalu VI. 10.5—12.5 m, Lak 1, 367.0—367.7 m, in the Lower Badenian — Nagyörbő 1, 862.0 m, Szokolya 3, 41.0—42.5 m. On the last one the spinules are less strong with foramina in between.

Familia: Cyrillaceae

Genus: *Cyrillaceaeepollenites* (MÜRR. et PFLUG 1951) R. POTONIÉ 1960

1951. *Cyrillaceae-pollenites* — MÜRR. et PFLUG, Notizbl. Hess. L. A. Bodenf. VI. 2. p. 90.

1960. *Cyrillaceaeepollenites* (MÜRR. et PFLUG 1951) emend. — R. POT., Synopsis III. p. 102.

The generic name was mentioned first in 1951 but it became valid only by 1960 when a diagnosis was supplied by R. POTONIÉ together with a type (*Pollenites megaexactus*, illustrated in 1931 from the Miocene).

Generotypus: *Cyrillaceaeepollenites megaexactus* (MÜRR. et PF. 1951) R. POT. 1960.

***Cyrillaceaeepollenites exactus* (R. POT. 1931) R. POT. 1960**

Plate XCVII. Fig. 4—6.

1931. *Pollenites exactus* n. sp. — R. POT., Sitzgber. Ges. Naturf. Fr. Berlin, Nr. 1—3. p. 26. Taf. 1. V49b².

1934. *Pollenites exactus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 60—61. Taf. 2. Fig. 16, 31, 35. Taf. 6. Fig. 22.

1953. *Tricolporopollenites megaexactus* (R. POT.) n. c. ssp. *exactus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. Lief. 1—4. p. 101.

1960. *Cyrillaceaeepollenites* (al. *Pollenites*) *exactus* (R. POT. 1931) n. c. — R. POT., Synopsis III. p. 102.

It is sized 7—17 μ and occurs mainly in the Egerian together with *C. megaexactus*. The youngest occurrence is in the Badenian where it is already rare.

***Cyrillaceaeepollenites megaexactus* (R. POT. 1931) R. POT. 1960**

Plate XCVII. Fig. 7—10.

1931. *Pollenites megaexactus* n. sp. — R. POT., Sitzgber. Ges. Natf. Fr. Berlin, Nr. 1—3. p. 26. Taf. 1. V42b.

1950. *Poll. cingulum brühlensis* n. spm. — THOMSON, in POT. THOMS. et THIERS., Geol. Jahrb. 65. p. 56. T. B. Fig. 31—33.

1951. *Cyrillaceae-pollenites cingulum brühlensis* TH. — MÜRR. et PFLUG, Notizbl. Hess. L. A. VI. 2. T. 6. Fig. 76—78.

1953. *Tricolporopollenites megaexactus* (R. POT.) n. c. ssp. *brühlensis* (THOMS.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. Lief. 1—4. pp. 100—101.

1960. *Cyrillaceaeepollenites* (al. *Pollenites*) *megaexactus* (R. POT. 1931) n. c. — R. POT., Synopsis III. p. 102.

Specimens of 16—29 μ (mainly 17—20 μ) were found. The peak was in the Egerian and Lower Badenian, reflecting warmer episodes of the Miocene. It occurs sparsely also in other stages, up to the Sarmatian.

Ordo: Rhamnales
Familia: Rhamnaceae

Genus: Rhamnaceapollenites THIELE-PFEIFFER 1980

1980. *Rhamnaceapollenites* n. gen. — THIELE-PFEIFFER, *Palaeontogr. Abt. B.* 174. Lief. 4–6. p. 134.

Generotypus: Rhamnaceapollenites triquetrus THIELE-PFEIFFER 1980

Rhamnaceapollenites triquetrus THIELE-PFEIFFER 1980

Plate XCVII. Fig. 11–14.

1980. *Rhamnaceapollenites triquetrus* n. sp. — THIELE-PFEIFFER, *Palaeontogr. Abt. B. Bd.* 174, 4–6. p. 134. T. 9. Fig. 13–15.

One 22 μ specimen was found in the Egerian — Felsőpetény, mine cross-cut, sample 1.

Ordo: Cornales
Familia: Araliaceae

Genus: Araliaceoipollenites R. POT. 1951 ex R. POT. 1960

1951. *Araliaceoipollenites* — nomen nudum — R. POT., *Palaeontogr.* 91. Abt. B. Lief. 5–6. p. 147–148, 151.

1960. *Araliaceoipollenites* R. POT. 1951 — R. POT., *Synopsis III.* p. 97.

R. POTONIÉ used the name *Araliaceoipollenites* in 1951 but he gave a generic diagnosis and designed a type only in 1960 (*Synopsis III.*, p. 97. Pl. 6. Fig. 107).

Generotypus: Araliaceoipollenites euphorii (R. POT. 1931) R. POT. 1951

Araliaceoipollenites edmundi (R. POT. 1931) R. POT. 1951

Plate XCVII. Fig. 15–17.

1931. *Pollenites edmundi* n. sp. — R. POT., *Sitzungsber. Naturf. Fr. Nr.* 1–3. p. 26. T. 1. V53e.

1934. *Pollenites edmundi* R. POT. — R. POT., *Arb. Inst. Paläobot.* 4. p. 66.

1951. *Araliaceoipollenites edmundi* R. POT. — R. POT., *Palaeontogr.* 91. B. p. 137–138, 142.

1953. *Tricolporopollenites edmundi* (R. POT.) n. c. — TH. et PF., *Palaeontogr.* 94. Abt. B. Lief. 1–4. pp. 101–102.

Pollens of 37–46 μ were found in low numbers in the Egerian — Eger, Wind brickyard pit, layers “u” and “x₂”, Fót 1, 196.4–349.5 m, in the Eggenburgian — Fót 1, 160.0–162.0 m, in the Karpathian — Várpalota 133, 160.0–167.0 m, in the Lower Badenian — Szokolya 2, 51.1–118.3 m, Nagyörzsöny 14, 770.0 m, Tar-Fenyvespuszta area, sample 27, Hidas 53, 600.5–763.3 m, in the Sarmatian — Cserhátszentiván 1, 190.0–192.0 m.

According to MAMCZAR (1962 p. 114) it is supposedly related with the genus *Aralia*.

Araliaceoipollenites edmundi (R. POT. 1931) R. POT. 1960 f. *reticulatus* NAGY 1969

Plate XCVII. Fig. 18–20.

1969. *Araliaceoipollenites edmundi* (R. POT. 1931) R. POT. 1960. f. *reticulatus* n. f. — NAGY, MÁFI Évk. 52. 2. p. 188. Pl. XLIV. Fig. 6–8.

Specimens of 31–45 μ were found in low numbers in the Eggenburgian — Szászvár 8, 433.8–434.1 m, in the Ottományian — Pusztakisfalu VI. 22.5–25.0 m, in the Karpathian — Zengővárkony 59, 56.0–70.5 m, Komló 120, 178.0–178.8 m, in the Lower Badenian — Szokolya 2, 93.0–95.0 m, in the Lower Pannonian — Szirma 2, 51.0–52.0 m.

Remark: The form is relatively narrow with a length–width ratio of 1.4–2.1. The main feature is the relatively thick-walled reticulum.

It is probably related to the *Araliaceae*.

Araliaceopollenites euphorii (R. POT. 1931) R. POT. 1951

Plate XCVII. Fig. 23–25.

1931. *Pollenites euphorii* n. sp. — R. POT., Braunkohle, H. 16. p. 328. T. 1. Fig. 12, 28.
1934. *Pollenites euphorii* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 64. T. 2. Fig. 33, 39.
1951. *Araliaceopollenites euphorii* R. POT. — R. POT., Palaeontogr. 91. Abt. B. 5–6. p. 147–148, 151. T. 139–141.
1960. *Araliaceopollenites euphorii* (R. POT. 1931) R. POT. 1951 — R. POTONIÉ, Synopsis III. p. 97.

Specimens of 23–40 μ were found in variable quantities in the Egerian (frequent) — Fót 1, Eger, Wind brickyard pit, in the Eggenburgian (moderately common) — Fót 1, Püspökhátvan 4, in the Karpathian — Fót 1, Zengővárkony 59, Tekeres 1, Komló 120, Nógrádszakál 2, in the Badenian — mine Hidasbánya, II. seam, Hidas 89, Zengővárkony 59, Szokolya 2, in the Sarmatian — Cserhátszentiván 1.

With regards to its natural affinities it is considered generally to belong to the *Araliaceae* family (see MAMCZAR 1960, 1962, THOMSON et PFLUG 1953, R. POTONIÉ 1960, THIELE-PFEIFFER 1980, et al.).

Araliaceopollenites reticuloides THIELE-PFEIFFER 1980

Plate XCVII. Fig. 26–29.

1966. *Tricolporopollenites* sp. reticulate Form C, subsp. 1. et 2. — SONTAG, p. 39. Taf. 60. Fig. 4a, b, Taf. 61. Fig. 1.
1960. *Araliaceopollenites reticuloides* n. sp. — THIELE-PFEIFFER, Palaeontogr. 174, Abt. B. 4–6. pp. 164–165. T. 15, 26–34.

A few specimens, 26–37 μ , were found in the Egerian — Fót 1, in the Eggenburgian — Fót 1, Budajenő 2. THIELE-PFEIFFER described this characteristically stout species with strong reticulum from the Miocene. It may be compared with the Karpathian or Badenian flores of the Parathetyan realm (p. 211).

She supposed it belongs to the *Araliaceae*, suggesting the genus *Hedera*, living at present in the Palearctic. She added its similarity to *Schefflera hypoleuca* (India) and *Aralia edulis* SIEB. et ZUCC. (Japan) on pollen morphology (see above).

Familia: Cornaceae

Genus: *Tricolporopollenites* TH. et PF. 1953.

Tricolporopollenites edmundi (R. POT. 1931) TH. et PF. 1953. f. major NAGY 1969

Plate XCVIII. Fig. 1–3.

1969. *Tricolporopollenites edmundi* (R. POT. 1931) TH. et PF. 1953 f. major n. f. — NAGY, MÁFI Évk. 52. 2. p. 189. Pl. XLIV. Fig. 10, 13.

Moderately frequent, 43–65 μ , specimens were found in the Badenian (peak occurrences) — Hidas 53, 630.8–632.0 m, Szokolya 2, 51.1–118.3 m. Single specimens in the Karpathian — Zengővárkony 59, 65.0–67.0 m, in the Sarmatian — Cserhátszentiván 1, 134.0–136.0 m.

With regard to the illustrations of MAMCZAR (1962) it may be related to the *Cornaceae*.

Tricolporopollenites hedwigae PFLANZL 1956

[Plate XCVII. Fig. 21–22.

1934. *Pollenites* cf. *edmundi* R. POT. — R. POT. et VENITZ, Arb. Inst. Paläob. 5. p. 30. Taf. 3. Fig. 75.
1956. *Tricolporopollenites hedwigae* n. sp. — PFLANZL, Notizbl. Hess. L. A. Bodenf. 48. p. 243. Taf. 16. Fig. 15.

Relatively rare, 38–55 μ specimens, found in the Egerian — Fót 1, 237.5–305.0 m, Császár 1, 99.5 m, in the Ottnangian — Pusztakisfalu VI. 12.5–15.0 m, in the Karpathian — Fót 1, 119.0–131.5 m, in the Upper Pannonian — Naszály 1, 106.0–112.0 m, the last one probably redeposited.

It is probable related to *Cornaceae* or, according to LOBREAU-CALLEN (personal communication) to *Vitaceae*.

Tricolporopollenites satzveyensis PFLUG 1953

Plate XCVII. Fig. 30.

1953. *Tricolporopollenites satzveyensis* n. sp. (Pfl.) — THOMSON et PFLUG, Palaeontogr. 94. Abt. B. Lief. 1—4. p. 103. Taf. 13. Fig. 10—13.

Some specimens, 36—46 μ , were found from the Egerian to the Badenian. In younger formations like Pannonian it may occur redepositedly.

Familia: Umbelliferae

Genus: *Umbelliferoipollenites* VENKATACHALA et KAR 1968 emend.

1968. *Umbelliferoipollenites* gen. nov. — VENKATACHALA et KAR, The Palaeobotanist, Vol. 17. No. 2, pp. 164—165.

1983. *Cerceanuaepollenites* n. fgen. — KEDVES, Grana 22. pp. 41—42.

Diagnosis emendation: Elongate oval subprolate-prolate pollens, generally thinner in the middle, at the equator, showing a narrow waist. The pollens are tricolporate, rarely dicolporate. The exine is tectate. The structural elements of the pores become bigger in the equatorial region, visible generally as exine thickenings.

Remark: Both authors compared the genera to a number of others, agreeing only in relating the fossil pollen to the *Umbelliferae*. The difference between the two genera is that *Umbelliferoipollenites* VENKATACHALA et KAR is dicolporate, while *Cerceanuaepollenites* KEDVES being tricolporate. When discussing recent *Umbelliferae* ERDTMAN (1952 p. 443) wrote di- or tricolporates. Among the studied 85 species only *Echinophorae* are mentioned as being dicolporate, subprolate-perprolate.

As both authors cited only *Umbelliferae* including 275 genera and 2850 species (WILLIS 1966), it is better to fuse the two genera under the first name with a diagnosis amendment.

Umbelliferoipollenites nogradensis n. sp.

Plate XCVII. Fig. 31—34.

Holotypus: Nsz. 2, sample N° 11., slide N° 1., 105.9 \times 8.0, Plate XCVII. Fig. 31—32.

Locus typicus: Nógrádszakál 2, 78.0—79.5 m

Stratum typicum: Lower Badenian, tuffitic fine-sandy marl

Diagnosis: Prolate pollens with narrow middle and three thick colpi, ending blunt towards the poles. The exopores are strong, oval slits, elongated meridionally, above them the exine is thickened, due to it the exine bulges in equatorial plane. The endopores are oblong, equatorially reaching over the exopores. The exine is thick, tectate, with very fine intrabacula, slightly better developed near the corners. The surface is finely dotted.

Dimensions: The holotype is 34 μ long, 13 μ broad, length—width ratio 2:6. The colpus is 26 μ long, the exopore 2.5 μ broad, 3 μ high, the endopore 4 μ broad, 3—3.5 μ high.

Differential diagnosis: *Umbelliferoipollenites nogradensis* n. sp. differs from *U. speciosus* n. sp. by its finer ornaments, stronger colpus and pore.

Rare specimens of 30—49 μ were found in the Lower Badenian — Nógrádszakál 2, 79.0—101.0 m, Szokolya 2, 89.5—111.2 m.

Umbelliferoipollenites speciosus n. sp.

Plate XCVII. Fig. 35., Plate XCVIII. Fig. 4—7.

Holotypus: Szk. 2, sample N° 59., slide N° 1., 116.1 \times 11.6, Plate XCVIII. Fig. 4—7.

Locus typicus: Szokolya 2, 60.7—61.5 m

Stratum typicum: Lower Badenian; clay-marl

Diagnosis: Prolate, tricolporate pollens, narrow in the middle, the colpi are short, thinner towards the corners. The exopore is round, the endopore elongated equatorially, quadrangular. The exine thickening and bulging above the pores is frequent. The exine is tectate, intrabaculate.

Dimensions: The holotype is 43 μ long, 20 μ broad, length—width ratio 2:1. The colpae are cca. 26 μ long, the exopores 2.5 μ high, 2 μ broad, the endopores are 2.5 μ high, 6 μ broad.

Differential diagnosis: *Umbelliferoipollenites speciosus* n. sp. differs from *U. nogradensis* n. sp. in the shorter colpus and, better developed intrabaculate exine structure.

Rare 26—43 μ specimens were found in the Lower Badenian — Szokolya 2, 60.7—83.1 m, Szokolya 3, 60.8—69.6 m.

***Umbelliferoipollenites tenuis* n. sp.**

Plate XCVIII. Fig. 8—12.

Holotypus: Szk. 2, sample N° 99., slide N° 1., 113×44, Plate XCVIII. Fig. 8—12.

Locus typicus: Szokolya 2, 93.0—95.0 m

Stratum typicum: Lower Badenian; clay-marl

Diagnosis: Prolate, tricolporate pollens, slightly narrow in the middle, tectate, finely intrabaculate with small round exopores, endopores elongated equatorially. The exine surface is finely punctate.

Dimensions: The holotype is 30 μ long, 14 μ broad, length—width ratio 2:1. The colpae are thin slightly convergent towards the corners, hardly peaked. The exopores are cca. 1 μ , the endopores equatorially cca. 5 μ , height 2—2.5 μ . The exine is cca. 2 μ thick at the poles, 1.5 μ on the sides.

Differential diagnosis: *Umbelliferoipollenites tenuis* n. sp. differs from *U. speciosus* n. sp. in its more finely structured exine, far-spaced colpi. From *U. nogradensis* n. sp. it differs by better visible bacula, less developed colpus- and pore-structure.

Some specimens, 25—36 μ , were found in the Eggenburgian — Várpalota 133, 208.3—214.2 m, in the Lower Badenian — Szokolya 2, 93.0—95.0 m, in the Lower Pannonian — Szirma 2, 51.9—52.0 m.

Ordo: Rubiales

Familia: Rubiaceae

Rubiaceae sp.

Plate XCVIII. Fig. 13—16.

One 30 μ pollen part was depicted by the author (1969 p. 190, Pl. XLIV. Fig. 1) connected to the *Rubiaceae*. The damaged pollen came from the Lower Badenian — Hidas 53, 600.5—602.3 m.

Later an other 25 μ hexacolpate, granulate pollen was found in the Pannonian—Sarmatian (?) — Lak 1, 206.0—210.0 m.

It differs from the former specimen by being granulate and lacking pores. It may belong also to the *Rubiaceae* though *Labiatae* or even *Rosaceae* cannot be ruled out.

Familia: Caprifoliaceae

Genus: *Caprifoliipites* WODEHOUSE 1933

1933. *Caprifoliipites* gen. nov. — WODEHOUSE, Tertiary Pollen II. p. 518.

Genotypus: *Caprifoliipites viridifluminis* WODEHOUSE 1933

***Caprifoliipites andreanszkyi* NAGY 1969**

Plate XCVIII. Fig. 17—20.

1969. *Caprifoliipites andreanszkyi* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 191. Pl. XLIV. Fig. 16—19, 22.

It was found in variable quantities, in some specimens 20—25 μ , in the Egerian — Fót 1, 209.9—212.6 m, 349.5—354.0 m, Eger, Wind brickyard pit, layer "u", in the Ottnangian — Szilvásvár 1, 262.0 m.

The species culminated in the Karpathian and Badenian where it is frequent in the samples — in the Karpathian — Zengővárkony 59, 65.0—73.0 m, Várpalota 133, 161.0—165.0 m, Litke 17, 47.0—49.0 m, Hidas 53, 735.0—738.0 m, in the Badenian — Zengővárkony 45, 13.2—13.7 m, Zengővárkony 59, 30.9—37.5 m, Hidas 53, 659.5—659.8 m, 667.2—669.2 m, Szokolya 3, 45.5—47.0 m, Szokolya 2, 42.3—104.7 m, in the Sarmatian — Hidas 53, 479.1—483.0 m.

Remark: D. LOBREAUCALLEN kindly informed me that the pore-structure of the species resembles rather that of *Celastraceae*.

Caprifoliipites gracilis NAGY 1969

Plate XCVIII. Fig. 21—24.

1969. *Caprifoliipites gracilis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 192. Pl. XLIV. Fig. 11—12.

Frequent specimens of 19—20 μ were found in the Egerian — Fót 1, 351.0—352.5 m, 234.0—235.0 m, Eger, Wind brickyard pit layer "u", in the Otnangian — Zengővárkony 45, 16.4—17.2 m, in the Karpathian — Hidas 53, 837.9—839.0 m, in the Badenian — Hidas 53, 667.2—757.0 m, in the Sarmatian — Hidas 53, 479.1—482.0 m.

Caprifoliipites sambucoides NAGY 1969

Plate XCVIII. Fig. 25—28.

1969. *Caprifoliipites sambucoides* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 190—191. Pl. XLIV. Fig. 9, 14.

It was found in small quantities, 21—28 μ , in the Karpathian — Zengővárkony 59, 65.0—73.0 m, Mátraverebély 79, 256.0—256.3 m, in the Badenian — Hidas 53, 667.2—669.2 m, Hidas 89, 303.7 m, mine Hidasbánya, II. seam, sample 4, Szokolya 3, 60.1—60.8 m, in the Sarmatian — Cserhátszentiván 1, 163.0—165.0 m.

Genus: *Lonicerapollis* W. KR. 1962

1962. *Lonicerapollis* n. fgen. — W. KR., Geol., Jhg. 11. H. 2. p. 274.

Genotype: *Lonicerapollis gallwitzi* W. KR. 1962

Lonicerapollis gallwitzi W. KR. 1962

Plate XCVIII. Fig. 29—30., Plate XCIX. Fig. 1—6., Plate C. Fig. 1.

1962. *Lonicerapollis gallwitzi* n. fsp. — W. KR., Geol., Jhg. 11. H. 5. p. 275—276.

Rare forms of 34—99 μ were found in the Egerian — Fót 1, 369.0—370.5 m, in the Karpathian — Zengővárkony 59, 48.5—51.3 m, in the Lower Badenian — Szokolya 3, 63.0—77.4 m, Szokolya 2, 39.9—40.7 m, 44.7—45.5 m, 71.9—72.4 m, Tar-Fenyvespuszta area, sample 4, in the Sarmatian — Cserhátszentiván 1, 165.0—185.5 m, in the Lower Pannonian — Tihany 62, 52.7—55.4 m, Tata (TVG) 26, 7.0—9.0 m, 33.0—35.0 m, in the Upper Pannonian — Naszály 1, 8.0—12.2 m, 22.0—25.0 m, 60.0—66.0 m, 82.0—93.4 m.

It is related to the *Caprifoliaceae*.

Genus: *Diervillapollenites* DOKT.-HREBN. 1957

1957. *Diervilla-Pollenites* — DOKT.-HREBN. Inst. Geol. Prace, Tom. XV. Z. Badan flor Trzecziorz. Tom. II. p. 161. Pl. XXII. 6.

1966. *Diervillapollenites* n. g. — NAGY et RÁKOSI, MÁFI Évi Jel. 1964. p. 276.

The generic name became valid as a monotypic one. DOKTOROWICZ-HREBNICKA described in 1957 a species as *Pollenites megaspinosus* f. nov. putting before it the recent generic name *Diervilla* after comparing it with recent *Diervilla sessiliflora* BUCKEL. and *D. verosa*.

Genotype: *Diervillapollenites megaspinosus* DOKTOROWICZ-HREBNICKA 1957

Diervillapollenites megaspinosus DOKTOROWICZ-HREBNICKA 1957

Plate C. Fig. 2—3.

1957. *Diervilla-Pollenites megaspinosus* f. nov. — DOKTOROWICZ-HREBNICKA — Inst. Geol., Prace, Tom. XV. Z. Badan flor Trzeciorz. Tom. II. p. 161. Pl. XXII. Fig. 6.
1966. *Diervillapollenites hungaricus* n. sp. — NAGY et RAKOSI, MÁFI Évi Jel. 1964. pp. 269, 276. Pl. II. 5—6. III. 1—2.

It occurred in very low numbers, 44—50 μ , in the Lower Badenian — Báánd 3, 4.8—13.0 m, in the Upper Pannonian — Várkeszű 1, 15.0—16.0 m.

Familia: Dipsacaceae

Genus: *Scabiosaepollenites* NAGY 1969

1969. *Scabiosaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 193.

Generotypus: *Scabiosaepollenites magnus* NAGY 1969

Scabiosaepollenites magnus NAGY 1969

Plate C. Fig. 4., Plate CI. Fig. 1.

1969. *Scabiosaepollenites magnus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 193. Pl. XLVI. Fig. 1.

Some specimens, 63—122 μ , were found in the Karpathian — Zengűvarkony 59, 51.3—56.0 m, in the Lower Badenian — Tengelic 2, 850.0—851.3 m, Szokolya 3, 77.2—77.4 m, Szokolya 2, 45.5—46.3 m, 47.9—48.7 m, in the Upper Pannonian — Naszaly 1, 51.0—54.3 m, 93.4—104.6 m.

Scabiosaepollenites minimospinosus NAGY 1969

Plate C. Fig. 5—6.

1969. *Scabiosaepollenites minimospinosus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 193—194. Pl. XLV. Fig. 1. Pl. XLVI. Fig. 8.

Some specimens, 50—120 μ , were found in the Badenian — Szokolya 2, 59.1—72.4 m, Hidas 89, 259.0 m, in the Upper Pannonian — Hidas 53, 147.5—148.5 m, Naszaly 1, 37.2—38.0 m, 66.0—79.5 m, Várkeszű 1, 15.0—16.0 m.

Series: Malvales — Solanales

Ordo: Malvales

Familia: Tiliaceae

Genus: *Intratropollenites* TH. et PF. 1953

1953. *Intratropollenites* n. gen. (PF. et TH.) — TH. et PF., Palaeontogr. 94. Abt. B. Lief. 1—4. p. 87.

Generotypus: *Intratropollenites instructus* (R. POT. 1931) TH. et PF. 1953

Intratropollenites cordataeformis (WOLFF 1934) MAI 1961

Plate CI. Fig. 2—5.

1934. *Tiliae-pollenites instructus cordataeformis* n. f. — WOLFF, Arb. Inst. Paläobot. 5. p. 73. Taf. 5. Fig. 22.

1961. *Intratropollenites cordataeformis* (WOLFF 1934) n. c. — MAI, Geol., 10. Beih. 32. p. 67. Taf. XIII. Fig. 4—7.

It was found in variable quantities, 26–42 μ . In low numbers in the Karpathian — Litke 17, 96.0–244.0 m, in the Badenian — Nagyörzsöny 7/a, 887.0 m, Nógrádszakál 2, 95.5–123.0 m, in high numbers in the Pannonian — Balatonkenese 1, 62.4–63.0 m, Várkesző 1, 15.0–42.0 m, Kapolcs 2, 41.7–42.0 m, Pula 3, 13.5–17.0 m, Tata (TVG) 26, 27.0–30.0 m, Naszály 1, 12.2–37.2 m.

Intratriporopollenites insculptus MAI 1961

Plate CI. Fig. 6–8.

1961. *Intratriporopollenites insculptus* n. sp. — MAI, Geol., 10. Beih. 32. pp. 65–66. Taf. XI. Fig. 10–27.

It was found 27–52 μ , from the Egerian to the Pannonian with a peak in the Middle Miocene. In the Egerian — Eger, Wind brickyard borehole 8.3–9.2 m, in the Eggenburgian — Fót 1, 172.7 m, in the Ottnangian — Nagyörbő 1, 908.5–914.0 m, in the Karpathian — Tököl 1, 886.0–888.5 m, Litke 17, 40.0–250.0 m, Püspökatvan 4, 151.0–153.0 m, Zengővárkony 59, 44.4–67.0 m, in the Badenian — Hidas 53, 667.2–686.5 m, Szokolya 11, 26.0 m, Szokolya 3, 77.2–77.4 m, Szokolya 2, 50.3–54.3 m, Nógrádszakál 2, 121.2–187.0 m, in the Sarmatian — Hidas 53, 534.0–537.0 m, in the Pannonian — Bogács 9/5, 163.0 m, Naszály 1, 51.0–54.3 m.

Remark: According to MAI (1961) in Germany it is characteristic for the Lower Miocene.

Intratriporopollenites instructus (R. POT. 1931) TH. et PF. 1953 ssp. instructus

Plate CI. Fig. 9–11.

1931. *Tiliae-pollenites instructus* n. sp. — R. POT., Braunkohle, H. 27. p. 556. Abb. 1. Fig. 9.

1953. *Intratriporopollenites instructus* (R. POT. et VEN.) n. c. — TH. et PF., Palaeontogr. 94. B. Lief. 1–4. p. 89. Taf. 10. Fig. 10–23.

Specimens of 35–60 μ were found in the Eggenburgian — Várpalota 133, 208.3–214.2 m, in the Ottnangian — Nagyörbő 1, 892.0–897.0 m, Szilvásvárad 1, 207.0 m, Alsóvadász 1, 1029.0–1034.6 m, in the Karpathian — Tekeres 1, 855.0–859.0 m, Püspökatvan 4, 149.0–151.0 m, 153.3–157.0 m, Nógrádszakál 2, 225.0–275.0 m, Litke 17, 256.0–258.0 m, Zengővárkony 59, 73.5–76.0 m, Mecseknádasd surface exposure, in the Lower Badenian — Nógrádszakál 2, 93.0–95.0 m, 101.0–104.0 m, Tengelic 2, 823.4–826.5 m, Szokolya 11, 26.0 m, Szokolya 3, 53.6–54.6 m, Szokolya 2, 51.1–107.9 m, Hidas 53, 667.2–669.0 m, Nagyörzsöny 14, 770 m, in the Sarmatian — Cserhát-szentiván 1, 159.0–194.0 m, in the Pannonian — Naszály 1, 104.0–106.0 m, Tata (TVG) 26, 30.0–33.0 m.

The species had its peak in the Middle Miocene.

Intratriporopollenites instructus (R. POT. 1931) TH. et PF. 1953 ssp. macroreticulatus MAI 1961

Plate CI. Fig. 12–13., Plate CII. Fig. 1–2.

1961. *Intratriporopollenites instructus* (R. POT. 1931) TH. et PF. 1953 subsp. *macroreticulatus* n. ssp. — MAI, Geol., Jhg. 10. Beih. 32. p. 66. Taf. XIII. Fig. 1–3.

It was found in low numbers, 34–51 μ , in the Eggenburgian — Szászvár 8, 433.8–434.1 m, in the Karpathian — Zengővárkony 59, 60.9–63.0 m, in the Lower Badenian — Zengővárkony 59, 30.9–34.0 m, Szokolya 2, 51.1–100.0 m, in the Sarmatian — Cserhátszentiván 1, 153.0–161.0 m, in the Upper Pannonian — Naszály 1, 25.0–26.7 m.

Intratriporopollenites microreticulatus MAI 1961

Plate CII. Fig. 7–8.

1961. *Intratriporopollenites microreticulatus* n. sp. — MAI, Geol., Jhg. 10. Beih. 32. p. 64. Taf. X. Fig. 6–7.

Few specimens, 28–37 μ , were found in the Egerian — Eger, Wind brickyard pit and borehole; Fót 1, besides in the Lower Miocene. Singles came from the Upper Miocene, Pliocene but their state of preservation indicates redeposition.

MAI considered it as a Lower Eocene form, relying on the data of KRUTZSCH.

Intratriporepollenites minimus MAI 1961

Plate CII. Fig. 3—6.

1961. *Intratriporepollenites minimus* n. sp. — MAI, Geol., 10. Beih. 32. p. 65. Taf. X. Fig. 10—11.

Some specimens, 23—27 μ , were found in the Egerian — Fót 1, 349.5—354.0 m, Eger, Wind brickyard borehole 7.8—8.3 m, and pit, layer "u", sample 10.

Intratriporepollenites polonicus MAI 1961

Plate CII. Fig. 9—11.

1961. *Intratriporepollenites polonicus* n. sp. — MAI, Geol., 10. Beih. 32. p. 66. Taf. XI. Fig. 30—32.

Rare 30—33 μ pollens from the Upper Badenian — Hidas 53, 572.0—575.0 m, in the Sarmatian — Hidas 53, 444.0 m, Lower Pannonian — Pápa 2, 142.8—143.3 m.

Intratriporepollenites pseudostructus MAI 1961

Plate CII. Fig. 12—14.

1961. *Intratriporepollenites pseudostructus* n. sp. — MAI, Geol., 10. Beih. 32. p. 65. Taf. X. Fig. 19.

Rather frequent species of 23—38 μ in the Lowest Miocene, in the Egerian — Eger, Wind brickyard borehole, 8.2—9.7 m, Fót 1, 241.6—271.5 m, in the Eggenburgian — Fót 1, 142.0—171.7 m, Püspökhatvan 4, 260.0—263.0 m, Budajenő 2, 518.2—575.9 m.

MAI indicated it as a Lower Eocene form. In Hungary it occurs only in Egerian and Eggenburgian samples; it is considered to be "in situ".

F a m i l i a : M a l v a c e a e

Genus: *Malvacearumpollis* NAGY 1962

1962. *Malvacearumpollis* n. gen. — NAGY, Acta Bot. Acad. Sci. Hung. VIII. 1—2. p. 159.

G e n e r o t y p u s : *Malvacearumpollis bakonyensis* NAGY 1962

***Malvacearumpollis bakonyensis* NAGY 1962**

Plate CII. Fig. 15., Plate CIII. Fig. 1—3.

1962. *Malvacearumpollis bakonyensis* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. VIII. 1—2. pp. 159—161. T. V. Fig. 13—14.

Some specimens of 54—103 μ were found in the Eggenburgian — Várpalota 133, 208.3—214.2 m, Budajenő 2, 575.5—575.9 m, in the Lower Badenian — Szokolya 3, 71.2—74.5 m, Tengelic 2, 850.0—851.3 m, in the Upper Pannonian — Naszály 1, 60.0—66.0 m, the last may have been redeposited.

***Malvacearumpollis rotundus* NAGY 1969**

Plate CIII. Fig. 4—6.

1969. *Malvacearumpollis rotundus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 196. Pl. XLVII. Fig. 1, 5.

Pollens of 72—73 μ were found in very few specimens in the Eggenburgian — Szászvár 8, 433.8—434.1 m, in the Upper Pannonian — Budapest-Kőbánya, profil IV. 107.0 m, probably redeposited.

Genus: *Reevesiapollis* W. KR. 1970

1970. *Reevesiapollis* pollen-genus nov. — W. KR., Feddes Rep. Band 81. H. 6–7. pp. 372–374.

Generotypus: *Reevesiapollis triangulus* (MAMCZAR 1960) W. KR. 1970

***Reevesiapollis triangulus* (MAMCZAR 1960) W. KR. 1970**

Plate CIV. Fig. 1–3.

1960. *Pollenites triangulus* n. spm. — MAMCZAR, Inst. Geol. Biuletyn 1957. p. 220. T. XIV. Fig. 202.

1970. *Reevesiapollis triangulus* (MAMCZAR 1960) comb. nov. — W. KR., Feddes Rep. Bd. 81, H. 6–7. pp. 374–376.

In the Hungarian Neogene only this species has been encountered from the Egerian up to the Pliocene, mainly in coal-bearing sequences. The diameter is 21–25 μ . It occurred in the Egerian — Fót 1, 240.0–253.5 m, 288.0–290.8 m, in the Eggenburgian — Fót 1, 183.5–184.1 m, Tekeres 1, 899.4–901.0 m, in the Ottnangian — Szilvássvár 1, 420.6 m, in the Karpathian — Fót 1, 131.5–132.5 m, in the Lower Badenian — Szokolya 2, 50.3–63.0 m, in the Sarmatian — Cserhátszentiván 1, 185.0–185.5 m, in the Upper Pannonian — Megyaszó 1, 52.0–54.4 m, mine Petőfibánya.

Remark: KRUTZSCH gave a detailed synonym list when described the species in 1970. According to his description it is found from the Paleocene to the Reuverian in the northern Palearctic. It never occurs dominantly but is very characteristic.

The *Sterculiaceae* live at present mainly in the tropics. According to WILLIS (1966) *Reevesia* LINDL. has 3 species, living from the Himalayas to China. In KRUTZSCH's opinion the Tertiary species correspond to the morphology of *R. pubescens* MART., he cited WANG (1961) that the species lives in southern Yünnan and Hainan in rain forests.

Ordo: Ligustales

Família: Oleaceae

Genus: *Oleoidearumpollenites* NAGY 1969

1969. *Oleoidearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 197.

Generotypus: *Oleoidearumpollenites reticulatus* NAGY 1969

***Oleoidearumpollenites chinensis* NAGY 1969**

Plate CIV. Fig. 4–5.

1969. *Oleoidearumpollenites chinensis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 197–198. Pl. XLVII. Fig. 7–8.

Pollens of 27–28 μ were found in few specimens in the Egerian — Eger, Wind brickyard borehole 9.2–9.7 m, in the Karpathian — Magyarereggy-Álmáspatak II. surface exposure, in the Lower Badenian — Szokolya 2, 45.5–99.0 m, in the Sarmatian — Cserhátszentiván 1, 136.0–138.0 m.

Remark: The aperture structure could not be studied on the specimens from the Mecsek Mts. in polar view. There are some in lateral position among those coming from Northern-Hungary where the germinal is tricolpate or may be tricolporoidate (Pl. CIV. Fig. 5).

The morphology suggests *Syringa* or *Ligustrum* (see NAGY 1969).

***Oleoidearumpollenites reticulatus* NAGY 1969**

Plate CIV. Fig. 6–7.

1969. *Oleoidearumpollenites reticulatus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 197. Pl. XLVII. Fig. 2–3.

Some specimens, 23–30 μ , were found in the Egerian — Fót 1, 352.5–354.0 m, in the Karpathian — Komló 120, 178.0–374.7 m, in the Lower Badenian — Szokolya 2, 75.1–75.9 m.

Remark: Both the holotype and the other specimen from the Mecsek Mts. were of lateral position thus the germinal structure could be studied only on the new specimens from Northern-Hungary. It is a tricolporoidate species (Pl. CIV. Fig. 6).

Its morphology suggests *Ligustrum* or *Jasminum*.

Ordo: Contortae
Familia: Periplocaceae

Genus: Manikinipollis W. KR. 1970

1970. *Manikinipollis* fgen. n. — W. KR., Paläont. Abh. Abt. B. Paläobot. Bd. III. H. 3/4. p. 410.

Generotypus: Manikinipollis tetradoides W. KR. 1970

Manikinipollis tetradoides W. KR. 1970

Plate CIV. Fig. 11—12.

1970. *Manikinipollis tetradoides* fsp. n. — W. KR., Paläont. Abh. Abt. B. Paläobot. Bd. III. H. 3/4. p. 410.

More specimens, 38—56 μ , were found, exclusively in the Sarmatian — Vajta, water exploratory borehole 724.0—728.0 m, Cserhátszentiván 1, 169.0—171.0 m.

The species belongs very probably to the *Periplocaceae* and even *Periploca* (KRUTZSCH 1970, NAGY 1979, p. 184).

Ordo: Boraginales (Tubiflorae)
Familia: Convolvulaceae

Genus: Calystegiapollis W. KRUTZSCH 1966

1966. *Calystegiapollis* n. fgen. — W. KR., Geol., 15. Beih. 55. pp. 42—43.

Generotypus: Calystegiapollis thuringiacus W. KR. et MAJEWSKI 1966.

Calystegiapollis sarmaticus n. sp.

Plate CIV. Fig. 8—10.

Holotypus: Csi. 1, sample N^o 5., slide N^o 1., 106 \times 46, Plate CIV. Fig. 8—10.

Locus typicus: Cserhátszentiván 1, 15.5—16.5 m

Stratum typicum: Sarmatian sand with carbonized plant remnants

Diagnosis: Rounded big, slightly oval pollen with hollows at marginal pores. The surface is covered by 20—25 evenly spaced oval pores. The exine is 3—3.5 μ thick, tectate, intrabaculate. The tectum is cca. 0.5 μ , the baculum-layer 2—2.5 μ , the nexine cca. 0.5 μ thick. The tectum has been dissolved near the pores (hollows), and thus the baculum layer forms the ornamentation of the pore in upper view.

Dimensions: The holotype is 61 \times 56 μ , the pores 6—7 μ long, 3—4 μ broad.

Differential diagnosis: *Calystegiapollis sarmaticus* n. sp. differs from *C. thuringiacus* W. KR. et MAI 1966 by its smaller and not drop-like pores and the more distinct though thinner exine.

One single specimen has been found, until now.

Familia: Boraginaceae
Subfamilia: Heliotropioideae

Genus: Heliotropioidearumpollenites NAGY 1969

1969. *Heliotropioidearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 108.

Generotypus: Heliotropioidearumpollenites gracilis NAGY 1969

Heliotropioidearumpollenites gracilis NAGY 1969

Plate CIV. Fig. 13—14.

1969. *Heliotropioidearumpollenites gracilis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 198—199. Pl. XLVII. Fig. 4.

Specimens of 23—30 μ were rarely found in the Egerian — Eger, Wind brickyard pit, layer "u", sample 9, in the Eggenburgian — Szászvár 8, 432.5—432.7 m, Medveszpatak-quarry, in the Karpathian — Zengővárkony 59, 67.5—70.5 m, in the Lower Badenian — Szokolya 2, 47.9—48.7 m, 101.0—102.2 m.

Heliotropioidearumpollenites rotundus NAGY 1969

Plate CIV. Fig. 15.

1969. *Heliotropioidearumpollenites rotundus* n. g. n. sp. — NAGY, MÁFI Évk. 2. p. 199. Pl. XLVI. Fig. 4.

Pollens in moderate quantities, 20—33 μ , were found in the Badenian — mine Hidasbánya, II. seam.

The morphology suggests *Heliotropium* species from near the water (NAGY, see above).

Ordo: Solanales

Familia: Lentibulariaceae

Genus: Utriculariaepollenites NAGY 1969

1969. *Utriculariaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 199.

Generotypus: *Utriculariaepollenites elegans* NAGY 1969

Utriculariaepollenites elegans NAGY 1969

Plate CIV. Fig. 16—19.

1969. *Utriculariaepollenites elegans* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 200. Pl. XLVIII. Fig. 12.

Few specimens, 17—31 μ , were found in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 222.5—354 m, Tata (TVG) 27, 72.8—79.7 m, in the Eggenburgian — Fót 1, 171.1—172.2 m, Szászvár 8, 432.1—432.7 m, in the Ottnangian — Pusztakisfalu VI, 22.5—25.0 m, Zengővárkony 45, 13.2—13.7 m, Alsóvadász 1, 984.0—984.5 m, in the Karpathian — Hidas 53, 983.0—984.5 m, Zengővárkony 45, 13.2—13.7 m, Komló 120, 178.0—178.8 m, 372.0—374.4 m*, in the Badenian — Hidas 53, 667.2—759.0 m, Szokolya 2, 114.0—115.3 m, in the Sarmatian — Hidas 53, 554.0—554.3 m, Cserhátszentiván 1, 163.0—165.0 m, in the Pannonian — Hidas 53, 118.0—126.8 m.

One may suggest here *Lentibulariaceae* or more closely the genus *Utricularia***.

The pollens of this genus supply good ecological data occurring generally in limnic coal-bearing sequences or in their footwall and hanging wall, indicating marshy conditions.

Familia: Acanthaceae

Genus: Pteracanthopollenites NAGY 1969

1969. *Pteracanthopollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 200.

Generotypus: *Pteracanthopollenites discordatus* NAGY 1969

* There are two typing errors in the holotype description — Komló 120, 372.0—374.4 m as locality, instead of Komló Zengővárkony was given, and instead of 372.0 m only 37.2 m for the stratum typicum.

** The sentence in the original description of the holotype "the new species might correspond to several plant species" should have included also "of the genus *Utricularia*", embracing about 120 tropical and temperate species (WILLIS 1966).

Pteracanthopollenites discordatus NAGY 1969

Plate CIV. Fig. 20—22.

1969. *Pteracanthopollenites discordatus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 200—201. Pl. XLVIII. Fig. 1—2.

No new specimen was found besides the type specimen from the Eggenburgian — Szászvár 8, 433.8—434.1 m.

Ordo: Solanales (Personatae)

Familia: Plantaginaceae

Genus: *Plantaginacearumpollis* NAGY 1963

1963. *Plantaginacearumpollis* n. g. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. IX. 3—4. p. 396.

Generotypus: *Plantaginacearumpollis miocaenicus* NAGY 1963

Plantaginacearumpollis miocaenicus NAGY 1963

Plate CV. Fig. 1—5.

1963. *Plantaginacearumpollis miocaenicus* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. IX. 3—4. pp. 396—397. T. V. Fig. 33—35.

Rare, 21—27 μ species, it was found as singles in the Karpathian — Magyaregregy-Almásptak II. surface exposure, in the Badenian — Szokolya 2, 68.7—69.5 m, in the Sarmatian — Hidas 53, 572.0—575.0 m, in the Lower Pannonian — Megyaszó 1, 74.5—77.5 m.

Plantaginacearumpollis sooi NAGY 1963

Plate CV. Fig. 6—7.

1963. *Plantaginacearumpollis sooi* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. Tom. IX. 3—4. p. 397. Tab. V. Fig. 36—38.

The species, 23—27 μ , was found beside the holotype in the Karpathian — Zengővárkony 59, 65.0—67.6 m, only in ones or twos in the Egerian — Eger, Wind brickyard pit, layer "u", sample 14, in the Lower Pannonian — Tata (TVG) 26, 21.0—24.0 m.

Series: *Rhoeadales-Asterales*

Ordo: Sarraceniales

Familia: Droseraceae

Genus: *Droseridites* COOKSON 1947

1947. *Tetradites (Droseridites)* — COOKSON, B.A.N.Z.A.R.E. Rep. A. II. 8. p. 137.

1960. *Droseridites* COOKSON 1947 — R. POT., Synopsis III. p. 139. Taf. 9. Fig. 198.

Generotypus: *Droseridites spinosa* COOKSON 1947

Droseridites cf. spinosa COOKSON 1947

Plate CV. Fig. 8—10.

1947. *Tetradites (Droseridites) spinosa* n. spm. — COOKSON, B.A.N.Z.A.R.E. Rep. A. II. 8. p. 137. Pl. XVI. Fig. 70, 71.

Tetrads of 58—62 μ full diameter; the single pollens are of cca. 36—38 μ .

It is a very rare species in the Eggenburgian — Püspökhátvan 4, 254.0—257.0 m, in the Karpathian — Nagygörbő 1, 908.5—914.0 m, in the Upper Pannonian — Gércse 1, 0.6—1.7 m.

Remark: It was marked cf. as it should have, according to COOKSON (1947) "often recurved spines", on the Hungarian specimens however, they are, rather blunt, just tapering, similar to *Drosera intermedia* CUN., as shown by ERDTMAN (1943, p. 88. Pl. IX. Fig. 152).

Genus: *Fischeripollis* W. KRUTZSCH 1970

1970. *Fischeripollis* fsp. n. — W. KR., Paläont. Abh. Abt. B. Bd. III. Hf. 3/4. p. 416.

Generotypus: *Fischeripollis undulatus* W. KR. 1970

Fischeripollis undulatus W. KRUTZSCH 1970

Plate CV. Fig. 11—12.

1953. *Tetradopollenites quater* n. sp. (PF. et TH.) — THOMSON et PFLUG, Palaeontogr. 94. B. Lief. 1—4. p. 113. Taf. 15. Fig. 82.

1966. *Fischeripollis undulatus* W. KR. (noch nicht publiziert) (T.67) 2a, 2b. — SONTAG, Geol. Jhg. 15. Beih. 54.

1970. *Fischeripollis undulatus* fsp. n. (*Dionaea undulata* sp. n.) — W. KR., Paläont. Abh. Abt. B. Bd. III. Hf. 3/4. pp. 416—417.

One 38 μ pollen (single grain of a tetrad) was found in the Upper Pannonian — Várkesző 1, 17.0—18.0 m.

KRUTZSCH and SONTAG mentioned this species from the Middle Miocene. PFLUG et THOMSON described the tetrad from the Middle Eocene and considered it to be *Catalpa* pollen. KRUTZSCH proposed relationship with the genus *Dionaea* from the *Droseraceae* family. The description of ERDTMAN (1952, p. 154) of *Dionaea muscipula* ELLIS speaks for the latter idea.

Ordo: Cistales (Parietales)

Familia: Cistaceae

Genus: *Cistacearumpollenites* NAGY 1969

1969. *Cistacearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 202.

Generotypus: *Cistacearumpollenites rotundus* NAGY 1969

Cistacearumpollenites macrodurensis (PF. et THOMS. 1953) NAGY 1969

Plate CV. Fig. 13—14.

1963. *Tricolporopollenites macrodurensis* n. sp. (PF. et TH.) — THOMS. et PF., Palaeontogr. 94. B. Lief. 1—4. p. 103.

1969. *Cistacearumpollenites macrodurensis* (PF. et THOMS. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 202.

Some specimens of 38—49 μ were found in the Egerian — Fót 1, 195.0—236.0 m, in the Karpathian — Zengővárkony 45, 13.2—13.7 m, in the Lower Badenian — Szokolya 2, 95.0—96.6 m, in the Sarmatian — Cserhátszentiván 1, 16.5—19.0 m, in the Lower Pannonian — Megyaszó 1, 38.0—146.3 m, in the Upper Pannonian — Naszály 1, 17.0—18.0 m.

Remark: The species was reclassified on morphological basis due to its striking similarity to *Hudsonia ericioides* L. as seen in HEYDACKER, 1963 (Pollen et Spores V. p. 42. Pl. I. Fig. 7—9). THOMSON et PFLUG (1953) mentioned *Parthenocissus* and *Cissus* as possible relationship.

Cistacearumpollenites rotundus NAGY 1969

Plate CV. Fig. 15—17.

1969. *Cistacearumpollenites rotundus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 202.

Rare species of 35—44 μ , found in the Egerian — Fót 1, 209.5—209.9 m, in the Ottnangian — Pusztakisfalu VI. 12.5—15.0 m, in the Karpathian — Zengővárkony 59, 56.0—60.9 m, Magyar-egregy-Almásfatak surface exposure I., in the Lower Badenian — Szokolya 3, 54.6—55.6 m, Szokolya 2, 44.7—72.4 m.

Ordo: Campanulales
Familia: Lobeliaceae

Genus: *Lobeliaepollenites* NAGY 1969

1969. *Lobeliaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 204.

Generotypus: *Lobeliaepollenites erdtmani* NAGY 1969

***Lobeliaepollenites erdtmani* NAGY 1969**

Plate CV. Fig. 18—20.

1969. *Lobeliaepollenites erdtmani* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 205. Pl. XLVIII. Fig. 8—10.

Rare species of 18—28 μ , found in the Egerian — Eger, Wind brickyard pit, layer x_2 , in the Lower Badenian — Szokolya 3, 60.1—74.5 m, Szokolya 2, 109.0—111.2 m, Nógrádszakál 2, 78.0—93.0 m, in the Pannonian — Bogács 9/5, 151.0—151.5 m.

Ordo: Dilleniales
Familia: Dipterocarpaceae

Genus: *Dipterocarpacearumpollenites* NAGY 1969

1969. *Dipterocarpacearumpollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 203.

Generotypus: *Dipterocarpacearumpollenites hidasensis* NAGY 1969

***Dipterocarpacearumpollenites hidasensis* NAGY 1969**

Plate CV. Fig. 21., Plate CVI. Fig. 1.

A few specimens, 47—52 μ , were found in the Badenian — Hidas 53, 667.2—669.2 m, in the Sarmatian — Cserhátszentiván 1, 186.0—188.0 m, in the Upper Pannonian — Hidas 53, 132.5—134.8 m.

Remark: With regard to morphology one may suggest its connection to the species-rich *Dipterocarpaceae* (see ERDTMAN 1952, p. 153).

***Dipterocarpacearumpollenites spinosus* NAGY 1969**

Plate CVI. Fig. 2—4.

1969. *Dipterocarpacearumpollenites spinosus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 204. Pl. XLVIII. Fig. 16—17.

This very rare species, 42—47 μ , came from the Badenian — Hidas 53, 667.2—669.8 m, from a coal-bearing facies.

Ordo: Asterales
Familia: Compositae
Subfamilia: Tubuliflorae

Genus: *Tubulifloridites* (COOKSON 1947) R. POT. 1960

1947. *Tricolpites* (*Tubulifloridites*) — COOKSON, B.A.N.Z.A.R.E. Rep. A. II. 8. p. 134. Pl. XV. Fig. 44.

1960. *Tubulifloridites* COOKSON 1947 — R. POT., Synopsis III. p. 106.

Generotypus: *Tubulifloridites antipodica* COOKSON 1947

Tubulifloridites ambrosiinae NAGY 1969

Plate CVI. Fig. 5—8.

1969. *Tubulifloridites ambrosiinae* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 207. Pl. XLIX. Fig. 5—6.

Some specimens, 23—25 μ , were found in the Lower Badenian — Hidas 53, 761.0—763.3 m, Szokolya 3, 68.6—69.6 m.

Tubulifloridites anthemidearum NAGY 1969

Plate CVI. Fig. 9—12.

1969. *Tubulifloridites anthemidearum* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 207—208. Pl. XLIX. Fig. 9—11.

Pollens of 27—36 μ were found in the Karpathian — Ipolytarnóc, Mihálygerge surface exposure, in the Badenian — Hidas 53, 672.5—676.0 m, Szokolya 2, 59.9—73.5 m, in the Sarmatian — Hidas 53, 534.0—537.0 m, in the Pannonian — Beremend 9, 76.0 m.

Tubulifloridites grandis NAGY 1969

Plate CVI. Fig. 13—14.

1969. *Tubulifloridites grandis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 206. Pl. XLIX. Fig. 1—2.

Found in moderate quantities, 30—45 μ , in the Egerian — Fót 1, 346.5—354.0 m, in the Eggenburgian — Budajenő 2, 575.5—575.9 m, in the Ottnangian — Tekeres 1, 908.9—911.4 m, Pusztakisfalu VI, 10.5—12.5 m, in the Karpathian — Komló 120, 178.0—178.8 m, Zengővárkony 59, 51.3—56.0 m.

Tubulifloridites granulatus NAGY 1969

Plate CVI. Fig. 15—17.

1969. *Tubulifloridites granulatus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 206. Pl. XLIX. Fig. 3—4.

Few specimens, 18—26 μ , were found in the Ottnangian — Pusztakisfalu VI. 10.5—12.5 m (holotype), in the Lower Badenian — Zengővárkony 59, 34.0—37.5 m, Szokolya 3, 51.6—52.6 m, Szokolya 2, 81.5—82.3 m.

Remark: The species description (NAGY 1969), contains some press errors. Correctly it is as follows: *Holotypus:* Pszf. VI. sample 5, slide 1, 120.3×44.1, *Locus typicus:* Pusztakisfalu VI. 10.5—12.5 m, *Stratum typicum:* Ottnangian silty fine sand.

Tubulifloridites macroechinatus (TREVISAN 1967) n. c.

Plate CVI. Fig. 18—21.

1967. *Tricolporopollenites macroechinatus* n.-fsp. — TREVISAN, Palaeont. Ital. LXII. (XXXII), p. 46. Tav. XXX. Fig. 1—2.

Very rare species of 43—46 μ full diameter, found in the Lower Badenian — Szokolya 3, 58.7—74.5 m.

Remark: TREVISAN found 2 specimens of the species in the Messinian, THIELE-PFEIFFER (1980) included in it *T. anthemidearum* NAGY 1969. For all similarity, however, there are basic differences between them. *Macroechinatus* is more sturdy, the echini base are broader, less tapering, the exine is thinner. The bacula are more densely situated in the columella layer making the surface reticulum denser. The specimen shown by THIELE-PFEIFFER (1980, T. 14. Fig. 14—18) belongs apparently to *T. macroechinatus* (TREV. 1967) n. c., unlike the specimen published by HOCHULI (1978, T. 13. Fig. 1—2) under this name. This latter should be classified correctly as *T. grandis* NAGY 1969.

Genus: Artemisiaepollenites NAGY 1969

1969. *Artemisiaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 208.

Generotypus: *Artemisiaepollenites sellularis* NAGY 1969

Artemisiaepollenites sellularis NAGY 1969

Plate CVII. Fig. 1—5.

1969. *Artemisiaepollenites sellularis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 208. Pl. XLIX. Fig. 16—17. Pl. XLI. Fig. 18—19.

Pollens of 15—26 μ , generally found in polar position, in the Egerian — Fót 1, 328.0—333.8 m, in the Eggenburgian — Fót 1, 176.7—181.0 m, Szászvár 8, 26.0—27.0 m, in the Lower Badenian — Szokolya 3, 54.6—55.6 m, Szokolya 2, 39.9—109.0 m, in the Upper Badenian — Hidas 53, 572.0—575.0 m, in the Sarmatian — Hidas 53, 479.1—482.0 m, in the Pannonian — Naszály 1, 140.0 m, Beremend 9, 76.0 m.

Genus: *Cichoreacidites* SAH 1967

1967. *Cichoreacidites* gen. nov. — SAH, Mus. Roy. l'Afrique Centr. Terv. Belg. Ann. Ser. 8. Sci. Geol. 57. pp. 94—95.

I described a new genus in 1969 (NAGY p. 209) as *Cichoriaearumpollenites*. I received SAH's study when mine was already in press, so that the valid generic name could be printed only into a footnote.

Genotype: *Cichoreacidites spinosus* SAH 1967

Cichoreacidites gracilis (NAGY 1969) n. c.

Plate CVII. Fig. 6—8.

1969. *Cichoriaearumpollenites gracilis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 208. Pl. XLVIII. Fig. 13—14.

Rare species of 26—33 μ , found in the Karpathian — Zengővárkony 59, 51.3—56.0 m, in the Lower Badenian — Szokolya 3, 68.6—69.6 m, Szokolya 2, 40.7—51.5 m, Nógrádszakál 2, 142.8—145.0 m, in the Pannonian — Beremend 9, 76.0 m, Vigántpetend 86.0—86.2 m.

Ordo: Ericales

Familia: Cletracae

Genus: *Tricolporopollenites* TH. et PF. 1953

Tricolporopollenites cletraciformis NAGY 1969

Plate CVII. Fig. 9—11.

1969. *Tricolporopollenites cletraciformis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 210—211. Pl. XLIX. Fig. 7—8.

A very rare pollen of 20—23 μ , found in the Egerian — Fót 1, 196.4—235.0 m, in the Karpathian — Zengővárkony 59, 67.5—78.0 m, in the Badenian — Hidas 53, 667.2—669.2 m, Szokolya 2, 86.3—87.1 m.

Two specimens were taken as cf., sized 28 μ , one from the Ottnangian — Pusztakisfalu VI. 12.5—15.0 m, the other from the Lower Badenian — Szokolya 2, 51.1—51.9 m.

Familia: Ericaceae

Genus: *Ericipites* WODEHOUSE 1933

1933. *Ericipites* gen. nov. — WODEHOUSE, Tertiary pollen II. pp. 516—517.

Genotype: *Ericipites longisulcatus* WODEHOUSE 1933

***Ericipites baculatus* NAGY 1969**

Plate CVII. Fig. 12—14.

1969. *Ericipites baculatus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 211—212. Pl. XLIX. Fig. 18, 19.

It was found in few specimens, 26—36 μ , in the Egerian — Eger, Wind brickyard pit, layer "k", in the Eggenburgian — Püspökhatvan 4, 260.0—263.0 m, in the Öttnangian — Balaton 26, 523.0—529.9 m, in the Karpathian — Zengővárkony 59, 56.0—65.0 m, Mecsek nádásd surface exposure, Litke 17, 232.0—234.0 m, in the Badenian — Tar 34, 530.0—533.0 m, Tengelic 2, 726.4—730.2 m, in the Lower Pannonian — Pápa 2, 142.8—143.3 m, in the Upper Pannonian — Hidas 53, 132.5—134.8 m.

Remark: A press error in the original species description: the pollens are not tricolpate, but tricolporate.

***Ericipites callidus* (R. POTONIÉ 1931) W. KR. 1970**

Plate CVII. Fig. 15—18.

1931. *Pollenites callidus* n. sp. — R. POT., Braunkohle, H. 16. p. 332. Taf. II. Fig. 27.

1934. *Pollenites callidus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 85. Taf. 4. Fig. 9, 13.

1953. *Tetradopollenites callidus* (R. POT.) n. c. — TH. et FR., Palaeontogr. 94. B. 1—4. p. 112.

1966. *Ericipites* ex gr. *callidus* (R. POT. 1934) — SONTAG, Geol., Jhg. 15, Beih. 54. p. 42. T. 70/1—3.

1970. *Ericipites callidus* (R. POT. 1931) comb. n. — W. KR., Pal. Abh. Abt. B. Bd. III. H. 3/4. p. 122.

Few specimens, 23—31 μ , were found in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 214.0—216.5 m, in the Eggenburgian — Budajenő 2, 518.0—523.0 m, Püspökhatvan 4, 248.0—251.0 m, Fót 1, 142.6—183.5 m, in the Karpathian — Fót 1, 118.0—131.5 m, in the Lower Badenian — Szokolya 2, 75.1—75.9 m, in the Sarmatian — Lak 1, 232.0—233.5 m, in the Lower Pannonian — Tata (TVG) 26, 30.0—35.0 m, in the Upper Pannonian — Vásárosnamény 1, 787.0—787.7 m, Naszály 1, 60.0—66.0 m.

R. POTONIÉ described the species (1931, 1934) from Miocene coal-bearing formations, THOMSON et PFLUG stated that it is an enduring species during the whole Tertiary with a very long life-span.

***Ericipites discretus* (R. POT. 1934) NAGY 1969**

Plate CVII. Fig. 19—20.

1934. *Pollenites discretus* n. sp. — R. POT., Arb. Inst. Paläobot. 4. p. 86. Taf. 6. Fig. 23.

1953. *Tetradopollenites discretus* (R. POT.) n. c. — TH. et FR., Palaeontogr. 94. Abt. B. Lief. 1—4. p. 113. Taf. 15. Fig. 74, 78.

1969. *Ericipites discretus* (R. POT. 1934) n. c. — NAGY, MÁFI Évk. 52. 2. p. 211. Pl. XLIX. Fig. 12—13.

These 29—43 μ tetrads came mainly from the Lower Miocene, as in the Egerian — Fót 1, 357.0—358.5 m, 358.5—360.0 m, Eger, Wind brickyard pit, layers "x₂" and "u", in the Eggenburgian — Fót 1, 169.3—171.7 m, Budajenő 2, 538.4—539.4 m, in the Karpathian — Zengővárkony 59, 60.9—63.0 m, in the Sarmatian — Hidas 53, 545.4—546.5 m.

Their occurrence in younger formations is probably secondary; in the Lower Pannonian — Beremend 9, 76.0 m, Tata (mapping borehole) 26, 16.8—24.6 m, Tata (TVG) 26, 21.0—24.0 m, in the Upper Pannonian — Hidas 53, 126.6—132.6 m, 364.2—367.0 m.

R. POTONIÉ described the species from the Middle Eocene of Geiseltal, THOMSON et PFLUG mentioned it beside the Upper Eocene and Lower Oligocene also from the Reuverian which is very likely a secondary occurrence.

***Ericipites ericius* (R. POT. 1931) R. POT. 1960**

Plate CVII. Fig. 21—22.

1931. *Pollenites ericius* n. sp. — R. POT., Braunkohle, Jhg. 30. Hf. 16. p. 329. T. II. Fig. 25., p. 332.

1934. *Pollenites ericius* R. POT. — R. POT., Arb. Inst. Paläobot. Bd. 4. p. 84. T. 4. Fig. 11, 14.

1953. *Tetradopollenites ericius* (R. POT. 1931) n. comb. — TH. et PFLUG, Palaeontogr. 94. Bd. 1—4. p. 112. T. 15. Fig. 71, 77, 79.

1960. *Ericipites* (al. *Pollenites*) *ericius* (R. POT. 1931) n. c. — R. POT., Synopsis III. p. 138.

It occurs in moderate quantities, 31–42 μ , in the Egerian — Eger, Wind brickyard borehole 9.2–9.7 m, Fót 1, 348.0–372.0 m, in the Karpathian — Fót 1, 130.5–131.5 m, Várpalota 133, 161.0–167.7 m, in the Lower Badenian — Szokolya 3, 51.6–52.5 m, Szokolya 2, 7.9–82.3 m, in the Sarmatian — Cserhátszentiván 1, 165.0–167.0 m, in the Lower Pannonian — Megyaszó 1, 62.5–65.0 m, Naszály 1, 131.5–150.0 m, in the Upper Pannonian — Naszály 1, 17.0–19.5 m, Megyaszó 1, 25.0–32.0 m.

Remark: This species was described as *Pollenites ericius* by R. POTONIÉ (1931) from Tertiary brown coals (Babina II mine, Miocene). Later he found it in the Geiseltal Eocene and in the Rhénian brown coals. THOMSON et PFLUG (1953) consider it to range from the Eocene up to the Upper Pliocene.

***Ericipites hidasensis* NAGY 1969**

Plate CVII. Fig. 23–25.

1969. *Ericipites hidasensis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 212. Pl. L. Fig. 1–2.

Some specimens, 29–41 μ , were found in the Eggenburgian — Fót 1, 160.0–162.0 m, Püspökhátvan 4, 227.0–230.0 m, in the Karpathian — Litke 17, 160.0–162.0 m, in the Badenian — Nógrádszakál 2, 95.5–122.0 m, Szokolya 2, 71.9–72.4 m, Tar-Fenyvespuszta area, sample 27, Hidas 53, 600.5–602.3 m, in the Lower Pannonian — Balatonkenese 1, 62.4–63.0 m, Naszály 1, 140.0 m, Tata (TVG) 26, 15.0–18.0 m, Tata (TVG) 27, 8.5–30.4 m, in the Upper Pannonian — Pápa 2, 5.0 m.

Series: Caryophyllales - Monochlamydae

Ordo: Santalales

Subordo: Loranthineae

Familia: Loranthaceae

***Spinulaepollis* W. KRUTZSCH 1962**

1962. *Spinulaepollis* n. fgen. — W. KR., Geol., Jhg. 11. H. 3. p. 278.

Generotypus: *Spinulaepollis arceuthobioides* W. KR. 1962

***Spinulaepollis arceuthobioides* W. KR. 1962**

Plate CVII. Fig. 26.

1962. *Spinulaepollis arceuthobioides* n. fsp. — W. KR., Geol., 11. H. 3. p. 278. Taf. VI. B. 1–15.

Some specimens, 20–23 μ , were found in the Eggenburgian — Szászvár 8, 432.5–432.7 m, in the Karpathian — Komló 120, 367.0–374.7 m, Zengővárkony 45, 13.6–13.7 m. One 17 μ specimen came from the Egerian — Eger, Wind brickyard pit, layer "u".

It occurs in quite high numbers in the GDR, according to KRUTZSCH, THIELE-PFEIFFER, however, mentioned only one single specimen from Oberpfalz (1980 p. 160.) from a Miocene brown coal bearing sequence.

Familia: Proteaceae

***Proteacidites* (COOKSON 1950) COUPER 1953**

1950. *Proteacidites* — COOKSON, Austr. Journ. of Sci. Res. B. 3.2. pp. 170–175.

1953. *Proteacidites* COOKSON ex COUPER — COUPER, N. Zeal. Geol. Surv. Pal. Bul. 22. p. 42.

Generotypus: *Proteacidites adenanthoides* COOKSON 1950

Proteacidites egerensis NAGY 1963

Plate CVII. Fig. 27—32.

1963. *Proteacidites egerensis* n. sp. — NAGY, Pollen et Spores, Vol. V. No. 2. p. 406. Pl. III. 9—11.

Very rare 9—16 μ specimens. The Egerian specimen — Wind brickyard, layer “u” — is straight triangular, the others are slightly concave, in the Eggenburgian — Püspökhatvan 4, 233.0—236.0 m, in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m (NAGY 1973, Pl. V. Fig. 10—12.), Sajószentpéter 120, 48.0 m,* in the Lower Badenian — Szokolya 2, 109.0—111.2 m.

Ordo: Caryophyllales

Subordo: Caryophyllineae

Familia: Caryophyllaceae

Genus: *Caryophyllidites* COUPER 1960

1960. *Caryophyllidites* n. gen. — COUPER, N. Zeal. Geol. Surv. Pal. Bul. 32. p. 68.

Generotypus: *Caryophyllidites polyoratus* COUPER 1960

Caryophyllidites hidasensis NAGY 1969

Plate CVII. Fig. 33—34.

1969. *Caryophyllidites hidasensis* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 213—214. Pl. L. Fig. 3, 8.

Very rare pollens of 35—37 μ size, occurring in the Badenian — Hidas 53, 688.0—688.5 m and in the Lower Pannonian — Megyaszó 1, 95.0—98.7 m.

Caryophyllidites microreticulatus NAGY 1969

Plate CVIII. Fig. 1—2.

1969. *Caryophyllidites microreticulatus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 214. Pl. XLIX. Fig. 20—21.

Very rare pollens of 21—26 μ , found in the Egerian — Fót 1, 357.0—358.5 m, in the Badenian — Zengővárkony 59, 30.9—34.0 m.

Caryophyllidites rueterbergensis W. KR. 1966

Plate CVIII. Fig. 3—4.

1966. *Caryophyllidites rueterbergensis* n. fsp. — W. KR., Geol., 15. Beih. 35. pp. 40—41. Taf. VIII. 9—14.

Very rare species of 24—28 μ , found in the Lower Badenian — Szokolya 2, 93.0—96.6 m.

Subordo: Chenopodinae

Familia: Chenopodiaceae

Genus: *Chenopodipollis* W. KR. 1966

1966. *Chenopodipollis* n. fgen. — W. KR., Geol., 15. Beih. 55. p. 35.

Generotypus: *Chenopodipollis multiplex* (WEYL. et PF. 1957) W. KR. 1966

* Studied by MISS. E. BODOR.

Chenopodipollis maximus NAGY 1969

Plate CVIII. Fig. 5–6.

1969. *Chenopodipollenites maximus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 215. Pl. I. Fig. 5–6.

Few specimens of 33–38 μ diameter were found in the Badenian — Hidas 53, 558.0–669.8 m, Szokolya 3, 63.0–64.7 m, Szokolya 2, 115.3–118.3 m.

Chenopodipollis multiplex (WEYL. et PF. 1957) W. KR. 1960

Plate CVIII. Fig. 10–11.

1957. *Periporopollenites multiplex* n. sp. — WEYL. et PF., Palaeontogr. 102. Abt. B. Lief. 4–6. p. 103. T. 22. Fig. 18–19.

1966. *Chenopodipollis* (al. *Periporopollenites*) *multiplex* (WEYL. et PF. 1957) n. c. — W. KR., Geol., 15. Beih. 55. p. 35. T. VII. 22–25.

Some specimens, 15–27 μ , were found in the Egerian — Fót 1, 288.0–305.0 m, in the Eggenburgian — Püspökhatvan 4, 233.0–236.0 m, in the Badenian — Hidas 53, 669.2–763.3 m, mine Hidasbánya, II. seam, sample 1, 53, Szokolya 2, 45.5–47.1 m, in the Lower Pannonian — Pula 3, 15.5–16.0 m, in the Upper Pannonian — Naszály 1, 17.0–18.0 m, Hidas 53, 134.0–137.0 m.

Chenopodipollis neogenicus NAGY 1969

Plate CVIII. Fig. 12–15.

1969. *Chenopodipollenites neogenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 215. Pl. L. Fig. 9, 10.

Some specimens of 25–30 μ were found in the Lower Badenian — Szokolya 3, 53.6–54.6 m, Szokolya 2, 47.9–48.7 m, 72.7–73.5 m, 99.0–100.0 m, 109.0–111.2 m, in the Upper Pannonian — Hidas 53, 147.5–148.5 m.

Familia: *Amaranthaceae*

Genus: *Vaclavipollis* W. KR. 1966

1966. *Vaclavipollis* n. gen. — W. KR., Geol., Beih. 55. pp. 35–36.

Generotypus: *Vaclavipollis pactovae* W. KR. 1966

Vaclavipollis sooiana NAGY 1973

Plate CVIII. Fig. 16–19.

1973. *Vaclavipollis sooiana* n. sp. — NAGY, Acta Bot. Acad. Sci. Hung. 19 (1–4), p. 455. Pl. V. Fig. 8–9.

Rare species of 28–37 μ , found in the Badenian — Szokolya 3, 47.0–48.6 m, Szokolya 2, 50.3–51.1 m, Tengelic 2, 732.2–735.7 m, in the Lower Pannonian — Alsóvadász 1, 94.4–101.0 m.

Morphologically it is similar to the genus *Gomphrena* from the *Amaranthaceae*.

Ordo: *Ebenales* (*Diospyrales*)

Familia: *Sapotaceae*

Genus: *Sapotaceoidaepollenites* R. POT. 1960

1950. *Sapotaceoidae*, *Sapotaceoidae-pollenites* — R. POT., THOMS. et THIERG., Geol. Jb. 58. p. 62.

1953. *Tetracolporopollenites* n. g. (PF. et THOMS.) — THOMS. et PF., Palaeontogr. 94. B. p. 108.

1960. *Sapotaceoidaepollenites* R. POT., THOMS. et THIERGART 1950 — R. POT., Synopsis III. p. 109.

Generotypus: *Sapotaceoidaepollenites manifestus* (R. POT. 1931) R. POT. 1960

The genus is represented by quite a number of species in the Neogene of Hungary, first of all in the Oligocene—Miocene transition period and the early Neogene. It occurs, however, never dominantly.

R. POTONIÉ mentioned in 1934 (Arb. Inst. Paläobot. 4. p. 86) for comparison of *Pollenites manifestus* R. POT. some species from the family *Sapotaceae*. In 1950 he applied the name *Sapotaceoidae-pollenites* for the above species and for *S. micromanifestus*. Thus the genus is not monotypic and as no generic diagnosis was given, the genus name is invalid according to the Code.

***Sapotaceoidae-pollenites abditus* (PF. 1953) NAGY 1969**

Plate CVIII. Fig. 20.

1953. *Tetracolporopollenites abditus* n. sp. (PF.) — THOMS. et PF., Palaeontogr. 94. B. p. 108. T. 14. Fig. 100—101.

1969. *Sapotaceoidae-pollenites* cf. *abditus* (PF. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 217. Pl. L. Fig. 14, 22, 23.

Few specimens, 16—22 μ , were found in the Fót 1, 361.8—364.5 m, Eger, Wind brickyard, layer "u", these are probably in situ.

In younger Neogene samples it is probably redeposited — Karpathian — Fót 1, 115.0 m, in the Badenian — Hidas 53, 630.8—632.0 m, Nagybörzsöny 14, 789.1—790.5 m, in the Pannonian — Tihany 62, 161.4—161.7 m.

***Sapotaceoidae-pollenites biconus* (PF. 1953) NAGY 1969**

Plate CVIII. Fig. 21.

1953. *Tetracolporopollenites biconus* n. sp. (PF.) — TH. et PF., Paleontogr. 94. B. p. 109. Taf. 14. Fig. 113—114.

1969. *Sapotaceoidae-pollenites biconus* (PF. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 217. Pl. L. Fig. 18, 25.

Some specimens of 21—26 μ were found in the Egerian — Eger, Wind brickyard borehole, Fót 1, 241.6—243.2 m, in the Karpathian — Nógrádszakál 2, 231.0—290.0 m, in the Lower Badenian — Nógrádszakál 2, 122.0—167.0 m, Szokolya 2, 53.5—106.4 m.

In the Mecsek Mts. it was found in the Karpathian and Badenian formation.

***Sapotaceoidae-pollenites brevicolpus* (ROCHE 1973) n. c.**

Plate CVIII. Fig. 22—23.

1973. *Tetracolporopollenites brevicolpus* n. fsp. — ROCHE, Mém. expl. cartes géol. minières Belg. No. 13. p. 86.

Based on the short diagnosis and the 500 \times magnified pictures our specimen may belong to this species. It was found in the Egerian — Fót 1, 209.5—209.9 m.

The form was described by ROCHE from the lower Eocene.

***Sapotaceoidae-pollenites folliformis* (PF. 1953) n. c.**

Plate CVIII. Fig. 24—25.

1953. *Tetracolporopollenites folliformis* n. sp. (PF.) — THOMS. et PF., Palaeontogr. 94. B. p. 109. Taf. 15. Fig. 26—29.

Some specimens, 19—22 μ , were found in the Egerian — Eger, Wind brickyard pit, layer "x₂", in the Ottnangian — Tekeres 1, 881.9—883.2 m, in the Karpathian — Komló 120, 372.0—374.0 m, in the Badenian — Tab, thermal water borehole 654.0—656.0 m, Szokolya 2, 101.0—102.2 m.

PFLUG described the species from the Paleocene—Lower Eocene of Germany.

***Sapotaceoidae-pollenites hungaricus* (KEDVES 1965) n. c.**

Plate CVIII. Fig. 26.

1965. *Tetracolporopollenites hungaricus* n. fsp. — KEDVES, Acta Univ. Szegediensis, N. S. Tom. XI. Fasc. 1—2. p. 36. T. VII. Fig. 1—2.

Few specimens, 34 μ , were found in the Karpathian — Fót 1, 120.0–121.0 m, which may have been redeposited.

KEDVES M. described the species from the Lower Eocene of Iszkaszentgyörgy.

Sapotaceoidapollenites kirchheimeri (REISS. 1950) NAGY 1969

Plate CVIII. Fig. 27.

1950. *Pollenites kirchheimeri* n. sp. — REISSINGER, Paleontogr. 90. B. p. 119. T. 18. Fig. 62.

1953. *Tetracolporopollenites kirchheimeri* (REISS. 1950) n. c. — TH. et PF., Paleontogr. 94. B. p. 109. T. 15. Fig. 13–21.

1969. *Sapotaceoidapollenites kirchheimeri* (TH. et PF. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 218. Pl. 50. Fig. 20.

In Hungary it occurs, 34–42 μ , from the Egerian up to the Middle Miocene in low numbers, sometimes even as cf. forms. In the Middle Miocene it is more frequent — Zengővárkony 59, 65.0–70.5 m, Várpalota 133, 166.0–167.0 m, Szokolya 2, 87.2–115.5 m, Szilvásvár 1, 36.2–97.2 m, Nógrádszakál 2, 121.2–122.0 m.

Remark: In study (1969) THOMSON et PFLUG figure erroneously as authors.

Sapotaceoidapollenites manifestus (R. POT. 1931) R. POT. 1960 ssp. *contractus* PF. 1953

Plate CIX. Fig. 1–2.

1931. *Pollenites manifestus* n. sp. — R. POT., Jb. Preuss. geol. L. A. p. 3. Fig. 30.

1934. *Pollenites manifestus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 86–87. T. 4. Fig. 24–31. T. 6. Fig. 26.

1950. *Sapotaceoidae-pollenites manifestus* R. POT. — R. POT., THOMS. et THIERG., Geol. Jb. 65. p. 62. T. "B". Fig. 60–62.

1953. *Tetracolporopollenites manifestus* (R. POT.) n. c. ssp. *contractus* n. ssp. (PF.) — THOMS. et PF., Palaeontogr. 94. Abt. B. pp. 110–111. T. 15. Fig. 37–42.

1960. *Sapotaceoidapollenites* (al. *Pollenites*) *manifestus* (R. POT. 1931) POT., THOMS. et THIERG. 1950 — R. POT., Synopsis III. p. 109. T. 6. Fig. 130.

Few specimens, 23–28 μ , were found in the Egerian — Eger, Wind brickyard borehole and pit, layer "u", in the Badenian — mine Hidasbánya, II. seam, sample 1, Szokolya 2, 51.1–51.9 m.

Sapotaceoidapollenites cf. microellipsus (PF. 1953) n. c.

Plate CIX. Fig. 3.

1953. *Tetracolporopollenites microellipsus* n. sp. (PF.) — THOMS. et PF., Paleontogr. 94. B. p. 109. T. 14. Fig. 113–114.

Some cf. specimens, 23–31 μ , were found in the Eggenburgian — Fót 1, 171.7–172.7 m, in the Ottnangian — Tekerés 1, 895.4–899.4 m, in the Lower Badenian — Szokolya 2, 52.7–53.5 m. Maybe they were all redeposited. One 20 μ specimen smaller than given by description, came from Eger, Wind brickyard borehole 21.5–21.9 m.

PFLUG described the species from Paleocene–Middle Eocene formations of Germany.

Sapotaceoidapollenites microrhombus (PF. 1953) NAGY 1969

Plate CIX. Fig. 4–5.

1953. *Tetracolporopollenites microrhombus* n. sp. (PF.) — TH. et PF., Paleontogr. 94. B. p. 109. T. 15. Fig. 22–25.

1969. *Sapotaceoidapollenites microrhombus* (PF. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 217.

Very few, 23–25 μ , specimens were found in the Egerian — Eger, Wind brickyard borehole 8.2–9.2 m, in the Karpathian — Rákoskeresztúr I, 148.0–159.0 m, Litke 17, 182.0–184.0 m, in the Lower Badenian — Tengelic 2, 845.0–847.5 m.

Sapotaceoidapollenites microrhombus (PF. 1953) NAGY 1969 f. *miocaenica* NAGY 1969

Plate CIX. Fig. 6.

1969. *Sapotaceoidapollenites microrhombus* (PF. 1953) n. c. f. *miocaenica* n. f. — NAGY, MÁFI Évk. 52. 2. p. 217. Pl. L. Fig. 11.

Few specimens, 23–30 μ , were found in the Mecsek Mts. in the Ottnangian — Pusztakisfalu VI, in the Badenian — Hidas 53, and in Northern Hungary in the Karpathian — Litke 17, 242.0–244.0 m.

Sapotaceoidapollenites obscurus (PF. et TH. 1953) NAGY 1969

Plate CIX. Fig. 7–10.

1953. *Tetracolporopollenites obscurus* n. sp. (PF. et TH.) — THOMS. et PFLUG, Palaeontogr. 94. B. p. 108. T. 14. Fig. 86–99, 102–108.

1969. *Sapotaceoidapollenites obscurus* (PF. et THOMS. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 216–217. Pl. L. Fig. 15.

Relatively frequent, 26–46 μ species, found in the Egerian — Eger, brickyard borehole 7.8–9.7 m, brickyard pit, layers “x₂” and “u”, Fót 1, 194.5–305.0 m, in the Eggenburgian — Püspökhatvan 4, 302.0–306.0 m, in the Ottnangian — Pusztakisfalu VI. 12.5–15.0 m, Alsóvadász 1, 1029.0–1034.6/3 m, in the Karpathian — Zengővárkony 59, 65.0–83.0 m, Komló 120, 367.0–374.4 m, Litke 17, 220.0–234.0 m, Tengelic 2, 861.8–863.6 m, Nógrádszakál 2, 213.0–259.0 m, in the Badenian — Tab, thermal water exploratory borehole 654.0–656.0 m. Tengelic 2, 850.0–851.3 m, Hidas 53, 600.5–759.0 m, Szokolya 2, 85.5–86.3 m, in the Sarmatian — Hidas 53, 479.1–496.0 m, in the Pannonian — Alsóvadász 1, 94.4–101.0 m.

Sapotaceoidapollenites rotundus NAGY 1969

Plate CIX. Fig. 14–19.

1969. *Sapotaceoidapollenites rotundus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 219. Pl. L. Fig. 16–17, 24.

Specimens of 22–30 μ were found in the Badenian — Zengővárkony 59, 30.9–37.5 m, Szokolya 2, 37.9–106.4 m, Nógrádszakál 2, 78.0–79.5 m, in the Sarmatian — Cserhátszentiván 1, 169.0–173.0 m, in the Lower Pannonian — Tata (mapping borehole) 26, 16.8–24.6 m.

Sapotaceoidapollenites sapotoides (PF. 1953) R. POT. 1960

Plate CIX. Fig. 11–13.

1953. *Tetracolporopollenites sapotoides* n. sp. (PF. et TH.) — THOMS. et PF., Palaeontogr. 94. B. p. 110. Taf. 15. Fig. 6–12.

1960. *Sapotaceoidapollenites* (al. *Tetracolporopollenites*) *sapotoides* (THOMS. et PFLUG 1953) n. c. — R. POT., Synopsis III. p. 109.

Found in moderate quantities, 32–45 μ , in the Egerian — Eger, Wind brickyard borehole 7.8–8.7 m, in the Karpathian — Zengővárkony 45, 13.6–13.7 m, Zengővárkony 59, 63.0–83.0 m, Nógrádszakál 2, 229.0–231.0 m, Várpálot 133, 166.0–167.7 m, Badenian — Szokolya 2, 69.5–115.3 m, in the Sarmatian — Cserhátszentiván 1, 169.0–171.0 m.

Sapotaceoidapollenites thomsoni n. sp.

Plate CIX. Fig. 20–22.

Holotypus: Ph. 4, sample No 65., slide No 1., 100×7.2, Plate CIX. Fig. 20–22.

Locus typicus: Püspökhatvan 4, 257.0–260.0 m

Stratum typicum: Eggenburgian; silt

Diagnosis: Rounded, tetracolporate pollen. Length—width ratio: 0.9. The exine is cca. 1 μ finely intrapunctate. The colpi are thin, cca. 1 μ , not reaching to the poles. The exopores are small, round, just bigger than the colpus, the endopores are equatorially longer, thinner (cca. 0.5 μ) becoming cca. 1.5 μ towards the equator.

Dimensions: The holotype is $32 \times 28 \mu$.

Differential diagnosis: Among the rounded globose or near-globose forms *Sapotaceoidapollenites kirchheimeri* (REISS 1950) NAGY 1969 has a similar length—width ratio (0.9—1.0), but it is bigger, the endopores are much broader and the exine becomes thick towards the equator.

Beside the holotype further specimens by one or two came from the Eggenburgian — Püspökhatvan 4.

Remark: Specimens identical in morphology and size were shown by THOMSON (1949, Pl. X. Fig. 5—6) from Rheinian brown coal and by THOMSON et PFLUG (1953, Pl. 15. Fig. 44). In 1949 THOMSON showed recent *Sapotaceae* pollens and *Mimusops elegans* (Pl. X. Fig. 11) is remarkably similar to the above species.

Sapotaceoidapollenites turgidus NAGY 1969

Plate CIX. Fig. 23—25.

1969. *Sapotaceoidapollenites turgidus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 218—219. Pl. L. Fig. 12—13.

Specimens of $27-36 \mu$ were found in the Egerian — Eger, Wind brickyard pit, layers "k" and "u", in the Eggenburgian — Püspökhatvan 4, 201.0—204.0 m, in the Karpathian — Zengővárkony 59, 71.4—73.0 m, Tengelic 2, 861.8—863.6 m, in the Lower Badenian — Szokolya 2, 95.0—96.6 m, 76.7—77.5 m.

Familia: Symplocaceae

Genus: Porocolpopollenites PFLUG 1953

1950. *Symplocos-pollenites* ... in R. POTONIÉ, THOMS. et THIERG. Geol. Jb. 65. p. 61.

1951. *Symplocopollenites* in R. POT., Palaeontogr. 91. B. p. 147.

1953. *Porocolpopollenites* n. gen. (PF.) — TH. et PF., Palaeontogr. 94. B. p. 92.

Generotypus: *Porocolpopollenites vestibuliformis* PF. 1953

Porocolpopollenites hemicolpis PFLUG 1953

Plate CIX. Fig. 26—27.

1953. *Porocolpopollenites hemicolpis* n. sp. (PF.) — TH. et PF., Paleontogr. 94. B. p. 93. T. 10. Fig. 129.

Very rare, $21-26 \mu$ pollens in the Ottngian — Nagygyőrő 1, 903.2—908.5 m, in the Lower Badenian — Szokolya 2, 93.0—95.0 m.

PFLUG described the species from the Rheinian brown coal bearing sequences.

Porocolpopollenites hidasensis NAGY 1963

Plate CIX. Fig. 28—30.

1963. *Porocolpopollenites hidasensis* n. sp. — NAGY, Acta Bot. IX. 3—4. pp. 397—398. Pl. V. Fig. 39—41.

Very few specimens, $29-31 \mu$, were found in the Middle Badenian — Hidas 89, 326.0 m, in the Sarmatian — Hidas 53, 572.0—575.0 m.

Porocolpopollenites latiporis PF. et TH. 1953

Plate CX. Fig. 1—2.

1953. *Porocolpopollenites latiporis* n. sp. (PF. et TH.) — THOMS. et PF., Palaeontogr. 94. B. p. 93. Taf. 10. Fig. 123—124.

Some specimens, $25-35 \mu$, were found in the Eggenburgian — Fót 1, 168.0—172.7 m, in the Ottngian — Tekeres 1, 895.4—899.4 m, in the Karpathian — Zengővárkony 59, 65.0—67.0 m, in the Lower Badenian — Szokolya 2, 46.3—47.1 m, in the Sarmatian — Vajta, water exploratory borehole 724.0—728.0 m, Cserhátszentiván 1, 163.0—165.0 m.

Porocolpopollenites orbiformis PF. et TH. 1953

Plate CX. Fig. 3—5.

1953. *Porocolpopollenites orbiformis* n. sp. (PF. et TH.) — TH. et PF., *Palaeontogr.* 94. B. p. 94. Taf. 11. Fig. 24.

Very rare, 22—25 μ , species, found in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Badenian — Tengelic 2, 820.0—823.2 m.

Describing it from the Rheinian brown coal also THOMSON et PFLUG mentioned that it is a very rare species.

Remark: Among the illustrations in PFLUG the specific characters are best visible on plate 11. figure 24. thus this is the one I regard as the holotype.

Porocolpopollenites stereiformis PFLUG 1953

Plate CX. Fig. 6—7.

1953. *Porocolpopollenites stereiformis* n. sp. (PF.) — TH. et PF., *Palaeontogr.* 94. B. p. 93. T. 10. Fig. 126—128.

Very few specimens, 28—31 μ , were found in the Egerian — Fót 1, 354.0—355.0 m, in the Karpathian — Komló 120, 178.0—178.8 m, in the Badenian — mine Hidasbánya II. seam, sample 6.

Porocolpopollenites triangulus (R. POT. 1931) TH. et PF. 1953

Plate CX. Fig. 8.

1931. *Pollenites triangulus* n. sp. — R. POT., *Braunkohle*, H. 16. p. 332. Taf. II. Fig. 9.

1951. *Symplocoipoll. triangulus* R. POT. 1931 — R. POT., *Palaeontogr.* 91. B. p. 135. T. XXI: Text.

1953. *Porocolpopollenites triangulus* (R. POT.) n. c. — TH. et PF., *Palaeontogr.* 94. B. p. 94. Taf. 11. Fig. 1—2.

Very rare, 27—30 μ , species in the Egerian — Fót 1, 214.0—216.5 m, in the Badenian — Hidas 53, 666.7—669.2 m.

Porocolpopollenites vestibulum (R. POT. 1931) TH. et PF. 1953

Plate CX. Fig. 9—11.

1931. *Pollenites vestibulum* n. sp. — R. POT., *Braunkohle*, H. 16. p. 332. Taf. II. Fig. 23.

1951. *Symplocoipollenites vestibulum* R. POT. 1934 — R. POT., *Palaeontogr.* 91. B. p. 147. T. XXI: Text.

1953. *Porocolpopollenites vestibulum* (R. POT.) n. c. — THOMS. et PF., *Palaeontogr.* 94. B. p. 94. T. 11. Fig. 3—23.

Few specimens, 38—42 μ , were found in the Karpathian — Zengővárkony 59, 30.9—34.0 m, in the Badenian — Nógrádszakál 2, 122.0—123.0 m, Szokolya 2, 52.9—56.0 m, Tengelic 2, 780.0—823.4 m, in the Lower Pannonian — Pápa 2, 142.8—143.3 m.

Ordo: Polygonales

Familia: Polygonaceae

Genus: *Persicarioipollis* W. KR. 1962

1962. *Persicarioipollis* n. fgen. — W. KR., *Geol.*, 11. H. 5. p. 282.

Genotype: *Persicarioipollis meuseli* W. KR. 1962

Persicarioipollis franconicus W. KR. 1962

Plate CX. Fig. 12—14.

1962. *Persicarioipollis franconicus* n. sp. — W. KR., *Geol.*, 11. H. 3. p. 284. T. X. Fig. 5—8.

Some specimens, 30—37 μ , were found in the Pannonian — Tihany I. 1. (section), sample 62., Naszály 1, 82.0—93.4 m, Tata mapping borehole 26, 16.8—24.6 m, Jászládány 1, 188.4—188.6 m, 188.6—397.4 m.

Persicarioipollis lusaticus W. KR. 1962

Plate CX. Fig. 15—16.

1962. *Persicarioipollis lusaticus* n. fsp. — W. KR., Geol., 11. H. 3. p. 284. T. IX. Fig. 13—17.

Specimens of 30—37 μ were found in the Eggenburgian — Szászvár 8, 433.8—434.1 m, in the Karpathian — Zengővárkony 59, 65.0—67.0 m, in the Lower Badenian — Szokolya 3, 51.6—52.6 m, 60.8—63.0 m, in the Sarmatian — Hidas 53, 545.4—546.5 m, Tengelic 2, 722.7—723.1 m.

Persicarioipollis meuseli W. KR. 1962

Plate CX. Fig. 17—18.

1962. *Persicarioipollis meuseli* n. fsp. — W. KR., Geol., 11. H. 3. p. 282. T. VIII. Fig. 9—16.

Few specimens, 41—46 μ , were found in the Ottnangian — Tekeres 1, 886.7—886.9 m, in the Karpathian — Ipolytarnóc, Mihálygerge surface exposure, Pásztó 4, 145.5 m, in the Lower Badenian — Szokolya 2, 86.3—87.1 m.

Persicarioipollis welzowense W. KR. 1962

Plate CX. Fig. 19—20.

1962. *Persicarioipollis welzowense* n. fsp. — W. KR., Geol., 11. H. 3. p. 284. T. IX. Fig. 6—12.

Specimens of 35—46 μ were found in the Karpathian — Ipolytarnóc, Mihálygerge surface exposure, in the Upper Pannonian — Budapest-Kőbánya IV. section, 101.0 m, Naszály 1, 17.0—18.0 m, 60.0—66.0 m, Várkesző 1, 15.0—16.0 m.

Ordo: Urticales

Familia: Moraceae

Moraceae pollen

Plate CXI. Fig. 1—3.

1979. Family *Moraceae*, unknown pollen — NAGY, Grana 18. p. 185—186. (Fig. 4E—G).

A small 10 μ verrucate pollen came from the Lower Badenian tuffitic sand — Szokolya 2, 95.0—96.5 m.

Familia: Urticaceae

Genus: *Triporopollenites* PF. et THOMS. 1953

***Triporopollenites urticoides* NAGY 1969**

Plate CXI. Fig. 4—5.

1969. *Triporopollenites urticoides* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 221—222. Pl. LI. Fig. 13, 16.

Pollens of 14—15 μ were found in the Egerian — Tata (TVG) 27, 58.2—59.0 m, in the Ottnangian — Zengővárkony 45, 17.2—17.8 m, Alsóvadász 1, 1029.0—1034.6 m, in the Badenian — Hidas 53, 763.3—764.6 m, in the Sarmatian — Hidas 53, 444.0 m.

Familia: Ulmaceae

Subfamilia: Ulmoideae

Genus: *Ulmipollenites* WOLFF 1934

1934. *Ulmipollenites* — WOLFF, Arb. Inst. Paläobot. 5. p. 75. Taf. 5. Fig. 25.

Generotypus: *Ulmipollenites undulosus* WOLFF 1934

***Ulmipollenites maculosus* NAGY 1969**

Plate CXI. Fig. 6—7.

1959. *Ulmipollenites maculosus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 223. Pl. LII. Fig. 1—2.

Numerous, 29—45 μ , pollens were found in the Eggenburgian — Püspökhatvan 4, 233.0—236.0 m, in the Karpathian — Zengővárkony 59, 51.3—56.0 m, in the Badenian — Nagybörzsöny 14, 794.4—797.4 m, Szokolya 3, 33.0—64.7 m, Szokolya 2, 71.4—102.2 m, Hidas 53, 600.5—669.2 m.

***Ulmipollenites miocaenicus* NAGY 1969**

Plate CXI. Fig. 8—9.

1969. *Ulmipollenites miocaenicus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 222—223. Pl. LII. Fig. 3—4.

Moderately frequent, 29—34 μ , pollens were found in the Egerian — Eger, Wind brickyard pit, layer “u”, sample 14, in the Eggenburgian — Szászvár 8, 433.6—433.8 m, in the Karpathian — Litke 17, 208.0—210.0 m, Komló 120, 374.4—374.7 m, 178.0—178.8 m, in the Badenian — mine Hidasbánya, II. seam, sample 6, Hidas 53, 667.2—669.2 m, Tar 34, 210.0—213.0 m.

***Ulmipollenites polyangulus* (PF. 1953) n. c.**

Plate CXI. Fig. 10—11.

1953. *Polyporopollenites polyangulus* n. sp. (PF.) — TH. et PF., Palaeontogr. 94. B. p. 91. Taf. 10. Fig. 59—60.

Pollens of 18—30 μ in variable quantities were found; dominantly in the Eger, Wind brickyard pit, layer “u”, 7—14. samples, less much in Fót 1, 201.0—354.0 m (both Egerian). It is frequent in the Eggenburgian — Fót 1, 168.0—169.3 m, Budajenő 2, 556.5—557.7 m, Szászvár 8, 434.3—434.5 m. These were apparently in situ occurrences while the following may have been redeposited: in the Karpathian — Litke 17, 242.0—252.0 m, in the Upper Pannonian — Naszály 1, 54.5—60.0 m.

PFLUG described the species from the Paleocene—Middle Eocene.

***Ulmipollenites stillatus* NAGY 1969**

Plate CXI. Fig. 12—14.

1969. *Ulmipollenites stillatus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 223. Pl. LI. Fig. 13, 16.

Moderately frequent, 26—39 μ , species found in the Egerian — Eger, Wind brickyard pit, layer “u”, samples 12, 14, in the Karpathian — Mecseknádasd, Zobák surface exposure, Komló 120, 178.0—178.8 m, Litke 17, 39.0—40.0 m, in the Badenian — Hidas 53, 688.0—688.5 m, Szokolya 2, 78.8—79.1 m, Nógrádszakál 2, 112.0—116.0 m, in the Sarmatian — Hidas 53, 479.1—482.0 m.

***Ulmipollenites undulosus* WOLFF 1934**

Plate CXI. Fig. 15—16.

1934. *Ulmipollenites undulosus* n. sp. — WOLFF, Arb. Inst. Paläobot. 4. p. 75. Taf. 5. Fig. 25.

1953. *Polyporopollenites undulosus* (WOLFF) n. c. — TH. et PF., Palaeontogr. 94. B. p. 91. Taf. 10. Fig. 52—58.

Pollens of 25—35 μ were found in small quantities in the Egerian — Eger, Wind brickyard pit, layer “u”, sample 14., Fót 1, 206.0—209.5 m, in the Eggenburgian — Ipolytarnóc, sample 1282, in the Ottnangian — Nagygörbő 1, 903.2—908.5 m, in the Badenian — Szokolya 3, 77.2—77.4 m, Szokolya 2, 62.3—107.9 m, Nógrádszakál 2, 91.4—93.0 m, in the Pannonian it becomes dominant — Hidas 53, 134.8—367.0 m, Naszály 1, 26.7—29.7 m, Megyaszó 1, 25.0—32.0 m.

WOLFF described it from the Pliocene, THOMSON et PFLUG mentioned it from the Rheinian brown coal and the Reuverian.

Genus: *Celtipollenites* NAGY 1969

1969. *Celtipollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 224.

Generotypus: *Celtipollenites komlóensis* NAGY 1969

***Celtipollenites komlóensis* NAGY 1969**

Plate CXI. Fig. 17—20.

1969. *Celtipollenites komlóensis* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 224. Pl. XLIII. Fig. 3, 7.

Pollens of 28—46 μ in variable quantities were found, few in the Karpathian — Zengővárkony 59, 65.0—67.0 m, Komló 120, 178.0—178.8 m. It becomes more frequent in the Pannonian — Megyaszó 1, 72.5—74.5 m, 140.3—146.3 m, 200.0—206.0 m, Bogács 9/5, 163.0 m, Várkesző 1, 17.0—18.0 m, Kapolcs 2, 41.7—43.7 m.

Genus: *Zelkovaepollenites* NAGY 1969

1969. *Zelkovaepollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 224.

Generotypus: *Zelkovaepollenites potoniéi* NAGY 1969

***Zelkovaepollenites potoniéi* NAGY 1969**

Plate CXII. Fig. 1—4.

1969. *Zelkovaepollenites potoniéi* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 225. Pl. LI. Fig. 17, 20.

Few specimens, 32—41 μ , were found in the Ottnangian — Nagyörbő 1, 1059.4—1069.4 m, in the Karpathian — Zengővárkony 59, 56.0—73.0 m, Komló 120, 178.0—178.8 m, Almáspatak I., II. outcrops, Mecseknádasd surface exposures, in the Badenian — mine Hidasbánya, II. seam, Hidas 53, 600.5—669.8 m, Nagyörzsöny 14, 799.1—813.0 m, Szokolya 3, 60.8—63.0 m, Szokolya 2, 47.6—96.6 m, Nógrádszakál 2, 229.0—231.0 m, in the Sarmatian — Hidas 53, 534.0—537.0 m, Cserhátszentiván 1, 23.0—25.0 m, 169.0—171.0 m, 192.0—194.0 m, in the Pannonian — Hidas 53, 147.0—148.5 m, Szirma 2, 17.0—22.0 m.

***Zelkovaepollenites thiergarti* NAGY 1969**

Plate CXII. Fig. 5—8.

1969. *Zelkovaepollenites thiergarti* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 225. Pl. LI. Fig. 14, 15.

Pollens of 27—34 μ were found in moderate quantities in the Egerian — Fót 1, 288.0—357.0 m, in the Eggenburgian — Fót 1, 172.5 m, Szászvár 8, 432.5—432.7 m, 433.6—433.8 m, in the Karpathian — Litke 17, 236.0—238.0 m, in the Badenian — Hidas 53, 667.2—669.2 m, Tab thermal borehole 654.0—656.0 m, Tar 34, 563.0—566.0 m.

Ordo: Fagales

Familia: Betulaceae

Genus: *Carpinipites* S. K. SRIVASTAVA 1966

1933. *Carpinus* ... — WODEHOUSE, Tertiary pollen II. p. 510. Fig. 42.

1937. *Carpinus?*-*pollenites* ... THIERGART, Geol. Jb. 58. p. 315.

1953. *Polyporopollenites* n. g. (pro parte) — TH. et PF., Palaeontogr. 94. B. p. 92.

1966. *Carpinipites* n. g. — S. K. SRIVASTAVA, Pollen et Spores VII. 3. p. 530.

1969. *Carpinuspollenites* THIERGART 1938 — NAGY, MÁFI Évk. 52. 2. p. 226.

Remark: SRIVASTAVA (1966) validated *Carpinus ancipites* by WODEHOUSE, 1933 and took as generotype a fossil species which evidently belongs to the genus *Carpinus*.

Generotypus: *Carpinipites ancipites* (WODEHOUSE 1933) S. K. SRIVASTAVA 1966

***Carpinipites carpinoides* (Pf. 1953) n. c.**

Plate CXII. Fig. 9—14.

1953. *Polyporopollenites carpinoides* n. sp. — PFLUG, in: TH. et PF., Palaeontogr. 94. B. p. 92. Taf. 10. Fig. 79—84.

A moderately frequent species of 20—50 μ , showing 3—4—5—6 pores and occurring throughout the whole Neogene. As an Arctotertiary element it appears in the Egerian and although it falls back during warmer periods, like Ottnangian, Badenian coal-forming, but it is present near the shore even as a montane element.

Genus: *Ostryapollenites* THOMSON 1950

1950. *Ostrya? -Poll.* THOMSON — R. POT., THOMS. et THIERG., Geol. Jb. 65. p. 52.

Generotypus: *Ostryapollenites rhenanus* (THOMSON 1950) NAGY 1969

***Ostryapollenites rhenanus* (THOMS. 1950) NAGY 1969**

Plate CXII. Fig. 15—17.

1934. *Pollenites cf. granifer bituitus* R. POT. — R. POT. et VENITZ, Arb. Inst. Paläobot. 5. Taf. 2. Fig. 46.

1950. *Ostrya? -Poll. granifer rhenanus* n. spm. THOMSON — R. POT., THOMS. et THIERG., Geol. Jb. 65. p. 52. Taf. B. Fig. 9, 10.

1953. *Triporopollenites rhenanus* (THOMS.) n. c. — TH. et PF., Palaeontogr. 94. B. p. 84. T. 8. Fig. 150.

1969. *Ostryapollenites rhenanus* (THOMS. 1950) n. c. — NAGY, MÁFI Évk. 52. 2. pp. 226—227. Pl. LII. Fig. 10.

Rare species of 19—32 μ , found in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 201.0—205.0 m, 241.6—243.2 m, 349.5—354.0 m, 361.8 m, in the Eggenburgian — Szászvár 8, 432.5—432.7 m, Budajenő 2, 556.5—557.7 m, in the Karpathian — Zengővárkony 59, 60.9—63.0 m, Komló 120, 178.0—178.8 m, in the Badenian — Szokolya 2, 109.0—118.3 m, in the Sarmatian — Cserhátszentiván 1, 122.0—124.0 m, in the Lower Pannonian — Megyaszó 1, 62.5—65.0 m, in the Upper Pannonian — Naszály 1, 82.0—93.4 m.

Genus: *Triporopollenites* PFLUG et THOMS. 1953

1953. *Triporopollenites* n. gen. (PF. et TH.) — THOMS. et PF., Palaeontogr. 94. B. p. 82.

Generotypus: *Triporopollenites coryloides* PF. 1953

***Triporopollenites coryloides* PF. 1953**

Plate CXII. Fig. 19.

1953. *Triporopollenites coryloides* n. sp. — PFLUG, in: TH. et PF., Palaeontogr. 94. B. p. 84. Taf. 9. Fig. 20—24.

Few specimens, 19—23 μ , were found in the Badenian — Szokolya 3, 47.0—50.6 m, in the Sarmatian — Vajta water exploratory well 724.0—728.0 m, Cserhátszentiván 1, 13.2—15.5 m, in the Lower Pannonian — Tar 34, 63.0—69.0 m in the Upper Pannonian — mine Petőfibánya.

Genus: *Betulaepollenites* R. POTONIÉ 1934

1934. *Betulae-pollenites* R. POT., Arb. Inst. Paläobot. 4. p. 58.

Generotypus: *Betulaepollenites microexcelsus* R. POT. 1934

Betulaepollenites betuloides (PFLUG 1953) NAGY 1969

Plate CXII. Fig. 20–23.

1953. *Trivestibulopollenites betuloides* n. sp. (PF.) — TH. et PF., *Palaeontogr.* 94. B. Lief. 1–4. p. 85. Taf. 9. Fig. 25–34.

1969. *Betulaepollenites betuloides* (PF. 1953) n. c. — NAGY, *MÁFI Évk.* 52. 2. p. 228. Pl. LII. Fig. 12.

Specimens of 17–32 μ occurring in the whole Neogene. It is an Arctotertiary element, well represented in the Egerian (Fót 1, Eger-brickyard) but especially in the Pannonian, where sometimes it occurs dominantly in coastal formations (mine Petőfibánya). It is less frequent in the Sarmatian.

Genus: *Alnipollenites* R. POTONIÉ 1934

1932. *Alni-pollenites* ... R. POT. — R. POT., *Jb. Preuss. Geol. L. A.* p. 4.

1934. *Alni-pollenites* ... R. POT. — R. POT., *Arb. Inst. Paläobot.* 4. pp. 58–59.

Genotype: *Alnipollenites verus* R. POT. 1934

Alnipollenites verus R. POT. 1934

Plate CXII. Fig. 24–29.

1931. *Pollenites verus* n. sp. — R. POT., *Braunkohle* 16. p. 320. Taf. II. 40. p. 332.

1932. *Alni-pollenites verus* R. POT. — R. POT., *Jb. Preuss. Geol. L. A.* p. 4.

1934. *Alni-pollenites verus* R. POT. — R. POT., *Arb. Inst. Paläobot.* 4. pp. 58–59.

1953. *Polyvestibulopollenites (Alnipollenites) verus* (R. POT.) n. comb. — TH. et PF., *Palaeontogr.* 94. B. p. 90.

Pollens of 17–35 μ , occurring as 5 (rarely 4, 6, 7) pored variants in the entire Neogene. Its dominantly occurrences are especially typical in some particular facies — coal-formation, limnic phases.

Familia: *Fagaceae*

Genus: *Faguspollenites* RAATZ 1937

1937. *Faguspollenites* ... RAATZ, *Abh. Preuss. Geol. L. A., N. F., H.* 183. p. 23.

Genotype: *Faguspollenites verus* RAATZ 1933

Faguspollenites crassus NAGY 1969

Plate CXIII. Fig. 1–5.

1969. *Faguspollenites crassus* n. sp. — NAGY, *MÁFI Évk.* 52. 2. pp. 231–232. Pl. LII. Fig. 20.

Species of 35–51 μ , found in varying quantities as singles in the Egerian — Fót 1, 328.0–332.8 m, in the Eggenburgian — Budajenő 2, 544.4–548.7 m, rather frequent in the Badenian — Hidas 53, 669.0–669.8 m, Herend 52, 71.8–72.6 m, Szokolya 2, 71.9–100.0 m, sparse in the Sarmatian — Cserhátszentiván 1, 163.0–190.0 m, in the Lower Pannonian — Megyaszó 1, 140.3–146.3 m, in the Upper Pannonian — Hidas 53, 126.0–134.4 m, Naszály 1, 93.4–112.0 m.

Faguspollenites gemmatus NAGY 1969

Plate CXIII. Fig. 6–8.

1969. *Faguspollenites gemmatus* n. sp. — NAGY, *MÁFI Évk.* 52. 2. p. 231. Pl. LI. Fig. 18–19.

Rather rare, 36–58 μ , species found in the Egerian — Fót 1, 351.0–352.5 m, in the Eggenburgian — Budajenő 2, 575.5–575.9 m, in the Karpathian — Fót 1, 120.0–123.3 m, Komló 120, 374.4–374.7 m, in the Badenian — Hidas 53, 600.5–669.2 m, Szokolya 3, 51.6–52.6 m, 60.8–

63.0 m, Szokolya 2, 71.9—86.3 m, in the Sarmatian — Cserhátszentiván 1, 132.0—134.0 m, 190.0—192.0 m, in the Lower Pannonian — Tata mapping borehole 26, 16.8—24.6 m, in the Upper Pannonian — Gérce 1, 129.6—130.8 m, Naszály 29.7—32.0 m, 1, 93.4—104.6 m.

The fossil species resembles *Fagus orientalis* LIPSKY especially in its exine structure (NAGY 1969).

Faguspollenites minor NAGY 1969

Plate CXIII. Fig. 9—12.

1969. *Faguspollenites minor* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 232. Pl. LIII. Fig. 4, 5.

A moderately frequent, 27—45 μ , species found in the Egerian — Eger, Wind brickyard pit, layer "x", Fót 1, 214.0—369.0 m, Tata (TVG) 27, 30.7—34.0 m, in the Eggenburgian — Budajenő 2, 544.4—548.7 m, Püspökhatvan 4, 185.0—257.0 m, in the Ottnangian — Pusztakisfalva VI. 12.5—15.0 m, Alsóvadász 1, 984.5—988.2 m, in the Karpathian — Komló 120, 178.0—178.8 m, Zengővárkony 59, 67.5—81.0 m, in the Badenian — Zengővárkony 59, 30.9—34.0 m, Tengelic 2, 814.0—817.0 m, Szokolya 3, 31.0—74.5 m, Szokolya 2, 39.1—96.6 m, Nógrádszakál 2, 78.0—79.5 m, in the Sarmatian — Hidas 53, 558.0—561.0 m, Cserhátszentiván 1, 115.0—173.0 m, in the Pannonian — Tata mapping 26, 10.5—14.6 m, Naszály 1, 38.0—39.9 m, Alsóvadász 1, 163.1—170.2 m, Szirma 2, 47.9—48.4 m.

Botanically it may be related to *Fagus ferruginea* AIT. (see NAGY 1969).

Faguspollenites subtilis NAGY 1969

Plate CXIII. Fig. 13—14.

1969. *Faguspollenites subtilis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 230. Pl. LII. Fig. 14.

Rather rare 46—57 μ pollens, found mainly in the Karpathian — Zengővárkony 59, 51.3—73.0 m, Komló 120, 178.0—178.8 m, besides it is found in the Badenian — Hidas 53, 688.0—688.5 m, Szokolya 11, 26.0 m, Szokolya 3, 52.6—53.6 m, Szokolya 2, 37.9—38.3 m, in the Sarmatian — Cserhátszentiván 1, 19.0—21.0 m, in the Pannonian — Naszály 1, 104.0—106.0 m.

Faguspollenites verus RAATZ 1937

Plate CXIII. Fig. 15—16.

1937. *Fagus-pollenites verus* n. sp. — RAATZ, Abh. Preuss. Geol. L.A., N.F. H. 183. p. 23. Fig. 17.

1969. *Faguspollenites tenuis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 232. Pl. LIII. Fig. 6.

Moderately frequent, 35—47 μ pollens, found in the Egerian — Fót 1, Eger, brickyard pit, in the Karpathian — Komló 120, Hidas 53, Várpalota 133, Litke 17, in the Badenian — Hidas 53, Szokolya 3, in the Sarmatian — Hidas 53, Cserhátszentiván 1, in the Pannonian — Tihany 62, Beremend 9, Naszály 1, Tata (TVG) 26.

Remark: Comparing their diagnoses and pictures, I decided to unite the above two species.

Faguspollenites vivus NAGY 1969

Plate CXIII. Fig. 17., Plate CXIV. Fig. 1—3.

1969. *Faguspollenites vivus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 230—231. Pl. LII. Fig. 16.

Pollens of 34—52 μ with thick exine, 2.5—3 μ , and densely clavate sculpture. Some specimens occurred in the Egerian — Fót 1, 209.9—212.6 m, in the Sarmatian — Cserhátszentiván 1, 115.0—120.0 m, 169.0—171.0 m, 185.0—185.5 m, in the Pannonian — Kapocs 2, 41.7—42.3 m, Pápa 2, 5.0 m, 142.5—143.3 m, but the peak was in the Karpathian — Zengővárkony 59, 51.3—67.5 m, and in the Badenian — Zengővárkony 59, 30.9—34.0 m, Szokolya 3, 51.6—64.7 m, Szokolya 2, 59.9—118.3 m.

Genus: Quercopollenites NAGY 1969

1969. *Quercopollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 233.

Genotype: *Quercopollenites granulatus* NAGY 1969

Quercopollenites granulatus NAGY 1969

Plate CXIV. Fig. 4—6.

1969. *Quercopollenites granulatus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 233. Pl. LII. Fig. 21.

Moderately frequent 26—37 μ pollens, found in the Egerian — Eger, Wind brickyard borehole, Fót 1, in the Eggenburgian — Szászvár 8. Some specimens came from the Badenian — Hidas 53, Szokolya 2, Sarmatian — Hidas 53, Cserhátszentiván 1, Pannonian — Hidas 53.

Quercopollenites petrea typus

Plate CXIV. Fig. 7—9.

1969. *Quercopollenites petrea* type — NAGY, MÁFI Évk. 52. 2. p. 234. Pl. LIII. Fig. 18.

Some specimens, 27—39 μ , were found in the Karpathian — Komló 120, 372.0—374.0 m, in the Badenian — Hidas mine, II. seam, sample 1, Hidas 53, 600.1—602.3 m, Szokolya 2, 93.0—118.3 m, Szokolya 11, 26.0 m, in the Sarmatian — Hidas 53, 534.0—537.0 m, Cserhátszentiván 1, 169.0—174.0 m. In higher numbers it was found in the Pannonian only — Hidas 53, 73.3—148.5 m, Tata (TVG) 27, 8.5—30.4 m, Tata mapping borehole 26, 16.8—24.6 m, Tata (TVG) 26, 35.0—39.0 m, Megyaszó 1, 200.0—206.5 m, Alsóvadász 1, 94.4—101.0 m, mine Petőfibánya.

Quercopollenites robur typus

Plate CXIV. Fig. 10., 14.

1969. *Quercopollenites robur* type — NAGY, MÁFI Évk. 52. 2. p. 233—234. Pl. LIII. Fig. 10.

Some specimens, 20—39 μ , were found in the Egerian — Fót 1, 290.5—361.8 m, Tata (TVG) 27, 72.8—74.7 m, in the Karpathian — Komló 120, 372.0—374.0 m, Zengővárkony 59, 67.5—83.0 m, Magyaregregy-Almáspatak, Mecseknádasd surface exposures, in the Badenian — mine Hidasbánya II. seam, samples 4—5, Magyaregregy-Leánykő, Tab thermal borehole 654.0—656.0 m, Tengelic 2, 735.7—768.0 m, Nógrádszakál 2, 185.0—187.0 m, Szokolya 11, 26.0 m, Szokolya 3, 52.6—64.7 m, Szokolya 2, 82.3—96.6 m, in the Sarmatian — Tekeres 1, 18.8—23.6 m, Cserhátszentiván 1, 136.0—185.5 m, it is frequent in the Lower Pannonian — Tata (TVG) 26, 11.0—15.0 m.

Genus: *Tricolpopollenites* PF. et TH. 1953

1953. *Tricolpopollenites* n. gen. (PFLUG et THOMSON) — TH. et PF. Palaeontogr. 94. B. p. 95.

Generotypus: *Tricolpopollenites parmularius* (R. POT. 1934) TH. et PF. 1953

Tricolpopollenites liblarensis (THOMSON 1950) TH. et PF. 1953 ssp. ***fallax*** (R. POT. 1934)

TH. et PF. 1953

Plate CXV. Fig. 5—6.

1934. *Pollenites fallax* n. sp. — R. POT., Arb. Inst. Paläobot. 4. p. 70. Taf. 3. Fig. 10.

1953. *Tricolpopollenites liblarensis* (THOMSON 1950) ssp. *fallax* (R. POT. 1934) n. c. — THOMS. et PF., Palaeontogr. 94. B. p. 97. Taf. 11. Fig. 133—151.

Pollens in variable numbers, 10—17 μ , were found dominantly in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, as singles in the Eggenburgian — Szászvár 8, Püspökhatvan 4, in the Ottnangian — Tököl 1, Magyaregregy-Almáspatak surface exposure I., Pusztakisfalva VI., in the Karpathian — Tököl 1, Magyaregregy-Almáspatak surface exposure I., in the Badenian — Hidas 53, 572.0—575.0 m, mine Hidasbánya, II. seam, sample 6.

As to its botanical relationship *Leguminosae*, *Cupuliferoidae* and other herbs are mentioned (R. POT. 1934, THOMS. et PF. 1953).

Tricolpopollenites liblarensis (THOMSON 1950) TH. et PF. 1953 ssp. **liblarensis**

Plate CXV. Fig. 3—4.

1950. *Poll. liblarensis* n. spm. P. THOMSON-R. POT., THOMSON et THIERG., Geol. Jb. 65. p. 55. Taf. B, Fig. 26, 27.
1953. *Tricolpopollenites liblarensis* (THOMS.)=*quisqualis* R. POT. n. comb. subsp. *liblarensis* (THOMS.) n. c. — TH. et PF., Palaeontogr. 94. B. pp. 96—97. Taf. 11. Fig. 111—132.
1960. *Cupuliferoideaepollenites liblarensis* THOMSON in: POT., THOMS. et THIERG. 1950, Taf. B. Fig. 26. — R. POT., Synopsis III. p. 92. Taf. 6. Fig. 94.

Moderately frequent specimens, 17—25 μ , occurred in the Egerian — Eger, Wind brickyard pit and borehole, Fót 1, in the Eggenburgian — Budajenő 2, Pápa 2, Fót 1, Szászvár 8, in the Karpathian — Zengővárkony 59, Litke 17, Fót 1, in the Badenian — Szokolya 2, Nógrádszakál 2, Hidas 53, mine Hidasbánya, II seam.

Remark: THOMSON marked the name *Cupuliferoidae* in this species as title and published the basic species as a subspecies THOMSON et PFLUG. The question of identity with the species *quisqualis* stood open for a long time but R. POTONIÉ separated the two in 1960 (Synopsis III. p. 92).

Beside *Cupuliferoidae* the *Leguminosae* are mentioned as possible natural relationship (THOMSON et PFLUG, 1953).

Genus: Tricolporopollenites PF. et TH. 1953

1953. *Tricolporopollenites* n. gen. (PFLUG et THOMSON) — TH. et PF., Palaeontogr. 94. B. p. 98.

Genotype: *Tricolporopollenites dolium* (R. POT. 1931) TH. et PF. 1953

Tricolporopollenites asper (TH. et PF. 1953) W. KR. 1961

Plate CXIV. Fig. 16—17.

1953. *Tricolporopollenites asper* n. sp. (PF. et TH.) — TH. et PF., Palaeontogr. 94. B. p. 96. Taf. 11. Fig. 43, 44, 47.
1961. *Tricolporopollenites asper* (TH. et PF. 1953) n. c. — W. KR., Ber. Geol. Ges. H. 4. p. 322.

Specimens of 22—27 μ were found in the Eggenburgian — Szászvár 8, in the Karpathian — Hidas 53, Zengővárkony 59, Komló 120, in the Badenian — Hidas 53, and Szokolya 2.

Tricolporopollenites cingulum (R. POT. 1931) THOMSON et PFLUG 1953 ssp. **fuscus** R. POT. 1934

Plate CXIV. Fig. 18—20.

1931. *Pollenites cingulum* n. sp. — R. POT., Sitz. Ber. Ges. Naturf. Berlin, Nr. 1—3. T. 1. (pro parte) V61c, V60d, V45a, V62c, V52b (22.8 μ), V60a, V48b, V46a.
1931. *Pollenites fuscus* n. sp. — R. POT., Braunkohle, 16. p. 328, 332. T. I. Fig. 13.
1934. *Pollenites cingulum fuscus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. pp. 82—83. T. 4. Fig. 20.
1934. *Pollenites cingulum fuscus* R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 38. T. 3. Fig. 96, 99.
1937. *Castanopsis? -pollenites cingulum* R. POT. — THIERG., Jb. Preuss. Geol. L. A. B. 58. pp. 314—315. T. 25. Fig. 9—11.
1953. *Tricolporopollenites cingulum* (R. POT.) n. c. ssp. *fuscus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. B. 1—4. p. 100. Taf. 12. Fig. 15—27.

It occurred in higher quantities, 22—29 μ , in the Lower Miocene — Fót 1, Eger, Wind brickyard borehole and pit, in the Middle Miocene — Hidas 53, Szokolya 2, Nógrádszakál 2. The rare specimens in the Sarmatian and Pannonian are redeposited.

Remark: Among the three “*cingulum*” types this is the biggest (22—28 μ). POTONIÉ illustrated it in 1931, with name given but the description came only in 1934. A well-usable characterisation was given in 1953 by THOMSON et PFLUG.

Its botanical relationship is uncertain. It may be a subtropical species of *Fagaceae*. In THIERGART's view it is *Castanopsis* (?). Illustration of recent *Castanopsis*, however, resemble rather *T. pusillus* as the equator is not “wulstig aufgebläht” (TH. et PF.), as in ssp. *fuscus*.

Tricolporopollenites cingulum (R. POT. 1931) THOMSON et PFLUG 1953 ssp. **pusillus**

(R. POT. 1934) TH. et PF. 1953

Plate CXIV. Fig. 21—24.

1934. *Pollenites quisqualis pusillus* n. f. — R. POT., Arb. Inst. Paläobot. 4. p. 71. T. 3. Fig. 21.
1953. *Tricolporopollenites cingulum* (R. POT.) n. c. ssp. *pusillus* (R. POT.) n. comb. — TH. et PF., Palaeontogr. 94. Abt. B. 1—4. p. 100. T. 12. Fig. 28—41.

1960. *Cupuliferoipollenites* (al. *Pollenites*) *pusillus* (al. *quisqualis pusillus* R. POT. 1934) R. POT. — R. POT., Synopsis III. p. 98. Taf. 6. Fig. 111.

It is less common than *T. cingulum* ssp. *fuscus*, 18–22 μ ; more common in the Egerian—Eggenburgian, in smaller quantities in the Upper Miocene.

Remark: In 1934 POTONIÉ described *pusillus* as subspecies, in 1953 THOMSON et PFLUG published it under the subspecies of *cingulum*. In 1960 R. POTONIÉ upgraded it as a species under the name *Cupuliferoipollenites pusillus* R. POT. 1934, where he cited his 1951 study (Mikroskopie, p. 277), and accordingly wanted to legalise the name. The classification by THOMSON et PFLUG is better for practical purposes.

***Tricolporopollenites cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *oviformis*
(R. POT. 1931) TH. et PF. 1953**

Plate CXIV. Fig. 25–26.

1931. *Pollenites oviformis* n. sp. — R. POT., Braunkohle 30. H. 16. p. 328. T. 1. Fig. 20.

1934. *Pollenites oviformis* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 95. T. 5. Fig. 23, 27.

1953. *Tricolporopollenites cingulum* (R. POT.) n. c. subsp. *oviformis* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. B. p. 100. T. 12. Fig. 42–49.

1960. *Cupuliferoipollenites oviformis* (R. POT. 1934) R. POT. 1951 — R. POT., Synopsis III. p. 98.

The species, 10–18 μ , is moderately frequent from the Egerian up to the Pliocene. It is regarded as a *Castanea* species (TH. et PF. 1953, p. 100). In my view it is a conspecies.

***Tricolporopollenites henrici* (R. POT. 1931) W. KR. 1961**

Plate CXV. Fig. 1–2.

1931. *Pollenites henrici* n. sp. — R. POT., Braunkohle 30, H. 16. p. 332. T. II. Fig. 19.

1934. *Pollenites henrici* R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 27. Taf. 2. Fig. 61. Taf. 3. 62–63.

1950. *Quercoidites henrici* R. POT. — R. POT., THOMS. et THIERG., Geol. Jb. 65. p. 54. Taf. B. Fig. 22–23.

1953. *Tricolporopollenites henrici* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. B. p. 95. Taf. 11. Fig. 39–40.

1960. *Quercoidites* (al. *Pollenites*) *henrici* (R. POT. 1931) POT., THOMS. et THIERG. 1950 — R. POT., Synopsis III. p. 92–93.

1961. *Tricolporopollenites henrici* (R. POT. 1931) n. c. — W. KR., Ber. Geol. Ges. H. 4. p. 322.

Few specimens, 35–44 μ , were found in the Ottnangian — Zengővárkony 45, in the Karpathian — Zengővárkony 45, Zengővárkony 59, in the Badenian — Hidas 53, Szokolya 2.

Remark: I consider it a collective species as variably ornamented specimens are collected under the name.

R. POTONIÉ considered it a Miocene form (R. POT. et VEN. 1934), THOMSON thought it to be characteristic for the Chattian—Aquitania and the Miocene (R. POT., THOMS. et THIERG. 1950), THOMSON et PFLUG (1953 p. 95) mentioned its occurrence from the Paleocene (Danian) up to the Lower Miocene.

***Tricolporopollenites microhenrici* (R. POT. 1931) W. KR. 1961**

Plate CXV. Fig. 7–8.

1931. *Pollenites microhenrici* n. sp. — R. POT., Sitzber. Natf. Nr. 1–3. p. 26.

1934. *Pollenites henrici microhenrici* R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 27. Taf. 2. Fig. 61.

1950. *Quercoidites microhenrici* R. POT. — R. POT., THOMS. et THIERG., Geol. Jb. 65. p. 55. Taf. B. Fig. 24, 25. Taf. C. Fig. 22.

1953. *Tricolporopollenites microhenrici* (R. POT.) n. c. — THOMS. et PF., Palaeontogr. 94. B. Lief. 1–4. p. 96. Taf. 11. Fig. 62–110.

1961. *Tricolporopollenites microhenrici* (R. POT. 1931) n. c. — W. KR., Ber. Geol. Gesell. H. 4. p. 322.

It is found in the entire Neogene, sometimes size 17–30 μ . It has a peak from the Egerian to the Middle Miocene. It occurs in low numbers also in the Sarmatian and even in the Lower Pannonian.

The authors generally put this form to the family *Fagaceae* type *Quercus*, but R. POT., TH. et THIERG. (1950) made mention of *Acer negundo* L. too, as a possibility of botanical relation.

Tricolporopollenites minimus NAGY 1969

Plate CXV. Fig. 9—11.

1969. *Tricolporopollenites minimus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 236. Pl. LII. Fig. 22—24.

Pollens of 15—19 μ , found in moderate quantities in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 228.2 m, in the Eggenburgian — Püspökhatvan 4, 254.0—257.0 m, Pápa 2, 211.6—212.0 m, in the Karpathian — Zengővárkony 59, 76.0—83.0 m, Komló 120, 178.0—178.8 m, in the Badenian — Hidas 53, 572.0—575.0 m, 667.2—669.2 m, Szokolya 2, 100.0—101.0 m, Nógrádszakál 2, 122.0—123.0 m, in the Sarmatian — Hidas 53, 534.0—537.0 m.

Tricolporopollenites porasper PFLUG 1953

Plate CXV. Fig. 12.

1953. *Tricolporopollenites porasper* n. sp. (PF.) — TH. et PF., Palaeontogr. 94. B. p. 105. T. 14. Fig. 11—13, 18, 19.

Rare species, 30—53 μ , occurs in the Egerian — Fót 1, 205.0—206.0 m, in the Eggenburgian — Szászvár 8, in the Karpathian — Zengővárkony 45, Zengővárkony 59, Komló-Zobákpusztá, in the Badenian — Hidas 53.

Tricolporopollenites villensis (THOMS. 1950) TH. et PF. 1953

Plate CXV. Fig. 13—14.

1931. *Pollenites cingulum* n. sp. R. POT., Sitzg. Ges. Naturf. Fr. No. 1—3. p. 26. Taf. V60.

1950. *Pollenites cingulum villensis* n. spm. THOMS. — R. POT., THOMS. et THIERG., Geol. Jb. 65. p. 55. Taf. B. Fig. 24, 25.

1953. *Tricolporopollenites villensis* (THOMS.) n. c. — TH. et PF., Palaeontogr. 94. B. p. 99. Taf. 12. Fig. 6, 8, 11, 14.

Some specimens, 24—38 μ , were found in the Egerian — Eger, Wind brickyard pit and borehole, in the Eggenburgian — Fót 1, 171.7—172.7 m, in the Karpathian — Rákoskeresztúr I, 248.0—250.0 m, Zengővárkony 59, in the Badenian — Hidas 53, Tengelic 2, Szokolya 2.

Ordo: Juglandales

Familia: Juglandaceae

Genus: Juglanspollenites RAATZ 1937

1937. *Juglans-pollenites* ... RAATZ, Abh. Preuss. Geol. L. A., N. F., H. 183. p. 18.

Genotype: *Juglanspollenites verus* RAATZ 1937

Juglanspollenites maculosus (R. POT. 1931) n. c.

Plate CXV. Fig. 15.

1931. *Pollenites maculosus* n. sp. — R. POT., Sitzg. Ges. Naturf. Fr. Nr. 1—3. p. 28. Taf. II. V19d.

1953. *Multiporopollenites maculosus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. pp. 94—95. Taf. 10. Fig. 95.

Rare species of 39—58 μ , occurring in the Egerian — Fót 1, 288.0—290.5 m, in the Badenian — Szokolya 2, 86.3—87.1 m, in the Sarmatian — Cserhátszentiván 1, 30.0—32.5 m, 153.0—161.0 m, 171.0—173.0 m, 188.0—190.0 m, 194.0—196.0 m, in the Lower Pannonian — Megyaszó 1, 52.0—54.5 m.

Juglanspollenites verus RAATZ 1937

Plate CXV. Fig. 16.

1937. *Juglans-pollenites verus* n. sp. — RAATZ, Abh. Preuss. Geol. L. A., N. F., H. 183. p. 18. Fig. 9.

Rather rare, 35—46 μ , species in the Egerian — Eger, Wind brickyard pit, in the Eggenburgian — Budajenő 2, 575.5—575.9 m, in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, in the Kar-

pathian — Tekeres 1, 863.0—868.0 m, Zengővárkony 59, 81.0—83.0 m, in the Badenian — Nógrád-szakál 2, 119.2—121.2 m, in the Sarmatian — Lak 1, 307.7—312.2 m, Cserhátszentiván 1, 186.0—188.0 m, in the Lower Pannonian — Tata (mapping borehole) 26, 16.8—24.6 m, Tata (TVG) 26, 33.0—35.0 m.

RAATZ mentioned *Juglans regia* L. pollens for comparison. R. POTONIÉ, THOMSON et THIERGART (1950 p. 50) compared it to the *Juglans cinerea* L. pollen type.

Genus: *Pterocaryapollenites* THIERGART 1937

1937. *Pterocarya-pollenites* ... THIERG., Jb. Preuss. Geol. L. A., B. 58. p. 311.

Genotype: *Pterocaryapollenites stellatus* (R. POT. 1931) THIERG. 1937

***Pterocaryapollenites mecsekensis* NAGY 1969**

Plate CXV. Fig. 17—18.

1969. *Pterocaryapollenites mecsekensis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 240. Pl. LIV. Fig. 7—8.*

Rare pollen species of 43—58 μ , occurring as 5—6—7 pored variants. It is known only from the Badenian onwards. Badenian — Hidas 53, 667.1—669.2 m (holotype), Szokolya 2, 45.5—118.3 m, in the Sarmatian — Cserhátszentiván 1, 130.0—132.0 m, in the Lower Pannonian — Megyaszó 1, 200.0—206.5 m, in the Upper Pannonian — Hidas 53, 147.5—148.5 m.

***Pterocaryapollenites rotundiformis* NAGY 1969**

Plate CXV. Fig. 19—20.

1969. *Pterocaryapollenites rotundiformis* n. sp. — NAGY, MÁFI Évk. 52. 2. Pl. LIV. Fig. 15.

Very rare, 39—53 μ , species, found in the Badenian — Hidas 53, 667.2—669.2 m, Szokolya 3, 51.9—69.0 m, in the Sarmatian — Hidas 53, 534.0—537.0 m, Cserhátszentiván 1, 194.0—196.0 m, in the Lower Pannonian — Tata mapping borehole 26, 10.5—14.6 m.

***Pterocaryapollenites stellatus* (R. POT. 1931) RAATZ 1937**

Plate CXV. Fig. 21—23.

1931. *Pollenites stellatus* n. sp. — R. POT., Sitz. Ber. Ges. Nat. Fr. 1—3. II. V47b.

1932. *Pollenites stellatus* n. sp. — R. POT., Jb. Preuss. L.A. 52. p. 4. Abb. 20.

1934. *Pollenites stellatus* R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. pp. 20—21. T. 2. Fig. 26—27.

1935. *Pterocarya* — RUDOLPH, B.B.C. 54. Abt. B. p. 257. T. IV. Fig. 12, 13.

1937. *Pterocarya-pollenites stellatus* R. POT. — RAATZ, Abh. Preuss. L. A., N. F., H. 183. p. 18. Fig. 8.

1937. *Pterocarya-pollenites stellatus* R. POT. — THIERG., Jb. Preuss. Geol. L.A. 58. p. 311. T. 24. Fig. 19.

1953. *Polyporopollenites stellatus* (R. POT. et VEN.) n. c. — TH. et PF., Palaeontogr. 94. Abt. B. pp. 91—92. T. 10. Fig. 84—85.

1958. *Pterocarya* sp. — NAGY, MÁFI Évk. 47. 1. pp. 95—96. T. 23. Fig. 9—8.

1960. *Pterocaryapollenites* (al. *Pollenites*) *stellatus* (R. POT. 1931) RAATZ 1937 — R. POT., Synopsis III. p. 132. T. 8. Fig. 183.

Few specimens, 29—39 μ , were found as 5—6—7—8 pored variants in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 288.0—290.5 m, in the Eggenburgian — Budajenő 2, 556.5—575.9 m, in the Otnangian — Tekeres 1, 899.4—901.0 m, Pusztakisfalu VI. 22.5—24.0 m, Nagy-görbő 1, 903.2—908.5 m, in the Karpathian — Tekeres 1, 845.0—868.0 m, Mecseknádasd surface exposure, Litke 17, 236.0—244.0 m, Püspökhatvan 4, 153.3—157.0 m, in the Badenian — Nógrád-szakál 2, 185.0—187.0 m, Nagyborzsöny 14, 770.0—813.0 m, in the Sarmatian — Lak 1, 367.0—367.7 m, in the Pannonian — Várkesző 1, 34.0—39.0 m, Naszály 1, 17.0—18.0 m, 51.0—54.3 m, 66.0—79.5 m, Budapest-Kőbánya, profile IV., sample 107, Alsóvadász 1, 94.4—101.0 m.

Remark: The species was denominated and its morphological features described by signs by R. POTONIÉ in 1931, in two articles. He described it in 1934, together with VENITZ but only the former appeared as author.

* Error in the description of the holotype — (1969 p. 240): Stratum typicum is Badenian, not Sarmatian. On p. 241. Fig. 46. refers to *P. mecsekensis* not to *P. rotundiformis*.

Genus: *Caryapollenites* RAATZ 1937

1934. *Caryae?-pollenites* ... R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 21.
1937. *Caryae-pollenites* ... R. POT. — RAATZ, Abh. Preuss. L. A., N. F., H. 183. p. 19.

Caryapollenites simplex (R. POT. 1932) RAATZ 1937 ssp. *simplex*

Plate CXV. Fig. 24—25.

1932. *Pollenites simplex* n. sp. — R. POTONIÉ, Jb. Preuss. Geol. L.A. 52. p. 3. Abb. 4.
1932. *Pollenites globiformis* n. sp. — R. POT., Jb. Preuss. Geol. L. A. 52. p. 3. Abb. 5.
1934. *Caryae?-pollenites simplex* R. POT. — R. POT. et VEN., Arb. Inst. Paläobot. 5. p. 21. Tab. 2. Fig. 28—30.
1937. *Carya-pollenites simplex* R. POT. f. *communis* n. f. — RAATZ, Abh. Preuss. Geol. L. A., N. F., H. 183. p. 19—20. Fig. 6.
1951. *Carya-poll. simplex* R. POT. 1934 (S.21) Beisselgrube — R. POT., Paläontogr. 91. Abt. B. Lief. 5—6. p. 14a, XX. 33.
1953. *Subtriporopollenites simplex* (R. POT. et VEN.) n. c., ssp. *simplex* (R. POT. et VEN.) n. c. — TH. et PF., Palaeontogr. 94. B. p. 86. Taf. 9. Fig. 64—73.
1960. *Caryapollenites* (al. *Pollenites*) *simplex* (R. POT. 1931) RAATZ 1937 — R. POT., Synopsis III. p. 123.

Moderately numerous specimens, 31—50 μ , were found in the whole Neogene, especially in the Karpathian and Badenian. A later peak in the Upper Pannonian fell short of the Middle Miocene one.

Remark: R. POTONIÉ published in 1931 two forms, he united them later in 1934 quite right as "*simplex*". In 1934 he mentioned the species as *Carya?* and described it. As the species name is mentioned with R. POTONIÉ only as author, there is no reason to mark it as R. POT. et VENITZ (as THOMSON et PFLUG 1953). RAATZ in 1937 marked it besides the generic name as f. *communis*. According to the description there are differences of some μ among specimens from various sites, but the photo by RAATZ corresponds the typical *Caryapollenites simplex* form. R. POTONIÉ published three figures in 1934 without denoting holotype. Figure 30, was repeated in 1951 again without mentioning a holotype. At last it was fixed in 1960 (Synopsis III. p. 123).

Caryapollenites simplex (R. POT. 1931) RAATZ 1937 ssp. *triangulus* PF. 1953

Plate CXV. Fig. 26—27.

1953. *Subtriporopollenites simplex* (R. POT. et VEN.) n. c. ssp. *triangulus* n. sp. — THOMS. et PF., Palaeontogr. 94. p. 86. Taf. 9. Fig. 57—61.

Few specimens, 28—38 μ , were found in the Egerian. The singles in younger formations are, also on the basis of their preservation state, redeposited.

Genus: *Engelhardtoidites* (R. POT., THOMS. et THIERGART 1950) R. POTONIÉ 1960

1960. *Engelhardtoidites* POT., THOMS. et THIERG. 1950 — R. POT., Synopsis III. p. 118. Taf. 7. Fig. 148.

Remark: When describing the genus *Momipites* WODEHOUSE could not decide whether the fossil species belonged to the *Ulmaceae*, *Betulaceae* or *Juglandaceae* (1933 p. 511). The name is derived from the *Ulmaceae*, *Momisia* genus. STANLEY (1965) included the *Momipites* name into synonyms of the species name, when describing fossil *Engelhardtia*. NICHOLS emended the genus in 1970; many names he regarded as nomina nuda. The generic name *Engelhardtiaipollenites* by RAATZ in 1937 is not a nomen nudum as it was referred by its author to *E. levis* (see also R. POTONIÉ, Synopsis III.).

The name *Engelhardtoidites* from 1950 was legalised only by R. POTONIÉ in 1960. As it is a valid publication I accepted the generotype unchanged according to R. POTONIÉ. *Momipites*, as NICHOLS used it, is was created later and is of broader sense than *Engelhardtoidites*, thus its acceptance would mean a step backwards.

Genotype: *Engelhardtoidites microcoryphaeus* (R. POT. 1931) R. POTONIÉ 1960

Engelhardtoidites microcoryphaeus (R. POT. 1931) R. POT. 1960

Plate CXVI. Fig. 1—4.

1931. *Pollenites microcoryphaeus* n. sp. — R. POT., Braunkohle 30, H. 16. p. 332. Taf. II. Fig. 13.
1950. *Juglandaceae?*, *Engelhardtoidites microcoryphaeus* R. POT. E. forma *minor* — THOMSON, Geol. Jb. 65. p. 51. Taf. B. Fig. 8. Taf. C. Fig. 16.
1960. *Engelhardtoidites* (al. *Pollenites*) *microcoryphaeus* (R. POT. 1931) POT., THOMS., THIERG. 1950 — R. POT., Synopsis III. p. 118.

The species, 13–23 μ , was found from the Egerian onwards in steadily decreasing quantities. It occurred in higher numbers in the Egerian — Eger, Wind brickyard pit and borehole, Fót 1, in the Eggenburgian — Szászvár 8, Budajenő 2, Püspökhatvan 4, in lower numbers in the Ottnangian — Tekeres 1, Zengővárkony 45, Rákoskeresztúr I, Alsóvadász 1, some specimens in the Karpathian — Tekeres 1, Mecseknádasd surface exposure, Hidas 53, Tököl 1, Fót 1, Litke 17, in the Badenian — Hidas 53, Nagybörzsöny 14, Tab thermal water exploratory well, Szilvásvárad 1, in the Sarmatian — Cserhátszentiván 1, it was sparse in the Upper Pannonian — mine Petőfibánya. It was this latter site where VÖRÖS, I. described a winged carpel of *Engelhardtia brogniarti* SAP. (NAGY 1958).

Genus: *Platycaryapollenites* NAGY 1969 emend. FREDERIKS. et CHRIST. 1978

1969. *Platycaryapollenites* n. g. — NAGY, MÁFI Évk. 52. 2. p. 242.

1978. *Platycaryapollenites* NAGY 1962 emend. FREDERIKS. et CHRIST., — Palynology 2. p. 135–136.

Genotype: *Platycaryapollenites miocaenicus* NAGY 1969

***Platycaryapollenites miocaenicus* NAGY 1969**

Plate CXVI. Fig. 5–9.

1969. *Platycaryapollenites miocaenicus* n. g. n. sp. — NAGY, MÁFI Évk. 52. 2. p. 242. Pl. LIII. Fig. 25–26.

It was found in variable quantities, 14–23 μ , in the Egerian — Fót 1, 372.0 m, in more specimens in the Eggenburgian — Szászvár 8, 432.5–433.5 m, Várpalota 133, 214.2–217.0 m, Püspökhatvan 4, 213.0–281.0 m, Budajenő 1, 538.0–539.4 m, in the Ottnangian — Alsóvadász 1, 1029.0–1034.0 m, Nagyörbő 1, 979.7–980.1 m, Pusztakisfalva VI. 22.5–25.0 m, in the Karpathian — Rákoskeresztúr I, 148.0–150.0 m, Zengővárkony 59, 76.0–78.0 m, Komló 120, 374.7 m, Tekeres 1, 895.4–899.4 m, Litke 17, 226.0–258.0 m, in the Badenian — Hidas 89, 326.0 m, Hidas 53, 672.5–688.5 m, Tengelic 2, 830.0–833.0 m, Nagybörzsöny 14, 780.0 m, Szokolya 2, 95.0–111.2 m. It occurred in ones or twos in the Sarmatian — Vajta water exploratory borehole, Cserhátszentiván 1, in the Pannonian — Bogács 9/5, 163.0 m, Tihany 62, 161.4–161.7 m, Naszály 1, 17.0–18.0 m. In the last it was probably redeposited.

The species had its peak in the Karpathian and Badenian formations.

Genus: *Plicatopollis* W. KRUTZSCH 1962

1962. *Plicatopollis* n. gen. — W. KR., Geol., Jhg. 11. H. 3. p. 277.

Genotype: *Plicatopollis plicatus* (R. POT. 1934) W. KR. 1962

***Plicatopollis plicatus* (R. POT. 1934) W. KR. 1962**

Plate CXVI. Fig. 10–11.

1934. *Pollenites plicatus* n. sp. — R. POT., Arb. Inst. Paläobot. 4. p. 55. Taf. 2. Fig. 19.

1962. *Plicatopollis plicatus* (R. POT. 1934) n. c. — W. KR., Geol. 11. H. 3. p. 277. Abb. 6.

Pollens of 17–27 μ , were found in variable quantities with a peak in the Egerian — Eger, Wind brickyard borehole 9.2–9.7 m, brickyard pit, layers "k" and "u", Fót 1, 280.0–354.0 m. It occurred in smaller numbers in the Eggenburgian — Budajenő 2, 538.4–539.4 m, Püspökhatvan 4, 233.0–236.0 m, in the Karpathian — Zengővárkony 45, 13.6–13.7 m, in some specimens in the Badenian — Hidas 53, 667.2–669.2 m, Szokolya 3, 40.0–40.8 m, in the Lower Pannonian — Pápa 2, 142.8–143.3 m; the last one is redeposited.

Genus: *Momipites* WODEHOUSE 1933

1933. *Momipites* gen. nov. — WODEHOUSE, Tertiary Pollen II. Bull. Torr. Bot. Club, Vol. 60. No. 7. p. 511. Fig. 43.

Remark: Decided after pollens from the Hungarian Neogene I consider the genus as belonging to the family Juglandaceae.

Genotype: *Momipites coryloidites* WODEHOUSE 1933

Momipites punctatus (R. POT. 1931) NAGY 1969

Plate CXVI. Fig. 12–14.

1931. *Pollenites coryphaeus punctatus* n. f. — R. POT., Braunkohle 30. H. 16. Taf. II. Fig. 7. 11. pp. 329, 332.
1934. *Coryli?-pollenites coryphaeus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. pp. 53–54. Taf. 2. Fig. 10.
1951. *Engelhardtoidites punctatus* R. POT. 1931 — R. POT., Palaeontogr. 91. B. T. XX. Fig. 34.
1953. *Triatriopollenites coryphaeus* (R. POT.) n. c. ssp. *punctatus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. B. p. 80. T. 8. Fig. 15–37.
1960. *Engelhardtioipollenites* (al. *Pollenites*) *punctatus* (al. *coryphaeus punctatus* R. POT. 1931) R. POT. 1951 — R. POT., Synopsis III. p. 117. Taf. 7. Fig. 147.
1969. *Momipites punctatus* (R. POT. 1931) n. c. — NAGY, MÁFI Évk. 52. 2. p. 246. Pl. LIV. Fig. 9–10.

Its 17–30 μ size specimens are very frequent in the Lower and Middle Miocene — Eger, Wind brickyard borehole and pit, Fót 1 (Egerian), in the Eggenburgian — Fót 1, Püspökhatvan 4, Budajenő 2, Várpalota 133, Szászvár 8, in the Ottnangian — Zengővárkony 45, Pusztakisfalva VI., Alsóvadász 1, in the Karpathian — Zengővárkony 59, Komló 120, Hidas 53, Tököl 1, Püspökhatvan 4, Litke 17, in the Badenian — Zengővárkony 59, Hidas 53, mine Hidasbánya II. seam, Nógrádszakál 2, Szokolya 2. The number of specimens decreases considerably in the Sarmatian — Vajta water exploratory borehole, Cserhátszentiván 1. In the Pannonian there are some specimens which might have been redeposited — Hidas 53, Tata area boreholes.

Remark: R. POTONIÉ (1931) first thought of the *Betulaceae* as possible relationship, then he changed to the *Juglandaceae* (1951). In my view these rigid, thick-walled forms are not *Engelhardtia* and thus classified it as *Momipites* WODEHOUSE 1933. Today, in accordance with the opinion of palynologists, I consider it as belonging to the *Juglandaceae*.

Momipites quietus (R. POT. 1931) NICHOLS 1973

Plate CXVI. Fig. 15–16.

1931. *Pollenites quietus* n. sp. — R. POT., Braunkohle 30. H. 27. p. 556. Fig. 13.
1934. *Pollenites quietus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. p. 83. T. 4. Fig. 18, 21.
1951. *Engelhardtioipollenites quietus* R. POT. 1934 — R. POT., Palaeontogr. 91. T. XX. Fig. 36–37.
1953. *Triatriopollenites quietus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. Lief. 1–4. p. 81. T. 8. Fig. 80–82.
1973. *Momipites quietus* (POTONIÉ 1931) n. c. — NICHOLS, Geoscience and Man VII. p. 107.

Pollens of 13–17 μ , occurring mainly in the Paleogene, thus it occurs only in the Egerian in situ — Eger, Wind brickyard pit, Fót 1, and in the Eggenburgian — Püspökhatvan 4.

Some Lower and Middle Miocene specimens are in secondary position.

Genus: *Pentapollenites* W. KRUTZSCH 1957

1957. *Pentapollenites* nov. fgen. — nomen — W. KR., Zeitschr. Ang. Geol. H. 11/12. p. 520. Taf. X. Fig. 1–13.
1962. *Pentapollenites* KRUTZSCH 1958 — W. KR., Paläont. Abh. B. 1. H. 2. p. 86.

Genotype: *Pentapollenites pentangulus* (PF. 1953) W. KR. 1957

Remark: I studied various species of this genus from the Lower and Middle Miocene (Egerian) — Eger, Wind brickyard pit and borehole, Tata (TVG) 27, Fót 1, from the Ottnangian — Nagyörbő 1, Alsóvadász 1, from the Karpathian — Litke 17, from the Lower Badenian — Szokolya 2, from the Badenian — Tab thermal water borehole, from the Sarmatian — Cserhátszentiván 1.

Hungarian workers indicated its occurrence in older formations. RÁKOSI, L. — in litt. and verbally — considered it a typical form of the Paleogene. KEDVES, M. mentioned it also from the Paleogene (1965 Acta Biol. XI. 1–2. p. 371). SIMONCSICS, P. described the *P. neogenicus* (1964) from the Salsgótárján Neogene brown coal sequences.

W. KRUTZSCH thought the genus lived from the Paleocene to the early Rupelian (p. 76, 98). Specimens from younger formations he regarded as redeposited.

Pentapollenites neogenicus SIMONCSICS 1964

Plate CXVI. Fig. 17–19.

1964. *Pentapollenites neogenicus* n. sp. — SIMONCSICS, Fortschr. Geol. Rheinl. Westf. B. 12. p. 103. T. 3. Fig. 11–16.
1964. *Tricolporopollenites bipyramidalis* n. sp. — SIMONCSICS, Fortschr. Geol. Reinl. Westf. B. 12. p. 101. T. 3. Fig. 1–5, 9.

Few specimens, 17–22 μ , were found in the Ottnangian — Alsóvadász 1, 1029.0–1034.6 m, Nagyörbő 1, 893.0–914.0 m, in the Karpathian — Litke 17, 264.0–265.0 m.

Remark: The illustrations by SIMONCSICS, 1964 of *P. neogenicus* n. sp. are shown in polar view and the *Tricolporopollenites bipyramidalis* n. sp. figures are, in fact, *Pentapollenites* of lateral position. I think it is all the same species. It is however confusing that in the description the author stated chagrenate-punctate wall structure for *P. neogenicus* n. sp. whereas *T. bipyramidalis* is characterised as striate-rugulate.

Pentapollenites pentangulus (PF. 1953) W. KR. 1957 ssp. pentangulus

Plate CXVI. Fig. 20–22.

1952. *Periporopoll. pentangulus* PFLUG (T. 6. Fig. 11) — PFLUG, Paläont. Zeitschr. 26. 12. p. 118. (nomen nudum)

1953. *Periporopollenites pentangulus* n. sp. (PF.) — TH. et PF., Palaeontogr. 94. B. p. 112. T. 15. Fig. 62–64.

1953. *Pentapollis pentangulus* (PF.) n. c. — PFLUG, Palaeontogr. 95. B. p. 113. 138. T. 20. Fig. 23.

1957. *Pentapollenites pentangulus* (PF. 1953) n. c. — W. KR., Zeitschr. Ang. Geol. H. 11/12. p. 520. T. X. Fig. 3–4.

1962. *Pentapollenites pentangulus* (PF. 1953) W. KR. 1957 subfsp. *pentangulus* — W. KR., Paläont. Abh. B. I. H. 2. pp. 90–91. T. V. Fig. 111–115.

Some 16–24 μ size specimens were found in the Egerian — Fót 1, 241.6–243.0 m, Eger, Wind brickyard pit, layers “x₂” and “u”, Tata (TVG) 27, 72.8–74.7 m, in the Ottnangian — Nagyörbő 1, 892.0–908.5 m, in the Lower Badenian — Nagyörbő 1, 69.5–70.3 m.

Pentapollenites punctoides W. KR. 1962

Plate CXVI. Fig. 23–26.

1962. *Pentapollenites punctoides* n. fsp. — W. KR., Paläont. Abh. B. I. H. 2. pp. 94–95. T. VIII. 201–214.

Some specimens, 16–23 μ , were found in the Egerian — Eger, Wind brickyard pit, layer “u”, borehole 7.8–9.2 m, in the Lower Badenian — Szokolya 2, in the Badenian — Tab thermal water borehole 790.0–791.5 m.

Pentapollenites regulatius W. KR. 1962. ssp. concavus W. KR. 1962

Plate CXVI. Fig. 29–31.

1962. *Pentapollenites regulatius concavus* n. fsp. et subfsp. — W. KR., Paläont. Abh. B. I. H. 2. p. 89. T. II. Fig. 51–57.

Moderately frequent, 17–25 μ , specimens were found in the Egerian — Eger, Wind brickyard borehole 8.3–9.7 m, in the Karpathian — Litke 17, 206.0–264.0 m, in the Lower Badenian — Szokolya 2.

Pentapollenites regulatius W. KR. 1962 ssp. regulatius

Plate CXVI. Fig. 27–28.

1962. *Pentapollenites regulatius regulatius* n. fsp. et subfsp. — W. KR., Paläont. Abh. B. I. H. 2. p. 89. T. II. Fig. 29–44.

Few specimens, 16–20 μ , were found in the Egerian — Eger, Wind brickyard borehole 8.3–9.7 m, Fót 1, 361.8 m, in the Karpathian — Litke 17, 256.0–258.0 m, in the Lower Badenian — Nógrádszakál 2, 121.0–122.0 m, in the Sarmatian–Pannonian boundary — Cserhátszentiván 1, 163.0–165.0 m, and in the Middle Miocene — western part of the Mecsek Mts.

Ordo: Myricales

Familia: Myricaceae

Genus: *Myricipites* WODEHOUSE 1933

1933. *Myricipites* gen. nov. — WODEHOUSE, Tertiary Pollen II. Bull. Torr. Bot. Club, Vol. 60. No. 7. p. 505.

Genotype: *Myricipites dubius* WODEHOUSE 1933

Myricipites bituitus (R. POT. 1931) NAGY 1969

Plate CXII. Fig. 18., Plate CXVI. Fig. 32—34.

1931. *Pollenites bituitus* n. sp. — R. POT., Braunkohle 30. H. 16. p. 332. T. II. Fig. 17.

1934. *Pollenites bituitus* R. POT. — R. POT., Arb. Inst. Paläobot. 4. pp. 57—58. T. 2. Fig. 20.

1953. *Triatriopollenites bituitus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. B. 1—4. p. 79. T. 7. Fig. 116—134.

Pollens in variable quantities, 19—30 μ , were found, in high numbers in the Egerian — Eger, Wind brickyard pit, Fót 1, and as singles in other sections of the Neogene.

Myricipites myricoides (KREMP 1950) NAGY 1969

Plate CXVI. Fig. 35., Plate CXVII. Fig. 1—2.

1950. *Pollenites myricoides* n. sp. — KREMP, Palaeontogr. 90. B. pp. 64—65. Taf. VI. Fig. 63.

1969. *Myricipites myricoides* (KREMP 1949) n. c. — NAGY, MÁFI Évk. 52. 2. p. 245. Pl. LIV. Fig. 11, 13, 14.

Pollens of 22—32 μ , were found in few specimens but in the entire Neogene. In the Egerian — Eger, Wind brickyard borehole 8.3—9.4 m, Fót 1, 346.5—348.0 m, Felsőpetény mine, sample 1, in the Eggenburgian — Budajenő 2, 575.5—575.9 m, in the Ottnangian — Alsóvadász 1, Balaton 26, Felsőnyárád 71, sample 6, Pusztakisfalu VI., Zengővárkony 45, in the Karpathian — Zengővárkony 59, Ipolytarnóc-Mihálygerge surface exposure, in the Badenian — Hidas 53, Magyaregregy-Kisrét, Csiga dűlő, Szokolya 2, and 3, and 11, Tengelic 2, in the Sarmatian — Cserhátszentiván 1, in the Pannonian — Megyaszó 1, Tata (TVG) 27, 26, Naszály 1.

Myricipites rurensis (PF. et TH. 1953) NAGY 1969

Plate CXVII. Fig. 14—15.

1953. *Triatriopollenites rurensis* n. sp. (PF. et TH.) — THOMS. et PF., Palaeontogr. 94. B. 1—4. p. 79. T. 7. Fig. 81—109.

1969. *Myricipites rurensis* (PF. et TH. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 245. Pl. LIII. Fig. 27.

Pollens of 22—28 μ , were found in variable quantities. It is frequent in the Egerian — Fót 1, but only moderately in the Eggenburgian — Fót 1, in the Karpathian — Zengővárkony 59, Komló 120, in the Badenian — Hidas 53, mine Hidasbánya II. seam, Szokolya 2, and 3, in the Sarmatian — Hidas 53, in the Pannonian — Hidas 53.

Ordo: Salicales

Familia: Salicaceae

Genus: *Salixipollenites* S. K. SRIVASTAVA 1966 emend.

1966. *Salixipollenites* n. g. — SRIVASTAVA, Pollen et Spores, VIII. 3 p. 529.

1969. *Salixipollenites* SRIVASTAVA 1966 — NAGY, MÁFI Évk. 52. 2. p. 246.

Diagnosis emendation: Tricolporate pollen, more or less deeply three-lobed, isodiametric, slightly elongate or oblately flattened, colpi long and tapering without internal marginal thickenings, and poroidate or vague germ-pores, exine thick and coarsely reticulate.

Genotype: *Salixipollenites trochuensis* S. K. SRIVASTAVA 1966

Salixipollenites densibaculatus NAGY 1969

Plate CXVII. Fig. 3—5.

1969. *Salixipollenites densibaculatus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 247. Pl. LV. Fig. 3—5.

Some specimens, 17—27 μ , were found in the Egerian — Eger, Wind brickyard pit, layer “u”, Fót 1, 235.0—364.5 m, Tata (TVG) 27, 72.8—74.7 m, in the Ottnangian — Pusztakisfalu VI. 15.0—25.0 m, Zengővárkony 45, 16.0—17.8 m, in the Karpathian — Zengővárkony 45, 13.2—13.7 m, Zengővárkony 59, 63.0—81.0 m, Komló 120, 374.4—374.7 m, in the Badenian — Hidas 53, 683.0—

686.5 m, 688.0—688.5 m, 708.1—708.5 m, 755.0—757.0 m, Szokolya 2, 78.8—79.1 m, in the Sarmatian — Vajta, water exploratory borehole 724.0—728.0 m, Cserhátszentiván 1, 136.0—138.0 m, in the Pannonian — Naszály 1, 93.4—104.0 m, Hidas 53, 135.5—137.0 m, 147.5—148.5 m, Beremend 9, 76.0 m, Tata (mapping borehole) 26, 16.8—24.6 m, Megyaszó 1, 25.0—32.0 m.

Salixipollenites helveticus NAGY 1969

Plate CXVII. Fig. 6—12.

1969. *Salixipollenites helveticus* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 246—247. Pl. LV. Fig. 24—25.

Pollens of 11—23 μ , in variable quantities were found with a peak in the Egerian, resp. Lower Miocene. It is frequent in the Egerian — Eger, Wind brickyard pit, layers "x₂" and "u", Fót 1, 228.2 m, in the Eggenburgian — Fót 1, 160.0—162.0 m, occurs dominantly in the Ottnangian — Pusztakisfalva VI. 15.0—25.0 m, Alsóvadász 1, 1029.0—1034.6 m.

It occurs as singles in the Karpathian, Badenian, Sarmatian — Zengővárkony 59, Komló 120, Hidas 53, Tar-Fenyvespuszta area, surface exposures, Szirma 2, 52.0—51.9 m.

Classis: Monocotyledonopsida (Monocotyledones)

Series: Alismatales - Poales

Ordo: Liliales

Subordo: Lilicineae

Familia: Liliaceae

Genus: Liliacidites COUPER 1953

1953. *Liliacidites* n. gen. — COUPER, N. Zeal. Geol. Surv. Pal. Bul. 22. p. 56.

Generotypus: *Liliacidites kaitangataensis* COUPER 1953

Liliacidites ellipticus NAGY 1969

Plate CXVII. Fig. 13.

1969. *Liliacidites ellipticus* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 249. Pl. IV. Fig. 22—23.

The specimens, 51 × 35 μ , were found in the Karpathian — Zengővárkony 59, 50.0—60.9 m.

Ordo: Cyperales

Familia: Cyperaceae

Genus: Cyperaceaeipollis W. KR. 1970

1970. *Cyperaceaeipollis* n. gen. — W. KR., Atlas VII. p. 16.

Generotypus: *Cyperaceaeipollis neogenicus* W. KR. 1970

Cyperaceaeipollis neogenicus W. KR. 1970

Plate CXVII. Fig. 16—17.

1970. *Cyperaceaeipollis neogenicus* n. sp. — W. KR., Atlas VII. pp. 66—68. T. 7. Fig. 4—14.

One 44 μ specimen was found in the Lower Badenian — Tengelic 2, 830.0—833.0 m. KRUTZSCH described the species from the Lower Miocene of Germany.

Ordo: Poales (Graminales, Glumiflorae)

Familia: Gramineae

Genus: *Graminidites* (COOKSON 1947) R. POTONIÉ 1960

1947. *Monoporites* (*Graminidites*) . . . COOKSON, B.A.N.Z.A.R.E. Rep. A. II. 8. p. 134.

1960. *Graminidites* COOKSON 1947 — R. POT., Synopsis III. p. 111. Taf. 6. Fig. 133.

Generotypus: *Graminidites media* (COOKSON 1947) R. POT. 1960

Graminidites crassiglobosus (TREVISAN 1967) W. KR. 1970

Plate CXVII. Fig. 18—19.

1967. *Monoporipollenites crassiglobosus* n. fsp. — TREVISAN, Pal. Ital. 62. (N. S. 32.) p. 49, 63. T. XXXIII. Fig. 5.

1970. *Graminidites crassiglobosus* (TREVISAN 1967) n. c. — W. KR., Atlas VII. p. 56. T. 3. Fig. 1—17.

One 26 μ specimen was found in the Lower Badenian — Szokolya 2, 107.9—109.0 m.

TREVISAN mentioned it from the Messinian of Italy, KRUTZSCH from the Upper Oligocene to the Middle Miocene of Germany.

Graminidites media (COOKSON 1947) R. POT. 1960

Plate CXVII. Fig. 20—22.

1947. *Monoporites* (*Graminidites*) *media* n. spm. — COOKSON, B.A.N.Z.A.R.E. Rep. A. II. 8. p. 134. Pl. XV. Fig. 41—42.

1960. *Graminidites media* COOKS. 1947 — R. POT., Synopsis III. p. 111. Taf. 6. Fig. 133.

Small quantities of 29—45 μ pollens, found in the Egerian — Eger, Wind brickyard pit, Fót 1, 237.5—288.0 m, in the Ottnangian — Tekeres 1, 884.0—886.7 m, in the Karpathian — Magyar-egregy-Almáspatak profile II, sample 1, Komló 120, 374.7 m, Zengővárkony 59, 51.3—56.0 m, in the Badenian — mine Hidasbánya II. seam, sample 53, Szokolya 2, 78.8—79.1 m, Szokolya 11, 26.0 m, in the Pannonian — Beremend 9, 76.0 m.

Series: Spadiciflorae-Pandanales

Ordo: Spadiciflorae (Arales = Arecales + Arales)

Familia: Palmae

Genus: *Arecipites* (WODEHOUSE 1933) em. NICHOLS, AMES et TRAVERSE 1973

1933. *Arecipites* gen. nov. — WODEHOUSE, Tertiary Pollen II. Bull. Torr. Bot. Club, 60., 7. p. 497.

1973. *Arecipites* WODEHOUSE 1933 emend. — NICHOLS, AMES et TRAVERSE, Taxon, Vol. 22. (2/3) May, pp. 248—249.

Generotypus: *Arecipites punctatus* WODEHOUSE 1933

Arecipites chamaedoriformis NAGY 1969

Plate CXVII. Fig. 23—24.

1969. *Arecipites chamaedoriformis* n. sp. — NAGY, MÁFI Évk. 52. 2. p. 253. Pl. LV. Fig. 3.

Pollens of 25—28 μ , were found in the Egerian — Fót 1, 288.0—290.5 m, in the Karpathian — Zengővárkony 59, 76.0—78.0 m, in the Badenian — Hidas 53, 573.0—575.0 m. One 32 μ cf. specimen was found in the Egerian — Eger, Wind brickyard pit, layer "u".

The pollens resemble the genus *Chamaedorea* WILLD. species.

Arecipites trachycarpoides NAGY 1969

Plate CXVIII. Fig. 1—2.

1969. *Arecipites trachycarpoides* n. sp. — NAGY, MÁFI Évk. 52. 2. pp. 252—253.

Very rare, 23—25 μ , species which was found in the Egerian — Eger, Wind brickyard, in the Karpathian — Zengővárkony 59, 81.0—83.0 m, in the Badenian — Szokolya 2, 78.8—79.1 m.

Genus: *Monocolpopollenites* (PFLUG et TH. 1953) NICHOLS, AMES et TRAVERSE 1973

1953. *Monocolpopollenites* n. g. (PFLUG et THOMS.) — TH. et PF., Palaeontogr. 94. B. p. 62.

1973. *Monocolpopollenites* PFLUG et THOMSON in: THOMSON et PFLUG 1953 emend. — NICHOLS, AMES et TRAVERSE, Taxon 22 (2/3) May p. 251.

Generotypus: *Monocolpopollenites tranquillus* (R. POTONIÉ 1934) THOMSON et PFLUG 1953

***Monocolpopollenites tranquillus* (R. POTONIÉ 1934) THOMSON et PFLUG 1953**

Plate CXVIII. Fig. 3—4.

1934. *Pollenites tranquillus* n. sp. — R. POT., Arb. Inst. Paläobot. 4. p. 51. T. 2. Fig. 3, 8.

1953. *Monocolpopollenites tranquillus* (R. POT.) n. c. — TH. et PF., Palaeontogr. 94. B. 1—4. pp. 62—63. T. 4. Fig. 27, 28, 35, 44, 45 etc.

Some 28—31 μ specimens were found in the Egerian — Eger, Wind brickyard pit, layer "u", Fót 1, 288.0—290.5 m, in the Eggenburgian — Szászvár 8, 433.6—433.8 m, in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m, Zengővárkony 45, 16.4—17.2 m.

It may be regarded as in situ only in these samples.

Genus: *Sabalpollenites* THIERGART 1937 ex R. POT. 1958

1937. *Sabal-pollenites* ... THIERG., Jb. Preuss. Geol. L. A. 38. pp. 308—309. T. 24. Fig. 14—15.

Remark: It is a monotypic generic name. THIERGART published two figures from which R. POTONIÉ determined the holotype in 1958 (Synopsis II. p. 98. Taf. 11. Fig. 10) and THIERGART 1937, Pl. 24. Fig. 15.

Generotypus: *Sabalpollenites convexus* THIERG. 1937

***Sabalpollenites papillosus* (MÜRR. et PF. 1953) NAGY 1969**

Plate CXVIII. Fig. 5—6.

1951. Wahrscheinlich *Palmen-Pollen* — MÜRR. et PF., Notizbl. hess. L. A. Bodenf. VI. 2. T. 5. Fig. 6—9.

1953. *Monocolpopollenites papillosus* (MÜRRIGER et PFLUG) n. c. — THOMS. et PF., Palaeontogr. 94. B. 1—4. p. 63. T. 4. Fig. 38, 48—49.

Pollens of 23—27 μ occurred in few specimens in the Egerian — Eger, Wind brickyard pit, in the Eggenburgian — Fót 1, 133.4—138.5 m. They may possibly be in situ.

***Sabalpollenites retareolatus* (PF. 1953) NAGY 1969**

Plate CXVIII. Fig. 7—9.

1953. *Monocolpopollenites areolatus* (R. POT.) n. c. subsp. *retareolatus* n. subsp. (PF.) — THOMS. et PF., Palaeontogr. 94. B. 1—4. p. 63. T. 4. Fig. 50—60.

1969. *Sabalpollenites retareolatus* (PF. 1953) n. c. — NAGY, MÁFI Évk. 52. 2. p. 254. Pl. LV. Fig. 17.

Rare, 26—44 μ pollens were found in the Egerian — Eger, Wind brickyard pit and borehole, in the Eggenburgian — Fót 1, 182.7—183.5 m, in the Karpathian — Zengővárkony 59, in the Badenian — Hidas 53, Szokolya 2, and 3.

Genus: *Dicolpopollis* PFLANZL 1956

1956. *Dicolpopollis* n. gen. — PFLANZL, Notizbl. hess. L. A. Bodenf. 48. p. 24. T. 16. Fig. 4.

Generotypus: *Dicolpopollis kockeli* PFLANZL 1956

***Dicolpopollis calamoides* NAGY 1963**

Plate CXVIII. Fig. 10—12.

1963. *Dicolpopollis calamoides* n. sp. — NAGY, Pollen et Spores V. 2. pp. 406—408. Pl. III. 12—23.

Pollens of 14—20 μ in high numbers were found in the Egerian — Eger, Wind brickyard pit, layer "u", in the Ottnangian — Alsóvadász 1, 1029.0—1034.6 m.

Remark: PFLANZL wrote about 16–19 μ granulate pollens when characterising *Dicolpopollis kockeli*. The figures support his description (Pl. 16. Fig. 9–13) and the repeated PFLANZL photos in KRUTZSCH 1970, Atlas VII. T. 42. Fig. 1–4. affirm it. KRUTZSCH changed the original diagnosis of PFLANZL when he mentioned “fein-reticulat” pollen forms, thus the specimens not included in PFLANZL’s figures belong to the species *Dicolpopollis calamoides* NAGY 1963.

Ordo: Pandanales
Familia: Sparganiaceae

Genus: *Sparganiaceapollenites* THIERG. 1937

1937. *Sparganiaceae-pollenites* ... THIERG., Jb. Preuss. Geol. L. A. 58. pp. 307–308.

Sparganiaceapollenites polygonalis THIERGART 1937

Plate CXVIII. Fig. 13–16.

1937. *Sparganiaceapollenites polygonalis* n. sp. — THIERGART, Jb. Preuss. Geol. L. A. 58. p. 307–308. T. 24. Fig. 11–12.

1950. *Sparganioidites* — R. POT., THOMS. et THIERG., Geol. Jb. 65. p. 50. Taf. 6. Fig. 11.

A few specimens, 20–34 μ , were found in limnic sequences in the Egerian and throughout the Miocene. In the Egerian — Eger, Wind brickyard borehole, brickyard pit, layer “u”, in the Eggenburgian — Fót 1, 166.0–168.0 m, in the Karpathian — Fót 1, 130.5–131.5 m, Rákoskeresztúr I. 148.0–151.0 m, Zengővárkony 59, 51.3–81.0 m, Komló 120, 372.0–374.7 m, Hidas 53, 837.9–839.0 m, in the Badenian — Hidas 89, 313.0 m, mine Hidasbánya II. seam, sample 53, Szokolya 3, 52.6–74.5 m, in the Pannonian — Hidas 53, 73.3–137.0 m, Naszály 1, 82.0–112.0 m, Tata mapping borehole 26, 16.8–50.0 m, Tata (TVG) 26, 11.0–39.0 m, Tata (TVG) 27, 8.5–18.5 m, Pápa 2, 5.0 m, 126.7–127.7 m, 146.0–146.3 m, Megyaszó 1, 25.0–32.0 m, 52.0–54.5 m, 140.3–146.3 m.

The quantity of specimens increased three times, in the horizon of the Egerian holostatotype, in the Karpathian of the Mecsek Mts. and in the Pannonian.

Familia: Typhaceae

Genus: *Tetradomonoporites* CHITALEY 1951 ex W. KR. 1970

1970. *Tetradomonoporites* CHITALEY 1951 ex vorliegender Arbeit — W. KR., Pal. Abh. B. III. 3/4 p. 407.

Lectogenotypus: *Tetradomonoporites typhoides* W. KR. 1970

Tetradomonoporites typhoides W. KR. 1970

Plate CXVIII. Fig. 17–22.

1970. *Tetradomonoporites typhoides* fsp. n. — W. KR., Pal. Abh. B. III. 3/4. p. 407. T. XLVII. Fig. 1–12.

The species is not too frequent in the Neogene, it is found rather in the Pliocene in small numbers (mine Petőfibánya). *Typha* tetrads of 33 μ diameter were found in the Lower Pannonian — Beremend 9, 76.0 m, in the Upper Pannonian — Várkesző 1, 34.0–35.0 m (NAGY 1958).

CLOSING REMARKS

The aim of this study was to summarize, catalogize and describe the spore-pollen spectrum of the Neogene formations of Hungary. As basis for classification, the standard work of Soó, R.: Evolutionary plant systematics (1963), was used.

The present study deals with *Bryophyta*, *Pteridophyta*, *Gymnospermae*, *Angiospermae* taxa. The taxonomical distribution of species was as follows:

- Bryophyta* — 9 genera, 38 species (new genus 1, new species 2);
- Pteridophyta* — 42 genera, 252 species (new genus 1, new species 39);
- Gymnospermae* — 22 genera, 110 species (new genus 1, new species 10);
- Angiospermae* — 89 genera, 207 species (new species 8).

From the Hungarian Neogene, 608 sporomorphs were determined from 162 genera. Three genera and 59 species are new.

The list of described taxa is found in the Hungarian text with frequency data for every stage.

Abbreviations: EG — Egerian
EB — Eggenburgian
O — Ottnangian
K — Karpathian
B — Badenian
Sz — Sarmatian
AP — Lower Pannonian
FP — Upper Pannonian
PL — Pleistocene

The frequencies have five ranks:

- r — rare (1–5 specimens)
- k — few (6–10 specimens)
- kő — moderate (11–20 specimens)
- gy — frequent (21–50 specimens)
- t — dominant (50+ specimens)

The redeposited forms are shown as — áth.

On the basis of the classification of Neogene sporomorphs the evaluation now became possible to supply new results in biostratigraphy, paleoecology and paleoclimatology. The next step will be the publication of this interpretation.

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NÉVMUTATÓ — REGISTER

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<i>maximus</i>	LXXII. 1.	139—140
<i>sivaki</i>	LXXII. 2—3.; LXXIII. 1—4.	41; 140
<i>Abietinaepollenites</i>		
<i>fotensis</i>	LXI. 3—5.	40; 132
<i>inclinatus</i>	LXI. 6—7.; LXII. 1—2.	132
<i>microalatus</i> f. <i>major</i>	LXII. 5—6.	133
<i>microalatus</i> ssp. <i>microalatus</i>	LXI. 8.; LXII. 3—4.	132—133
<i>neogenicus</i>	LXII. 7—8.; LXIII. 1—4.	133
sp.	LXIII. 5—6.; LXIV. 1.	133
<i>Acaciapollenites</i>		
<i>varpalotaënsis</i>	XC. 5.	159
<i>Aceripollenites</i>		
<i>reticulatus</i>	XCV. 28—31.	166
<i>rotundus</i>	XCVI. 1—4.	167
<i>Alangiopollis</i>		
<i>barghoornianum</i>	XCII. 1—4.	160—161
<i>simplex</i>	XCII. 5—6.	161
<i>Alnipollenites</i>		
<i>verus</i>	CXII. 24—29.	199
<i>Araliaceoipollenites</i>		
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<i>edmundi</i> f. <i>reticulatus</i>	XCVII. 18—20.	170
<i>euphorii</i>	XCVII. 23—25.	171
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<i>trachycarpoides</i>	CXVIII. 1—2.	212—213
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<i>sellularis</i>	CVII. 1—5.	185
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<i>grandis</i>	XXXIX. 7—8.; XL. 1—4.	35—36; 109—110
<i>magnus</i>	XL. 5—7.	110
<i>mecsekensis</i>	XLI. 1—3.	110
<i>medius</i>	XLI. 4—8.	110
<i>murensis</i>	XLII. 1—2., 4.	110
<i>murensis</i> f. <i>minor</i>	XLII. 3.	110
<i>nogradensis</i>	XLII. 5—8.	36; 111
<i>oculus</i>	XLII. 9.; XLIII. 1—6.	36; 111
<i>ornatus</i>	XLIII. 7.; XLIV. 1—2.	36—37; 111
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tenera	XI. 5—9.	71
cf. toroides	XI. 10—11.	71
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Carpinipites carpinoides	CXII. 9—14.	198
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simplex ssp. triangulus	CXV. 26—27.	206
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microreticulatus	CVIII. 1—2.	188
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<i>hungaricus</i>	XXII. 8—11.	90
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Fajnév — Species	Tábla — Plates	Oldal — Page
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<i>Vaclavipollis</i> <i>sooiana</i>	XVIII. 16—19.	189
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<i>Verrucingulatisporites</i> <i>elegans</i> <i>fotensis</i> <i>grandis</i> <i>granus</i> ssp. <i>granus</i> <i>gregussi</i> <i>heteroverrucatus</i> <i>karpatiensis</i> <i>mecsekensis</i> <i>miocaenicus</i> <i>murireticulatus</i> <i>nogradensis</i> <i>rugosus</i> <i>trifoliiformis</i> <i>undulatus</i> cf. <i>varius</i>	XXXVI. 11., 14. XXXVI. 12—13. XXXVI. 15—18. XXXVII. 1—3. XXXVII. 4—5., 7., 11. XXXVII. 6. XXXVII. 12—13. XXXVII. 8. XXXVII. 9—10., 14. VII. 6—9. XXXVII. 15—16. XXXVIII. 4—10. XXXVIII. 11—12. XXXVIII. 13—14. XXXVIII. 15—16.	105 33; 105—106 33—34; 106 106 106 106 34; 106—107 107 107 66 34; 107 34—35; 107—108 108 108 108
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FÉNYKÉPTÁBLÁK -- PLATES
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A felvételek 1000×-es nagyításúak (az ettől eltérő nagyítást jeleztük). Valamennyi felvétel eredeti, retusálás nélküli.

As a rule, the photos are magnified by 1000× (only scales differing from this are indicated). Photos original show without retouch.

Abbreviations figuring on the plates:

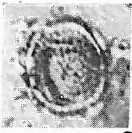
sz. = N^o, f. = borehole, m = metre, minta = sample, akna = shaft, térképező = mapping, vizkutató fúrás = water exploratory borehole

I. tábla — Plate I

- 1—10. *Musci* div. sp.
- 1—2. Hidas 53. sz. f. 479,1—482,0 m
 3. Hidas 53. sz. f. 667,2—669,2 m
 4. Hidas 53. sz. f. 444,0 m
 5. Hidas 53. sz. f. 572,0—575,0 m
 - 6—7. Zengővárkony 45. sz. f. 13,2—13,7 m
 - 8—9. Szokolya 2. sz. f. 51,9—59,1 m
 10. Eger, Wind-féle téglagyári feltárás „u” réteg, 16. minta; Eger, Wind brickyard pit, layer “u”, sample 16.
- 11—12. *Saxosporis hidasensis* NAGY 1968 — Holotypus — Hidas 53. sz. f. 132,5—134,8 m
- 13—14. *S. gracilis* W. KR. et PACLT. 1963 — Ipolytarnóc 1275. sz. minta
15. *S. cf. gerlachi* W. KR. 1967 — Fót 1. sz. f. 348,0—349,0 m
- 16—18. *Rudolphisporis rudolphi* (W. KR. 1959) W. KR. et PACLT. 1963 — Zengővárkony 59. sz. f. 56,0—60,9 m
19. *R. cf. rudolphi* (W. KR. 1959) W. KR. et PACLT. 1963 — Hidas 53. sz. f. 763,3—764,6 m
- 20—21. *R. mecsekensis* NAGY 1968 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m



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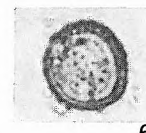
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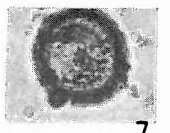
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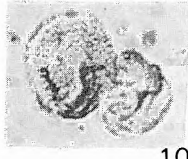
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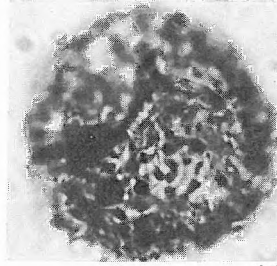
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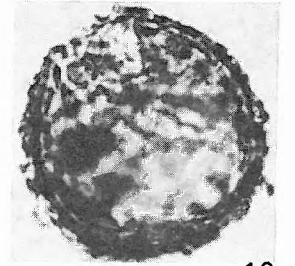
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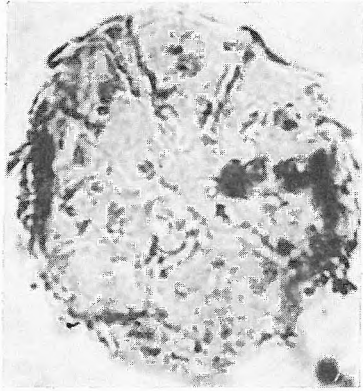
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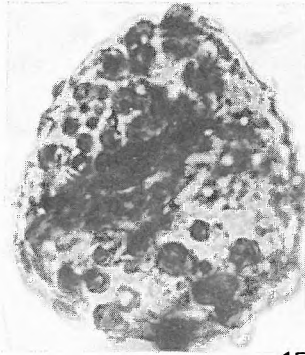
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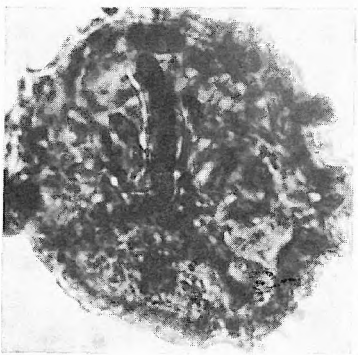
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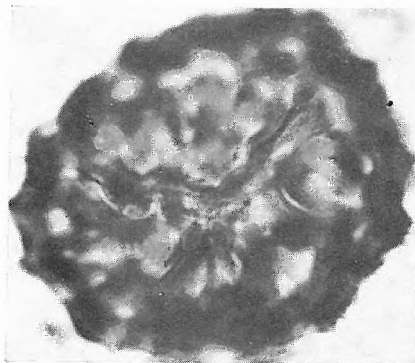
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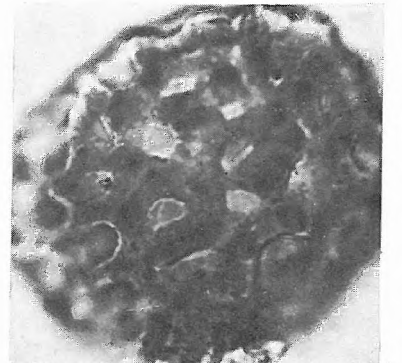
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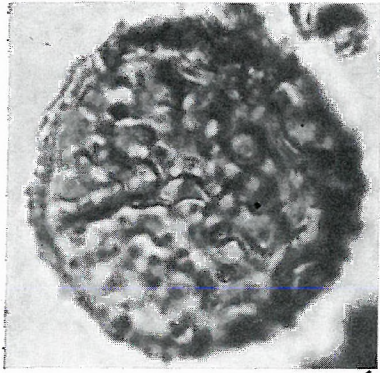
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II. tábla — Plate II

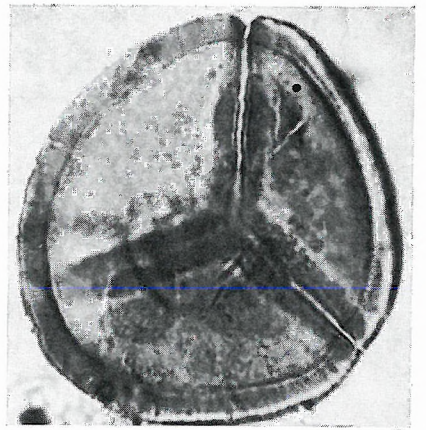
- 1—2. *Bohemiasporis vaclavensis* (W. KR. et PACLT. 1963) W. KR. et PACLT. 1967 — Zengővárkony 59. sz. f. 56,0—60,9 m
- 3—4. *Phacocerosporites baranyaënsis* NAGY 1968 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
5. *Ph. baranyaënsis* NAGY 1968 — Budajenő 2. sz. f. 518,2—523,0 m
- 6—7. *Ph. fotensis* n. sp. — Holotypus — Fót 1. sz. f. 244,6—243,2 m
- 8—9. *Ph. transversus* NAGY 1968 — Zengővárkony 59. sz. f. 51,3—56,0 m
10. *Ph. transversus* NAGY 1968 — Szokolya 2. sz. f. 50,3—51,1 m
- 11—12. *Stereisporites* sg. *Stereisporites megastereis* W. KR. 1963 — Naszály 1. sz. f. 32,8—34,9 m



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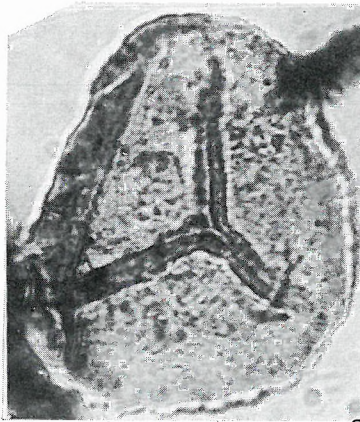
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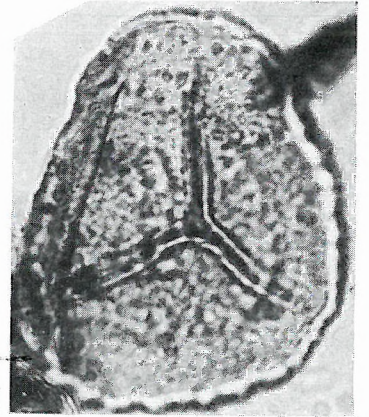
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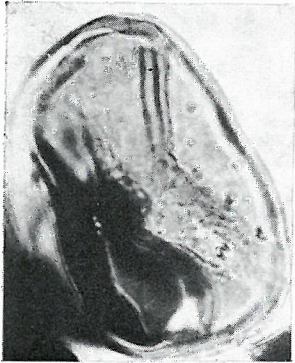
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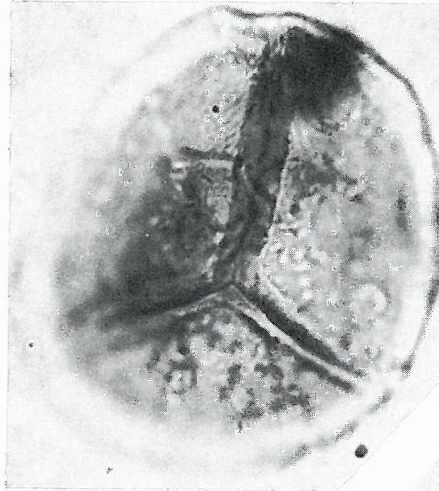
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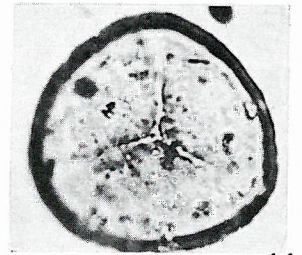
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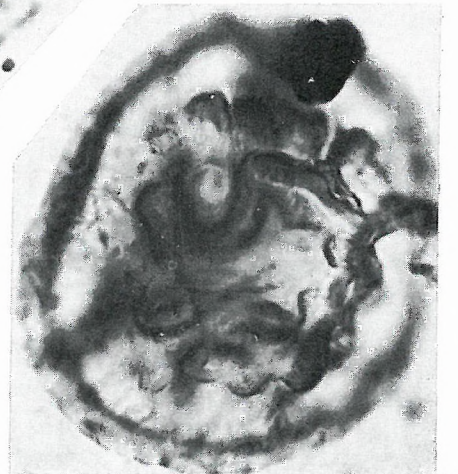
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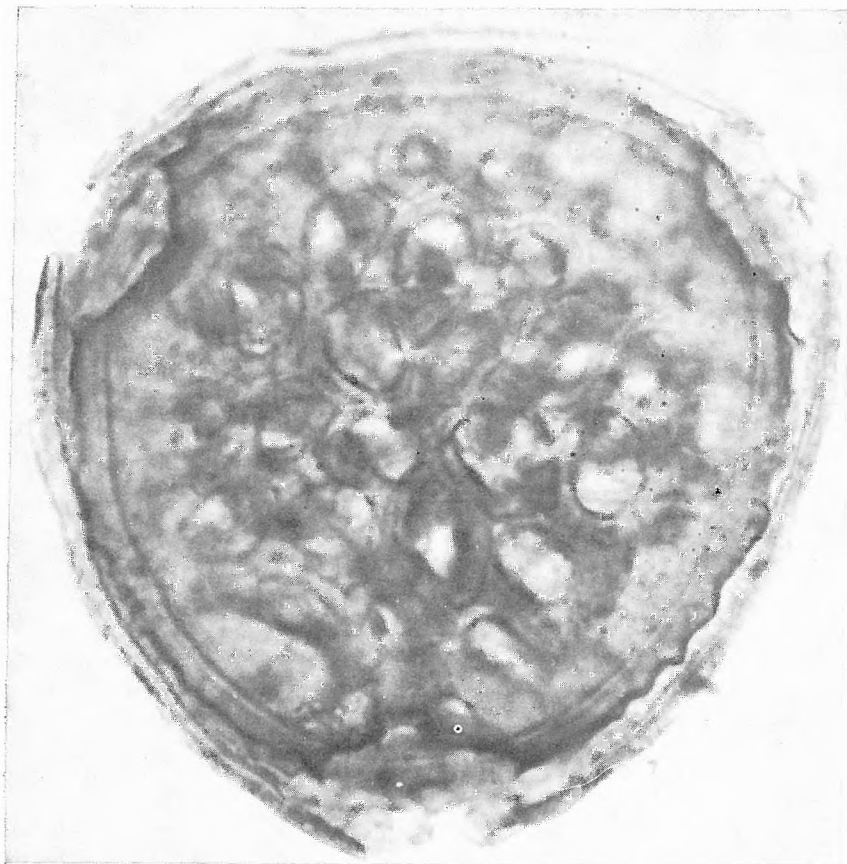
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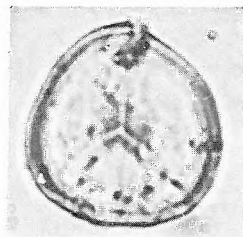
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III. tábla — Plate III

1. *Ricciaesporites hungaricus* NAGY 1968 — Generotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
2. *R. hungaricus* NAGY 1968 — Vajta, vízkutató f. 724,0—728,0 m
3. *R. cf. neogenicus* (W. KR. et PACLT. 1967) n. c. — Várkesző 1. sz. f. 15,0—16,0 m
4. *Stereisporites* sg. *Stereisporites involutus* DOKT.-HREBN. 1960 W. KR. 1963 ssp. *nochtenensis* W. KR. et SONTAG 1963 — Gérce 1. sz. f. 75,6—76,0 m
- 5—7. *S. sg. Stereisporites minor* (RAATZ 1937) W. KR. 1959 ssp. *minor* — Naszály 1. sz. f. 15,1—17,0 m
- 8—9. *S. sg. Stereisporites minor* (RAATZ 1937) W. KR. 1959 ssp. *microstereis* W. KR. et SONTAG 1963 — Szászvár 8. sz. f. 26,0—27,0 m
- 10—11. *S. sg. Stereisporites stereoides* (R. POT. et VEN. 1934) TH. et PF. 1953 ssp. *stereoides* — Várkesző 1. sz. f. 38,0—39,0 m
- 12—13. *S. sg. Stereisporites pseudopsilatus* W. KR. 1959 ssp. *pseudopsilatus* — Naszály 1. sz. f. 104,0—106,0 m
14. *S. sg. Stereisporites pseudopsilatus* W. KR. 1963 ssp. *validus* (DOKT.-HR. 1960) W. KR. 1963 — Naszály 1. sz. f. 82,0—93,7 m
- 15—16. *S. sg. Stereisporites stereoides* (R. POT. et VEN. 1934) TH. et PF. 1953 ssp. *stereis* (W. KR. 1959) W. KR. 1963 — Gérce 1. sz. f. 76,5—80,0 m



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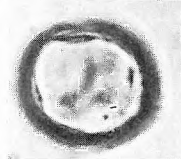
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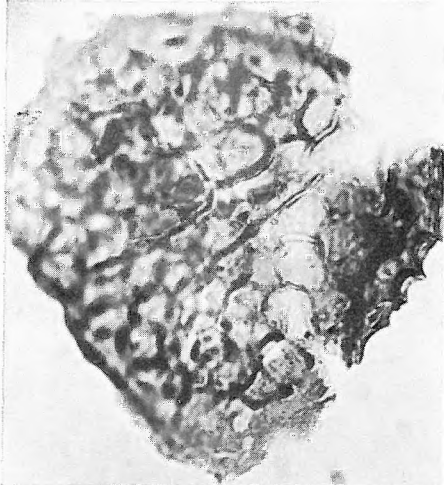
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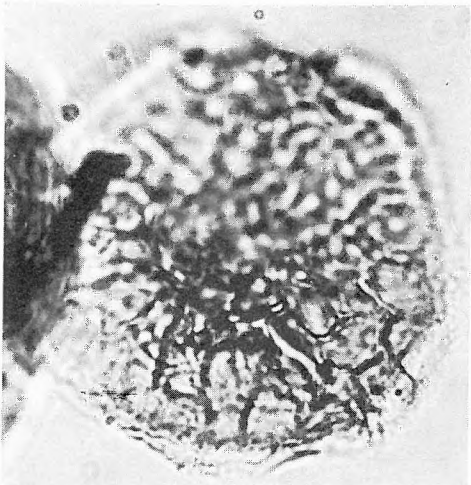
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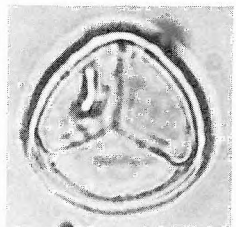
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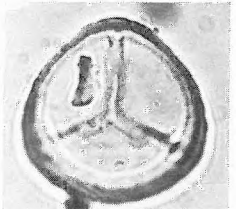
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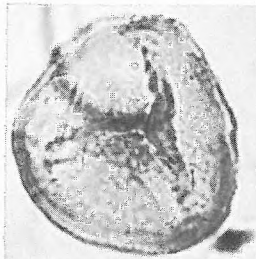
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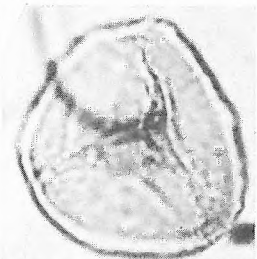
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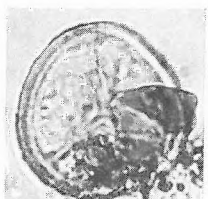
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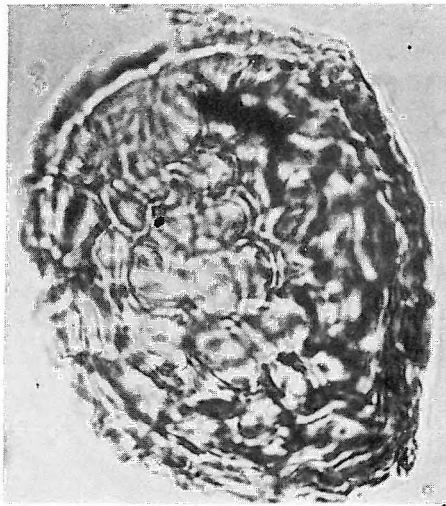
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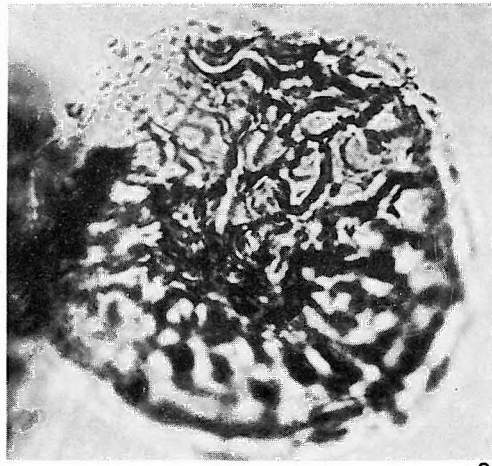
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IV. tábla — Plate IV

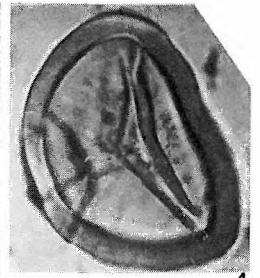
- 1—2. *Ricciaesporites transdanubicus* NAGY 1968 — Várkesző 1. sz. f. 36,0—37,0 m
3. *R. cf. neogenicus* (W. KR. et PACLT. 1967) n. c. — Várkesző 1. sz. f. 15,0—16,0 m
4. *Stereisporites* sg. *Stereisporites stictus* (WOLFF 1934) W. KR. 1959 ssp. *stictus* — Bogács 9/5 sz. f. 147,0—150,0 m
5. *S. sg. Stereisporites cf. tristereoides* W. KR. 1963 — Naszály 1. sz. f. 14,9—15,1 m
6. *S. sg. Stereisporites stictus* (WOLFF 1934) W. KR. 1959 ssp. *woelfersheimensis* (W. KR. 1959) W. KR. 1963 — Pula 3. sz. f. 13,0—13,5 m
- 7—8. *S. sg. Stereigranisporis granulus* W. KR. et SONT. 1963 — Várkesző 1. sz. f. 15,0—16,0 m
9. *S. sg. Stereigranisporis semigranuloides* W. KR. 1963 — Várpalota 133. sz. f. 189,0 m
- 10—11. *S. sg. Stereigranisporis semigranulus* W. KR. 1963 — Várkesző 1. sz. f. 34,0—35,0 m
12. *Ricciaesporites transdanubicus* NAGY 1968 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m



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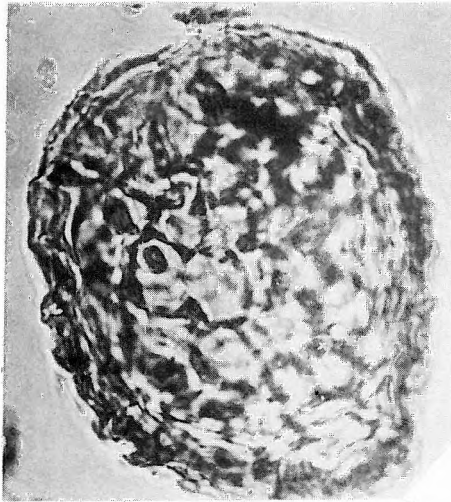
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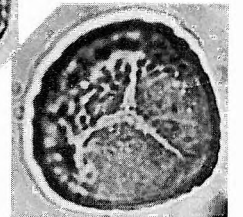
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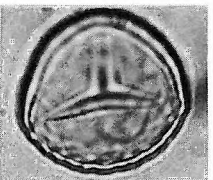
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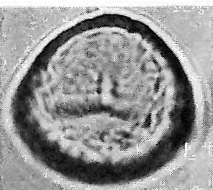
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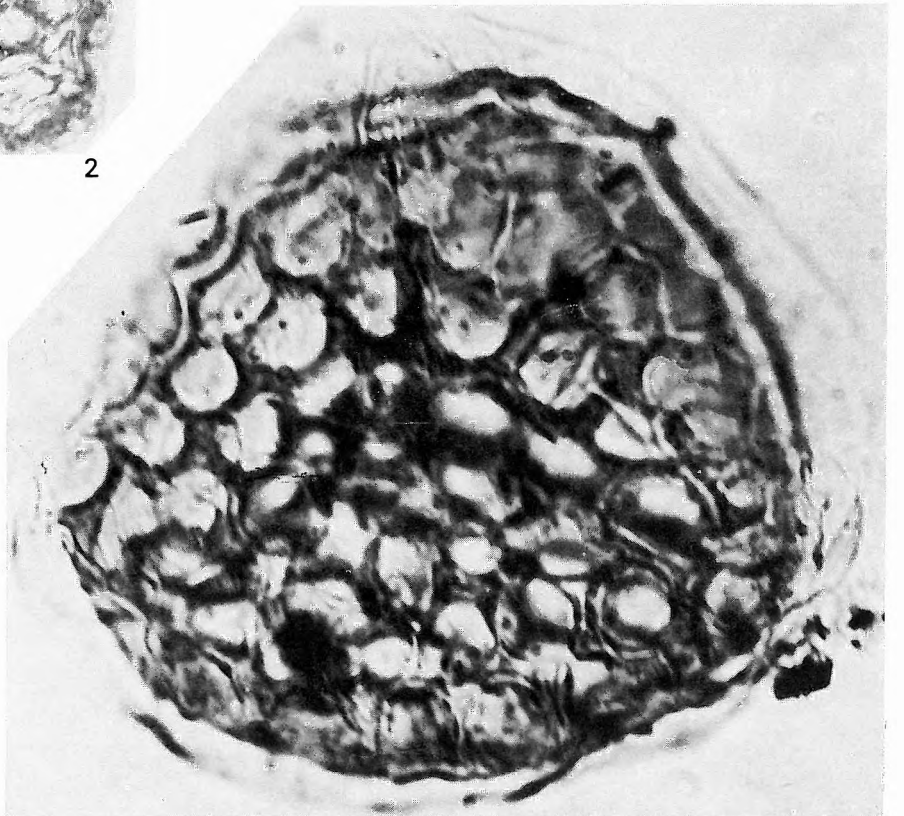
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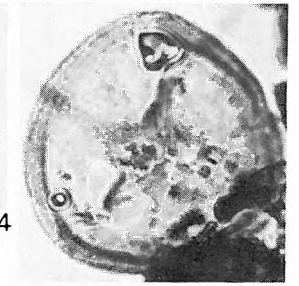
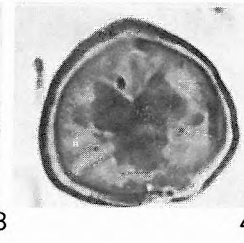
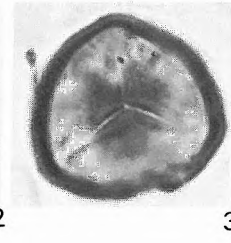
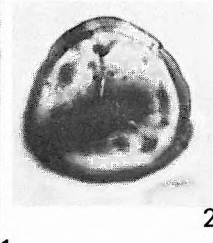
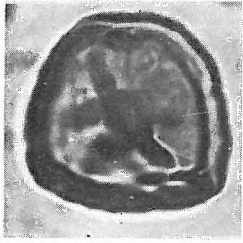
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12

V. tábla — Plate V

1. *Stereisporites* sg. *Distancoraesporis crassiancoris* W. KR. 1963 — Cserhátszentiván 1. sz. f. 183,7—185,0 m
2. *S.* sg. *Distancoraesporis huenfeldensis* W. KR. 1959 — Beremend 9. sz. f. 76,0 m
- 3—4. *S.* sg. *Distancoraesporis mecklenburgensis* W. KR. 1963 — Tata (TVG) 27. sz. f. 8,5—18,3 m
5. *S.* sg. *Distancoraesporis punctoides* W. KR. 1963 — Naszály 1. sz. f. 131,0—150,0 m
6. *S.* sg. *Distgranisporis granistereooides* W. KR. et SONT. 1963 — Szederkény 8303. sz. f. 63,6—67,0 m
- 7—8. *S.* sg. *Distgranisporis minimoides* W. KR. 1963 — Pula 3. sz. f. 13,5—14,0 m
- 9—10. *S.* sg. *Distverrusporis cingulatus* W. KR. 1963 ssp. *cingulatus* — Alsóvadász 1. sz. f. 448,0—441,0 m
- 11—13. *S.* sg. *Distverrusporis* cf. *cingulatus* W. KR. 1963 ssp. *cingulatus* — Tata térképező 26. sz. f. 45,0 m
- 14—16. *Encalyptaesporites pliocaenicus* NAGY 1968 — Szokolya 2. sz. f. 100,0—101,0 m
- 17—18. *Ephemerisporites borsodensis* NAGY 1968 — Bogács 9/5 147,0—150,0 m
- 19—21. *E. borsodensis* NAGY 1968 — Naszály 1. sz. f. 54,5—60,0 m



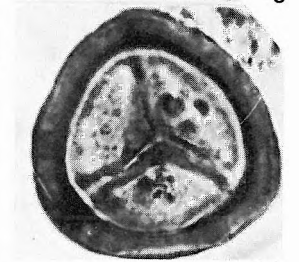
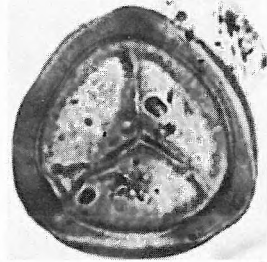
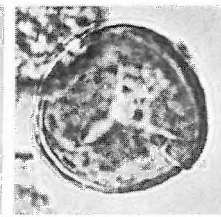
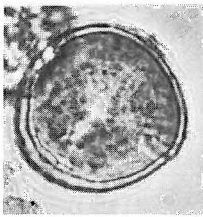
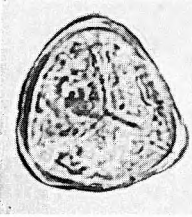
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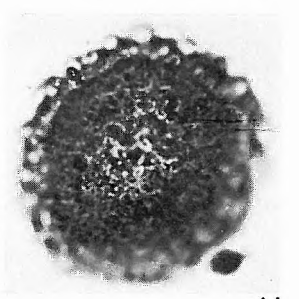
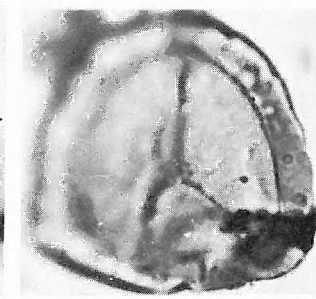
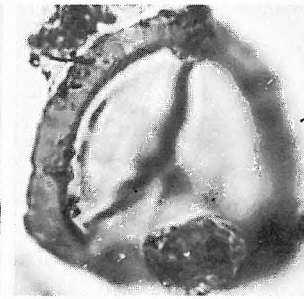
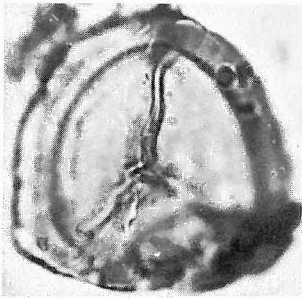
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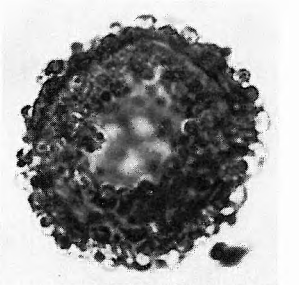
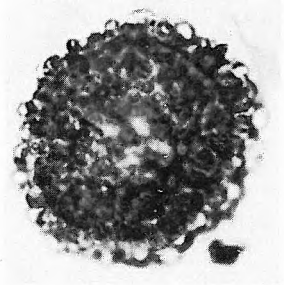
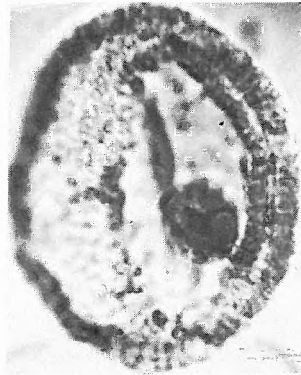
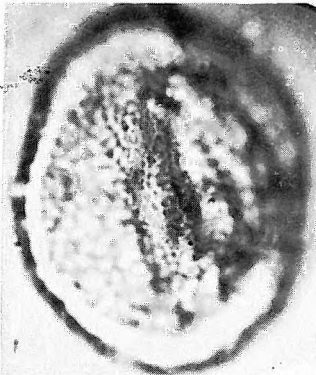


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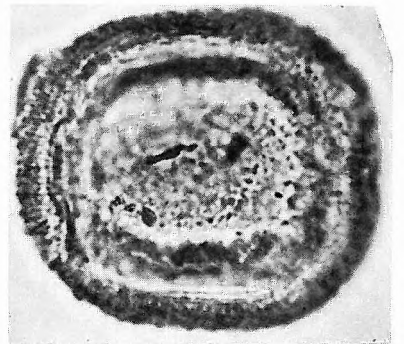
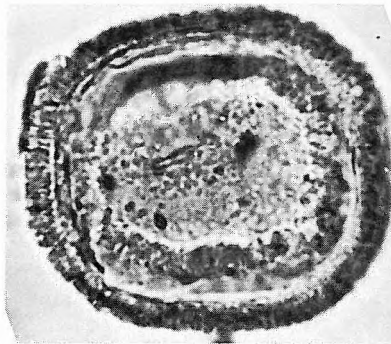
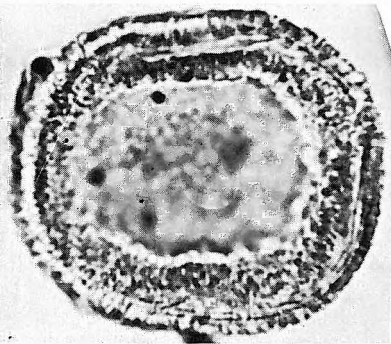


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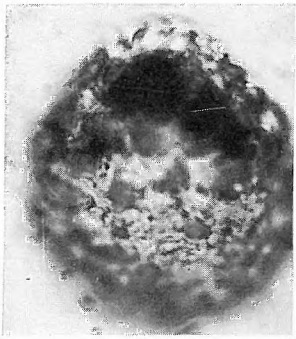
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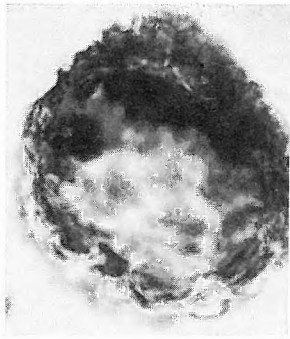
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VI. tábla — Plate VI

- 1—3. *Encalyptaesporites pliocaenicus* NAGY 1968 — Generotypus — Hidas 53. sz. f. 132,5—134,8 m
- 4—8. *Szokoljasporites bryophytoides* n. g. n. sp. — Generotypus — Szokolya 2. sz. f. 82,1—83,9 m
- 9—11. *Lycopodiumsporites altranftensis* (W. KR. 1963) n. c. — Fót 1. sz. f. 349,5—354,0 m
- 12—14. *L. pseudoclavatus* (W. KR. 1963) n. c. — Gérce 1. sz. f. 34,5—37,5 m
15. *L. pseudoclavatus* (W. KR. 1963) n. c. — Várkesző 1. sz. f. 17,0—18,0 m
- 16—18. *L. reticuloides* (W. KR. 1963) n. c. ssp. *reductoides* W. KR. 1962 — Naszály 1. sz. f. 66,0—79,5 m
- 19—21. *L. reticuloides* (W. KR. 1963) n. c. ssp. *reductoides* W. KR. 1962 — Naszály 1. sz. f. 116,5—131,5 m



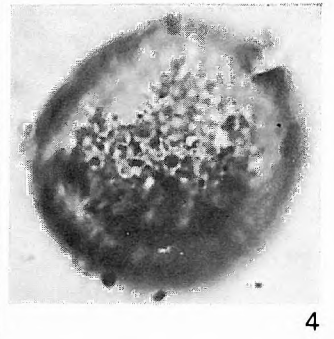
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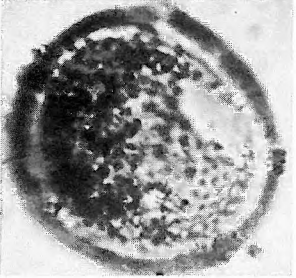
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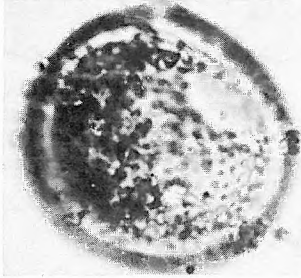
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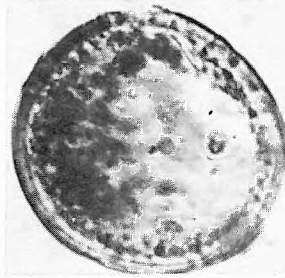
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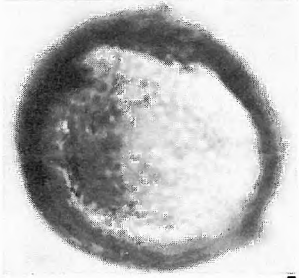
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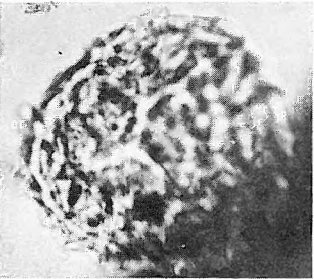
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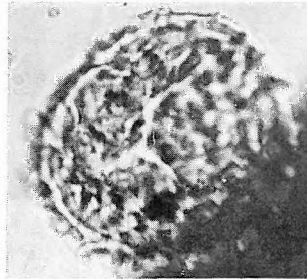
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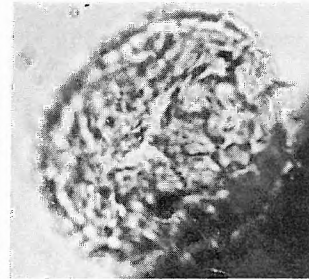
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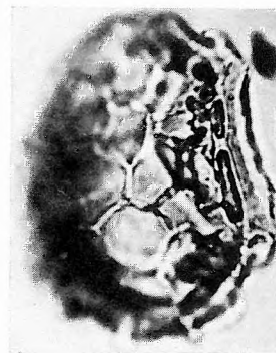
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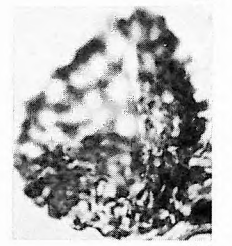
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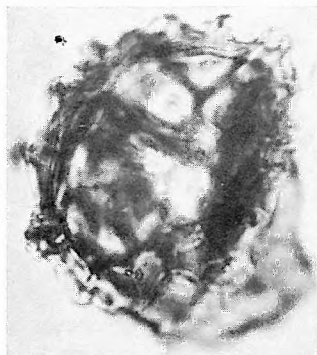
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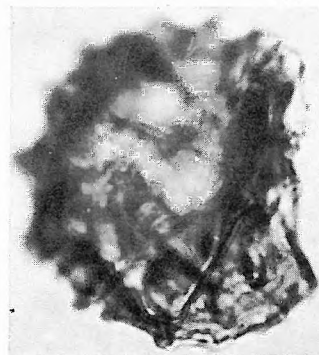
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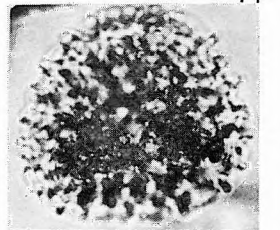
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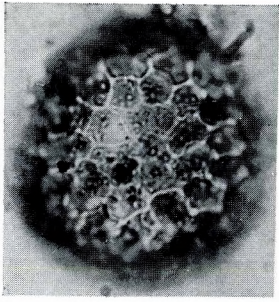
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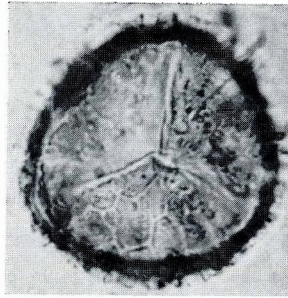
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VII. tábla — Plate VII

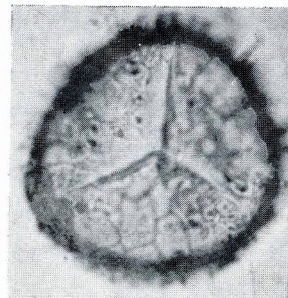
- 1—3. *Lycopodiumsporites rueterbergensis* (W. KR. 1963) n. c. ssp. *rueterbergensis* — Pusztafalu 3. akna 1. minta
- 4—5. *Selagosporis* sp. A. — Alsóvadász 1. sz. f. 744,1—757,8 m
- 6—8. *Verrucingulatisporites murireticulatus* NAGY 1963 — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m
 9. *V. murireticulatus* NAGY 1963 — Püspökhátvan 4. sz. f. 233,0—236,0 m
 10. *Lusatisporis punctatus* W. KR. 1963 — Alsóvadász 1. sz. f. 1029,0—1034,6 m
 11. *L. perinatus* W. KR. 1963 — Tata (TVG) 26. sz. f. 7,0—9,0 m
 12. *L. perinatus* W. KR. 1963 — Alsóvadász 1. sz. f. 1029,0—1034,6 m
- 13—14. *L. undulosus* NAGY 1973 — Holotypus — Alsóvadász 1. sz. f. 1029,5—1034,6 m



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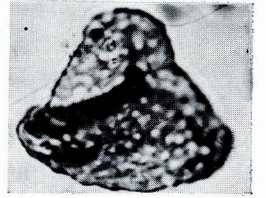
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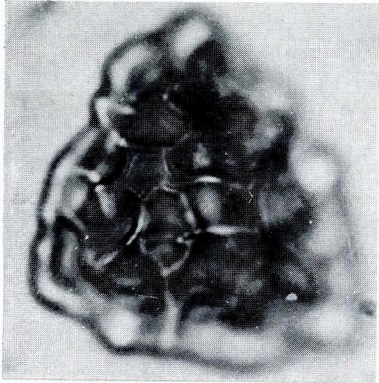
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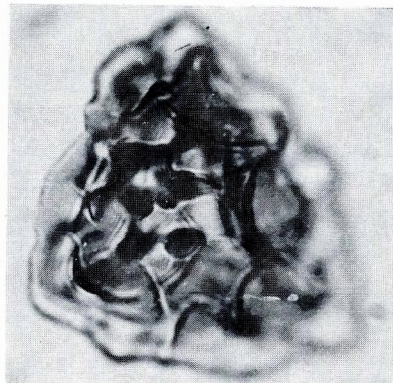
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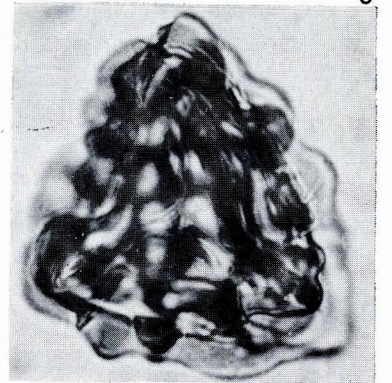
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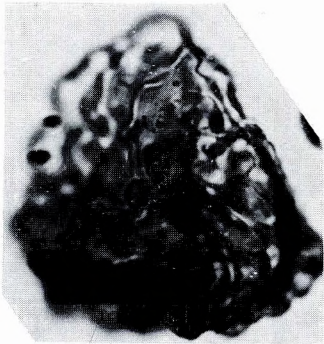
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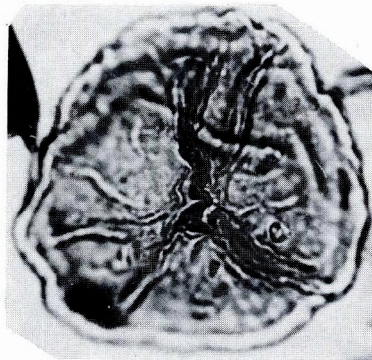
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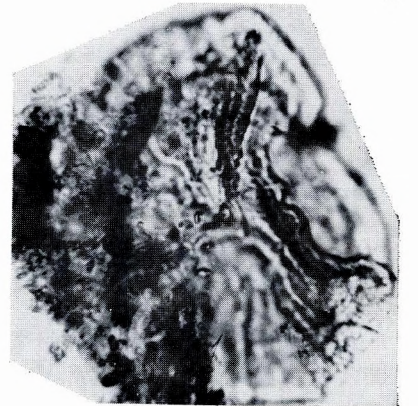
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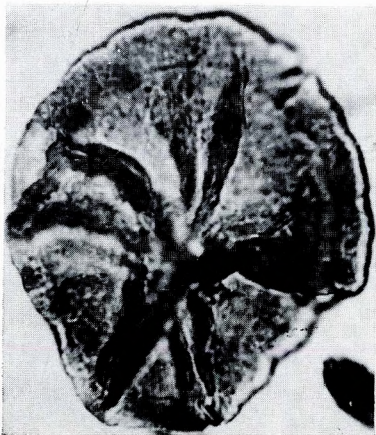
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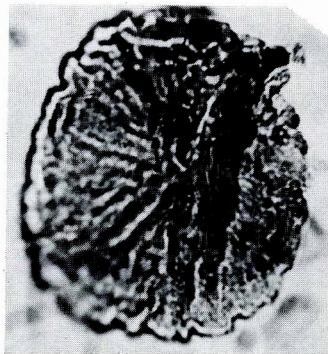
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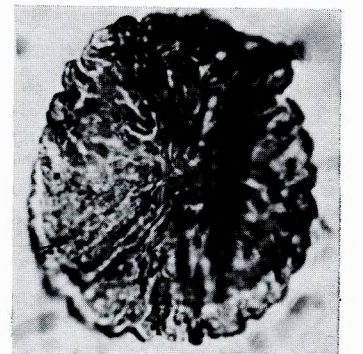
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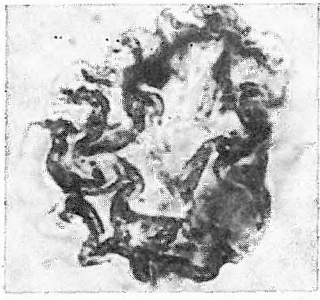
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VIII. tábla — Plate VIII

- 1—6. *Megastachysporites ladanyensis* n. g. n. sp. — Generotypus, Holotypus — Jászladány 1. sz. f. 188,43—188,65 m
7. *Echinatisporis bockwitzensis* W. KR. 1963 — Fót 1. sz. f. 355,5—357,0 m
- 8—9. *E. cycloides* W. KR. 1963 — Várpalota 317. sz. f. 100,9—101,1 m
- 10—11. *E. cserhatensis* n. sp. — Holotypus — Cserhátszentiván 1. sz. f. 163,0—165,0 m
- 12—13. *E. cserhatensis* n. sp. — Cserhátszentiván 1. sz. f. 101,6—104,0 m
- 14—15. *E. echinoides* W. KR. et PACLT. 1963 ssp. *echinoides* — Tengelic 2. sz. f. 817,0—820,0 m
- 16—17. *E. fotensis* n. sp. — Holotypus — Fót 1. sz. f. 294,0—301,0 m



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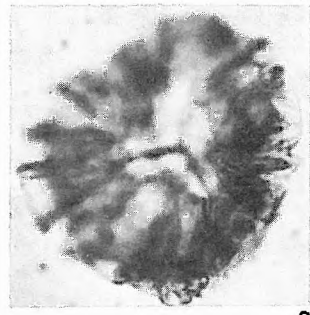
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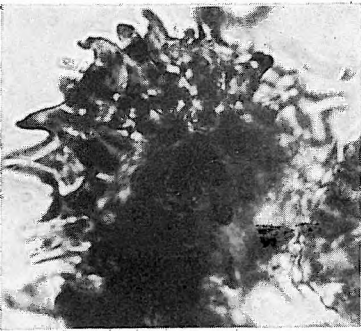
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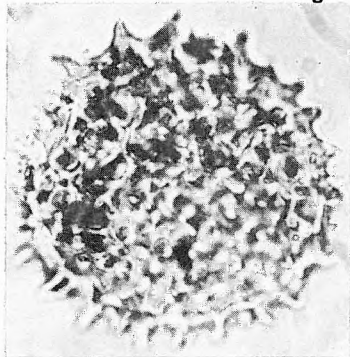
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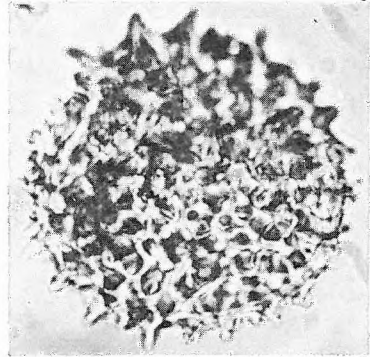
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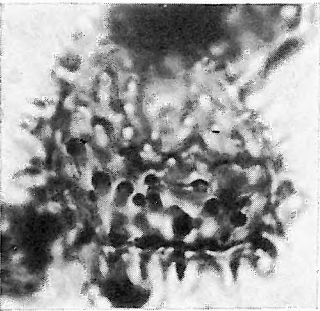
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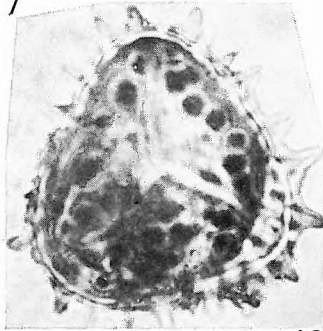
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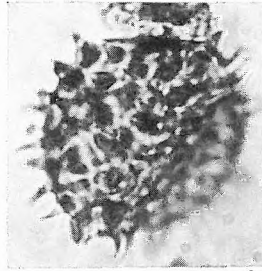
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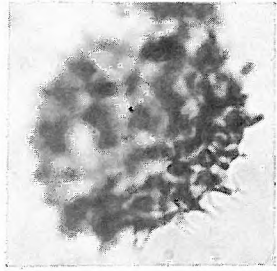
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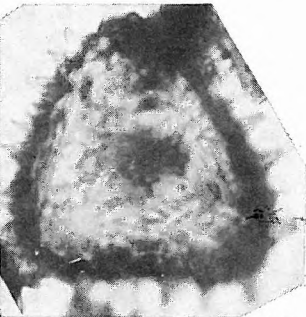
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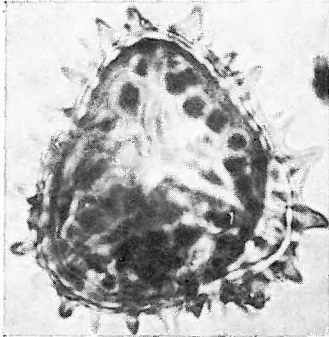
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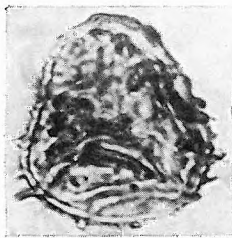
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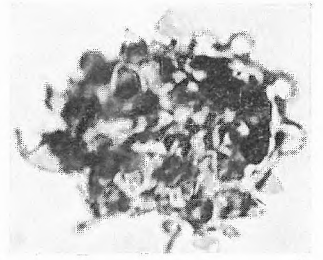
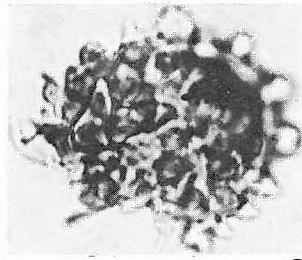
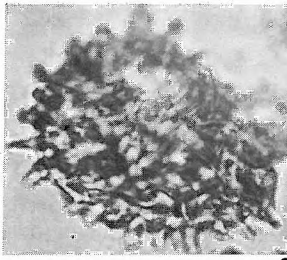
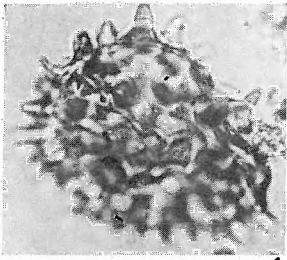
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IX. tábla — Plate IX

- 1—2. *Echinatisporis hidasensis* NAGY 1969 — Litke 17. sz. f. 256,0—258,0 m
3—4. *E. hidasensis* NAGY 1969 — Szokolya 2. sz. f. 44,0—45,5 m
5. *E. hidasensis* NAGY 1969 — Holotypus — Hidas 53. sz. f. 534,0—537,0 m
6—7. *E. longechinus* W. KR. 1969 — Budajenő 2. sz. f. 556,5—557,7 m
8. *E. longechinus* W. KR. 1959 — Fót 1. sz. f. 162,0—164,0 m
9—10. *E. microechinatus* W. KR. 1963 — Püspökhátvan 4. sz. f. 278,0—281,0 m
11. *E. mecsekensis* NAGY 1969 — Tekerés 1. sz. f. 855,0—859,0 m
12—13. *E. mecsekensis* NAGY 1969 — Eger Wind-féle téglagyár x_2 réteg; Eger, Wind brickyard pit, layer x_2
14—15. *E. microechinoides* W. KR. 1963 — Lak 1. sz. f. 353,7—357,7 m
16—18. *E. minimus* n. sp. — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m
19. *E. miocaenicus* W. KR. et SONTG. 1963 — Fót 1. sz. f. 328,0—332,8 m
20—21. *E. miocaenicus* W. KR. et SONTG. 1963 — Nógrádszakál 2. sz. f. 99,5—101,0 m

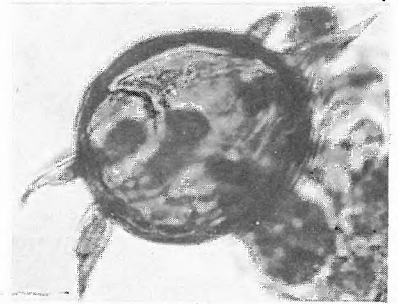
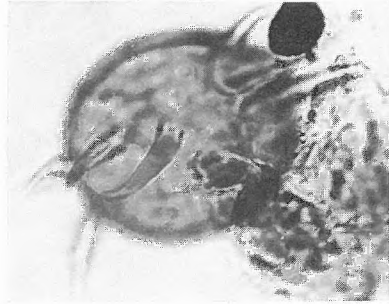
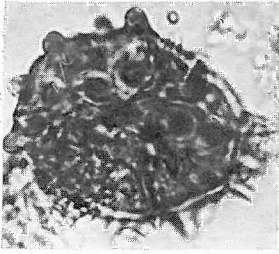


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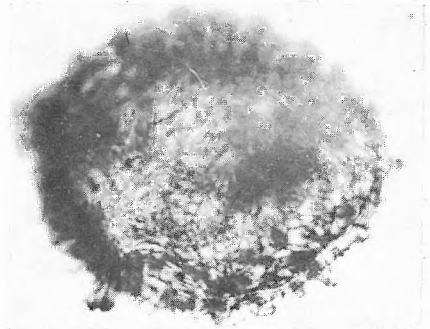
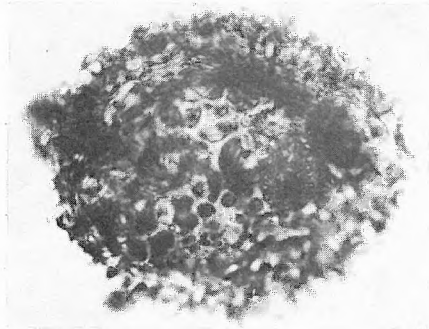
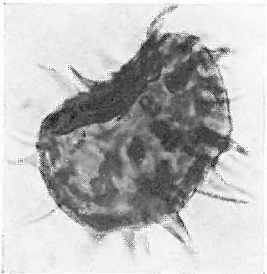
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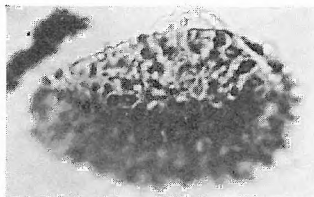
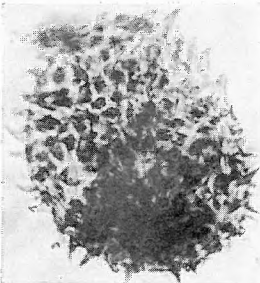
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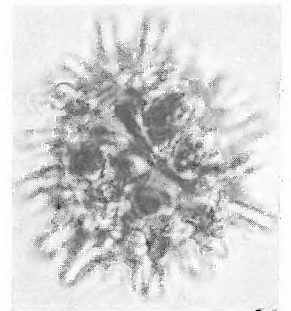
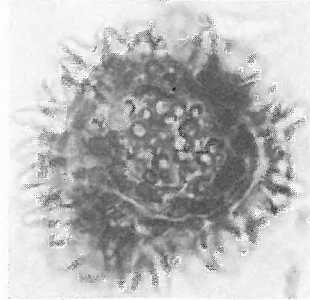
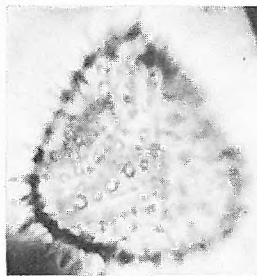
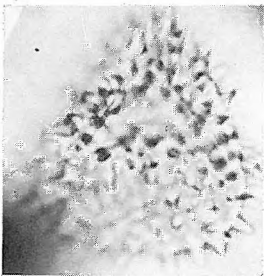
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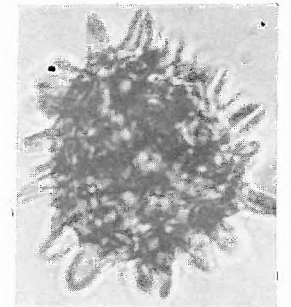
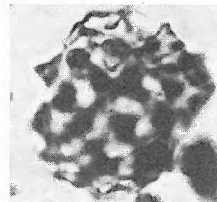
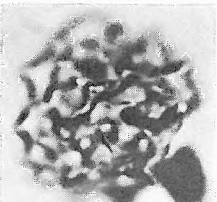


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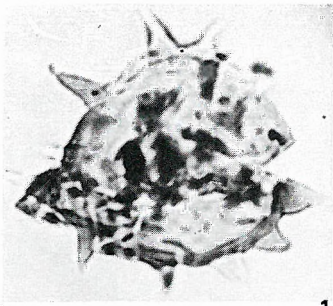
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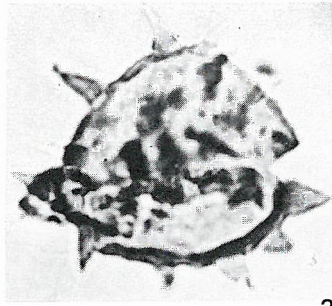
21

X. tábla — Plate X

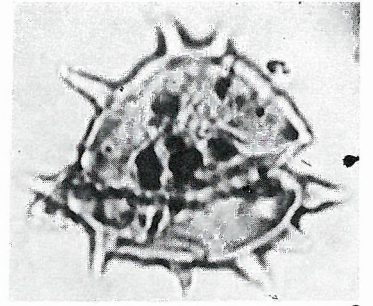
- 1—4. *Echinatisporis spinosus* n. sp. — Holotypus — Szokolya 2. sz. f. 44,0—45,5 m
5—7. *E. szaszvarensis* NAGY 1969 — Szászvár 8. sz. f. 437,8—438,5 m
8. *E. variabilis* NAGY 1969 — Holotypus — Hidas 53. sz. f. 669,2—669,8 m
9. *E. variabilis* NAGY 1969 — Fót 1. sz. f. 209,5—209,9 m
10. *E. verruechinus* W. KR. 1959 — Fót 1. sz. f. 355,5—357,0 m
11—12. *E. wiesaënsis* W. KR. 1963 — Nógrádszakál 2. sz. f. 121,2—122,0 m
13—14. *E. wiesaënsis* W. KR. 1963 — Szokolya 2. sz. f. 45,5—46,3 m
15—16. *Echinatisporis* sp. I. — Tengelic 2. sz. f. 835,7—839,0 m
17. *Echinatisporis* sp. III. — Kaposcs 2. sz. f. 47,7 m



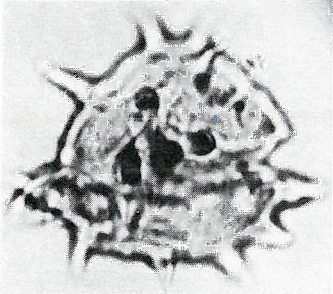
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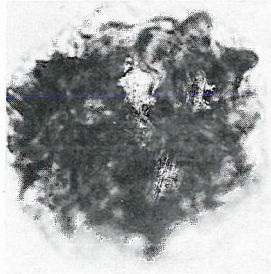
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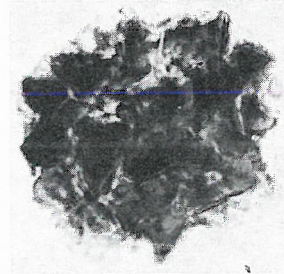
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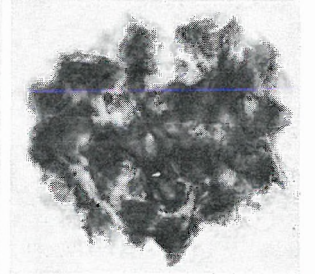
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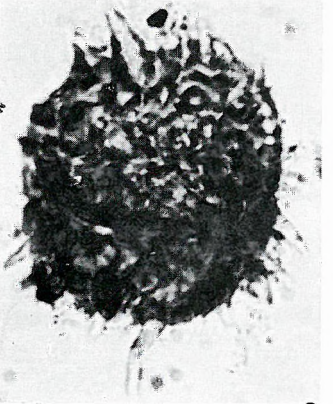
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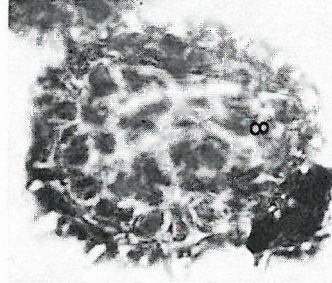
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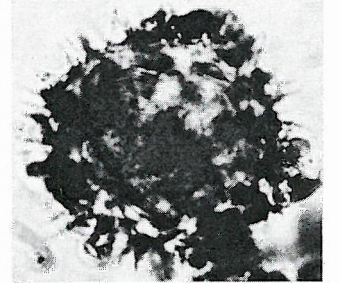
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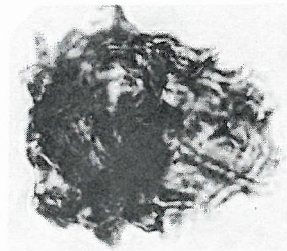
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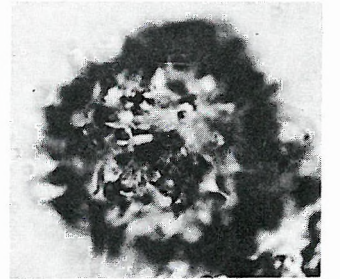
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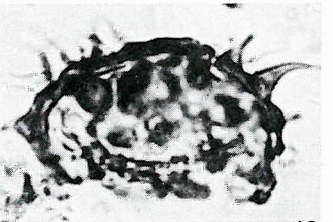
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10



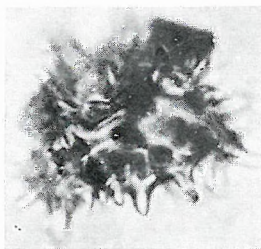
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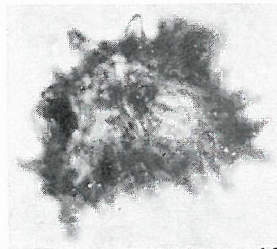
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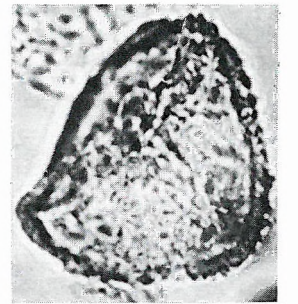
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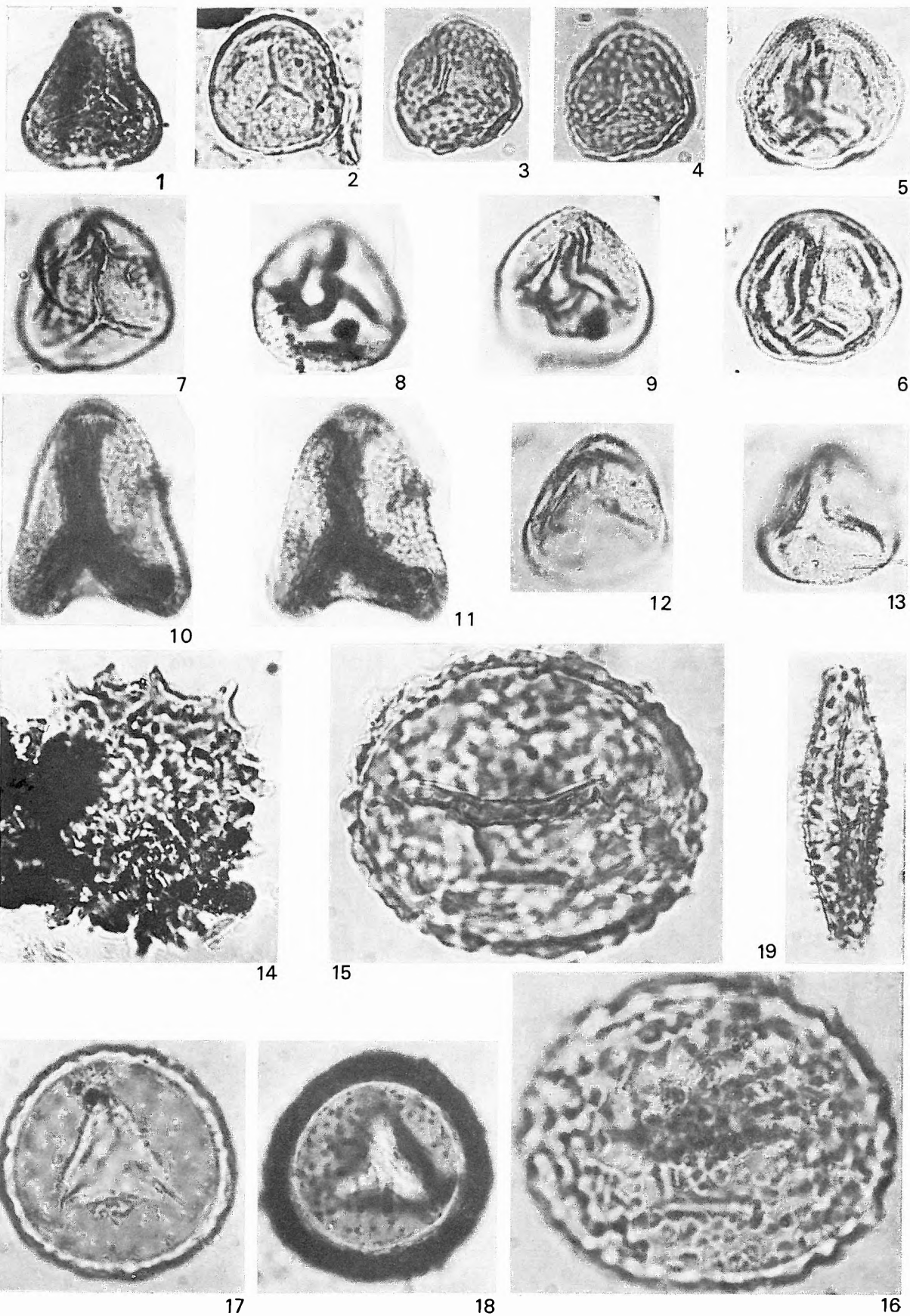
16



17

XI. tábla — Plate XI

1. *Brandenburgisporis beckwitzensis* W. KR. 1967 — Szokolya 2. sz. f. 34,0—37,0 m
2. *B. lusaticus* W. KR. 1967 — Pula 3. sz. f. 16,5—17,0 m
- 3—4. *B. lusaticus* W. KR. 1967 — Fót 1. sz. f. 275,0—278,7 m
- 5—6. *B. tenera* W. KR. 1962 — Eger Wind-féle téglagyári fúrás 10,9—11,1 m; Eger, Wind brick-yard borehole 10.9—11.1 m
7. *B. tenera* W. KR. 1962 — Nógrádszakál 2. sz. f. 91,4—93,0 m
- 8—9. *B. tenera* W. KR. 1962 — Naszály 1. sz. f. 19,0—20,5 m
- 10—11. *B. cf. toroides* W. KR. 1967 — Balaton 26. sz. f. 523,0—529,9 m
- 12—13. *B. treplinensis* W. KR. 1962 — Cserhátszentiván 1. sz. f. 185,0—185,5 m
14. *Muerrigerisporis muerrigeri* (PFLANZL 1953) W. KR. 1963 — Szokolya 2. sz. f. 65,5—66,3 m
- 15—16. *Ophioglossisporites grandis* (COOKSON 1947) NAGY 1969 — Zengővárkony 59. sz. f. 51,3—56,0 m
- 17—18. *O. rotundus* NAGY 1969 — Generotypus — Zengővárkony 59. sz. f. 34,0—37,5 m
19. *Osmundacidites nanus* (WOLFF 1934) n. c. — Tar 34. sz. f. 530,0—533,0 m



XII. tábla — Plate XII

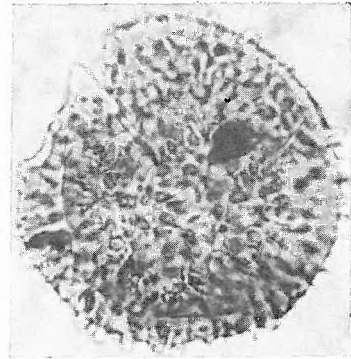
- 1—2. *Osmundacidites nanus* (WOLFF 1934) n. c. — Tar 34. sz. f. 530,0—533,0 m
- 3—4. *O. gemmatus* NAGY 1969 — Szászvár 8. sz. f. 433,8—434,1 m
- 5—6. *O. primarius* (WOLFF 1934) n. c. ssp. *primarius* — Alsóvadász 1. sz. f. 1029,4—1034,0 m
7. *O. primarius* (WOLFF 1934) n. c. ssp. *major* RAATZ 1937 — Alsóvadász 1. sz. f. 1029,5—1034,6 m
8. *O. primarius* (WOLFF 1934) n. c. subsp. *crassiprimarius* W. KR. 1967 — Naszály 1. sz. f. 41,8—42,4 m
- 9—10. *O. primarius* (WOLFF 1934) n. c. ssp. *oligocaenicus* W. KR. 1967 — Eger Wind-féle téglagyári fúrás 21,5—21,9 m; Eger, Wind brickyard borehole 21.5—21.9 m



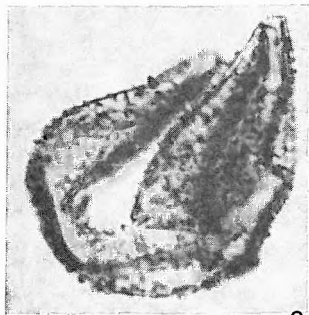
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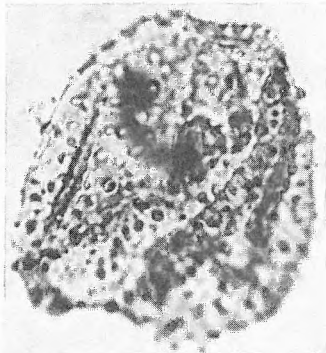
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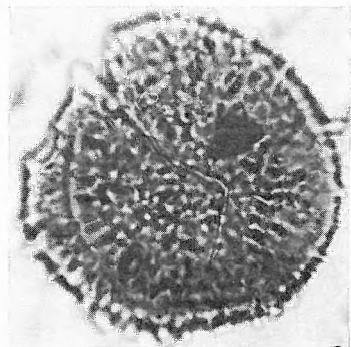
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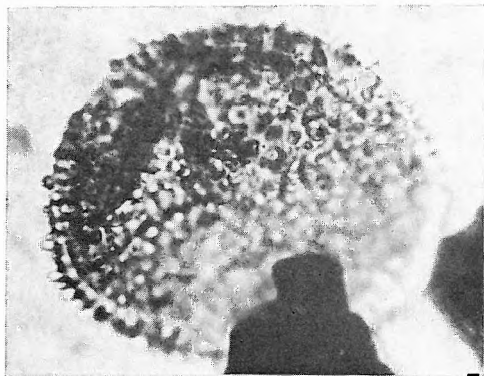
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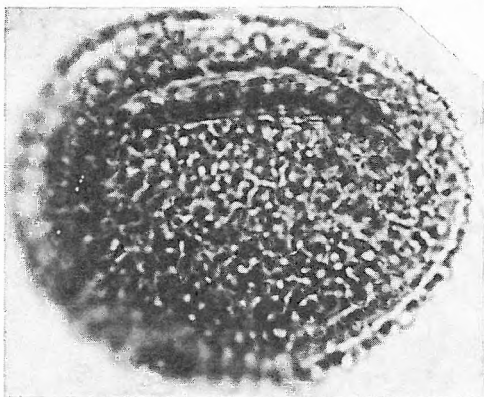
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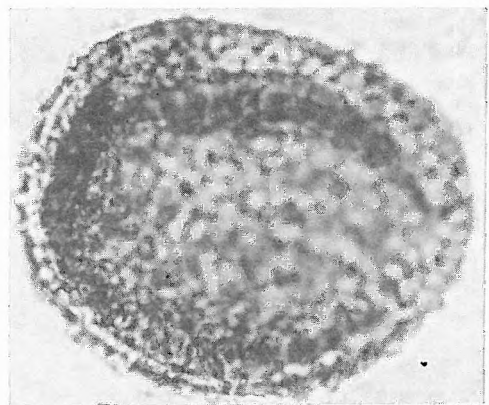
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8



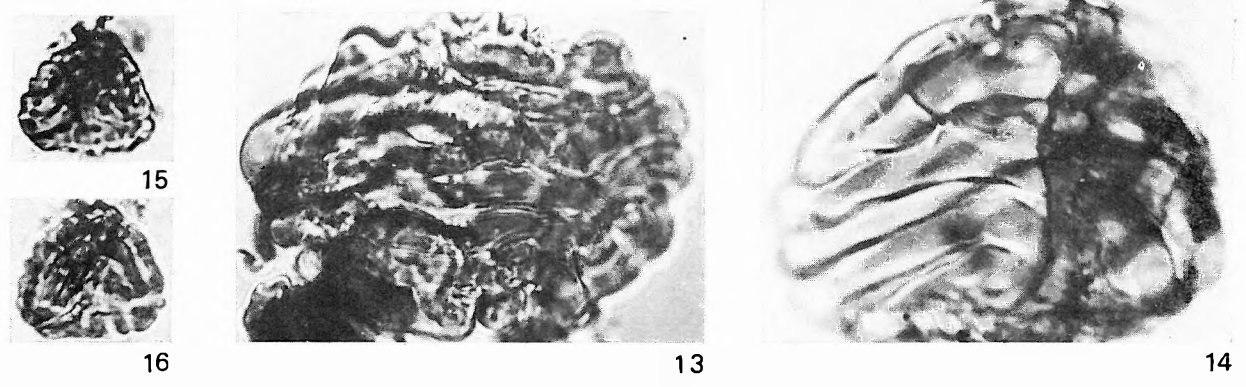
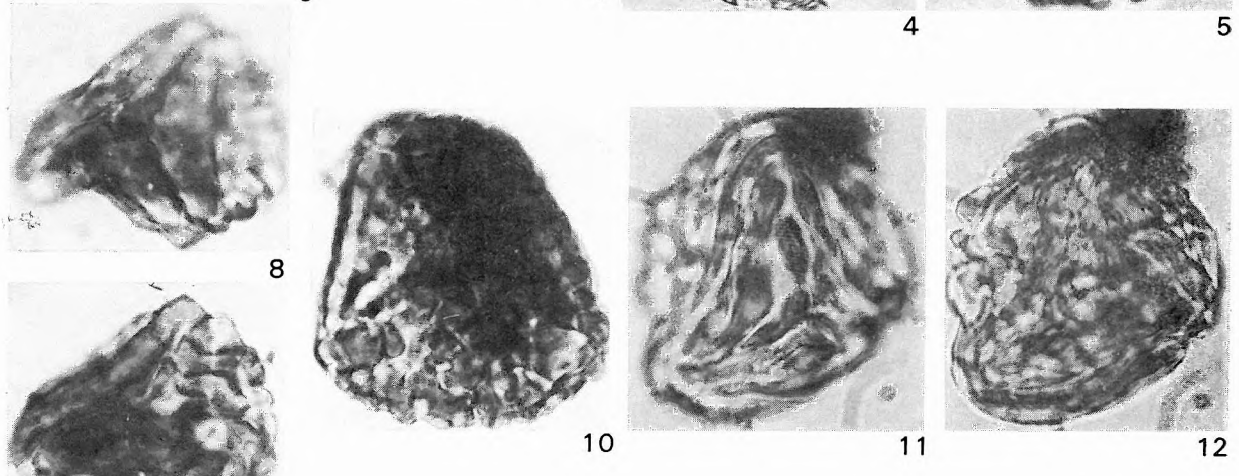
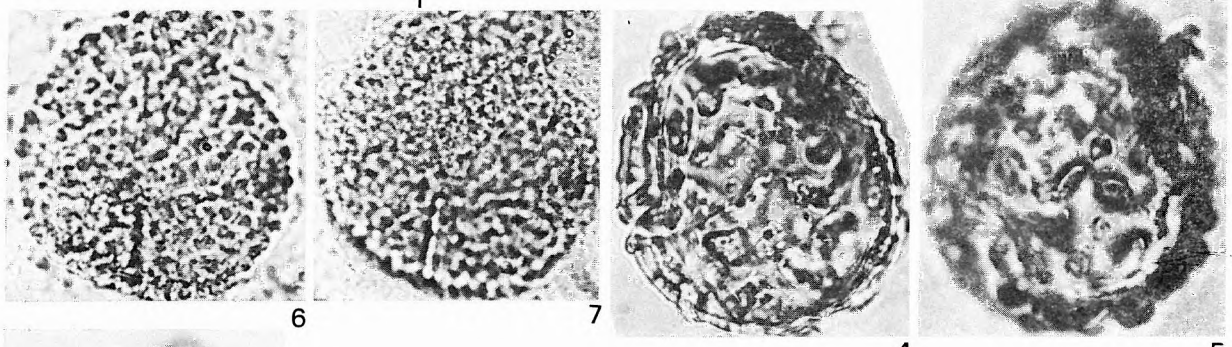
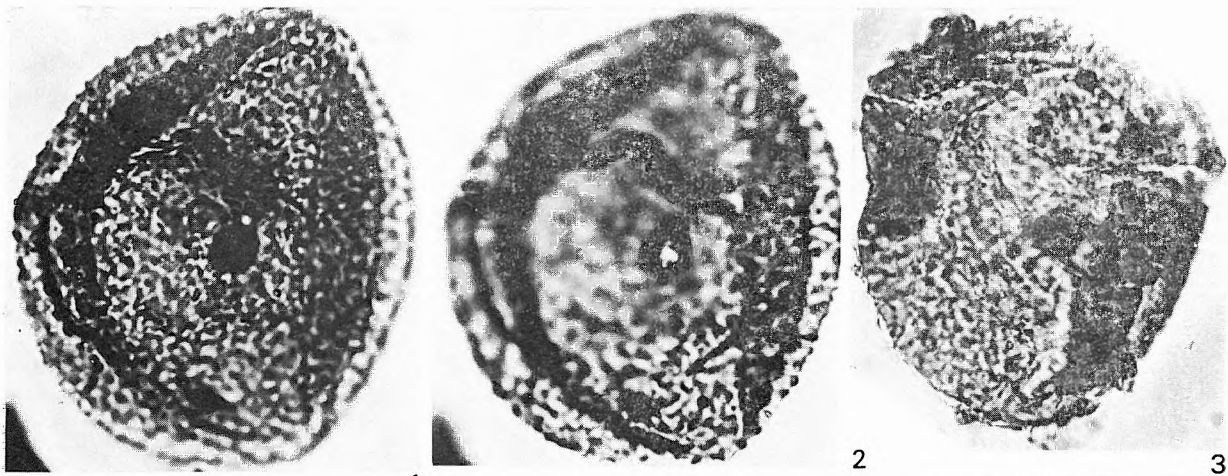
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10

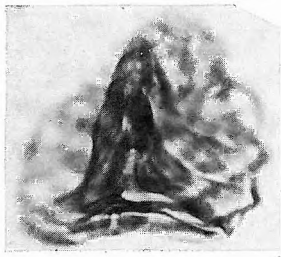
XIII. tábla — Plate XIII

- 1—2. *Osmundacidites quintus* (PF. et TH. 1953) n. c. ssp. *quintus* — Megyaszó 1. sz. f. 200,0—206,5 m
3. *O. quintus* (TH. et PF. 1953) n. c. ssp. *microquintus* W. KR. 1967 — Kóspallag 11. sz. f. 187,7—189,5 m
- 4—5. *O. quintus* (TH. et PF. 1953) n. c. ssp. *rhenanus* W. KR. 1967 — Tengelic 2. sz. f. 814,0—817,0 m
- 6—7. *O. quintus* (TH. et PF. 1953) n. c. ssp. *rugulatoides* W. KR. 1967 — Pula 3. sz. f. 14,0—14,5 m
- 8—9. *Cicatricosisporites chattensis* W. KR. 1961. ssp. *minor* W. KR. 1967 — Eger Wind-féle téglagyári feltárás „k” réteg; Eger, Wind brickyard pit, layer “k”
10. *C. lusaticus* W. KR. 1967 — Eger Wind-féle téglagyári fúrás 50,3—50,9 m, Eger, Wind brickyard borehole 50.3—50.9 m
- 11—12. *C. lusaticus* W. KR. 1967 — Fót 1. sz. f. 216,5—218,8 m
13. *C. mecsekensis* NAGY 1963 — Zengővárkony 45. sz. f. 16,0—16,4 m
14. *C. mecsekensis* NAGY 1963 — Zengővárkony 59. sz. f. 56,0—60,9 m
- 15—16. *C. minimus* NAGY 1963 — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m



XIV. tábla — Plate XIV

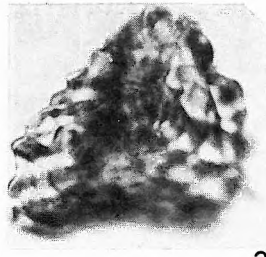
- 1—3. *Cicatricosisporites pannonicus* NAGY 1969 ssp. *triplanus* — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m
4. *Concavisporites minimodivisus* NAGY 1963 — Holotypus — Komló 120. sz. f. 39,8 m
5. *Concavisporites* sp. — Hidas 53. sz. f. 510,3 m
- 6—8. *Gleicheniidites elegans* NAGY 1963 — Holotypus — Eger Wind-féle téglagyár „u” réteg; Eger, Wind brickyard pit, layer “u”
- 9—10. *G. microstellatus* NAGY 1963 — Holotypus — Eger Wind-féle téglagyár „u” réteg; Eger, Wind brickyard pit, layer “u”
- 11—12. *G. umbonatus* (BOLCH. 1953) BOLCH. 1968 f. *minor*, forma typus — Szászvár 8. sz. f. 26,0—27,0 m
- 13—15. *G. umbonatus* (BOLCH. 1953) BOLCH. 1968. f. *minor* — Szászvár 8. sz. f. 26,0—27,0 m
16. *G. umbonatus* (BOLCH. 1953) BOLCH. 1968. f. *minor* — Eger Wind-féle téglagyári fúrás 8,3—9,2 m; Eger, Wind brickyard borehole 8.3—9.2 m
- 17—20. *G. zengoeensis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m
- 21—22. *Clavifera triplex* (BOLCH. 1953) BOLCH. 1966 — Eger, Wind-féle téglagyári fúrás 8,2—9,2 m; Eger, Wind brickyard borehole 8.2—9.2 m
23. *Leiotriletes adriennis* (R. POT. et GELL. 1933) W. KR. 1959 ssp. *pseudomaximus* (TH. et PF. 1953) W. KR. 1959 — Fót 1. sz. f. 349,5—354,0 m
- 24—25. *L. apheles* (HUNGER 1952) W. KR. 1959 — Lak 1. sz. f. 206,2—210,0 m



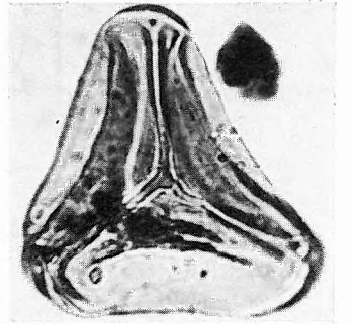
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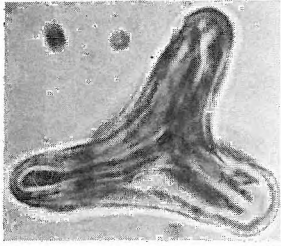
2



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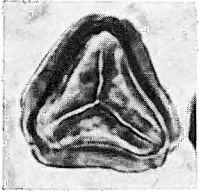
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8



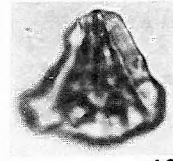
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11



12



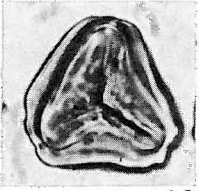
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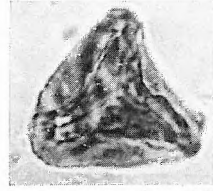
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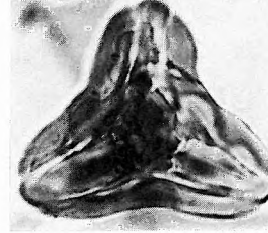
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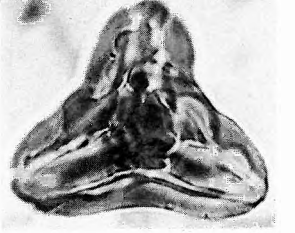
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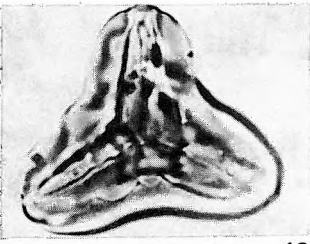
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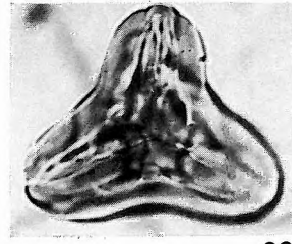
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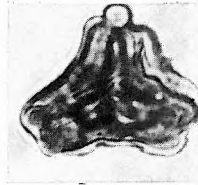
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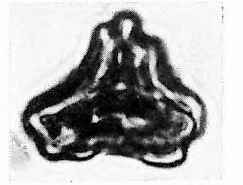
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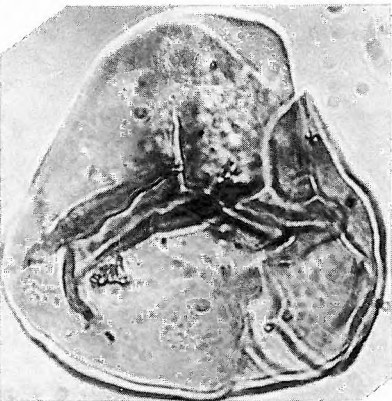
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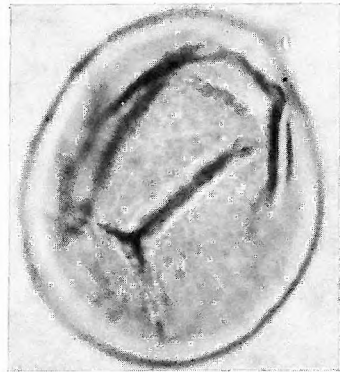
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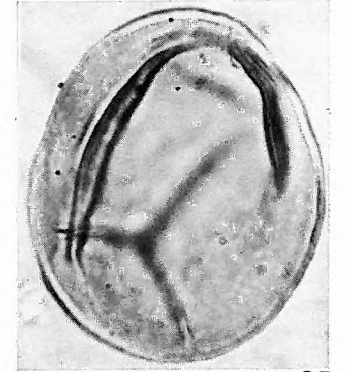
22



23



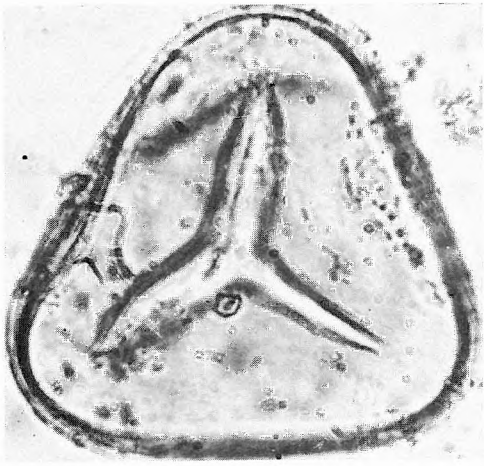
24



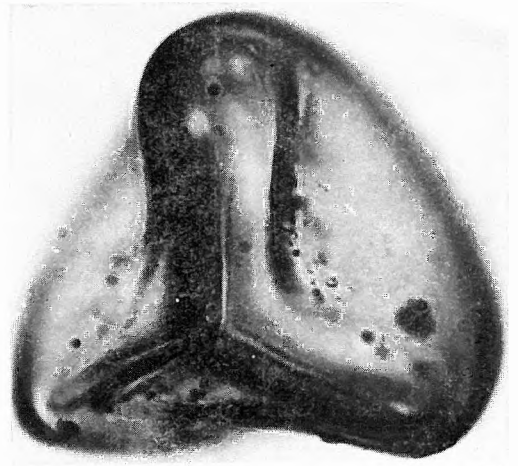
25

XV. tábla — Plate XV

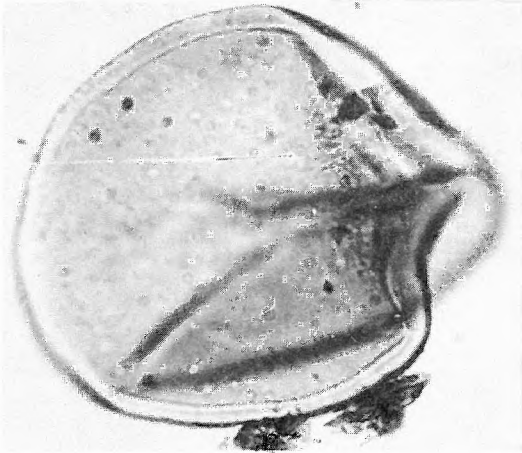
1. *Leiotriletes hidasensis* NAGY 1969 — Hidas 53. sz. f. 258,2—258,5 m
2. *L. maxoides* W. KR. 1962 ssp. *maxoides* — Fót 1. sz. f. 155,0—158,0 m
- 3–4. *L. maxoides* W. KR. 1962 ssp. *maxoides* asp. triplan— Eger Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
5. *L. maxoides* W. KR. 1962 ssp. *minoris* W. KR. 1962 — Litke 17. sz. f. 258,0—260,0 m
6. *L. maxoides* W. KR. 1962 ssp. *minoris* W. KR. 1962 — Pápa 2. sz. f. 211,0—212,0 m
7. *L. maxoides* W. KR. 1962 ssp. *maximus* (PF. 1953) W. KR. 1959 — Eger Wind-féle téglagyári feltárás „x₂” réteg; Eger, Wind brickyard pit, layer “x₂”



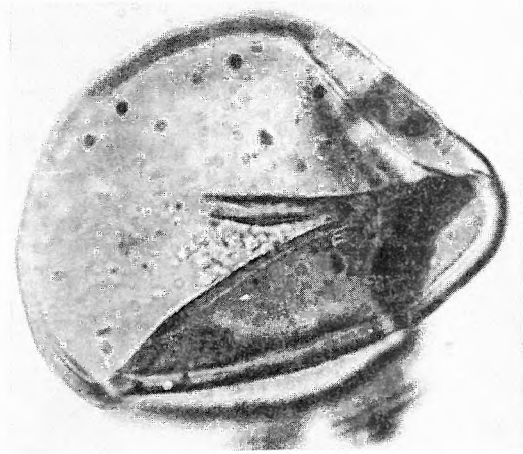
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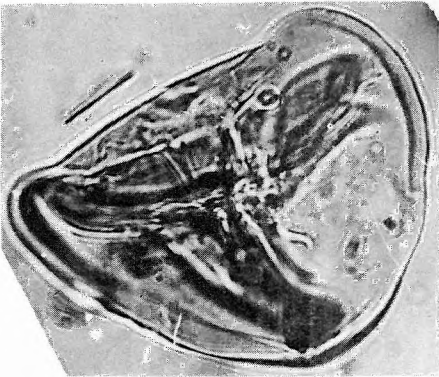
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3



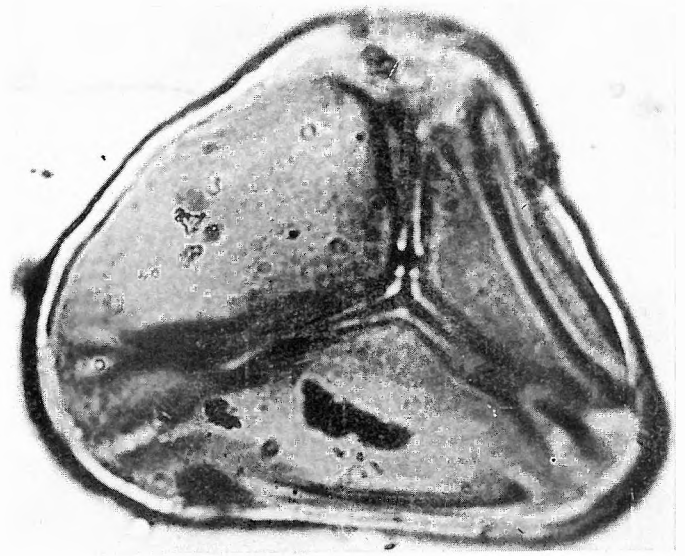
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5



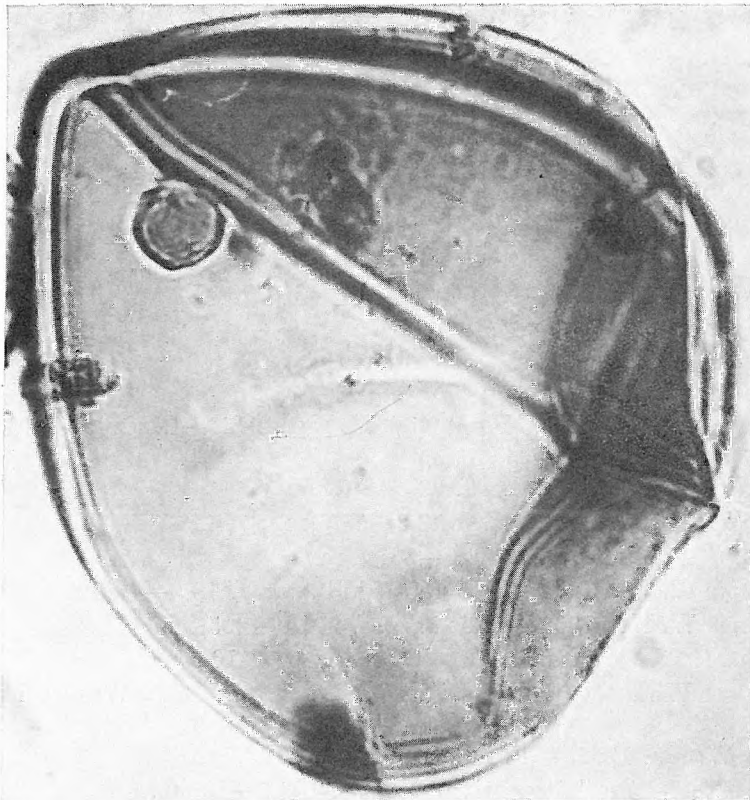
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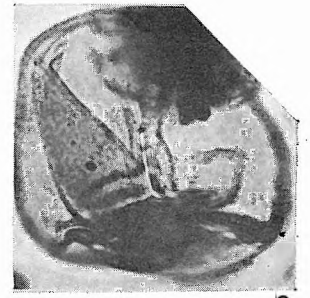
7

XVI. tábla — Plate XVI

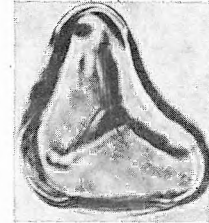
1. *Leiotriletes maxoides* W. KR. 1962 ssp. *maximus* (PF. 1953) W. KR. 1959 — Szokolya 2. sz. f. 69,5—70,3 m
2. *L. microadriennis* W. KR. 1959 — Cserhátszentiván 1. sz. f. 130,0—132,0 m
3. *L. microlepioidites* W. KR. 1962 — Tengelic 2. sz. f. 817,0—820,0 m
4. *L. microlepioidites* W. KR. 1962 — Eger Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
5. *L. microlepioidites* W. KR. 1962 — Cserhátszentiván 1. sz. f. 98,0—100,6 m
6. *L. seidewitzensis* W. KR. 1962 — Pusztakisfalva VI. sz. f. 6,3—7,8 m
7. *L. miocaenicus* NAGY 1969 — Naszály 1. sz. f. 25,0—26,7 m
8. *L. miocaenicus* NAGY 1969 — Tata (TVG) 27. sz. f. 58,2—59,0 m
9. *L. neddenioides* W. KR. 1962 — Megyaszó 1. sz. f. 32,0—38,0 m
- 10—11. *L. neddenioides* W. KR. 1962 — Balatonkenese 1. sz. f. 62,4—63,0 m
- 12—13. *L. seidewitzensis* W. KR. 1962 — Fót 1. sz. f. 171,7—172,7 m
14. *L. seidewitzensis* W. KR. 1962 — Fót 1. sz. f. 216,5—218,8 m
15. *L. triangulatoides* W. KR. 1962 — Budajenő 2. sz. f. 538,4—539,4 m
- 16—17. *L. triangulatoides* W. KR. 1962 — Fót 1. sz. f. 301,0—305,0 m
18. *L. triangulus* (MÜRR. et PF. 1952 ex W. KR. 1959) W. KR. 1962 — Naszály 1. sz. f. 140,0 m



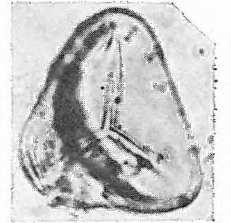
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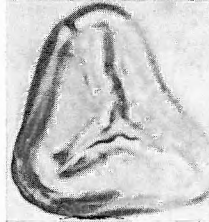
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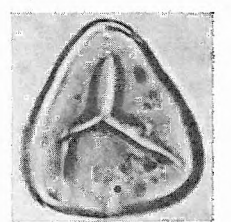
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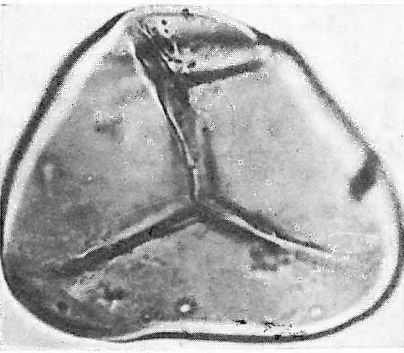
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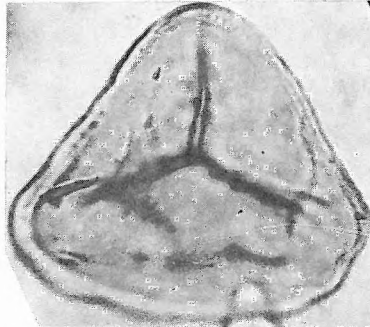
5



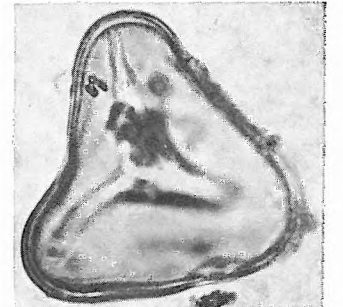
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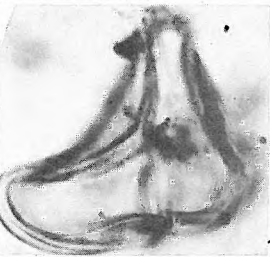
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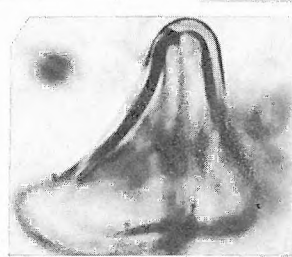
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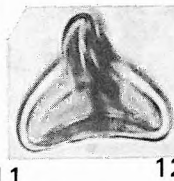
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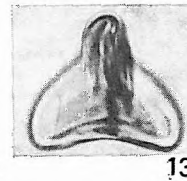
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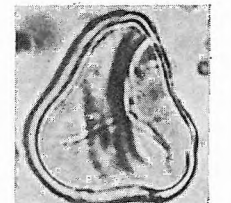
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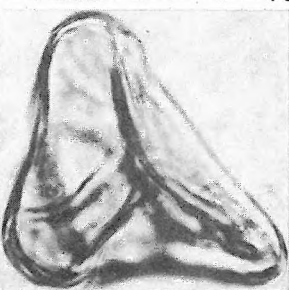
12



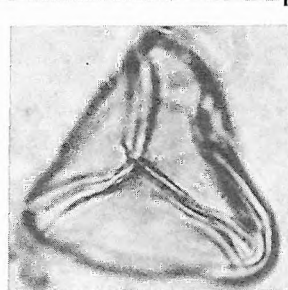
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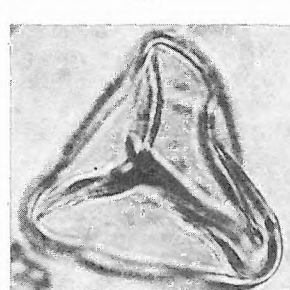
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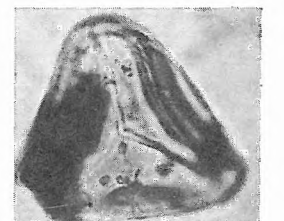
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16



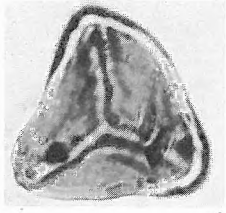
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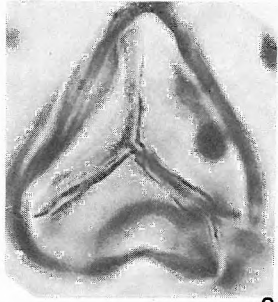
18

XVII. tábla — Plate XVII

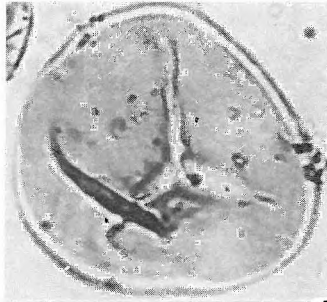
- 1—2. *Leiotriletes triangulus* (MÜRR. et PF. 1952 ex W. KR. 1959) W. KR. 1962 — Budajenő 2. sz. f. 518,2—523,0 m
3. *L. wolffi* W. KR. 1962 ssp. *wolffi* — Szokolya 2. sz. f. 89,5—90,3 m
4. *L. wolffi* W. KR. 1962 ssp. *wolffi* — Szokolya 3. sz. f. 52,3—53,6 m
5. *L. wolffi* W. KR. 1962 ssp. *wolffi* — Fót 1. sz. f. 328,0—332,8 m
- 6—8. *L. wolffi* W. KR. 1962 ssp. *brevis* W. KR. 1962 — Nógrádszakál 2. sz. f. 78,0—79,5 m
9. *L. wolffi* W. KR. 1962 ssp. *brevis* W. KR. 1962 — Fót 1. sz. f. 201,0—205,0 m
10. *Monoleiotriletes gracilis* W. KR. 1959 — Zengővárkony 45. sz. f. 16,0—16,4 m
- 11—12. *M. gracilis* W. KR. 1959 — Eger Wind-féle téglagyári fúrás 8,3—9,2 m; Eger, Wind brick-yard borehole 8.3—9.2 m
13. *Intrapunctisporis altranftensis* W. KR. 1962 — Fót 1. sz. f. 122,0—123,0 m
14. *I. balinkaense* (KEDVES 1973) n. c. — Cserhátszentiván 1. sz. f. 188,0—190,0 m
- 15—16. *Punctatisporites crassiexinus* W. KR. 1962 — Püspökhatvan 4. sz. f. 222,0—224,0 m
17. *Intrapunctisporis gracilis* W. KR. 1962 — Szokolya 2. sz. f. 86,3—87,1 m



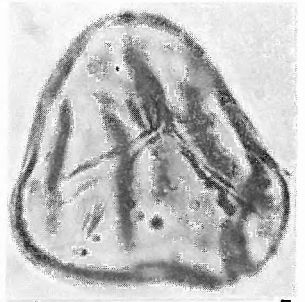
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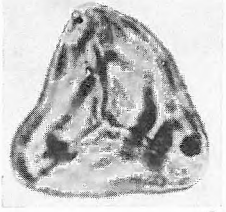
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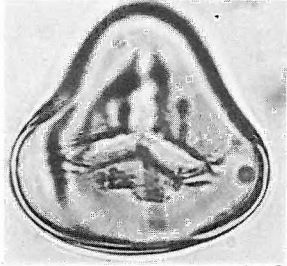
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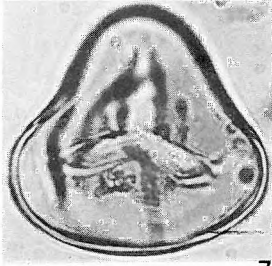
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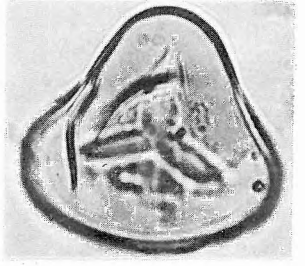
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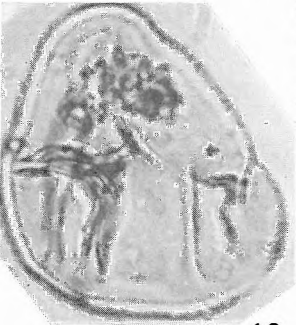
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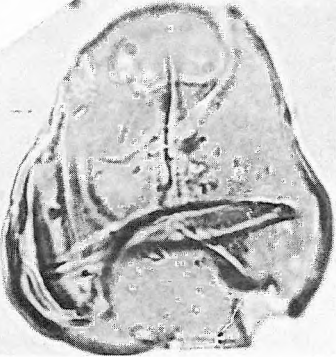
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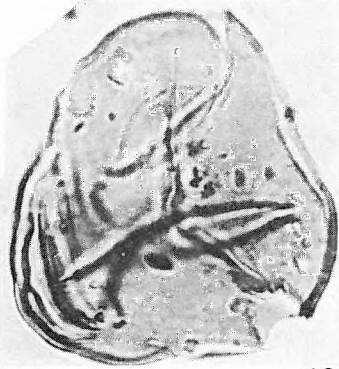
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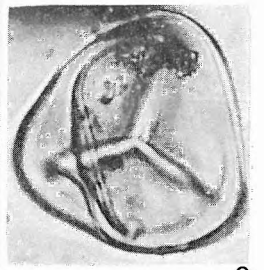
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11



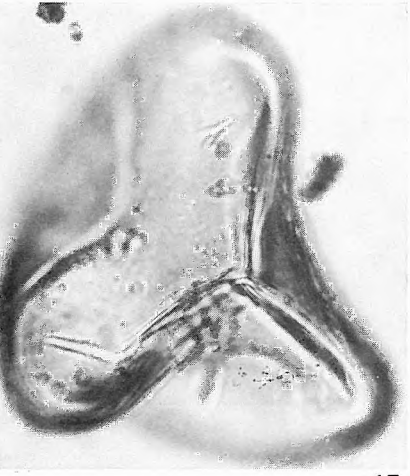
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9



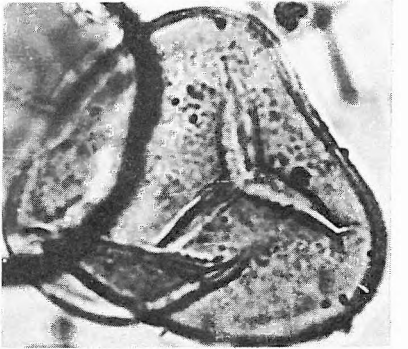
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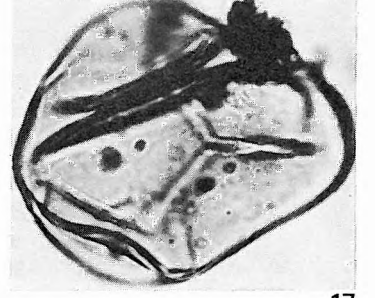
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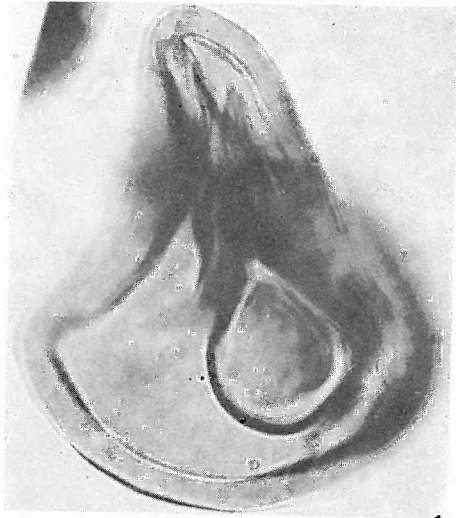
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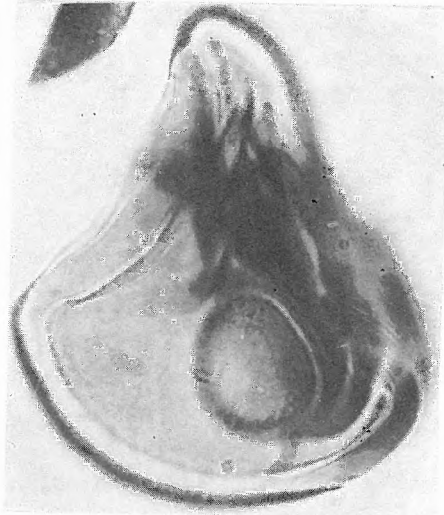
17

XVIII. tábla — Plate XVIII

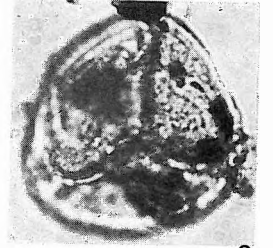
- 1—2. *Punctatisporites crassimaximus* W. KR. 1962 — Fót 1. sz. f. 336,2—336,8 m
- 3—4. *P. punctatoides* W. KR. 1967 — Tengelic 2. sz. f. 835,7—839,0 m
5. *P. tanndorfensis* W. KR. 1962 — Felsőpetényi bánya 1. sz. minta; Felsőpetény mine, sample N^o 1.
- 6—7. *Dictyophyllidites irregularis* (PF. 1953) n. c. — Alsóvadász 1. sz. f. 690,0—696,5 m
8. *D. pessinensis* (W. KR. 1962) n. c. — Fót 1. sz. f. 194,5—195,5 m
9. *D. pessinensis* (W. KR. 1962) n. c. — Fót 1. sz. f. 130,5—131,5 m
10. cf. *D. pliocaenicus* (THIERG. 1940) n. c. — Fót 1. sz. f. 209,9—216,2 m
11. *D. teupitzensis* (W. KR. 1962) n. c. ssp. *teupitzensis* — Tököl 1. sz. f. 886,0—888,5 m
12. cf. *D. pliocaenicus* (THIERG. 1940) n. c. — Fót 1. sz. f. 348,0—349,5 m
- 13—14. *D. teupitzensis* (W. KR. 1962) n. c. ssp. *medioris* W. KR. 1962 — Tata (TVG) 27. sz. f. 8,5—18,3 m
15. *Undulatisporites convexus* SCHULER et SITTL. 1959 — Naszály 1. sz. f. 37,2—38,0 m



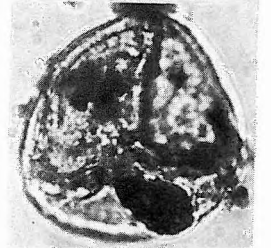
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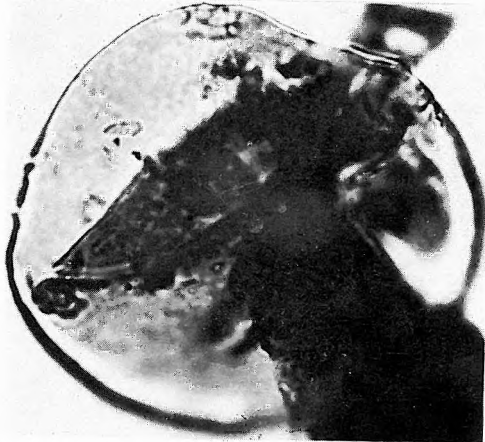
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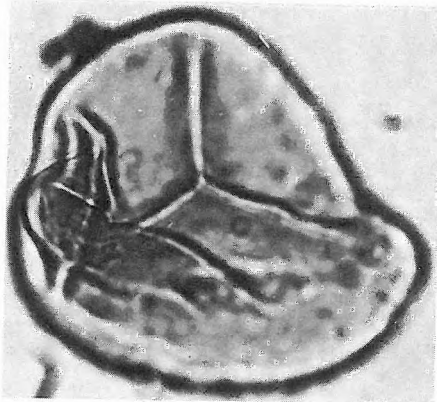
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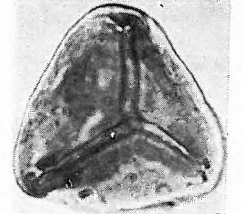
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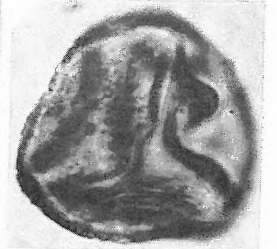
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6



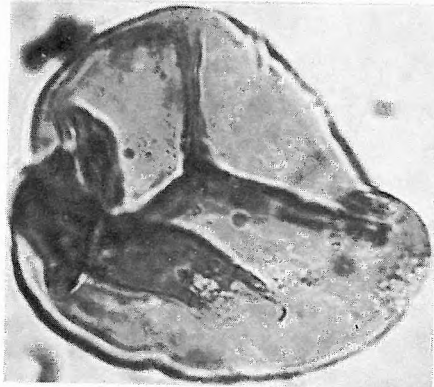
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9



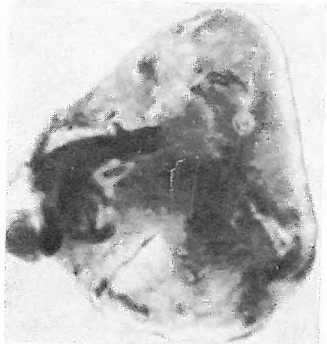
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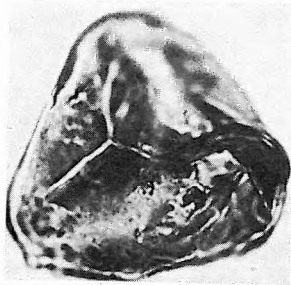
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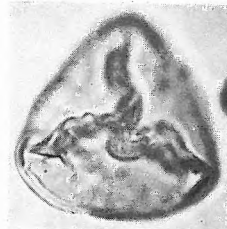
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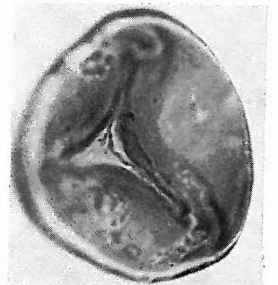
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12



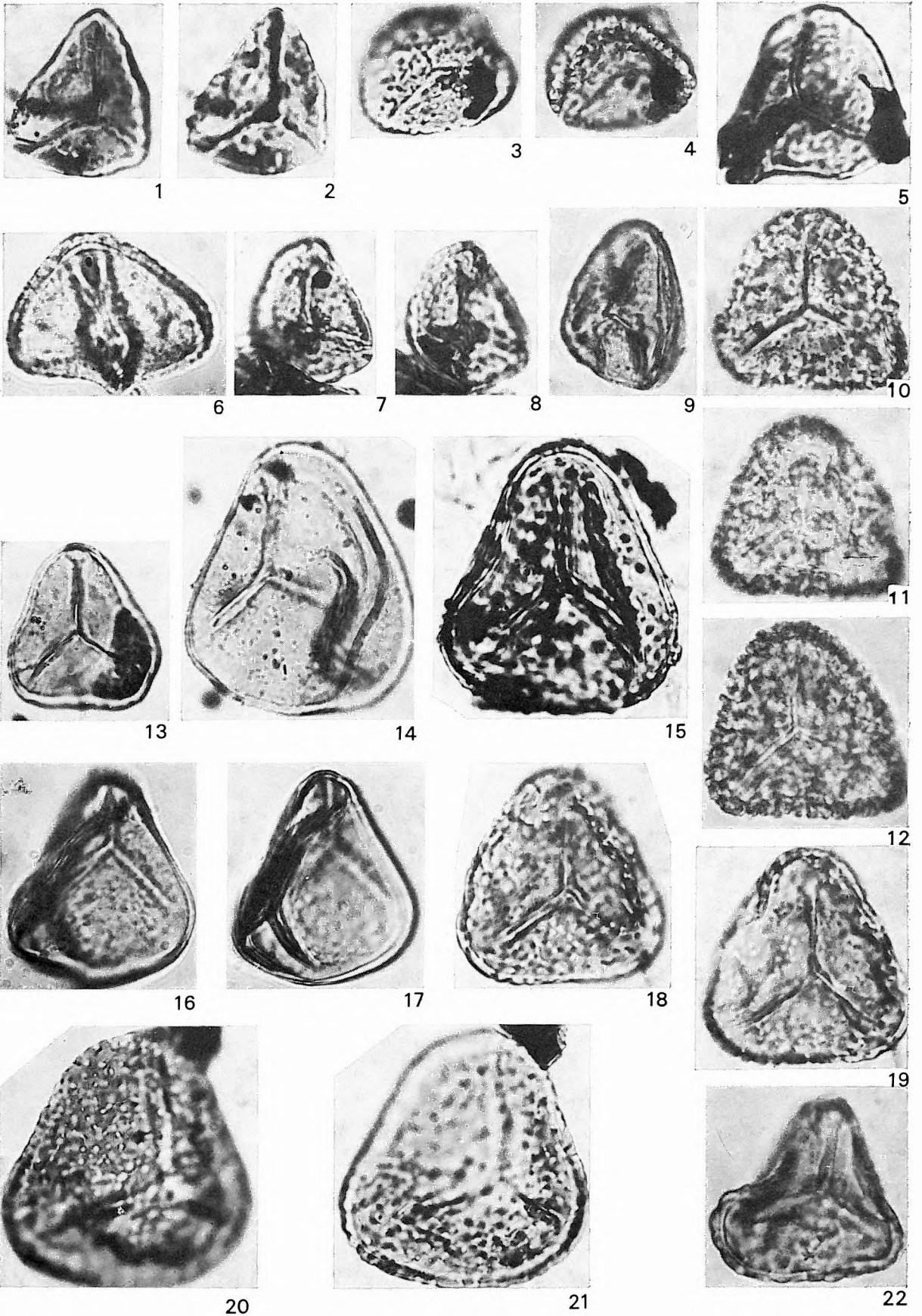
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14

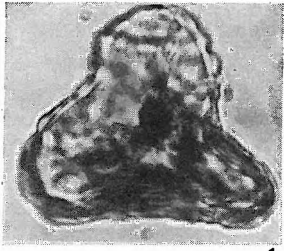
XIX. tábla — Plate XIX

- 1—2. cf. *Undulatisporites structuris* W. KR. 1962 — Naszály 1. sz. f. 104,0—106,0 m
- 3—4. *Foveotriletes crassifovearis* W. KR. 1962 ssp. *crassifovearis* — Naszály 1. sz. f. 37,2—38,0 m
5. *F. crassifovearis* W. KR. 1962 ssp. *crassifovearis* — Tököl 1. sz. f. 906,5—910,3 m
6. *F. crassifovearis* W. KR. 1962 ssp. *crassoïdes* W. KR. 1967 — Szokolya 2. sz. f. 75,9—76,7 m
- 7—8. *F. crassifovearis* W. KR. 1962 ssp. *microfovearis* W. KR. 1967 — Budajenő 2. sz. f. 518,2—523,0 m
9. *F. rueterbergensis* W. KR. 1962 — Fót 1. sz. f. 176,7—181,0 m
- 10—12. *F. pessinensis* W. KR. 1967 — Balaton 26. sz. f. 559,0—566,2 m
13. *F. rueterbergensis* W. KR. 1962 — Szokolya 2. sz. f. 95,0—96,6 m
14. *F. semifovearis* W. KR. 1967 — Szokolya 2. sz. f. 87,2—87,9 m
15. *F. semifovearis* W. KR. 1967 — Eger Wind-féle téglagyári feltárás „x₂” réteg; Eger, Wind brickyard pit, layer “x₂”
- 16—17. *F. triangulus* W. KR. 1962 — Nógrádszakál 2. sz. f. 93,0—95,0 m
- 18—19. *F. verrucatoïdes* W. KR. 1962 — Fót 1. sz. f. 288,0—290,5 m
- 20—21. *F. verrucatoïdes* W. KR. 1962 — Budajenő 2. sz. f. 575,5—575,9 m
22. *Favoisporis trifavus* W. KR. 1959 — Fót 1. sz. f. 168,0—169,3 m

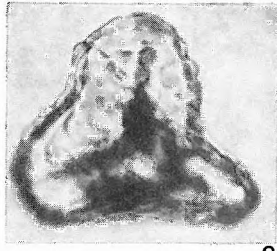


XX. tábla — Plate XX

- 1—2. *Favoisporis concavus* NAGY 1963 — Fót 1. sz. f. 301,0—305,0 m
3. *F. concavus* NAGY 1963 — Holotypus — Eger Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
4. *F. concavus* NAGY 1963 — Fót 1. sz. f. 234,0—235,0 m
- 5—6. *Favoisporites hungaricus* NAGY 1963 — Várkesző 1. sz. f. 17,0—18,0 m
- 7—8. *F. hungaricus* NAGY 1963 — Holotypus — Eger Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
- 9—10. *F. hungaricus* NAGY 1963 — Fót 1. sz. f. 354,0—355,0 m
11. *Microfoveolatisporis apheloides* W. KR. 1962 — Megyaszó 1. sz. f. 25,0—32,0 m
- 12—13. *M. tuemmlitzensis* W. KR. 1962 — Tihany 62. sz. f. 56,2—57,2 m
- 14—17. *Verrucatisporites inaequalis* NAGY 1969 — Generotypus — Zengővárkony 45. sz. f. 17,2—17,8 m
- 18—21. *V. tekeresensis* n. sp. — Holotypus — Tekeres 1. sz. f. 14,4—17,2 m



1



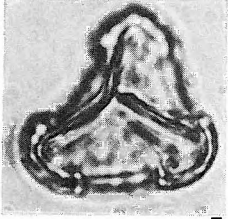
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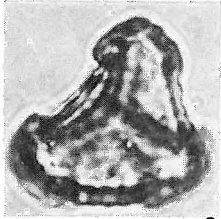
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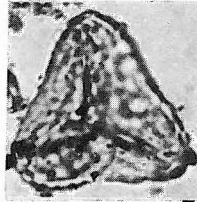
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5



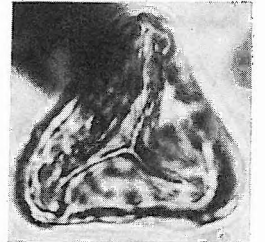
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7



8



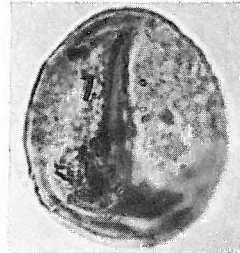
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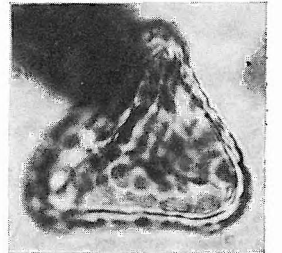
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12



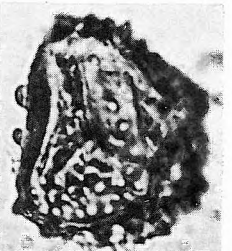
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10



14



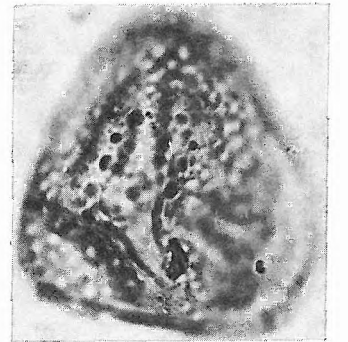
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16



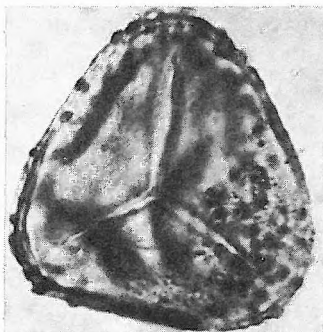
17



18



19



20



21

XXI. tábla — Plate XXI

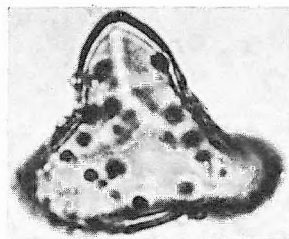
- 1—2. *Verrucatisporites tekeresensis* n. sp. — Lak 1. sz. f. 192,9—196,0 m
3. *V. tekeresensis* n. sp. — Torony 4. sz. f. 125,0—125,9 m
4. *V. tekeresensis* n. sp. — Torony 4. sz. f. 125,0—125,9 m
5. *Cibotiidites zonatus* Ross 1949 — Eger Wind-féle téglagyári fúrás 10,9—11,1 m; Eger, Wind brickyard borehole 10.9—11.1 m
6. *C. zonatus* Ross 1949 — Szilvásvárád 1. sz. f. 130,0 m
7. *C. zonatus* Ross 1949 — Tekeres 1. sz. f. 899,4—981,0 m
- 8—10. *C. zonatus* Ross 1949 — Zengővárkony 45. sz. f. 16,0—16,4 m, Scan felvételek, 8. ábra 1000×, 9. ábra 2000×, 10. ábra 10 000× (részlet); SEMG, Fig. 8. 1000×, Fig. 9. 2000×, Fig. 10. 10,000× (detail)
- 11—12. *Corrugatisporites asolidus* (W. KR. 1959) n. c. — Püspökhatvan 4. sz. f. 201,0—204,0 m
13. *C. corrivallatus* (W. KR. 1967) n. c. — Litke 17. sz. f. 222,0—224,0 m
14. *C. corrivallatus* (W. KR. 1967) n. c. — Szilvásvárád 1. sz. f. 372,5—381,8 m



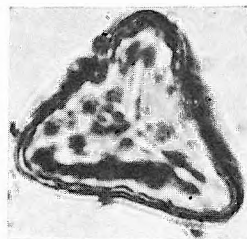
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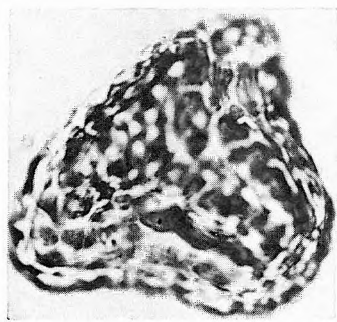
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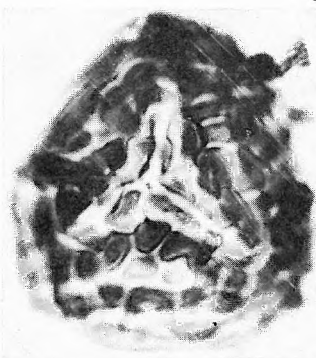
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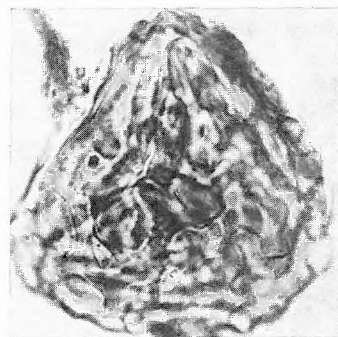
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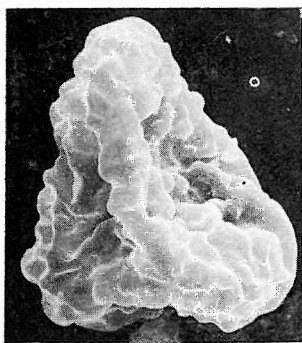
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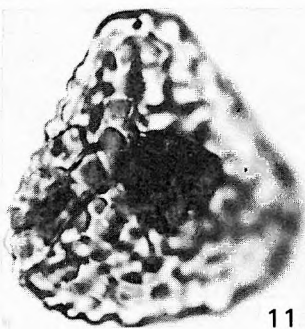
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7



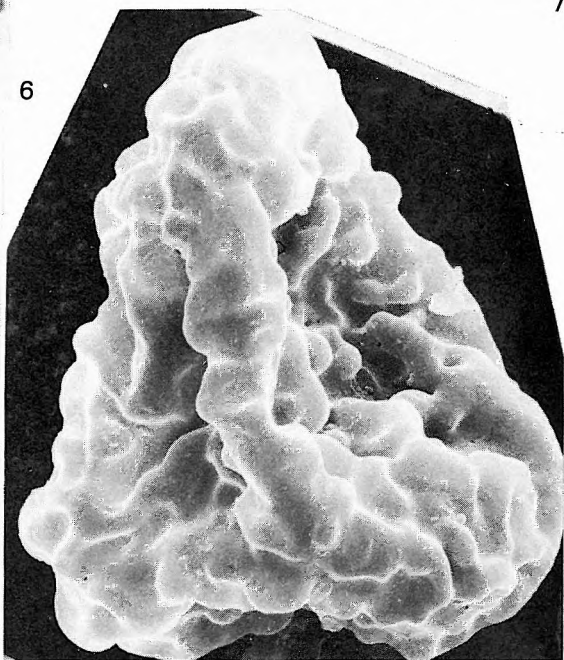
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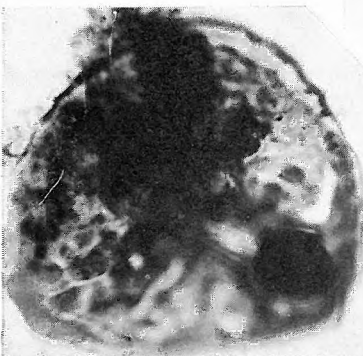
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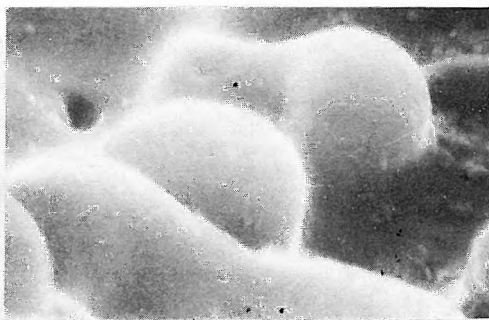
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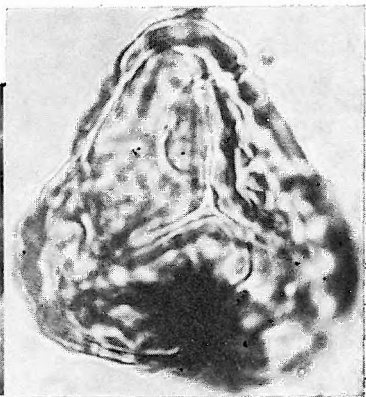
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13



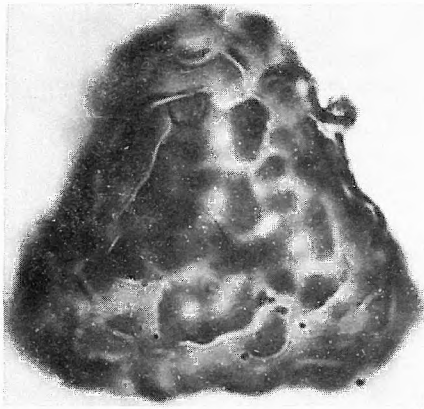
10



14

XXII. tábla — Plate XXII

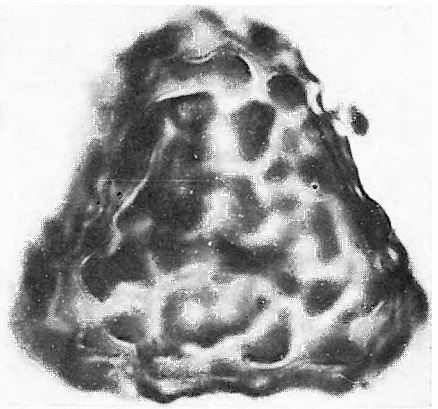
- 1—4. *Corrugatisporites delicatus* n. sp. — Holotypus — Szokolya 2. sz. f. 109,0—111,2 m
5—7. *C. delicatus* n. sp. — Szokolya 2. sz. f. 104,7—106,6 m
8—9. *C. hungaricus* (NAGY 1963) n. c. — Holotypus — Eger Wind-féle téglagyári feltárás „u”
réteg 32. minta; Eger, Wind brickyard pit, layer “u”, sample 32.
10. *C. hungaricus* (NAGY 1963) n. c. — Püspökatvan 4. sz. f. 151,0—153,0 m
11. *C. hungaricus* (NAGY 1963) n. c. — Litke 17. sz. f. 224,0—226,0 m
12—14. *C. microvallatus* (W. KR. 1967) n. c. — Eger Wind-féle téglagyári fúrás 7,8—8,3 m; Eger,
Wind brickyard borehole 7.8—8.3 m



1



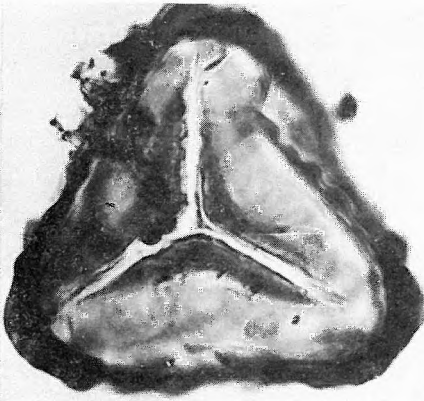
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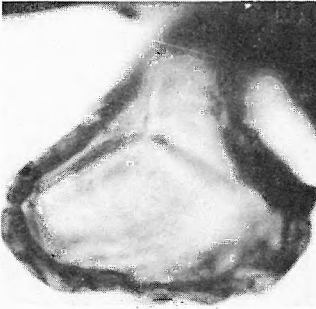
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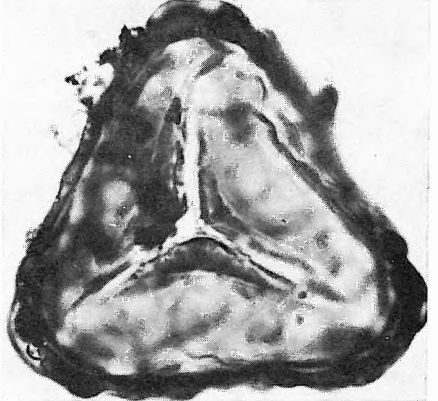
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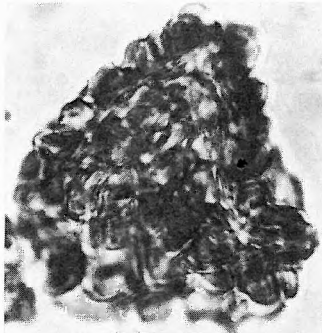
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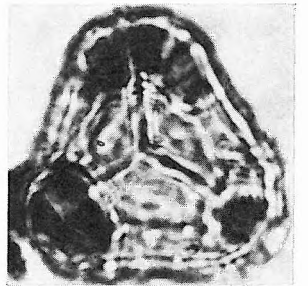
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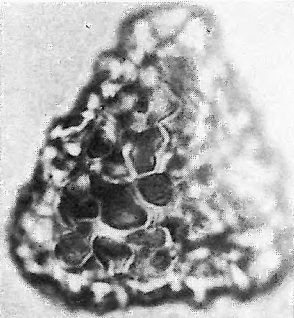
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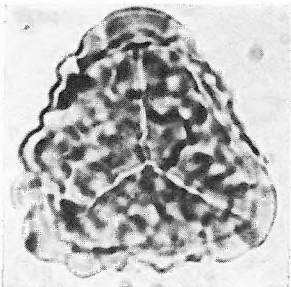
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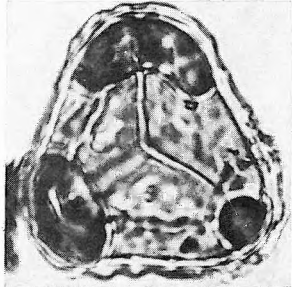
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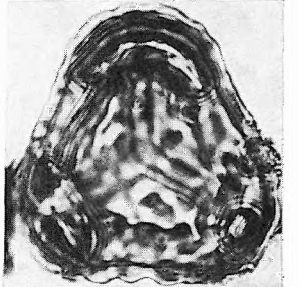
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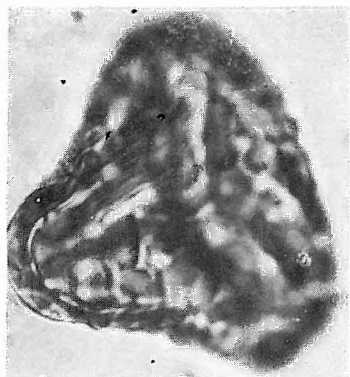
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14

XXIII. tábla — Plate XXIII

1. *Corrugatisporites paucivallatus* (PFLUG 1953) n. c. et emend. — Pusztakisfalú VI. sz. f. 10,5—12,5 m
2. *C. paucivallatus* (PF. 1953) n. c. et emend. — Eger, Wind-féle téglagyári fúrás 10,9—11,1 m; Eger, Wind brickyard borehole 10.9—11.1 m
3. *C. paucivallatus* (PF. 1953) n. c. et emend. — Nógrádszakál 2. sz. f. 121,2—122,0 m
- 4—5. *C. pseudovallatus* n. sp. — Szokolya 2. sz. f. 102,2—104,7 m
- 6—8. *C. pseudovallatus* n. sp. — Holotypus — Zengővárkony 59. sz. f. 34,0—37,1 m
- 9—10. *C. semivallatus* (W. KR. 1967) n. c. — Eger, Wind-féle téglagyári fúrás 10,9—11,1 m; Eger, Wind brickyard borehole 10.9—11.1 m
- 11—12. *C. semivallatus* (W. KR. 1967) n. c. — Fót 1. sz. f. 228,2 m



1



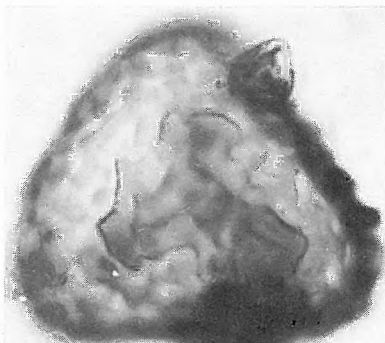
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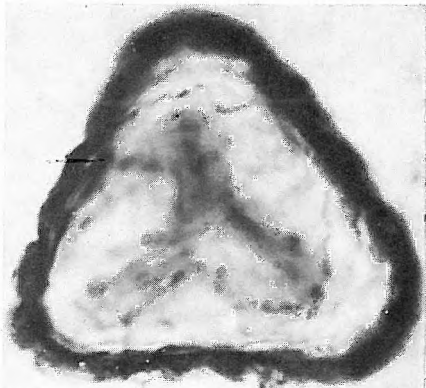
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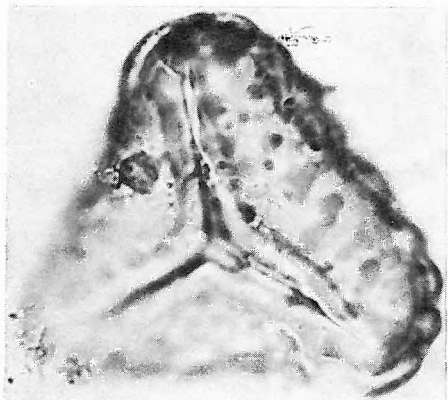
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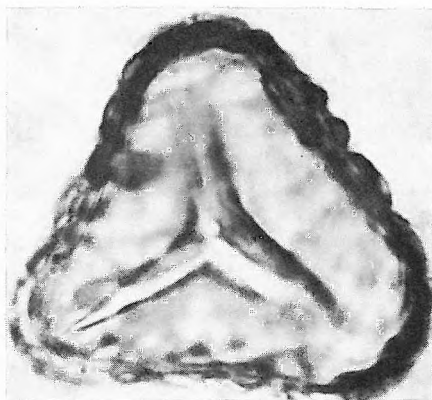
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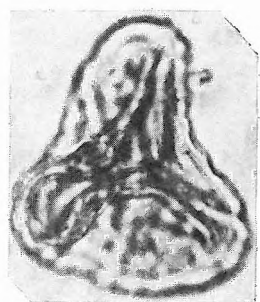
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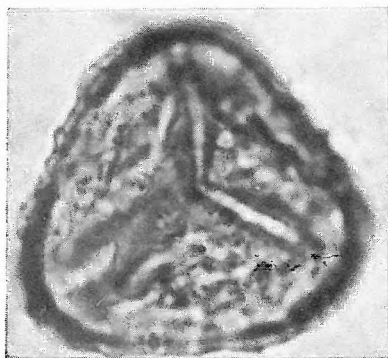
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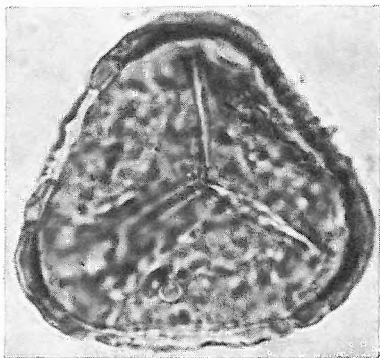
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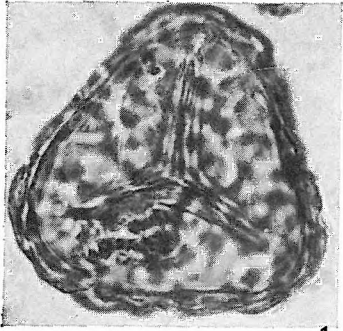
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XXIV. tábla — Plate XXIV

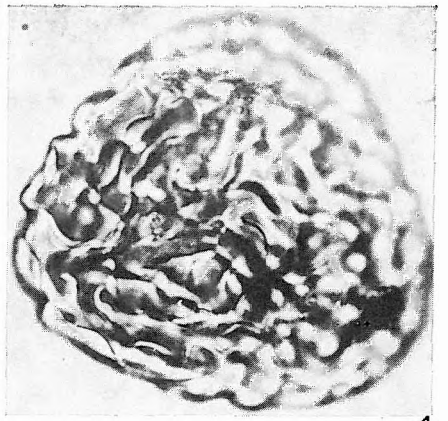
1. *Corrugatisporites solidus* (R. POT. 1934) TH. et PF. 1953 — Nógrádszakál 2. sz. f. 91,4—93,0 m
2. *C. solidus* (R. POT. 1934) TH. et PF. 1953 — Fót 1. sz. f. 216,5—218,8 m
- 3—5. *C. tekeresensis* n. sp. — Holotypus — Tekeres 1. sz. f. 875,0—899,4 m
- 6—7. *Leptolepidites magnipolatus* NAGY 1963 — Holotypus — Zengővárkony 45. sz. f. 16,4—17,2 m
- 8—9. *L. magnipolatus* NAGY 1963 — Litke 17. sz. f. 37,6—39,0 m
- 10—11. *Converrucosisporites baranyaënsis* (NAGY 1963) n. c. — Holotypus — Zengővárkony 45. sz. f. 16,4—17,2 m
12. *C. baranyaënsis* (NAGY 1963) n. c. — Naszály 1. sz. f. 17,0—18,0 m



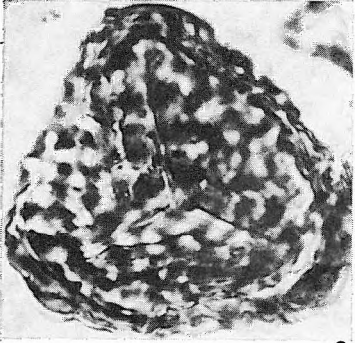
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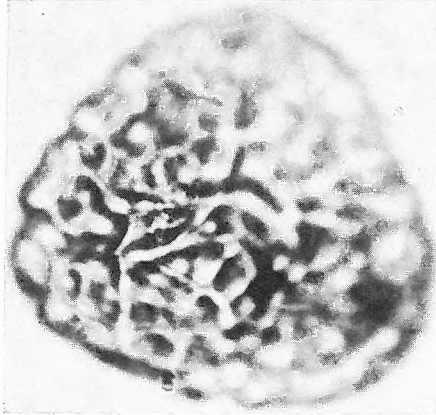
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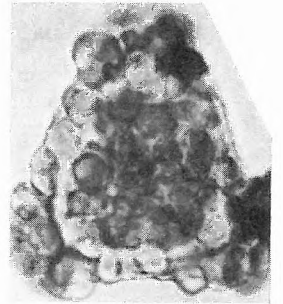
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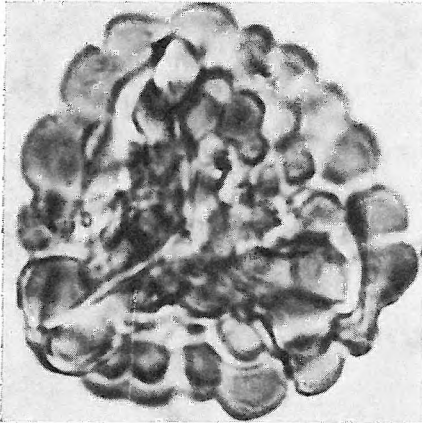
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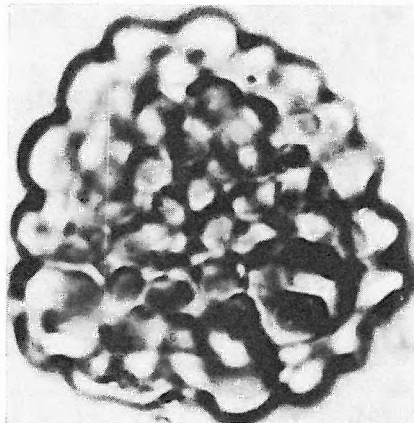
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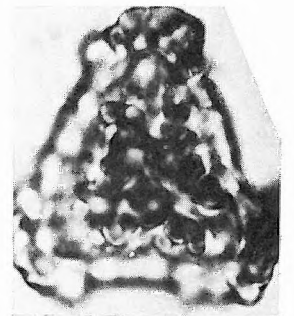
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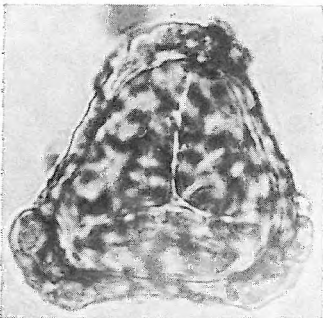
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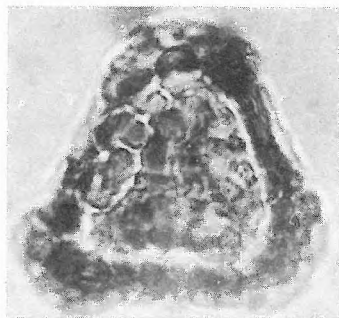
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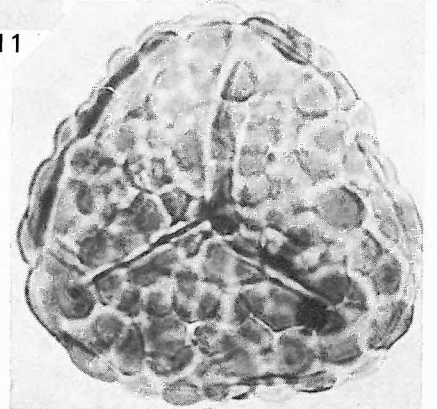
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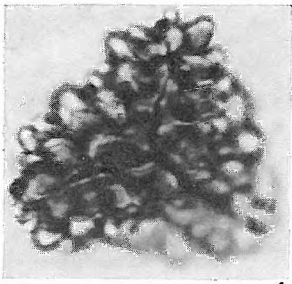
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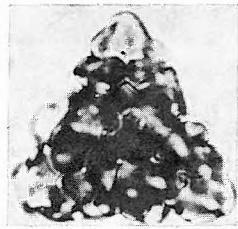
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XXV. tábla — Plate XXV

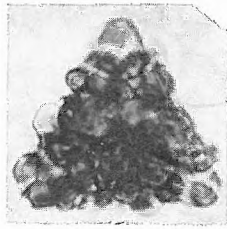
1. *Converrucosisporites parvus* (NAGY 1969) n. c. — Holotypus — Zengővárkony 59. sz. f. 60,9—63,0 m
- 2—3. *Converrucosisporites parvus* (NAGY 1969) n. c. — Budajenő 2. sz. f. 518,2—523,0 m
4. *C. parvus* (NAGY 1969) n. c. — Fót 1. sz. f. 234,0—235,0 m
- 5—9. *Macroleptolepidites ajkaënsis* n. sp. — Holotypus — Ajka 157. sz. f. 314,9—318,3 m
- 10—12. *M. duplex* (NAGY 1968) n. c. — Holotypus — Zengővárkony 59. sz. f. 65,0—67,0 m
- 13—14. *M. duplex* (NAGY 1968) n. c. — Herend 52. sz. f. 39,2—42,7 m
- 15—17. *M. hexagonalis* n. sp. — Holotypus — Litke 17. sz. f. 258,0—260,0 m
- 18—20. *M. krutzschi* NAGY 1963 — Holotypus — Hidas 53. sz. f. 258,1—258,5 m



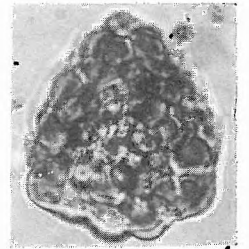
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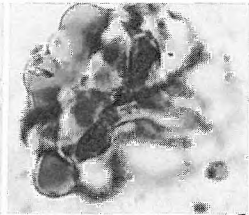
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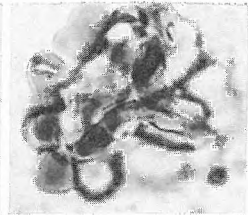
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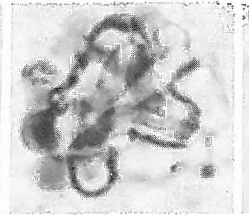
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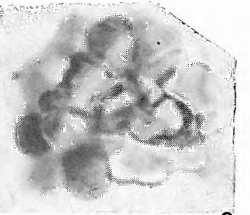
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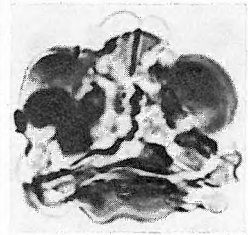
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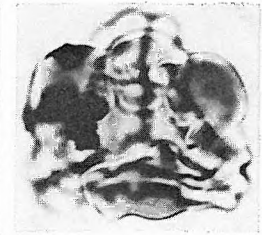
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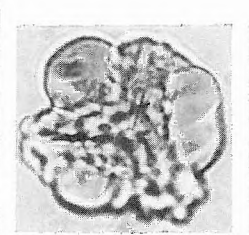
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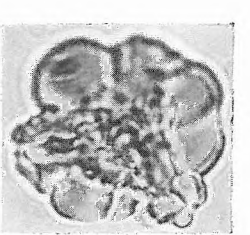
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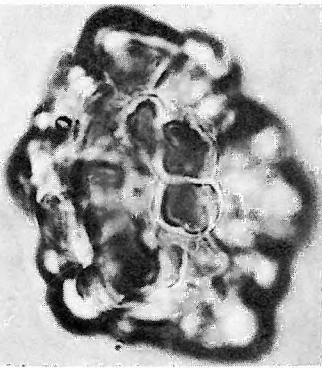
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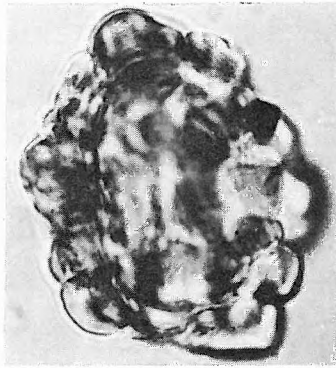
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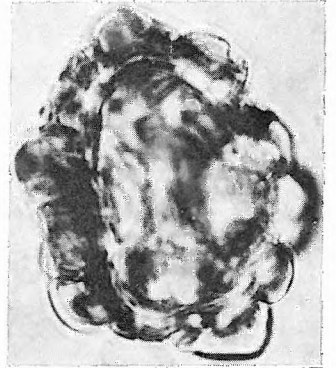
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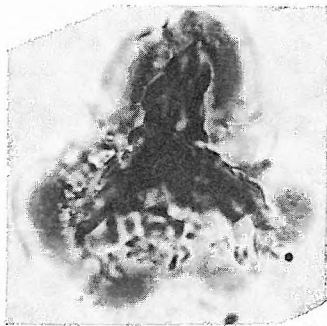
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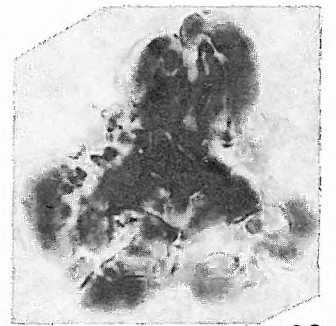
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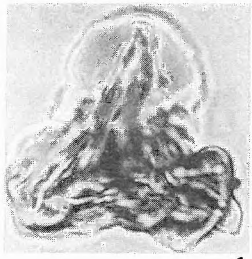


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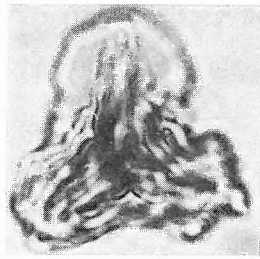


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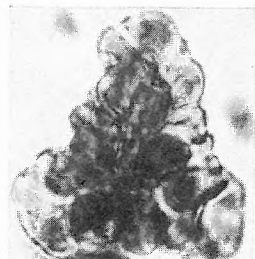
- 1—2. *Macroleptolepidites krutzschi* NAGY 1963 — Nógrádszakál 2. sz. f. 95,0—96,5 m
3. *M. krutzschi* NAGY 1963 — Alsóvadász 1. sz. f. 1029,3—1034,6 m
4—8. *Gleicheniidites rimosus* n. sp. — Holotypus — Szokolya 2. sz. f. 90,3—91,1 m
9—13. *Corrugatisporites graphicus* n. sp. — Holotypus — Szokolya 2. sz. f. 100,0—101,0 m
14—15. *C. graphicus* n. sp. — Fót 1. sz. f. 201,0—205,0 m
16—17. *C. graphicus* n. sp. — Szokolya 2. sz. f. 106,4—107,9 m



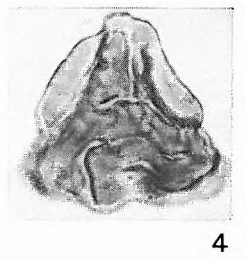
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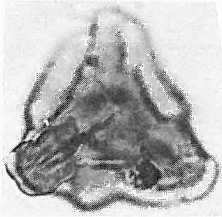
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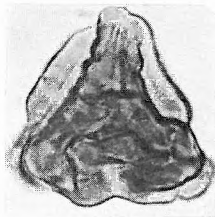
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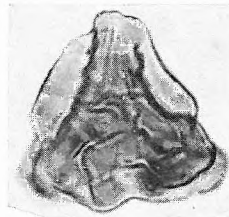
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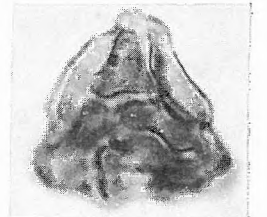
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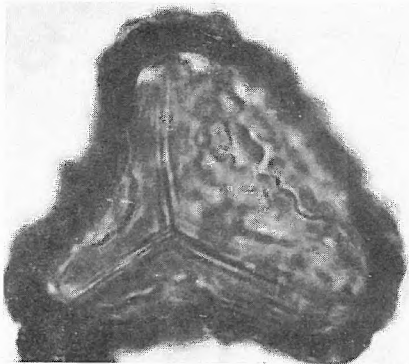
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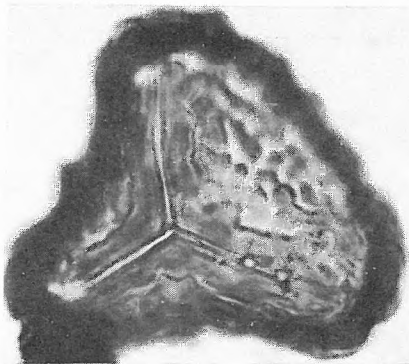
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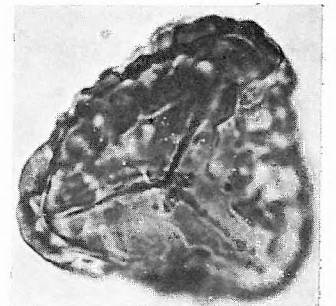
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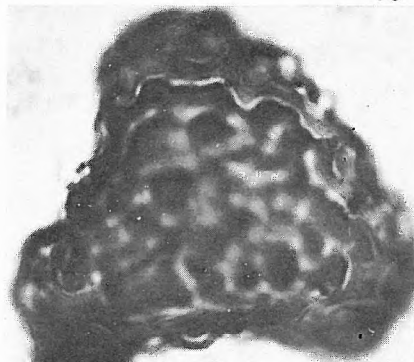
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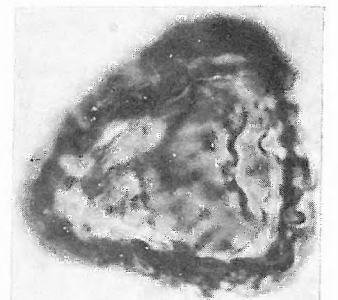
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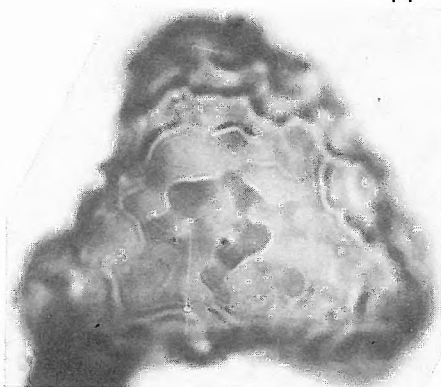
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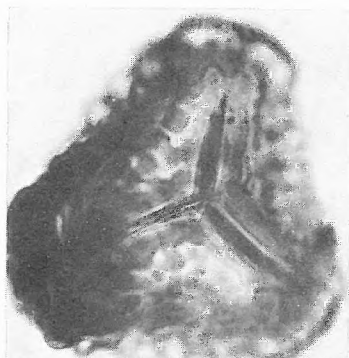
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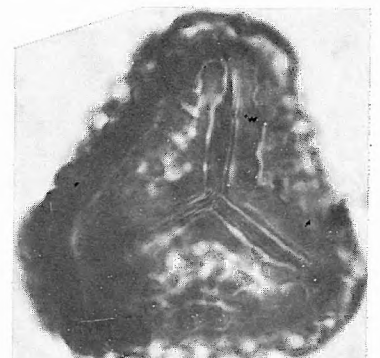
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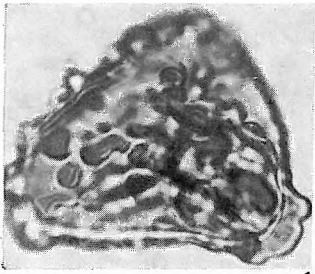
16



17

XXVII. tábla — Plate XXVII

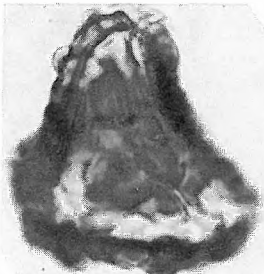
- 1—2. *Corrugatisporites limnicus* n. sp. — Holotypus — Pusztakisfalu VI. sz. f. 6,3—7,8 m
3—4. *C. limnicus* n. sp. — Zengővárkony 45. sz. f. 16,4—17,2 m
5. *C. limnicus* n. sp. — Zengővárkony 45. sz. f. 16,4—17,2 m
6. *C. limnicus* n. sp. — Zengővárkony 45. sz. f. 16,0—16,4 m
7—9. *C. minoris* n. sp. — Holotypus — Püspökhatvan 4. sz. f. 299,0—302,0 m
10—13. *C. litkeensis* n. sp. — Litke 17. sz. f. 156,0—158,0 m
14—16. *Polypodiaceoisporites corrutoratus* n. sp. — Pápa 2. sz. f. 242,8—243,3 m



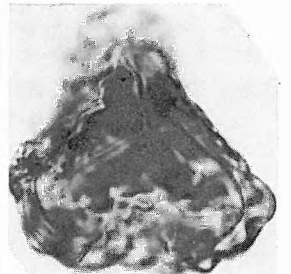
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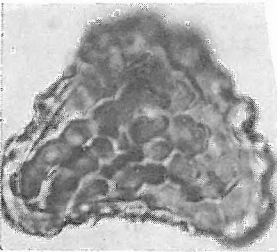
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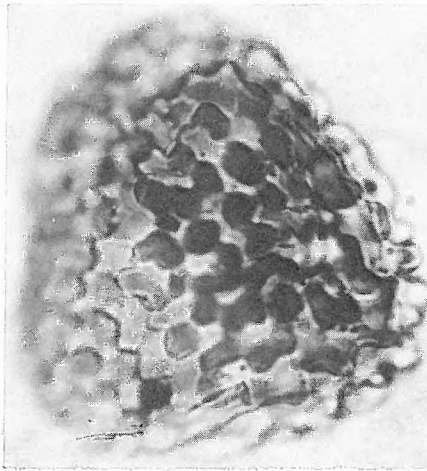
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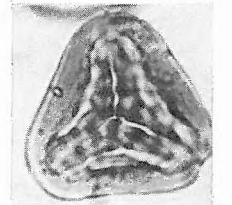
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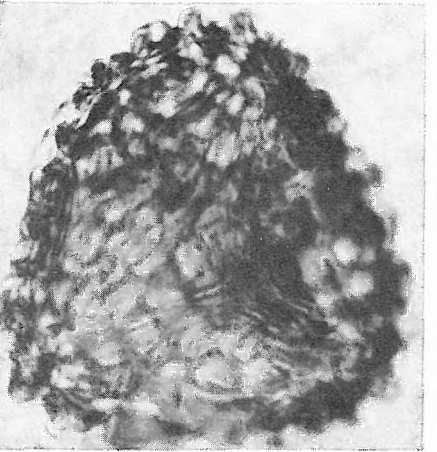
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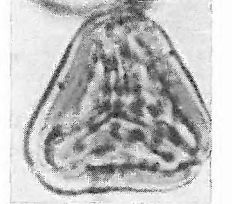
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16

XXVIII. tábla — Plate XXVIII

- 1—4. *Polypodiaceoisporites corrutoratus* n. sp. — Holotypus — Szokolya 2. sz. f. 82,1—83,9 m
5—6. *P. corrutoratus* n. sp. — Tata térképező 26. sz. f. 45,0 m
7—8. *P. acutus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 126,6—132,5 m
9—12. *P. boerzsoenyensis* n. sp. — Holotypus — Szokolya 2. sz. f. 87,2—87,9 m

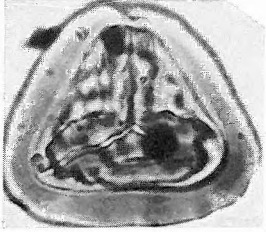


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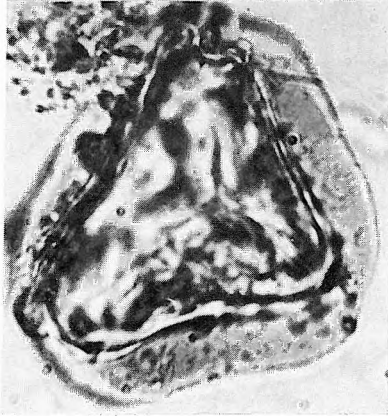
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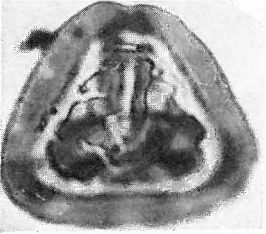
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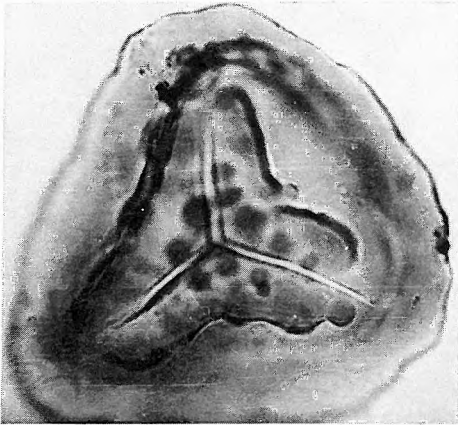
7



8



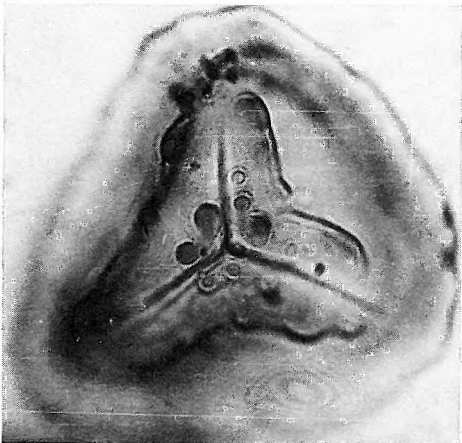
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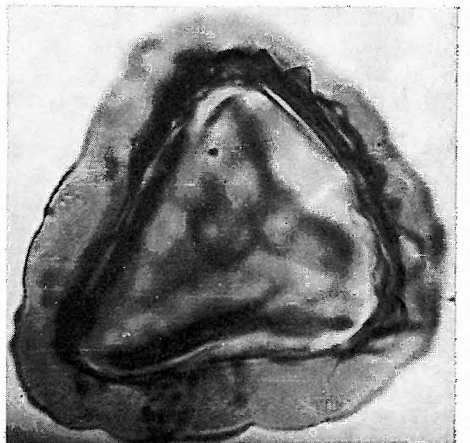
9



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11



12

XXIX. tábla — Plate XXIX

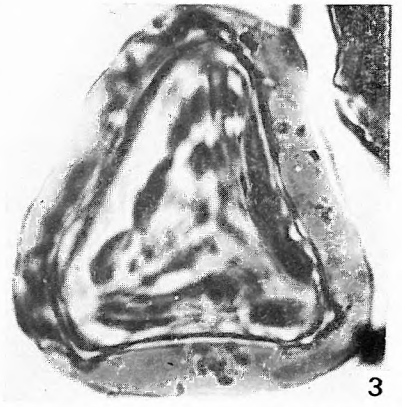
- 1—3. *Polypodiaceoisporites boerzsoenyensis* n. sp. — Cserhátszentiván 1. sz. f. 188,0—190,0 m
4. *P. cyclocingulatus* W. KR. 1967 — Szokolya 2. sz. f. 51,1—51,9 m
5. *P. cyclocingulatus* W. KR. 1967 — Szászvár 8. sz. f. 26,0—27,0 m
- 6—8. *P. gracillimus* NAGY 1963 — Holotypus — Eger Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
9. *P. gracillimus* NAGY 1963 var. *emarginatus* NAGY 1969, var. typus — Zengővárkony 45. sz. f. 13,2—13,7 m
10. *P. gracillimus* NAGY 1963. var. *emarginatus* NAGY 1969 — Litke 17. sz. f. 230,0—232,0 m
11. *P. gracillimus* NAGY 1963 — Zengővárkony 59. sz. f. 59,0—60,0 m — Scan felvétel 1000×; SEMG 1000×
- 12—14. *P. hamulatus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m
15. *P. hamulatus* NAGY 1969 — Szászvár 8. sz. f. 26,0—27,0 m
16. *P. hamulatus* NAGY 1969 — Szászvár 8. sz. f. 26,0—27,0 m
- 17—18. *P. helveticus* NAGY 1969 — Holotypus — Pusztakisfalu VI. sz. f. 6,3—7,8 m
- 19—20. *P. helveticus* NAGY 1969 — Szászvár 8. sz. f. 433,8—434,1 m



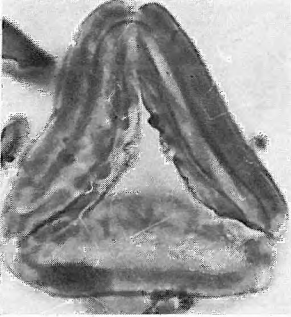
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2



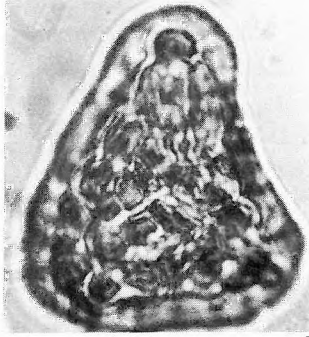
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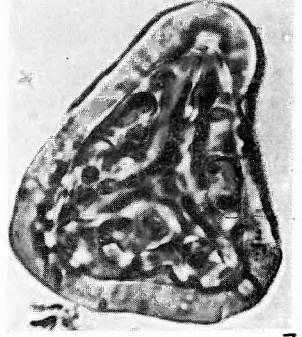
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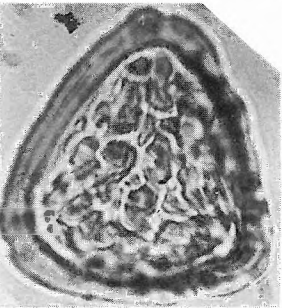
5



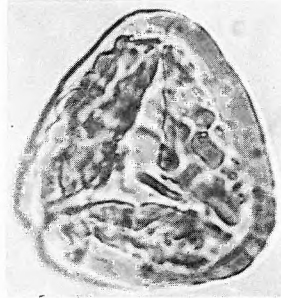
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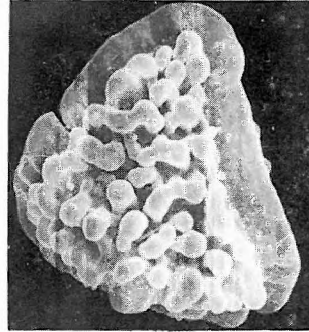
7



9



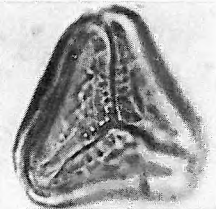
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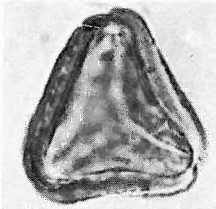
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8



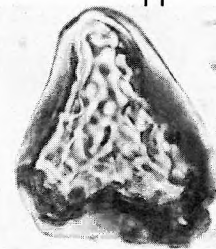
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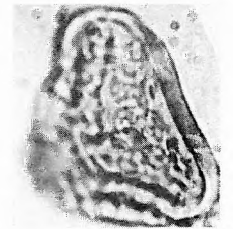
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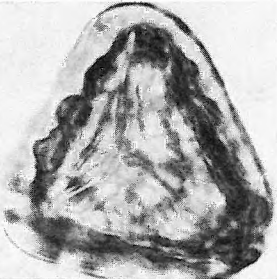
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15



16



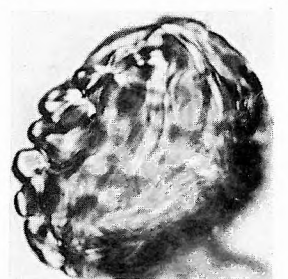
17



18

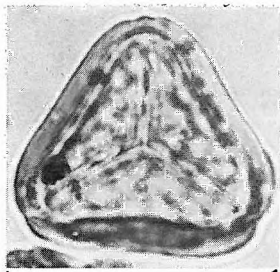


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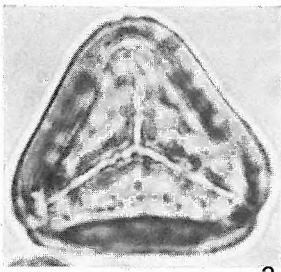


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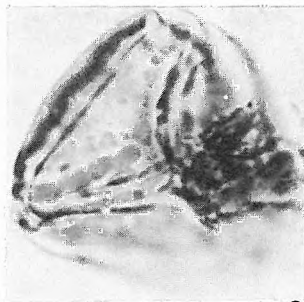
- 1—2. *Polypodiaceoisporites hidasensis* NAGY 1969 — Nógrádszakál 2. sz. f. 99,5—101,0 m
3—6. *P. hidasensis* NAGY 1969 — Holotypus — Hidas 53. sz. f. 600,5—602,3 m
7—9. *P. latigracilis* (W. KR. 1967) n. c. — Szokolya 2. sz. f. 51,1—51,9 m
10—11. *P. cf. latizonatus* KEDVES 1961 — Fót 1. sz. f. 301,0—305,0 m
12—14. *P. longus* NAGY 1969 — Szokolya 2. sz. f. 37,9—38,3 m
15—16. *P. longus* NAGY 1969 — Szokolya 2. sz. f. 53,5—54,3 m
17. *P. longus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m



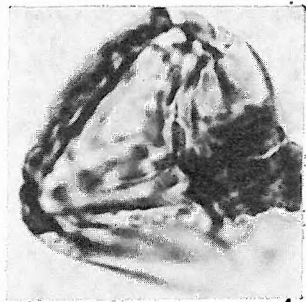
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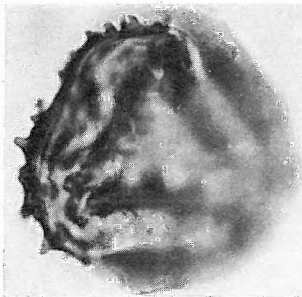
2



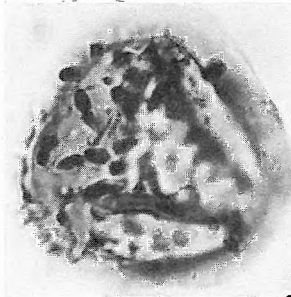
3



4



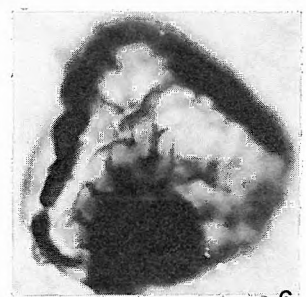
7



8



5



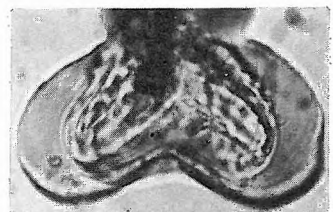
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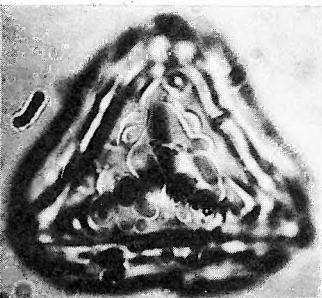
9



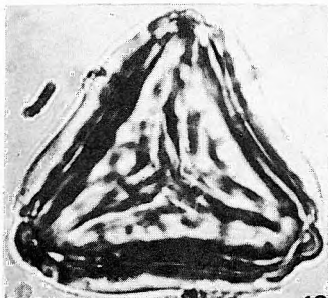
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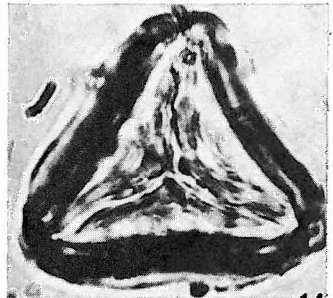
11



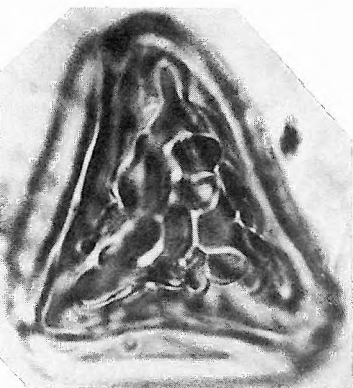
12



13



14



15



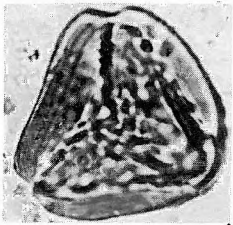
16



17

XXXI. tábla — Plate XXXI

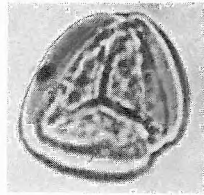
- 1—2. *Polypodiaceoisporites lusaticus* W. KR. 1967 — Pusztakisfalu VI. sz. f. 10,5—12,5 m
- 3—4. *P. lusaticus* W. KR. 1967 — Tengelic 2. sz. f. 850,0—851,3 m
5. *P. magdalenae* NAGY 1969 — Szászvár 8. sz. f. 26,0—27,0 m
6. *P. magdalenae* NAGY 1969 — Eger Wind-féle téglagyári feltárás „x₂” réteg: Eger, Wind brickyard pit, layer “x₂”
- 7—8. *P. magdalenae* NAGY 1969 — Alsóvadász 1. sz. f. 1029,0—1034,6/3 m
9. *P. marxheimensis* (MÜRR. et PFLUG 1952) W. KR. 1959 — Szokolya 2. sz. f. 60,7—61,5 m
- 10—11. *P. maximus* NAGY et RÁKOSI 1966 — Holotypus — Bánd 3. sz. f. 66,8—68,5 m
- 12—13. *P. mecsekensis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m
- 14—15. *P. mecsekensis* NAGY 1969 — Szokolya 2. sz. f. 109,0—111,2 m
16. *P. mecsekensis* NAGY 1969 — Fót 1. sz. f. 369,0—370,5 m
17. *P. mecsekensis* NAGY 1969 — Fót 1. sz. f. 209,9—212,6 m



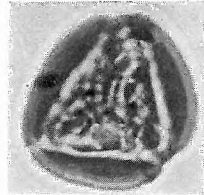
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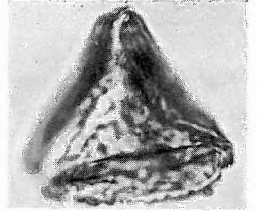
2



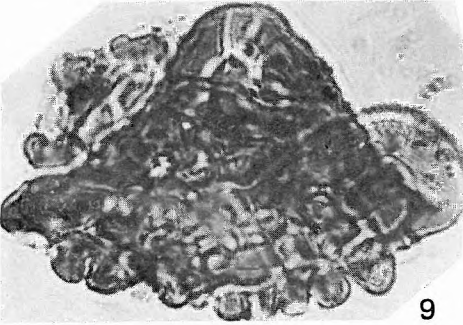
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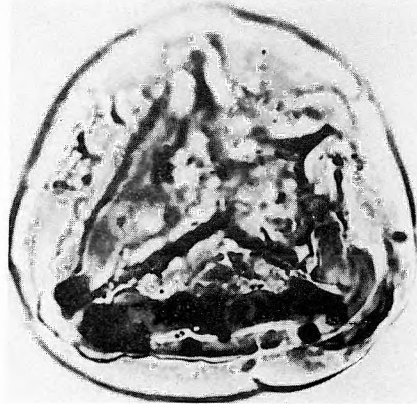
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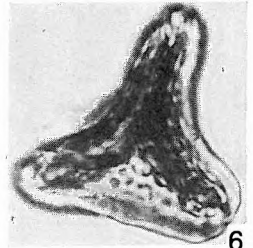
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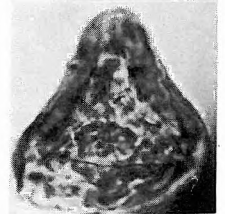
9



10



6



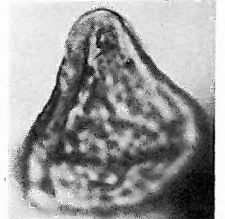
7



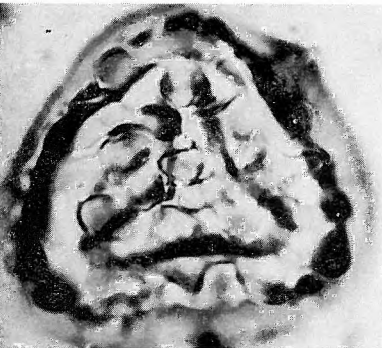
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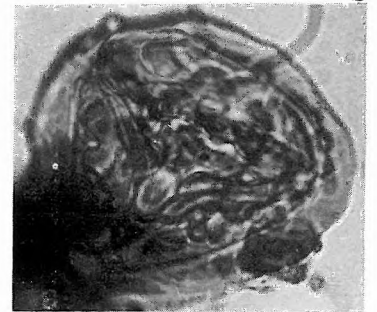
11



8



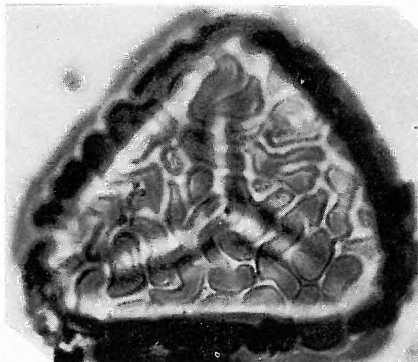
13



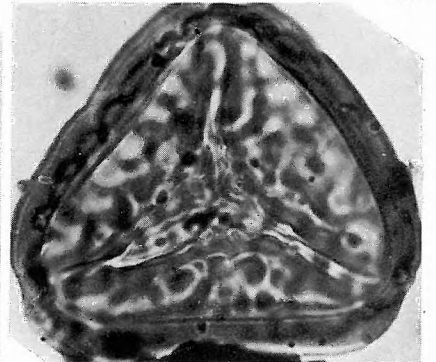
17



16



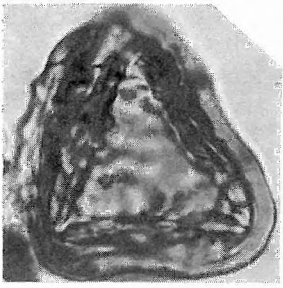
14



15

XXXII. tábla — Plate XXXII

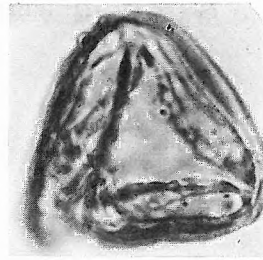
- 1—2. *Polypodiaceoisporites medius* NAGY 1963 — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m
- 3—4. *P. medius* NAGY 1963 — Tar 34. sz. f. 530,0—533,0 m
- 5—6. *P. medius* NAGY 1963 — Pápa 2. sz. f. 242,0—242,8 m
7. *P. microconcaus* W. KR. 1967 — Tököl 1. sz. f. 873,0—876,0 m
8. *P. microconcaus* W. KR. 1967 — Szokolya 2. sz. f. 33,5—34,7 m
9. *P. minutiosus* NAGY 1969 — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m
10. *P. minutiosus* NAGY 1969 — Kisbattyán 1. sz. f. 462,0 m
11. *P. minutus* NAGY 1969 — Szászvár 8. sz. f. 26,0—27,0 m
12. *P. minutus* NAGY 1969 — Alsóvadász 1. sz. f. 1029,3—1034,6 m
13. *P. muricinguliformis* NAGY 1969 — Szokolya 2. sz. f. 89,5—90,3 m
14. *P. muricinguliformis* NAGY 1969 — Tar 34. sz. f. 450,0—454,0 m
- 15—20. *P. paucioratus* n. sp. — Holotypus — Szokolya 2. sz. f. 51,1—51,9 m (15—17.: Amplival mikroszkópi felvétel; 18—20.: Opton mikroszkópi felvétel) (with Amplival LM: Fig. 15—17., with Opton LM: Fig. 18—20.)



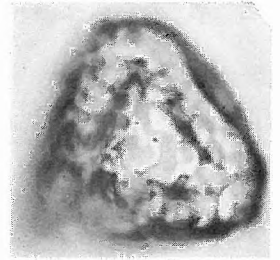
1



2



3



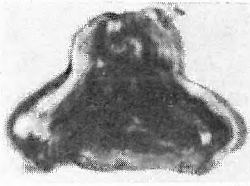
4



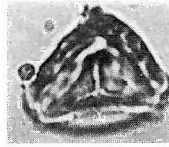
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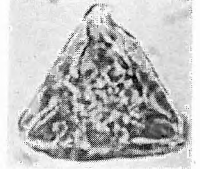
6



7



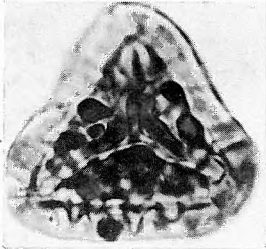
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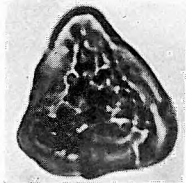
9



10



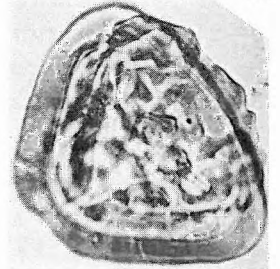
11



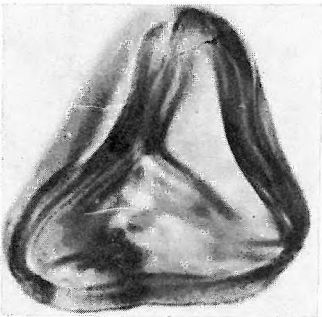
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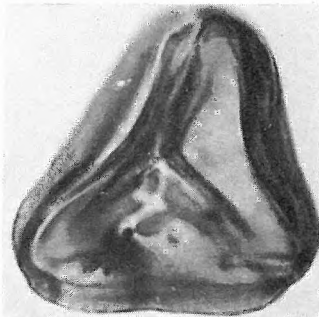
13



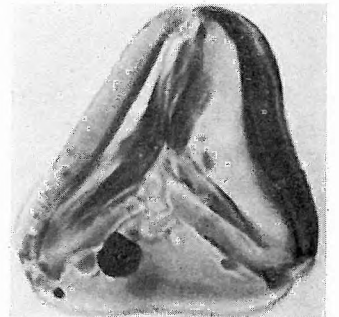
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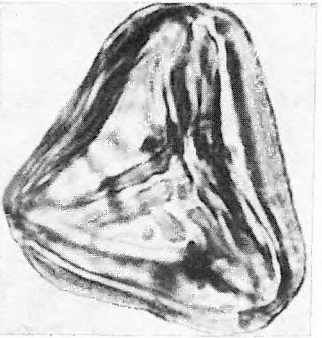
15



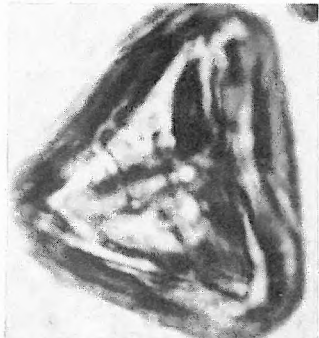
16



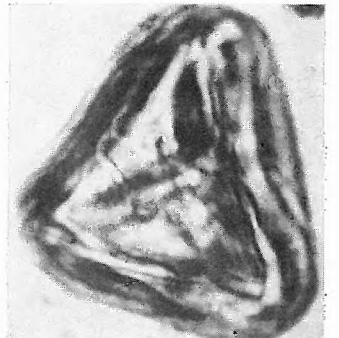
17



18



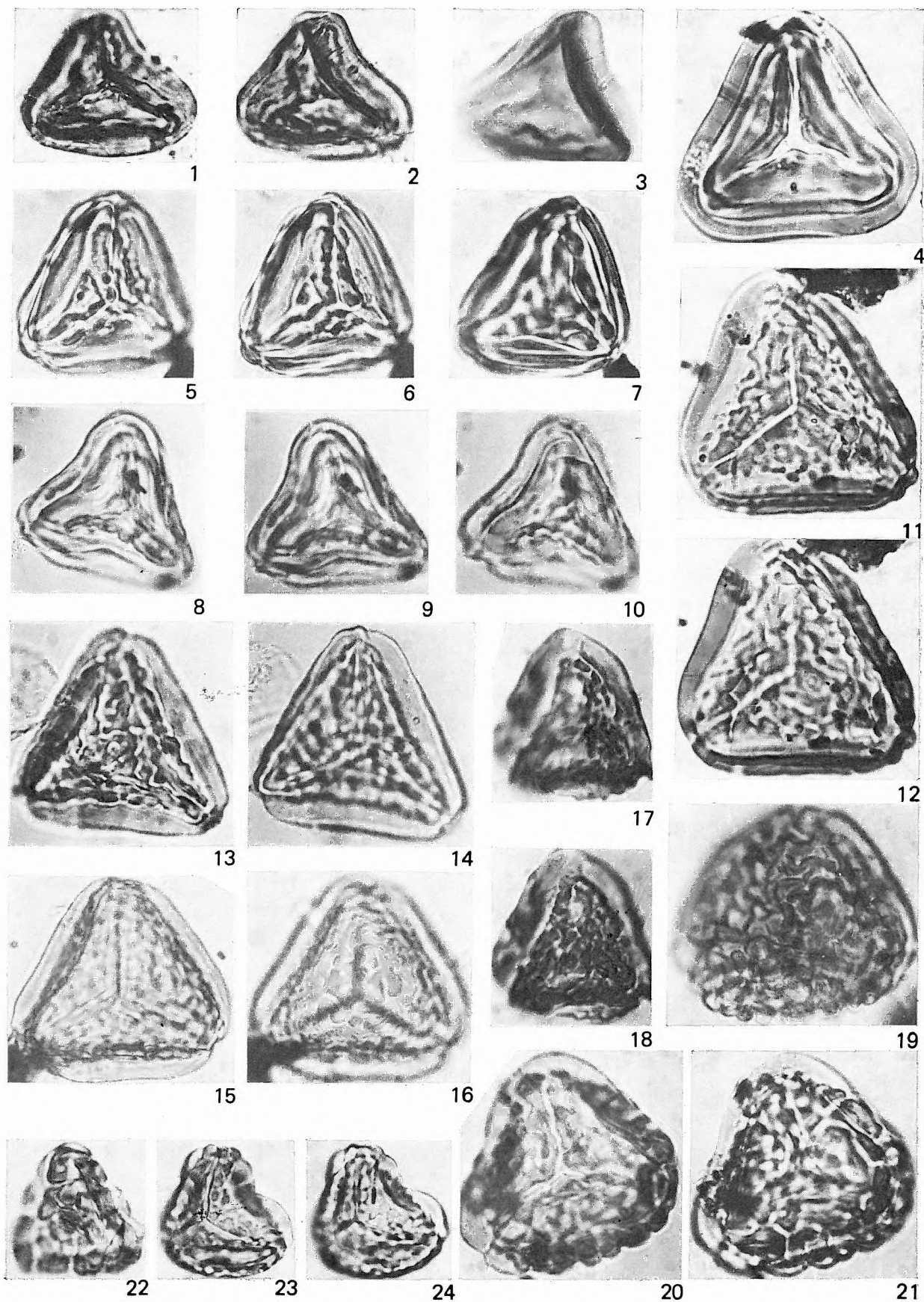
19



20

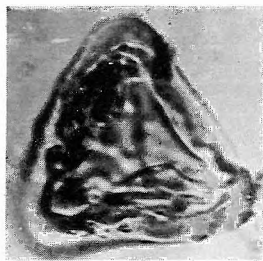
XXXIII. tábla — Plate XXXIII

- 1—3. *Polypodiaceoisporites paucirugosus* n. sp. — Holotypus — Litke 17. sz. f. 262,0—264,0 m
4. *P. paucirugosus* n. sp. — Szokolya 2. sz. f. 82,1—83,9 m
5—7. *Polypodiaceoisporites pulchellus* n. sp. — Holotypus — Tengelic 2. sz. f. 842,0—845, 0 m
8—10. *P. pulchellus* n. sp. — Nagygörbő 1. sz. f. 977,2—979,7 m
11—12. *P. rectolatus* NAGY 1969 — Szokolya 2. sz. f. 115,3—118,3 m
13—14. *P. rectolatus* NAGY 1969 — Holotypus — Szászvár 8. sz. f. 433,8—434,1 m
15—16. *P. rectolatus* NAGY 1969 — Nógrádszakál 2. sz. f. 95,5—99,5 m
17—18. *P. saxonicus* W. KR. 1967 — Kóspallag 11. sz. f. 160,7—162,0 m
19. *P. schoenewaldensis* W. KR. 1967 — Tengelic 2. sz. f. 850,0—851,3 m
20—21. *P. schoenewaldensis* W. KR. 1967 — Szokolya 2. sz. f. 55,1—55,9 m
22. *P. seidewitzensis* W. KR. 1967 — Püspökhatvan 4. sz. f. 269,0—272,0 m
23—24. *P. seidewitzensis* W. KR. 1967 — Tab, termálfúrás 790,0—791,5 m; Tab thermal water borehole 790.0—791.5 m

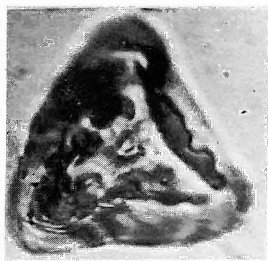


XXXIV. tábla — Plate XXXIV

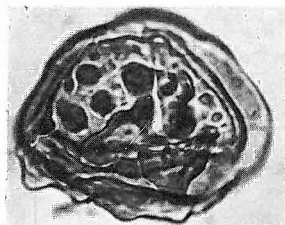
- 1—2. *Polypodiaceoisporites semiverrucatus* (W. KR. 1967) n. st. — Kóspallag 11. sz. f. 160,7—162,0 m
- 3—4. *P. semiverrucatus* (W. KR. 1967) n. st. — Kóspallag 11. sz. f. 162,0—163,0 m
- 5—6. *P. simplicatus* (NAGY 1969) nov. nom. — Szokolya 2. sz. f. 101,0—102,2 m
- 7—8. *P. snopkova* KEDVES 1973 — Fót 1. sz. f. 228,2—230,0 m
9. *P. speciosus* (R. POT. 1934) R. POT. 1956 — Hidas 53. sz. f. 126,6—132,5 m
- 10—11. *P. spiniverrucatus* TREVISAN 1967 — Cserhátszentiván 1. sz. f. 101,6—104,0 m
12. *P. spiniverrucatus* TREVISAN 1967 — Litke 17. sz. f. 40,0—41,0 m
- 13—14. *P. szaszvarensis* NAGY 1969 — Szászvár 8. sz. f. 26,0—27,0 m
- 15—16. *P. szaszvarensis* NAGY 1969 — Szászvár 8. sz. f. 26,0—27,0 m
- 17—18. *P. torosus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
- 19—20. *P. torosus* NAGY 1969 — Pápa 2. sz. f. 189,6—192,8 m
21. *P. torosus* NAGY 1969 — Zengővárkony 45. sz. f. 16,0—16,4 m
22. *P. torosus* NAGY 1969 — Fót 1. sz. f. 173,2—176,7 m



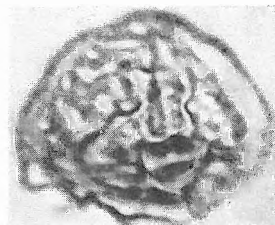
1



2



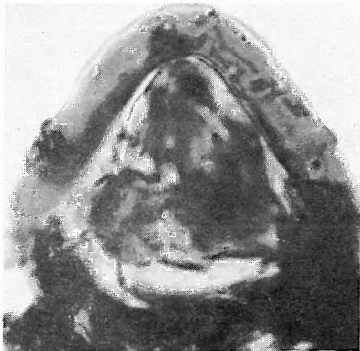
3



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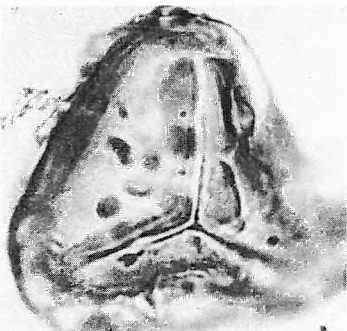
7



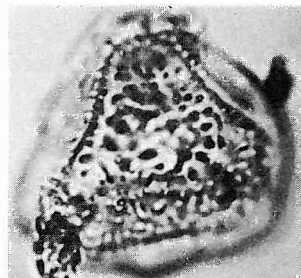
8



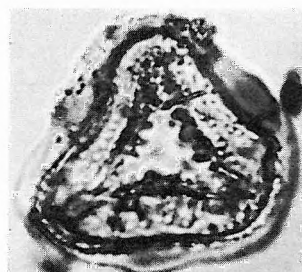
13



9



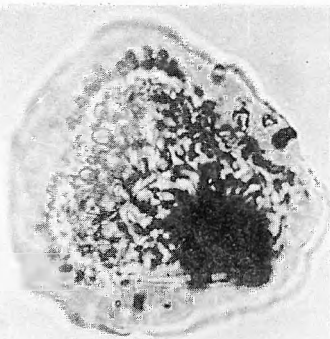
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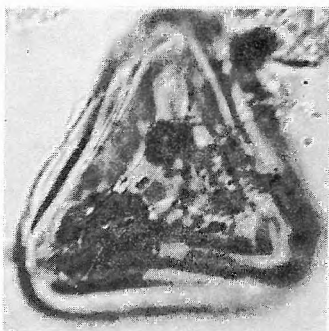
11



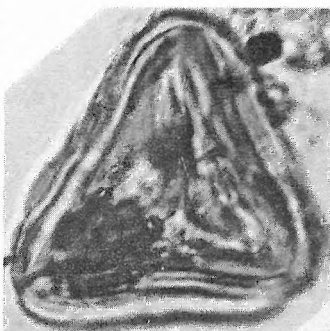
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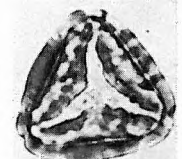
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17



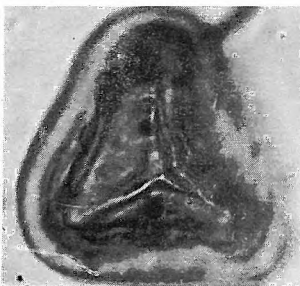
18



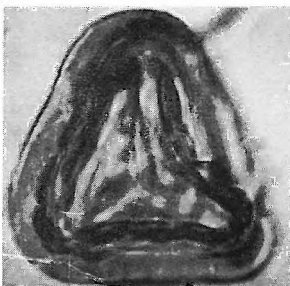
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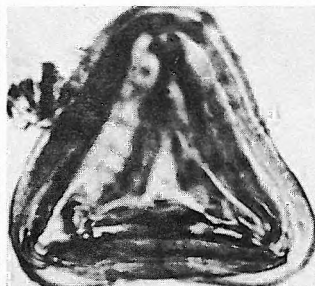
16



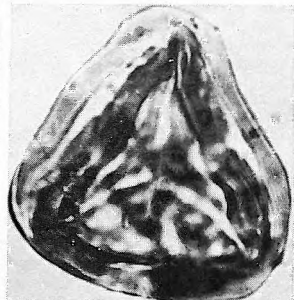
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20

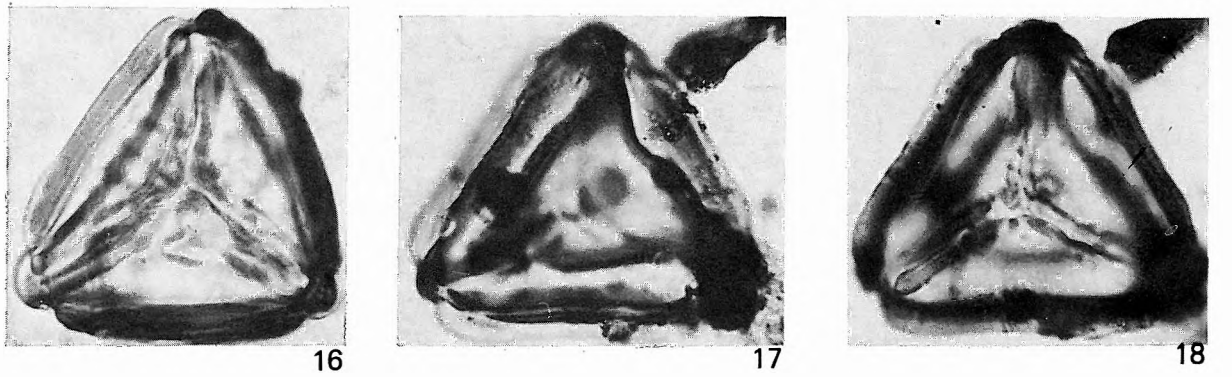
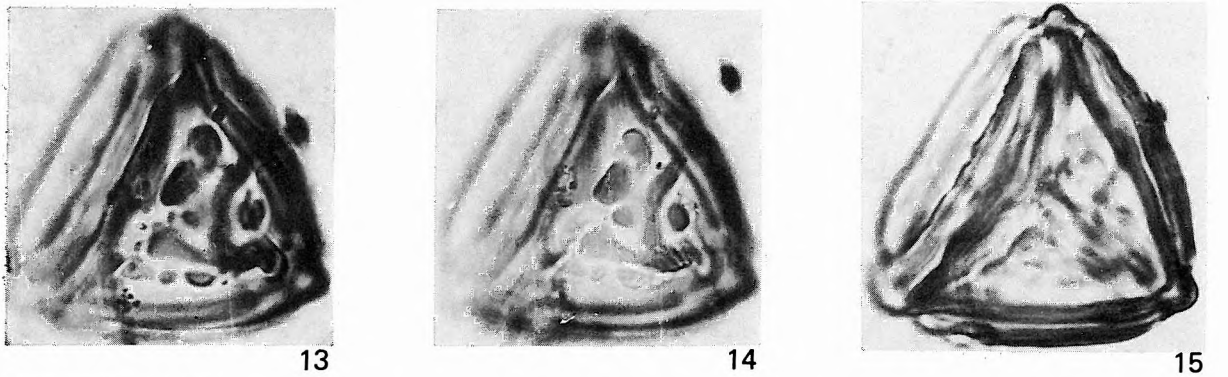
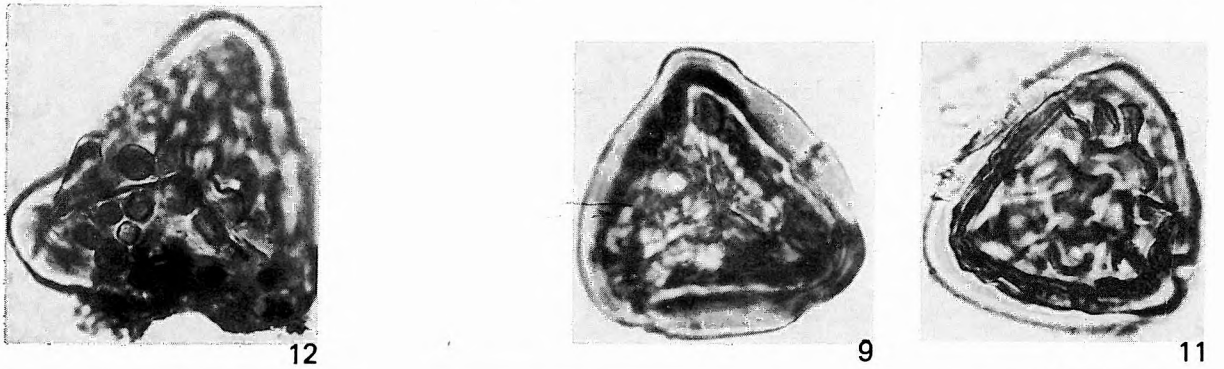
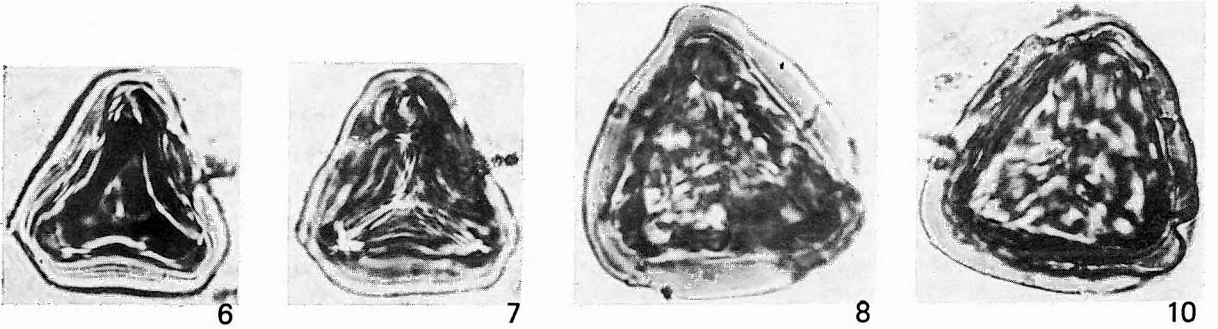
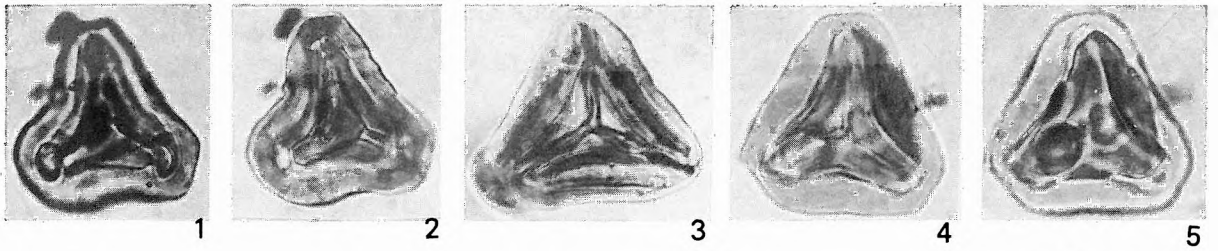


21



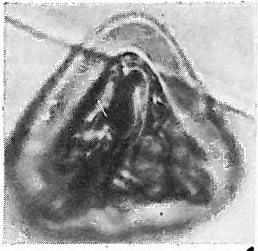
22

- 1—2. *Polypodiaceoisporites triangularis* n. sp. — Holotypus — Tengelic 2. sz. f. 839,0—842,0 m
 3. *P. triangularis* n. sp. — Vásárosnamény 1. sz. f. 751,0—754,0 m
 4—5. *P. triangularis* n. sp. — Eger Wind-féle téglagyári fúrás 8,2—9,2 m; Eger, Wind brickyard borehole 8.2—9.2 m
 6—7. *P. triangularis* n. sp. — Eger Wind-féle téglagyári fúrás 8,2—9,2 m; Eger, Wind brickyard borehole 8.2—9.2 m
 8—9. *P. triangulus* W. KR. 1967 ssp. *triangulus* — Budajenő 2. sz. f. 538,4—539,4 m
 10—11. *P. triangulus* W. KR. 1967 ssp. *triangulus* — Nógrádszakál 2. sz. f. 99,5—101,0 m
 12. *P. triangulus* W. KR. ssp. *trianguloides* W. KR. 1967 — Püspökatvan 4. sz. f. 284,0—287,0 m
 13—16. *P. triornatus* n. sp. — Holotypus — Szokolya 2. sz. f. 80,7—81,5 m
 17—18. *P. triornatus* n. sp. — Szokolya 2. sz. f. 107,9—109,0 m

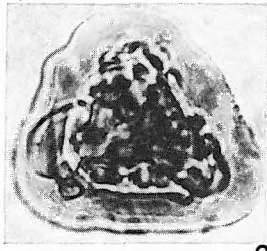


XXXVI. tábla — Plate XXXVI

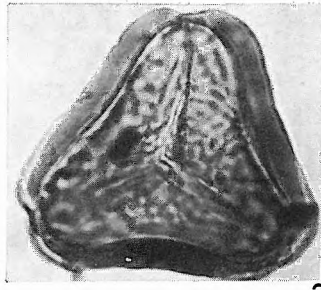
1. *Polypodiaceoisporites verrucosus* NAGY 1969 — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m
2. *P. verrucosus* NAGY 1969 — Fót 1. sz. f. 370,5—371,5 m
- 3—4. *P. zengoevarkonyensis* NAGY 1969 — Szokolya 2. sz. f. 102,2—104,7 m
- 5—7. *P. zengoevarkonyensis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 34,0—37,5 m
- 8—9. *P. zolyonii* NAGY 1963 — Szokolya 2. sz. f. 81,5—82,3 m
10. *P. zolyonii* NAGY 1963 — Holotypus — Szászvár 8. sz. f. 26,0—27,0 m
- 11., 14. *Verrucingulatisporites elegans* NAGY et RÁKOSI 1966 — Holotypus — Bánd 2. sz. f. 70,0—75,4 m
- 12—13. *V. fotensis* n. sp. — Holotypus — Fót 1. sz. f. 181,0—182,7 m
- 15—17. *V. grandis* n. sp. — Holotypus — Püspökhatvan 4. sz. f. 230,0—233,0 m
18. *V. grandis* n. sp. — Püspökhatvan 4. sz. f. 239,0—242,0 m



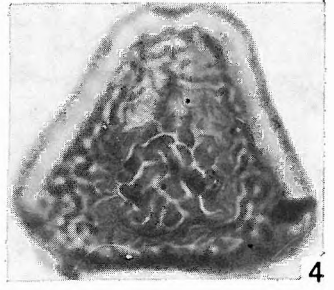
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2



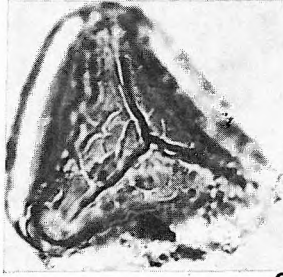
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6



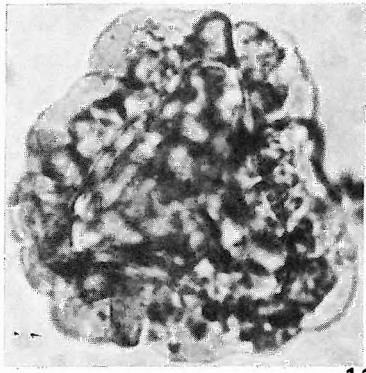
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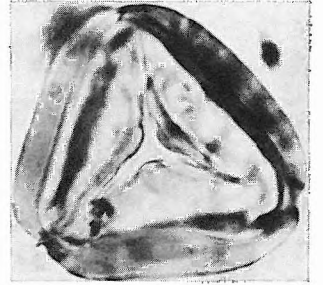
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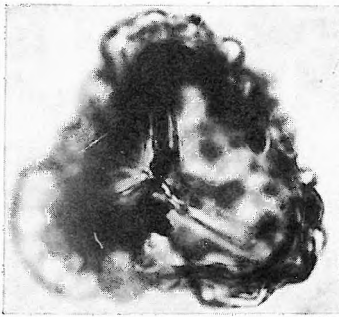
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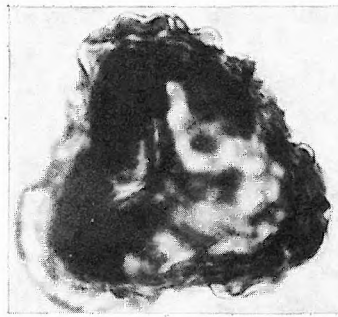
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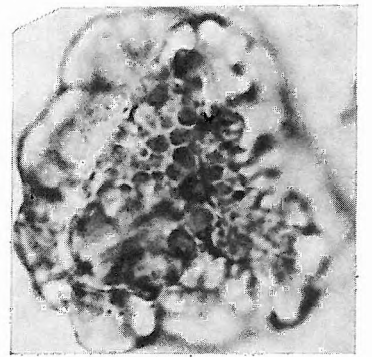
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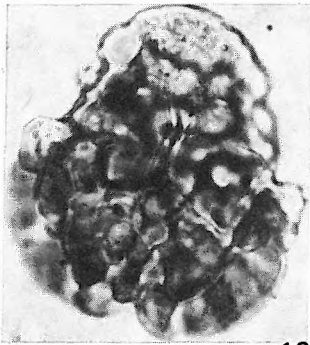
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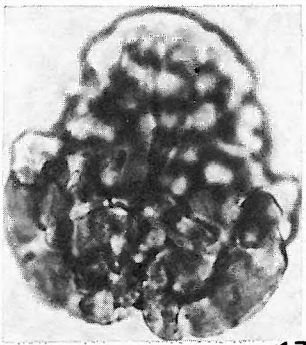
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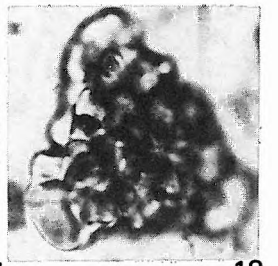
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16

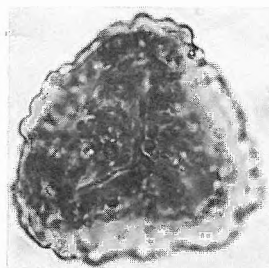


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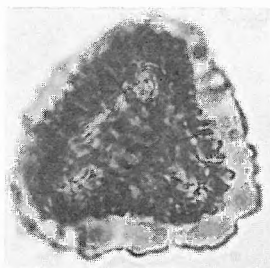


18

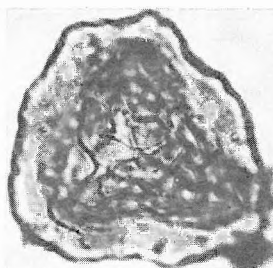
- 1—2. *Verrucingulatisporites granus* W. KR. 1967 ssp. *granus* — Nógrádszakál 2. sz. f. 78,0—79,5 m
3. *V. granus* W. KR. 1967 ssp. *granus* — Tata (TVG) 26. sz. f. 35,0—39,0 m
- 4., 11. *V. gregussi* NAGY 1963 — Holotypus — Zengővárkony 45. sz. f. 16,0—16,4 m
- 5., 7. *V. gregussi* NAGY 1963 — Zengővárkony 45. sz. f. 16,0—16,4 m
6. *V. heteroverrucatus* SIMONCSICS 1966 — Tekerés 1. sz. f. 869,7—874,0 m
8. *V. mecsekensis* NAGY 1969 — Holotypus — Zengővárkony 45. sz. f. 16,4—17,2 m
- 9—10. *V. miocaenicus* NAGY 1969 — Holotypus — Zengővárkony 45. sz. f. 16,4—17,2 m
- 12—13. *V. karpatiensis* n. sp. — Holotypus — Nógrádszakál 2. sz. f. 209,0—211,0 m
14. *V. miocaenicus* NAGY 1969 — Litke 17. sz. f. 220,0—222,0 m
- 15—16. *V. nogradensis* n. sp. — Holotypus — Nógrádszakál 2. sz. f. 223,0—225,0 m



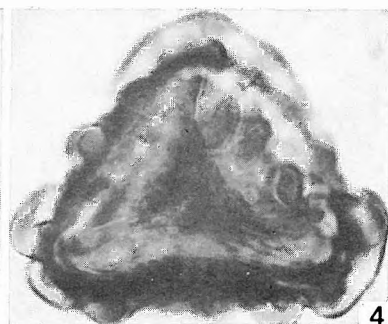
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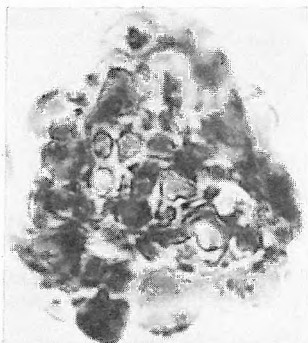
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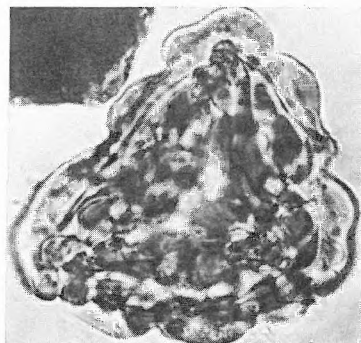
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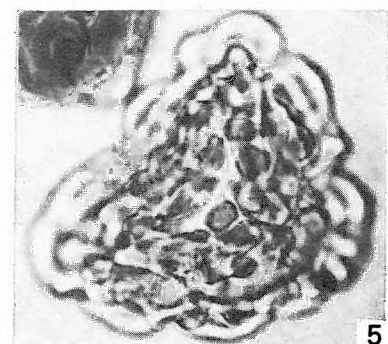
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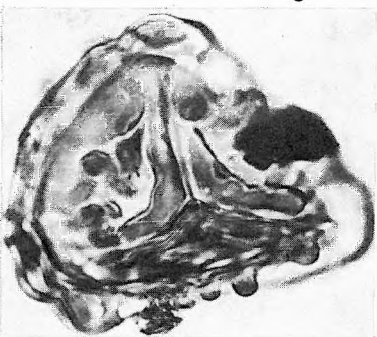
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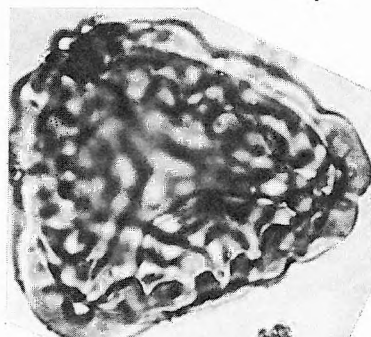
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5



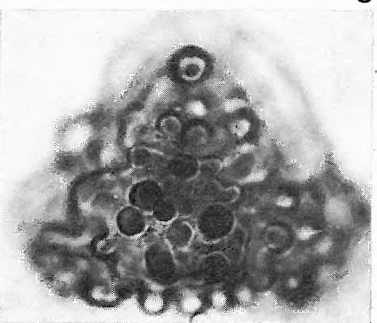
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9



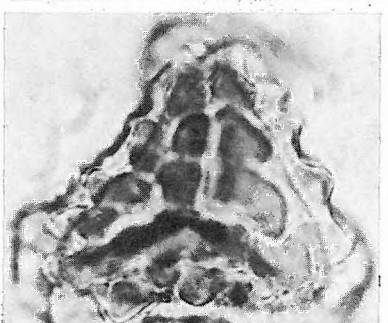
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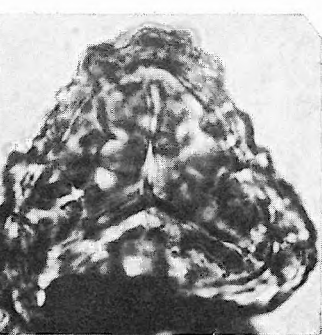
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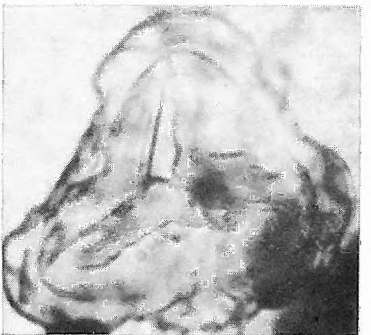
12



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14



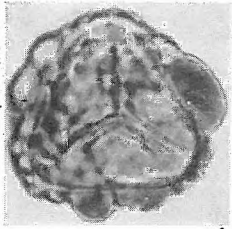
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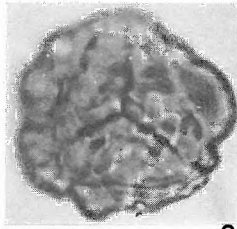
16

XXXVIII. tábla — Plate XXXVIII

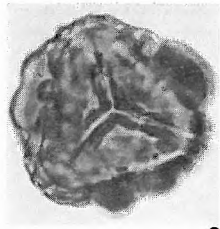
- 1—3. *Gemmatriletes* sp. — Pápa 2. sz. f. 242,0—243,0 m
4—5. *Verrucingulatisporites rugosus* n. sp. — Zengővárkony 59. sz. f. 60,9—63,0 m
6—9. *V. rugosus* n. sp. — Holotypus — Zengővárkony 59. sz. f. 60,9—63,0 m
10. *V. rugosus* n. sp. — Szokolya 3. sz. f. 68,6—69,6 m
11—12. *V. trifoliiformis* NAGY 1969 — Holotypus — Pusztakisfalú VI. sz. f. 15,0—17,0 m
13—14. *V. undulatus* NAGY 1963 — Holotypus — Eger, Wind-féle téglagyári feltárás „u” réteg;
Eger, Wind brickyard pit, layer “u”
15—16. *V. cf. varius* W. KR. 1967 — Eger, Wind-féle téglagyári fúrás 16.8—17,2 m; Eger, Wind
brickyard borehole 16.8—17.2 m



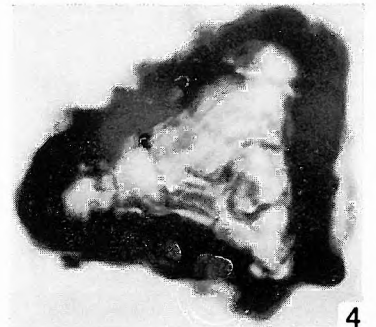
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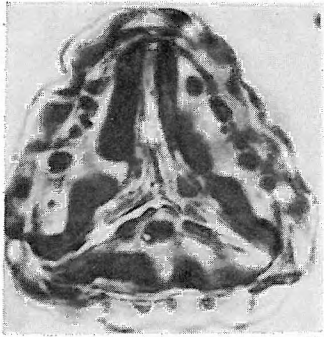
2



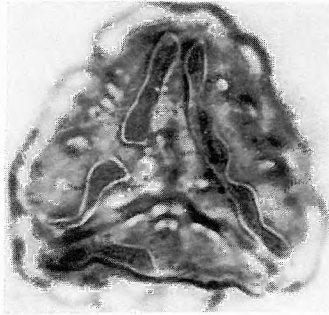
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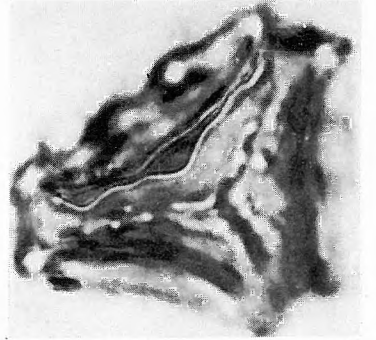
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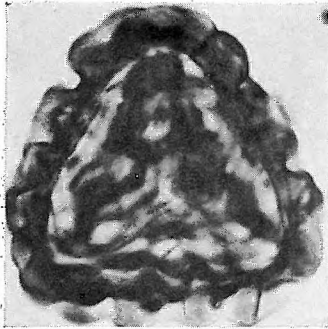
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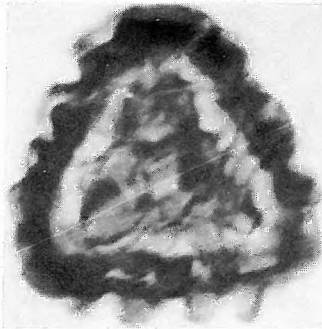
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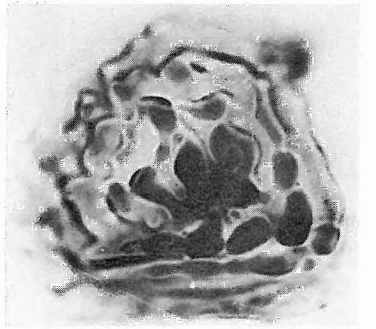
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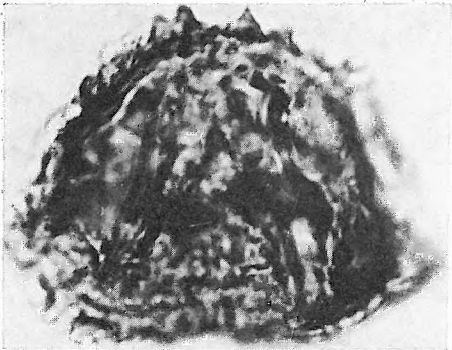
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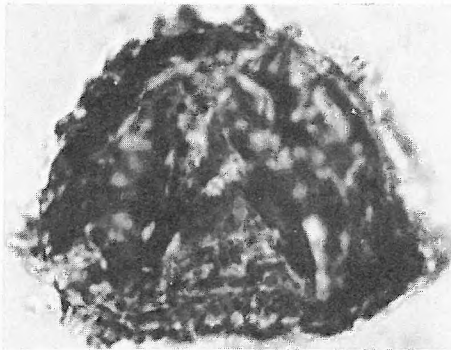
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10



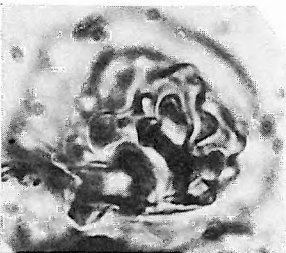
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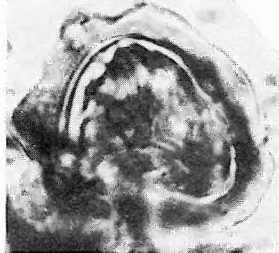
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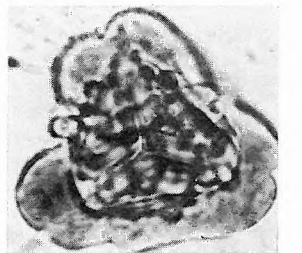
11



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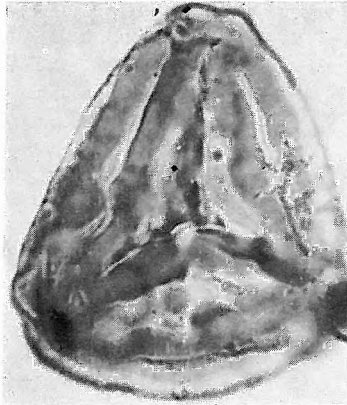
12

XXXIX. tábla — Plate XXXIX

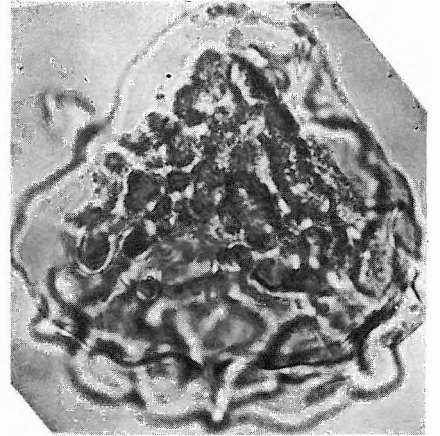
- 1—3. *Bifacialisporites badenensis* n. sp. — Holotypus — Szokolya 2. sz. f. 90,3—91,1 m
4—6. *Bifacialisporites goerboeensis* n. sp. — Holotypus — Nagygörbő 1. sz. f. 892,0—897,0 m
7—8. *Bifacialisporites grandis* n. sp. — Szokolya 2. sz. f. 90,3—91,1 m



1



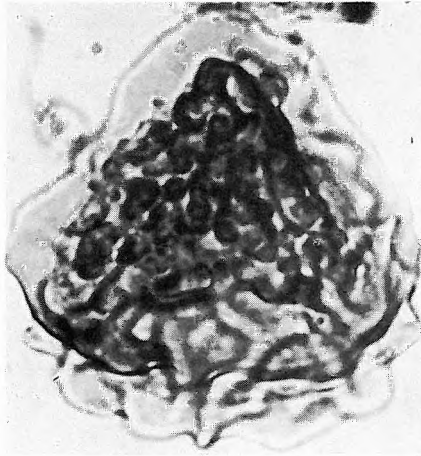
2



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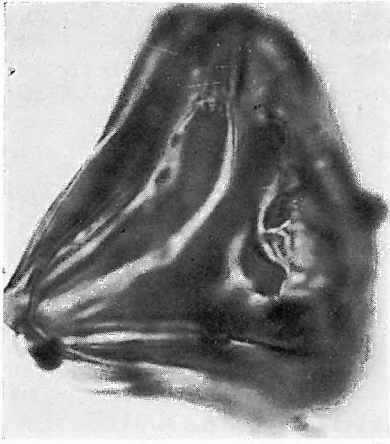


7

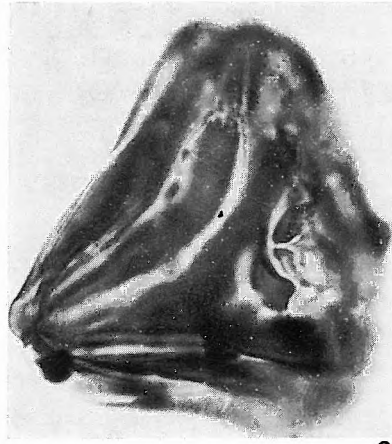


8

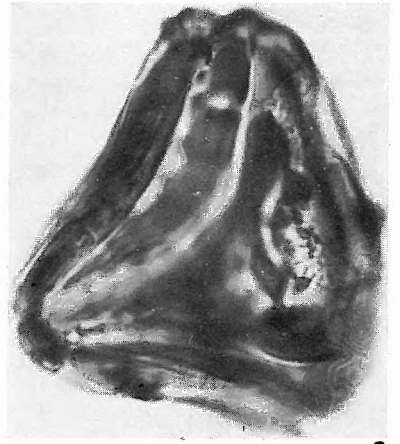
- 1—4. *Bifacialisporites grandis* n. sp. — Holotypus — Szokolya 2. sz. f. 109,0—111,2 m
5—6. *B. magnus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 258,1—258,5 m
7. *B. magnus* NAGY 1969 — Hidas 53. sz. f. 258,0—258,5 m



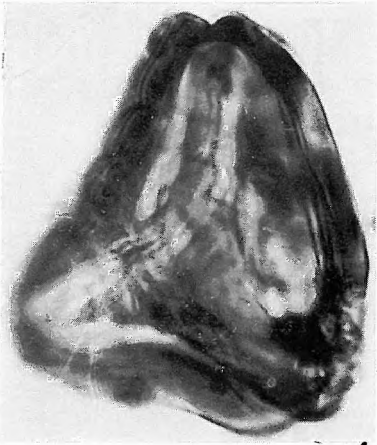
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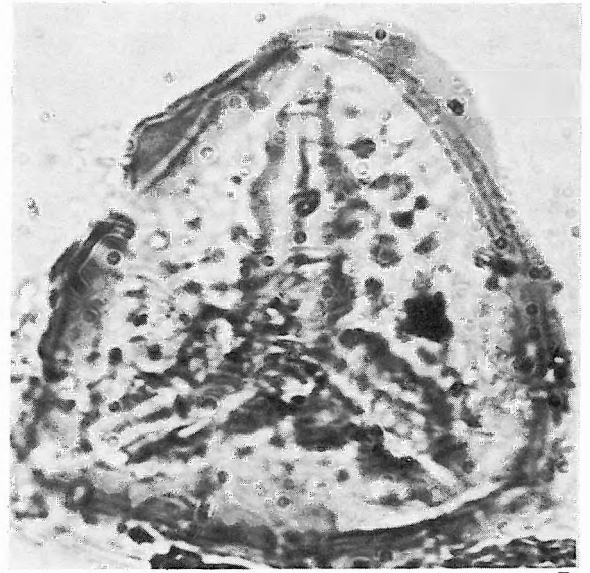
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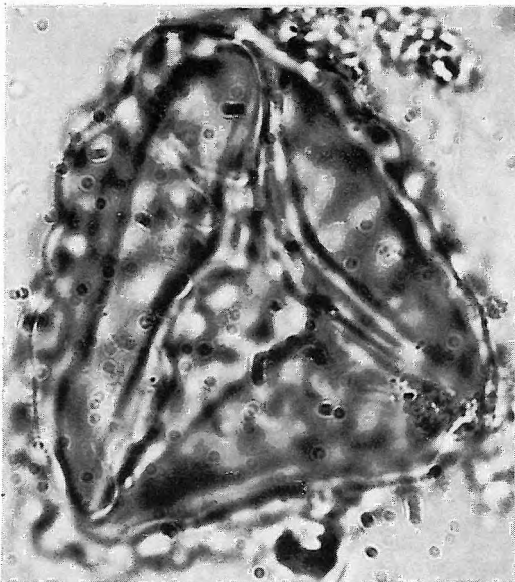
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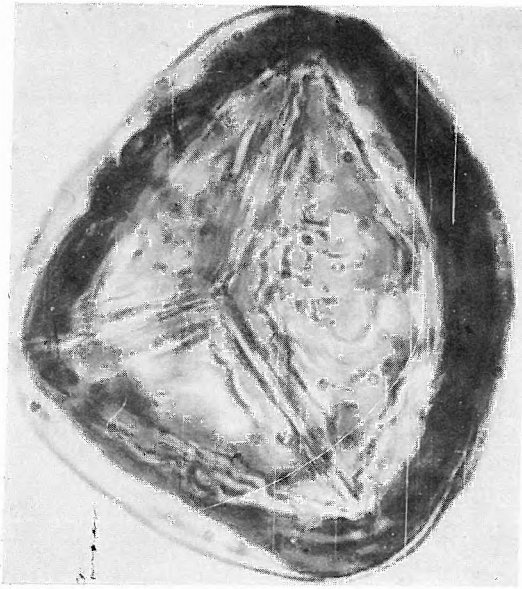
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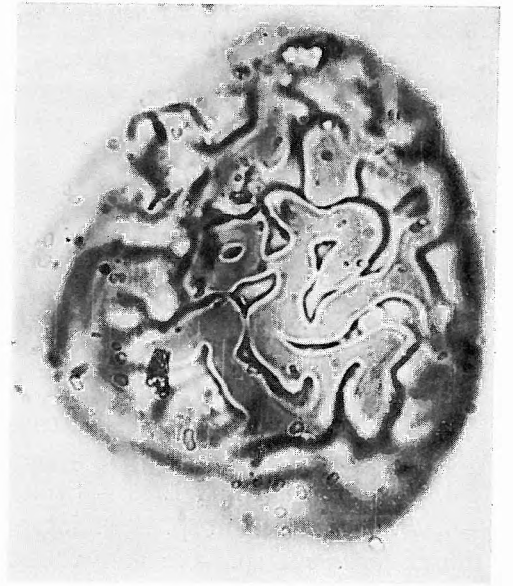
6

XLI. tábla — Plate XLI

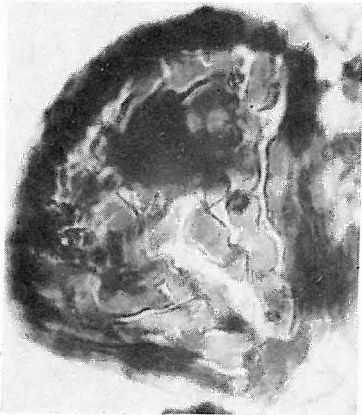
- 1—2. *Bifacialisporites mecsekensis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 34,0—37,5 m
3. *B. mecsekensis* NAGY 1969 — Szokolya 3. sz. f. 77,2—77,4 m
4—5. *B. medius* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m
6. *B. medius* NAGY 1969 — Zengővárkony 59. sz. f. 56,0—60,9 m
7—8. *B. medius* NAGY 1969 — Pápa 2. sz. f. 211,0—212,0 m



1



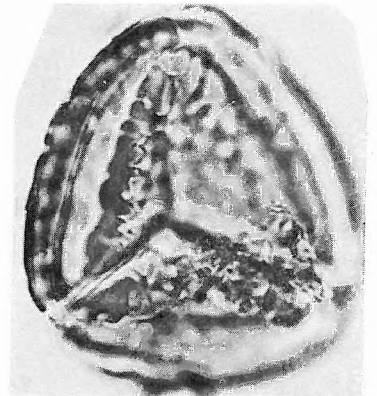
2



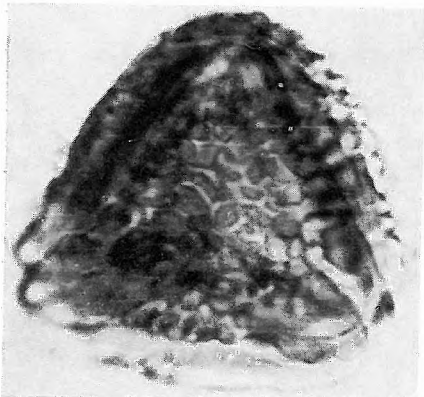
3



4



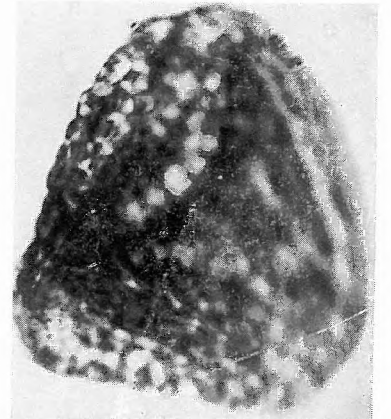
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6



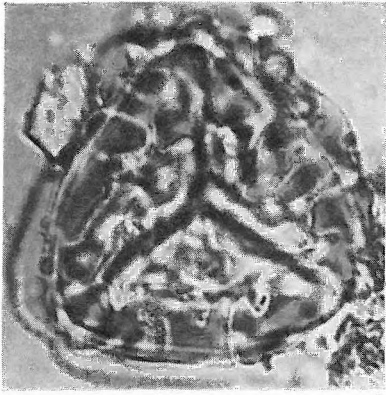
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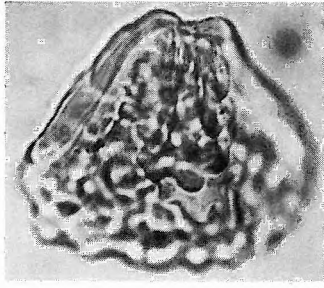
8

XLII. tábla — Plate XLII

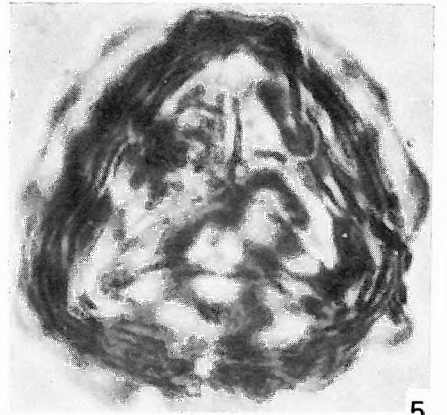
- 1—2. *Bifacialisporites murensis* NAGY 1963 — Generotypus — Hidas 53. sz. f. 258,1—258,5 m
3. *B. murensis* NAGY 1963 f. *minor* NAGY 1969 — Litke 17. sz. f. 232,0—234,0 m
4. *B. murensis* NAGY 1963 — Szokolya 2. sz. f. 115,3—118,3 m
- 5—8. *B. nogradensis* n. sp. — Holotypus — Szokolya 2. sz. f. 100,0—101,0 m
9. *B. oculus* n. sp. — Szokolya 3. sz. f. 58,7—59,9 m



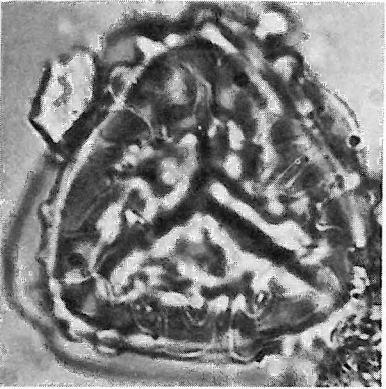
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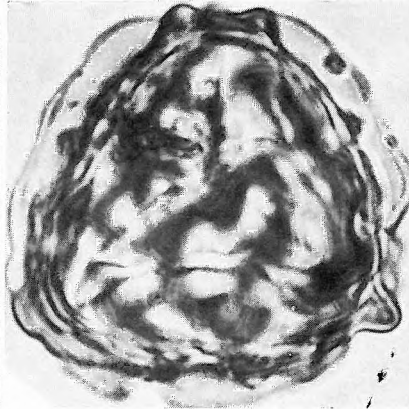
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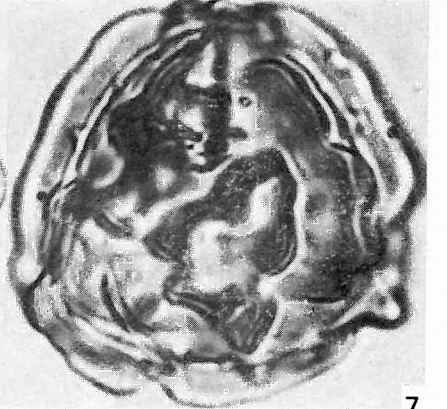
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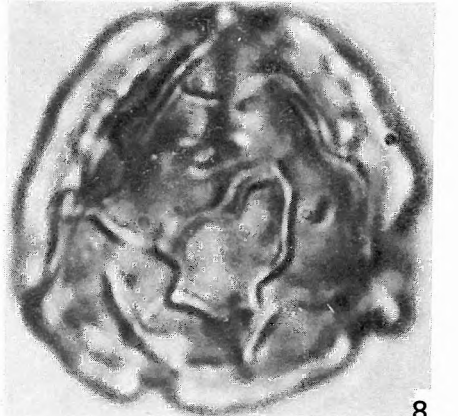
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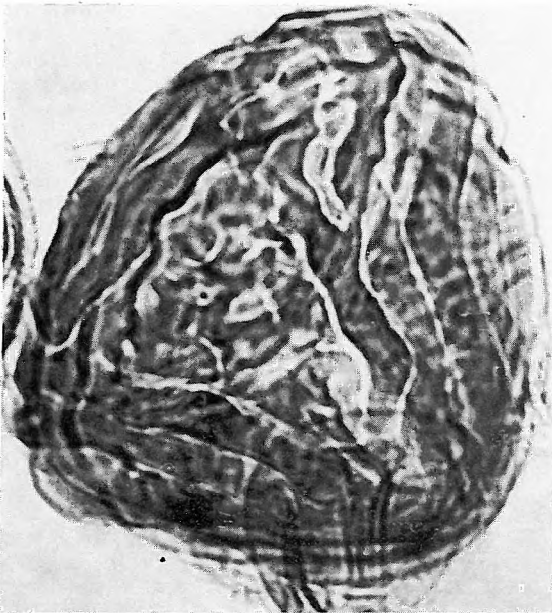
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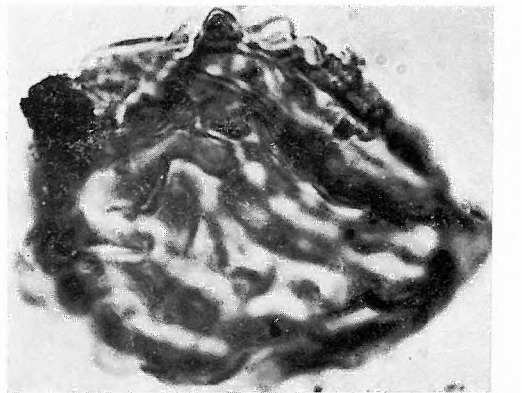
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XLIII. tábla — Plate XLIII

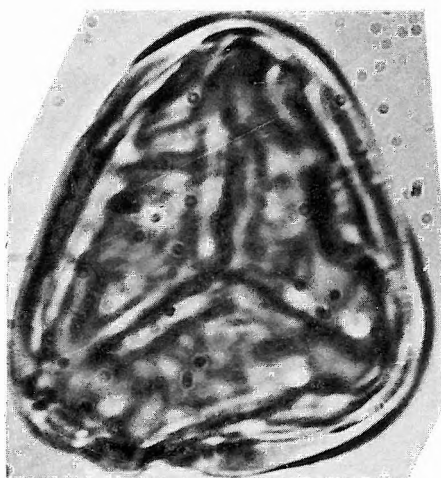
- 1—3. *Bifacialisporites oculus* n. sp. — Holotypus — Zengővárkony 59. sz. f. 34,0—37,5 m
4—6. *B. oculus* n. sp. — Zengővárkony 59. sz. f. 34,0—37,5 m — Oldalhelyzetű példány; lateral view
7. *B. ornatus* n. sp. — Holotypus — Ipolytarnóc, Mihálygerge felszíni feltárás; Ipolytarnóc, Mihálygerge, surface exposure



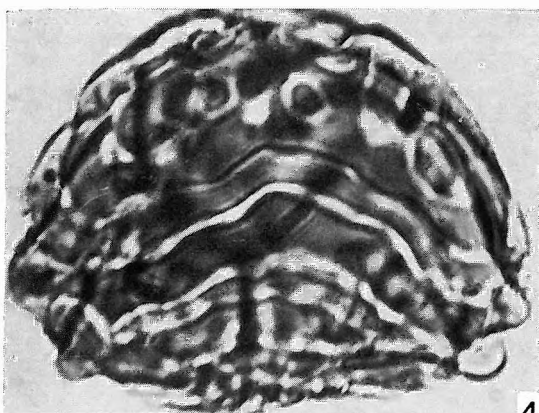
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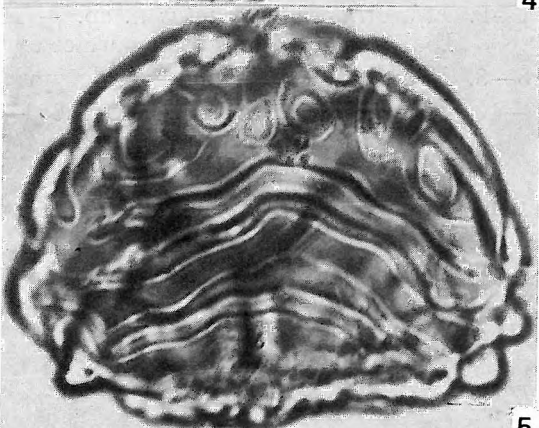
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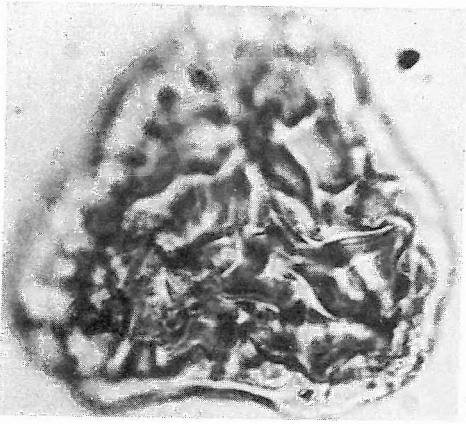
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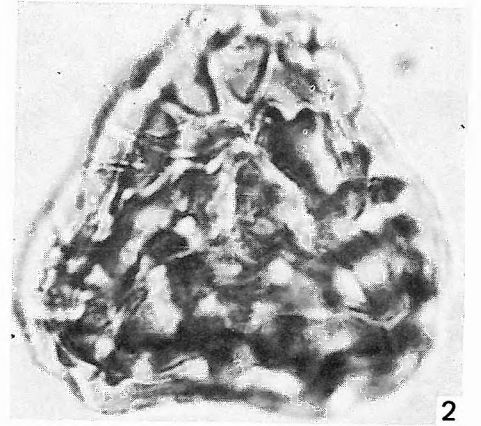
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XLIV. tábla — Plate XLIV

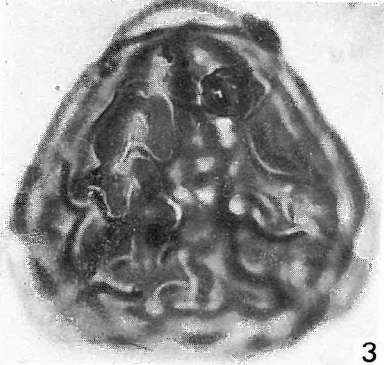
- 1—2. *Bifacialisporites ornatus* n. sp. — Holotypus — Ipolytarnóc, Mihálygerge felszíni feltárás;
Ipolytarnóc, Mihálygerge surface exposure
- 3—8. *B. szokolyaënsis* n. sp. — Holotypus — Szokolya 2. sz. f. 100,0—101,0 m
- 9—10. *Mecsekisporites aequus* NAGY 1968 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m



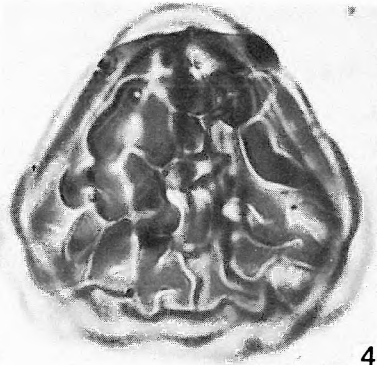
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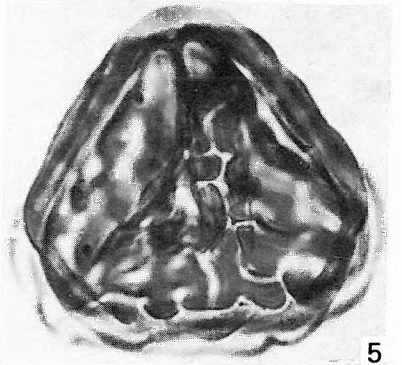
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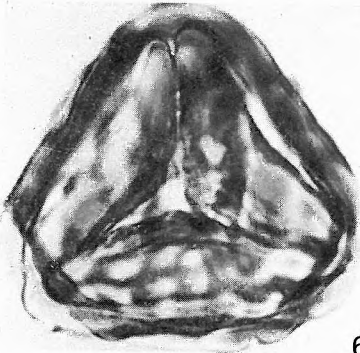
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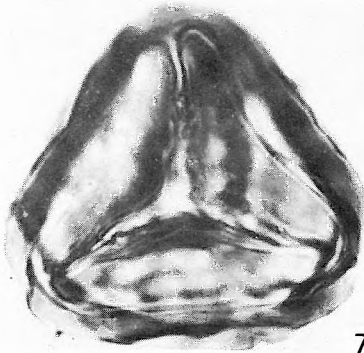
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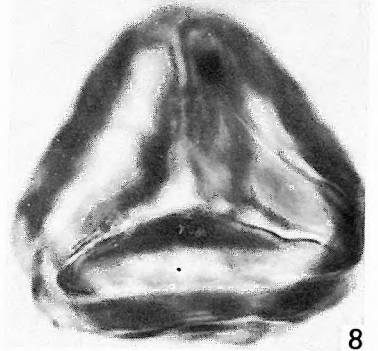
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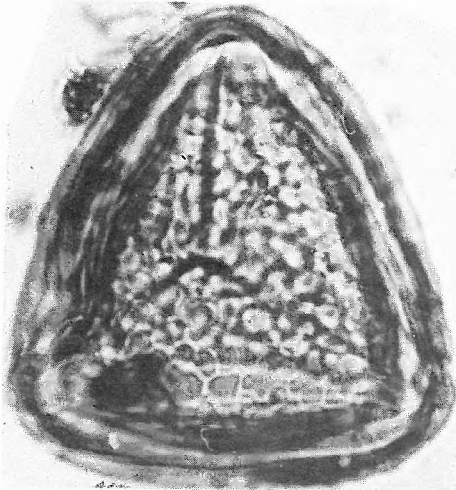
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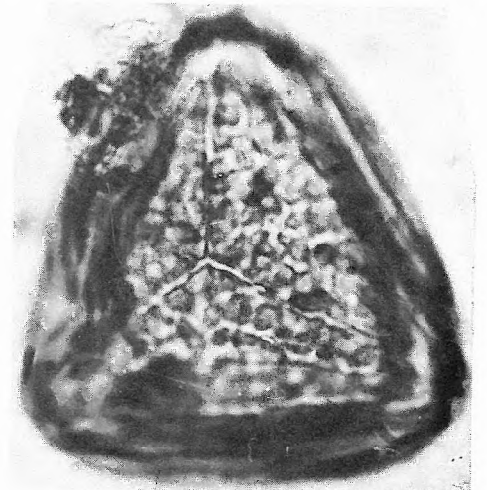
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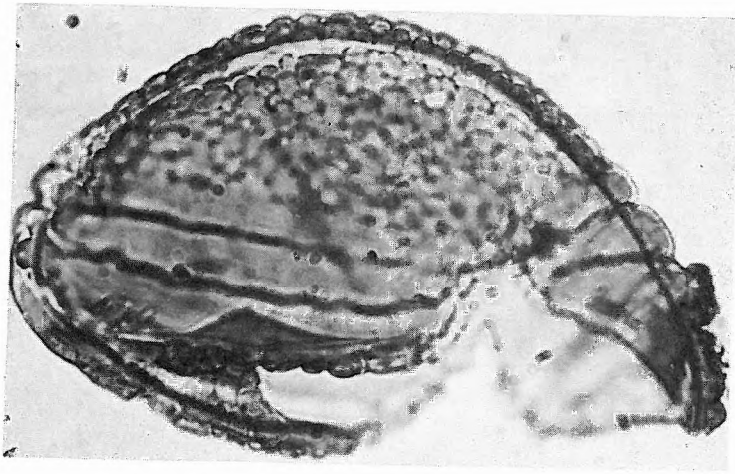
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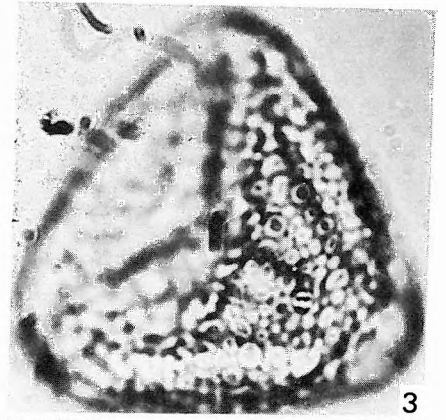
10

XLV. tábla — Plate XLV

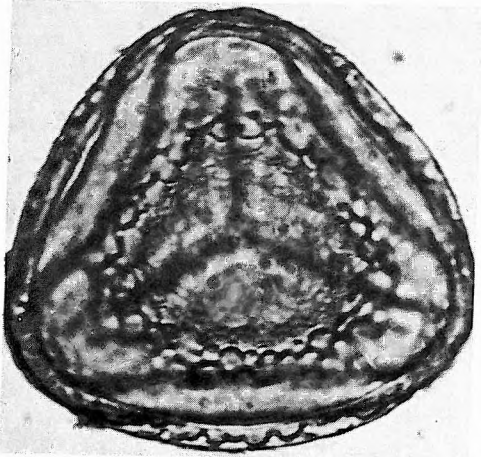
1. *Mecsekisporites cerebralis* NAGY 1969 — Szokolya 2. sz. f. 91,1—92,7 m
2. *M. miocaenicus* NAGY 1968 — Holotypus — Zengővárkony 59. sz. f. 34,7—37,5 m
- 3—4. *M. zengoevarkonyensis* NAGY 1968 — Szokolya 2. sz. f. 33,5—34,7 m
5. *M. zengoevarkonyensis* NAGY 1968 — Szokolya 3. sz. f. 60,8—63,0 m
6. *M. zengoevarkonyensis* NAGY 1968 — Zengővárkony 59. sz. f. 71,4—73,0 m
7. *M. zengoevarkonyensis* NAGY 1968 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m



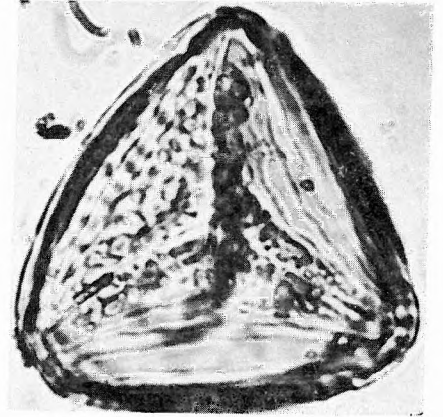
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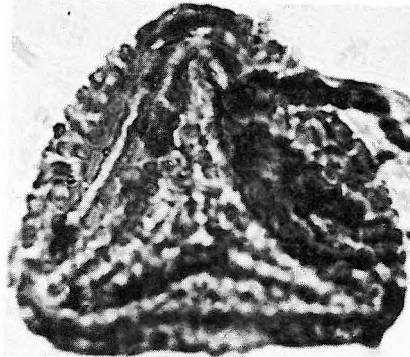
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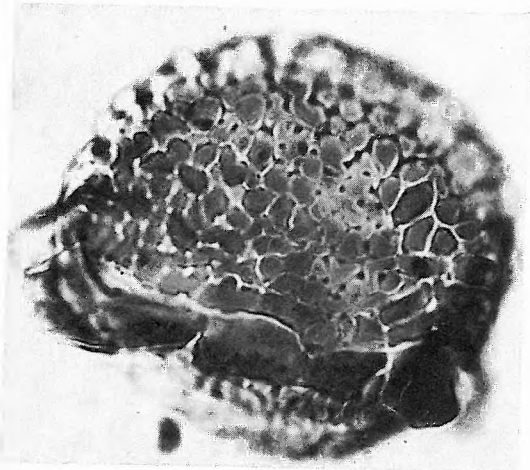
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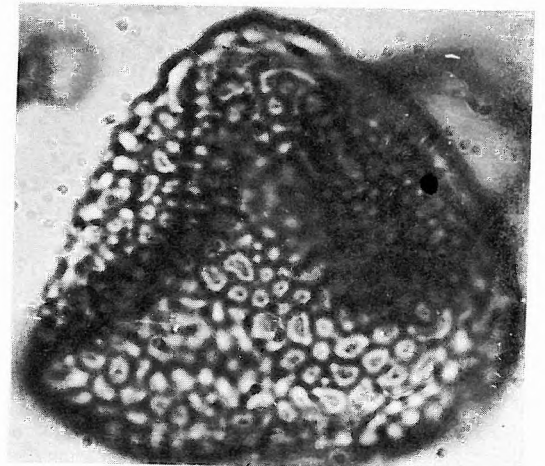
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5



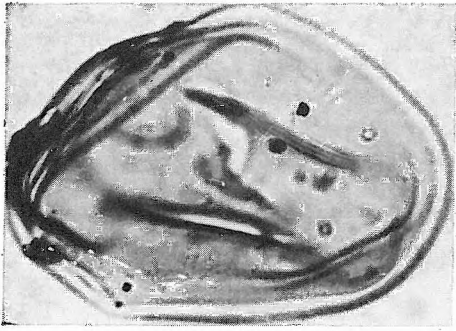
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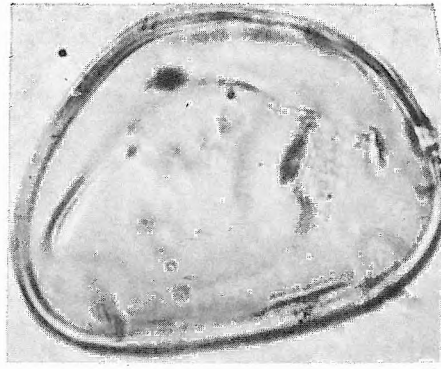
7

XLVI. tábla — Plate XLVI

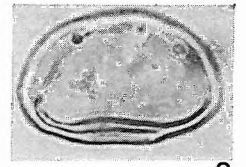
1. *Laevigatosporites discordatus* PFLUG 1953 — Szokolya 2. sz. f. 90,3—91,1 m
2. *L. discordatus* PFLUG 1953 — Szokolya 2. sz. f. 81,5—82,3 m
3. *L. gracilis* WILSON et WEBSTER 1946 — Eger, Wind-féle téglagyári fúrás 8,2—9,2 m; Eger, Wind brickyard borchole 8.2—9.2 m
4. *L. gracilis* WILSON et WEBSTER 1946 — Fót 1. sz. f. 155,0—158,0 m
5. *L. gracilis* WILSON et WEBSTER 1946 — Tata (TVG) 27. sz. f. 72,8—74,7 m
6. *L. haardti* (R. POT. et VEN. 1934) TH. et PF. 1953 — Császár 1. sz. f. 99,5 m
7. *L. haardti* (R. POT. et VEN. 1934) TH. et PF. 1953 — Fót 1. sz. f. 301,0—305,0 m
8. *L. major* (COOKSON 1947) W. KR. 1959 — Zengővárkony 59. sz. f. 30,9—34,0 m
9. *L. nitidus* (MAMCZAR 1960) W. KR. 1967 — Alsóvadász 1. sz. f. 1029,0—1034,6/14 m
10. *L. nitidus* (MAMCZAR 1960) W. KR. 1967 — Szokolya 2. sz. f. 79,9—80,7 m
11. *L. pseudodiscordatus* W. KR. 1959 — Püspökhatvan 4. sz. f. 251,0—254,0 m
12. *L. pseudodiscordatus* W. KR. 1959 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
13. *Microfoveolatosporites afavus* (W. KR. 1959) W. KR. 1967 — Felsőpetényi bánya 1. sz. minta; Felsőpetény mine, sample N° 1
- 14—15. *M. afavus* (W. KR. 1959) W. KR. 1967 — Fót 1. sz. f. 142,8—144,0 m



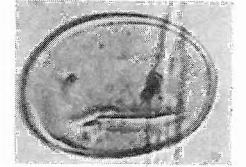
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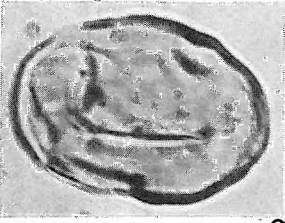
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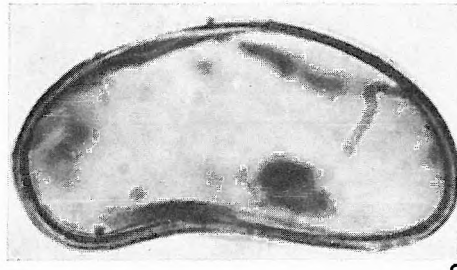
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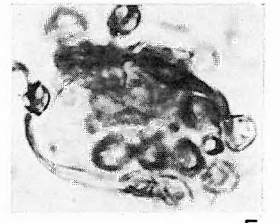
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6



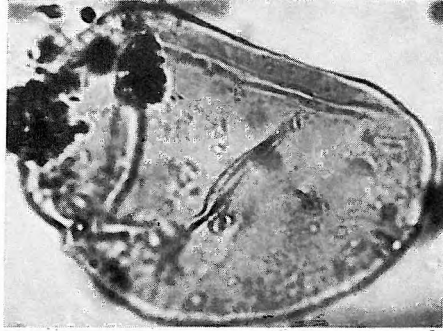
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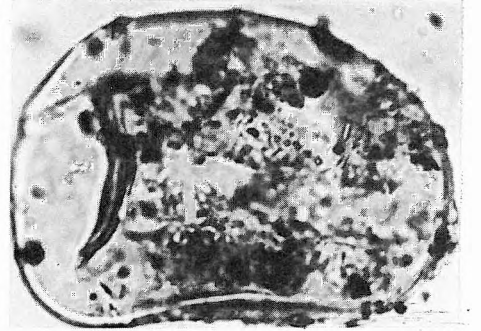
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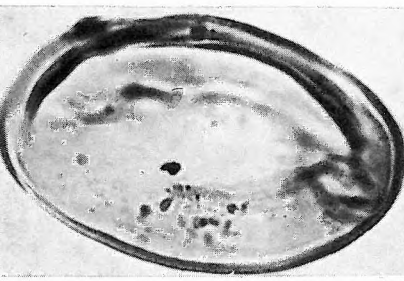
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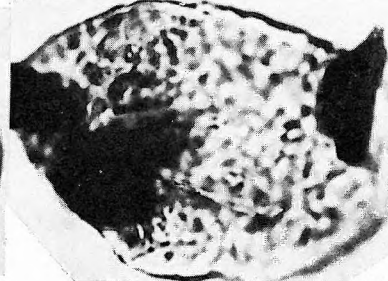
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10



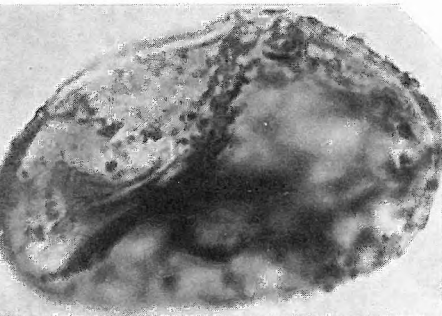
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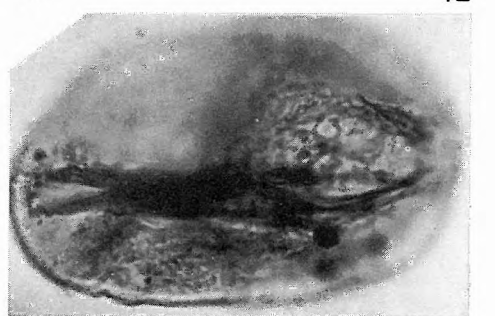
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12



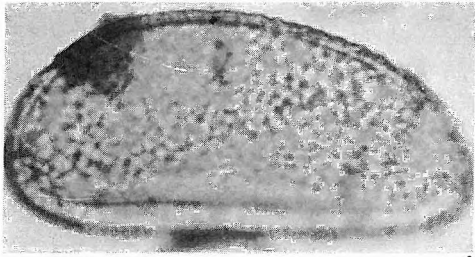
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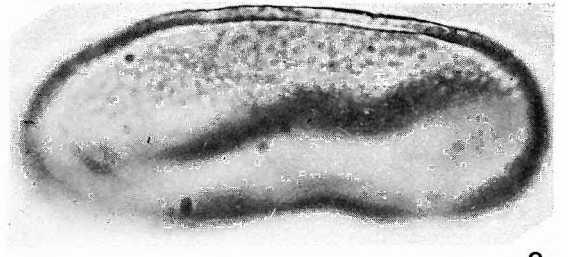
15

XLVII. tábla — Plate XLVII

- 1—2. *Microfoveolatosporites alsovadaszensis* NAGY 1973 — Pápa 2. sz. f. 242,0—242,8 m
3—4. *M. alsovadaszensis* NAGY 1973 — Fót 1. sz. f. 162,0—164,0 m
5—7. *M. canaliculatus* DETTMANN 1963 — Eger, Wind-féle téglagyári feltárás „x₂” réteg; Eger, Wind brickyard pit, layer “x₂”
8—9. *M. canaliculatus* DETTMANN 1963 — Eger, Wind-féle téglagyári fúrás 50,3—50,9 m; Eger, Wind brickyard borehole 50.3—50.9 m
10—11. *M. neogranuloides* W. KR. 1967 — Szokolya 2. sz. f. 52,7—53,5 m
12—14. *M. fossulatus* n. sp. — Holotypus — Pápa 2. sz. f. 242,8—243,3 m
15. *M. sellingi* W. KR. 1967 — Tar-Fenyvespuszta körzete, 27. minta; Tar-Fenyvespuszta area, surface exp., sample N^o 27



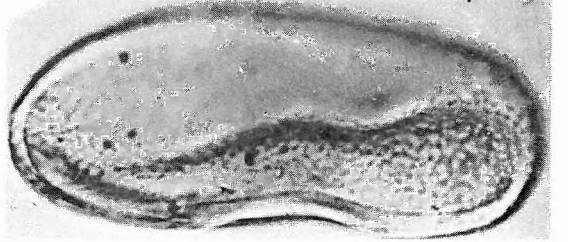
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3



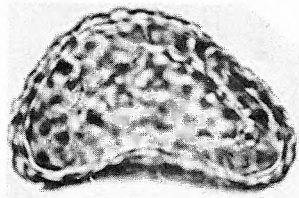
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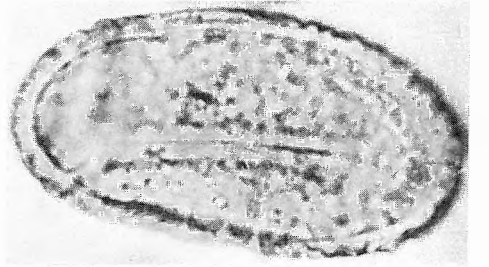
4



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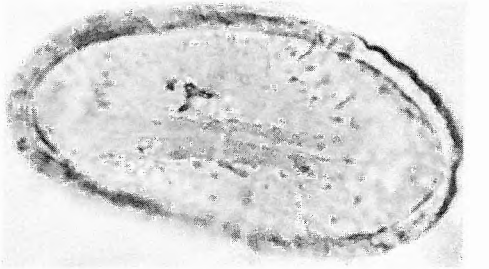
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7



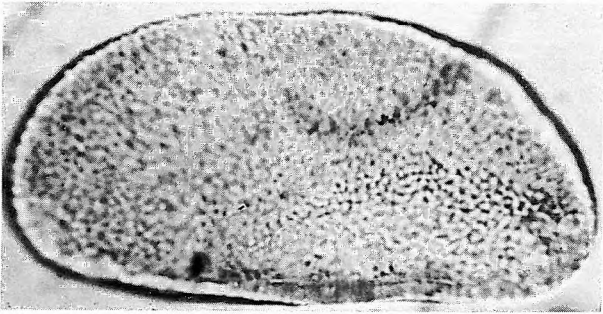
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11



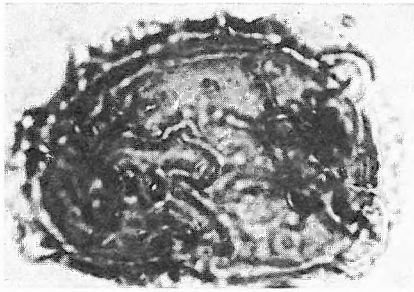
15



14

XLVIII. tábla — Plate XLVIII

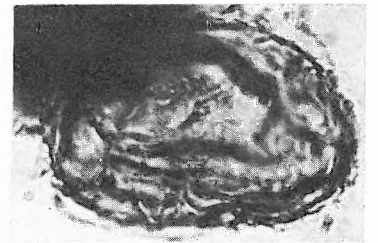
1. *Perinomonoletes goersbachensis* W. KR. 1967 — Szokolya 3. sz. f. 60,8—63,0 m
2. *P. goersbachensis* W. KR. 1967 — Szokolya 2. sz. f. 75,0—75,9 m
3. *P. pliocaenicus* W. KR. 1967 — Tata (TVG) 27. sz. f. 72,8—74,7 m
4. *P. pliocaenicus* W. KR. 1967 — Hidas 53. sz. f. 126,6—132,5 m
5. *P. spicatus* NAGY 1973 — Holotypus — Alsóvadász 1. sz. f. 280,6—283,9/3 m
6. *P. spicatus* NAGY 1973 — Püspökhátvan 4. sz. f. 201,0—204,0 m
7. *Intrapunctosporis lusaticus* W. KR. 1967 — Litke 17. sz. f. 104,0—106,0 m
8. *I. pliocaenicus* W. KR. 1967 — Nógrádszakál 2. sz. f. 165,0—167,0 m
- 9—10. *Extrapunctosporis microalveolatus* W. KR. 1967 — Szászvár 8. sz. f. 434,3—434,5 m
- 11—12. *E. megapunctus* W. KR. 1959 — Litke 17. sz. f. 118,0—120,0 m
13. *E. cf. miocaenicus* W. KR. 1967 — Felsőpetényi bánya 1. sz. minta; Felsőpetény mine, sample N° 1.
14. *E. cf. miocaenicus* W. KR. 1967 — Tekeres 1. sz. f. 850,0—855,0 m
- 15—16. *Echinosporis echinatus* W. KR. 1967 — Nógrádszakál 2. sz. f. 93,0—95,0 m



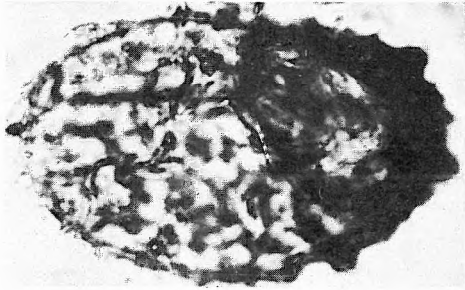
1



2



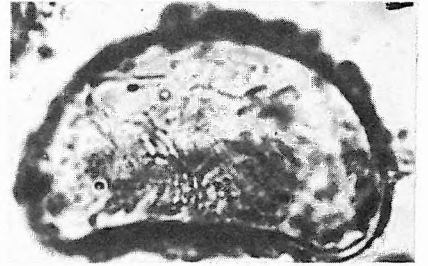
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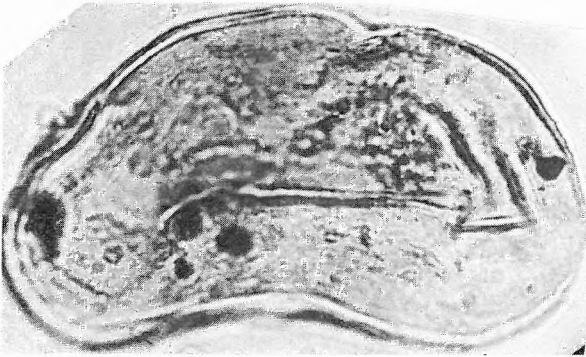
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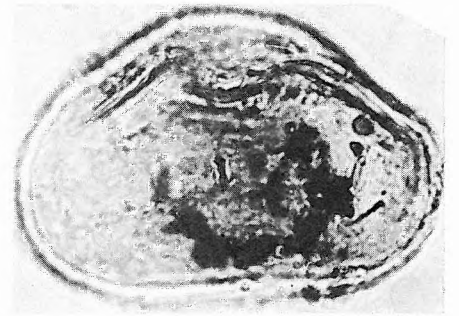
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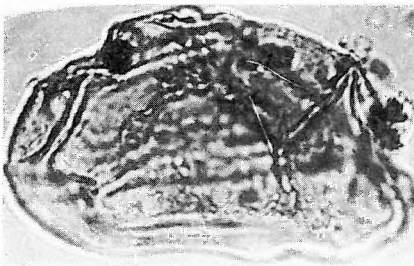
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11



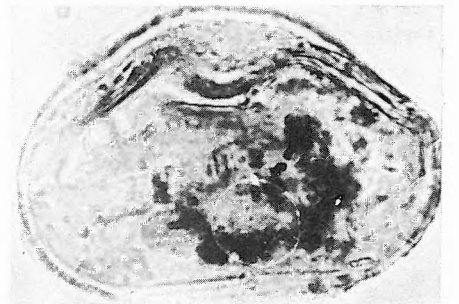
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9



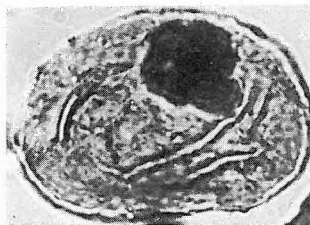
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12



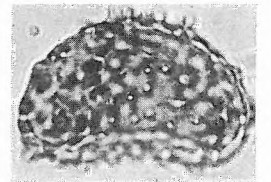
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14



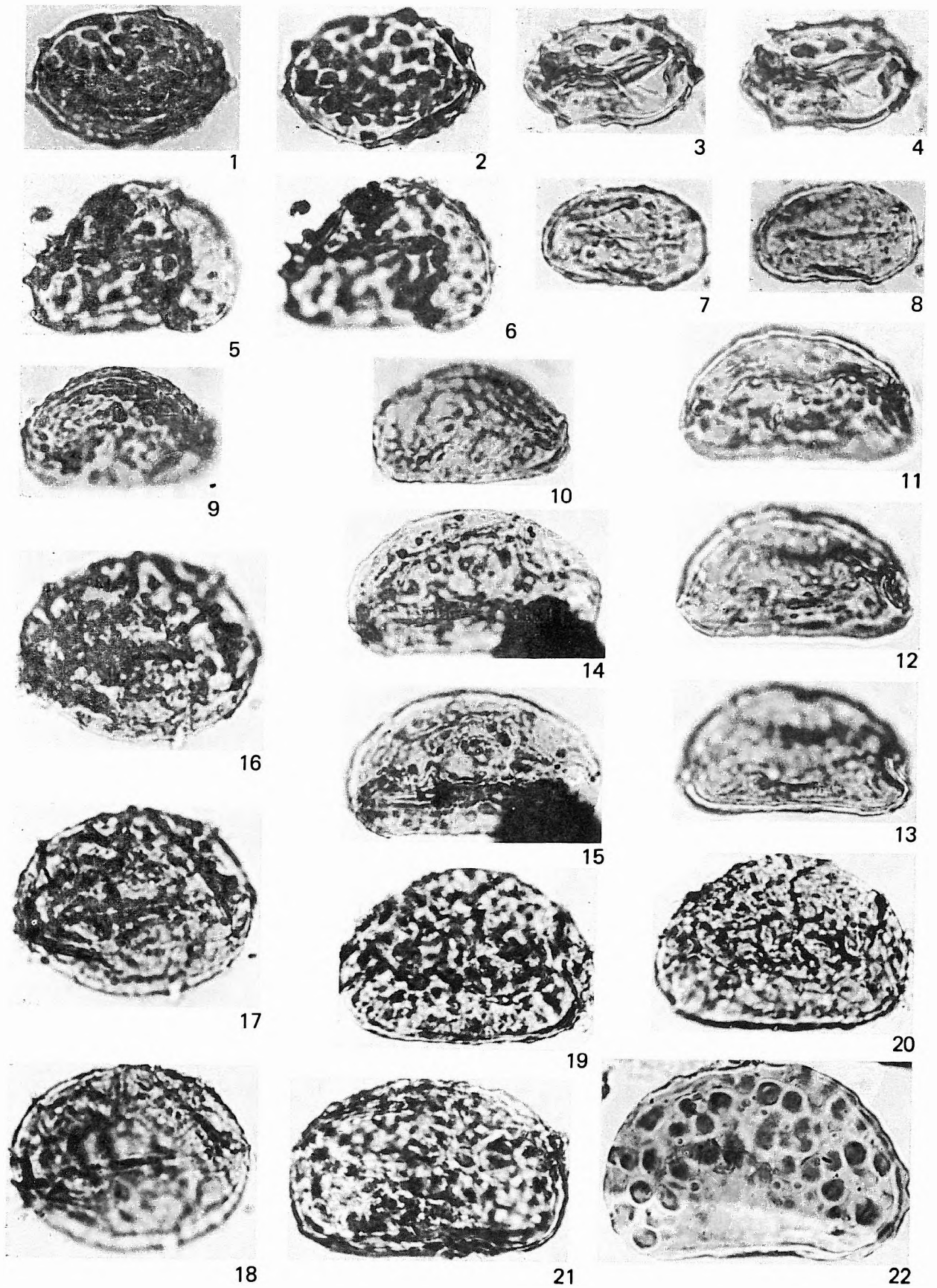
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16

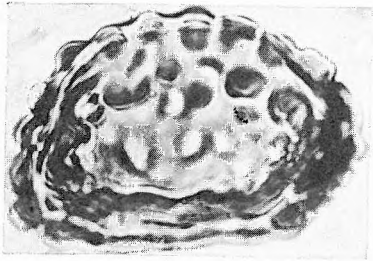
XLIX. tábla — Plate XLIX

- 1—2. *Echinosporis fotensis* n. sp. — Holotypus — Fót 1. sz. f. 121,0—122,0 m
- 3—4. *E. fotensis* n. sp. — Fót 1. sz. f. 346,5—348,0 m
- 5—6. *E. fotensis* n. sp. — Püspökhátvan 4. sz. f. 257,0—260,0 m
- 7—8. *E. microechinatus* W. KR. 1967 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind
brickyard pit, layer “u”
- 9—10. *E. microechinatus* W. KR. 1967 — Fót 1. sz. f. 288,0—290,5 m
- 11—13. *Gemmatosporis decoratus* n. sp. — Holotypus — Fót 1. sz. f. 349,5—354,0 m
- 14—15. *G. decoratus* n. sp. — Fót 1. sz. f. 361,8 m
- 16—18. *G. delicatus* n. sp. — Holotypus — Pusztakisfalu VI. sz. f. 12,5—15,0 m
- 19—20. *G. delicatus* n. sp. — Isotypus — Pusztakisfalu VI. sz. f. 12,5—15,0 m
21. *Polypodiisporites* sp. A n. c. — Várpalota 133. sz. f. 208,3—214,2 m
22. *Polypodiisporites alienus* (R. POT. 1931) NAGY 1973 — Budajenő 2. sz. f. 518,2—523,0 m

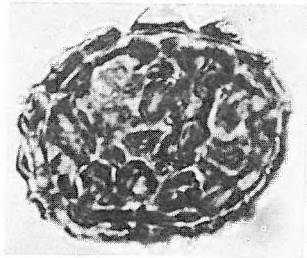


L. tábla — Plate L

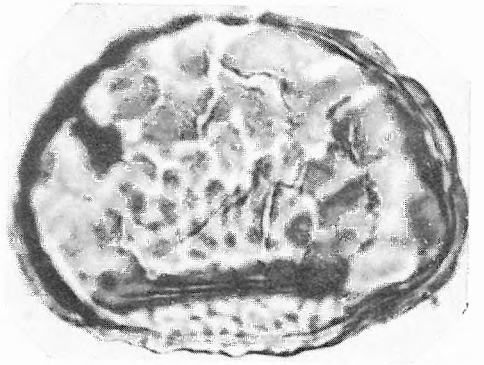
1. *Polypodiisporites alienus* (R. POT. 1931) NAGY 1973 — Eger, Wind-féle téglagyári fúrás 8,2—9,2 m; Eger, Wind brickyard borehole 8.2—9.2 m
2. *P. balticus* (W. KR. 1962) NAGY 1973 ssp. *major* W. KR. 1967 — Fót 1. sz. f. 209,5—209,9 m
3. *P. bockwitzensis* (W. KR. 1967) NAGY 1973 — Tata (TVG) 26. sz. f. 9,0—11,0 m
4. *P. bockwitzensis* (W. KR. 1967) NAGY 1973 — Nógrádszakál 2. sz. f. 271,0—273,0 m
5. *P. bockwitzensis* (W. KR. 1967) NAGY 1973 — Litke 17. sz. f. 37,6—39,0 m
- 6—7. *P. cerebriformis* (NAGY 1963) n. c. — Holotypus — Eger, Wind-féle téglagyári feltárás „u” réteg: Eger, Wind brickyard pit, layer “u”
8. *P. cerebriformis* (NAGY 1963) n. c. — Litke 17. sz. f. 200,0—202,0 m
- 9—11. *P. cerebriformis* (NAGY 1963) n. c. — Fót 1. sz. f. 196,4 m
12. *P. clatrimiformis* (TH. et PF. 1953) NAGY 1973 — Litke 17. sz. f. 208,0—210,0 m
13. *P. clatrimiformis* (TH. et PF. 1953) NAGY 1973 — Cserhátszentiván 1. sz. f. 139,0—141,0 m
14. *P. favus* (R. POT. 1931) R. POT. 1933 — Budajenő 2. sz. f. 518,2—523,0 m



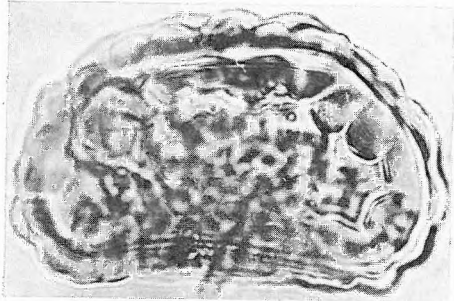
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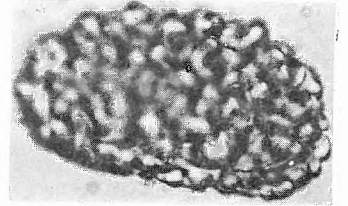
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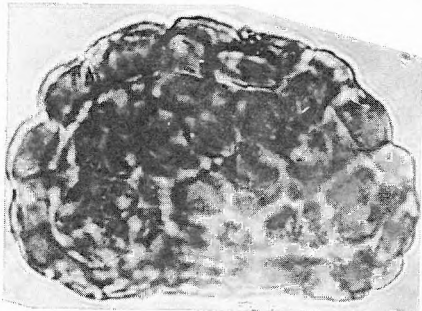
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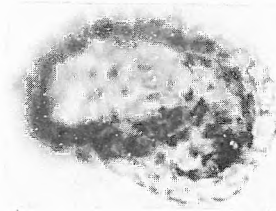
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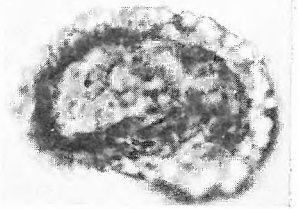
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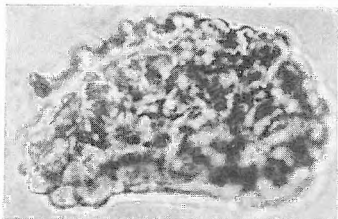
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9



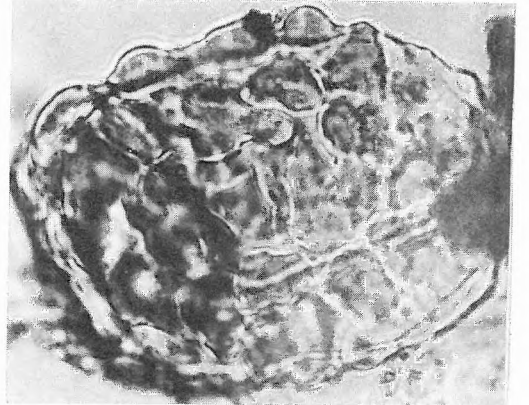
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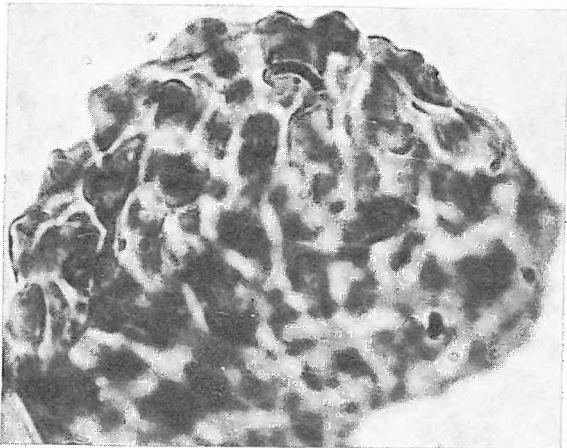
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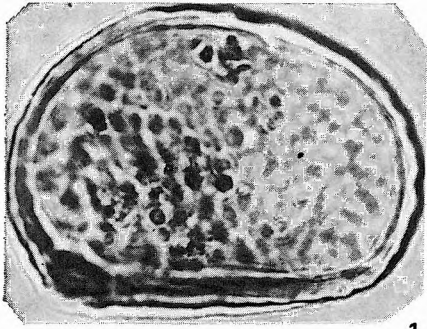
13



14

LI. tábla — Plate LI

1. *Polypodiisporites favus* (R. POT. 1931) R. POT. 1933 — Litke 17. sz. f. 218,0—220,0 m
2. *P. favus* (R. POT. 1931) R. POT. 1933 — Püspökhátvan 4. sz. f. 198,0—201,0 m
3. *P. gemmatus* (NAGY 1963) n. c. — Holotypus — Hidas 53. sz. f. 364,2—367,0 m
- 4—5. *P. gemmatus* (NAGY 1963) n. c. — Alsóvadász 1. sz. f. 1029,0—1034,6 m
6. *P. histiopteroides* (W. KR. 1962) NAGY 1967 ssp. *histiopteroides* — Püspökhátvan 4. sz. f. 153,3—157,0 m
7. *P. histiopteroides* (W. KR. 1962) NAGY 1967 ssp. *histiopteroides* — Várpalota 133. sz. f. 166,0—167,7 m
8. *P. histiopteroides* (W. KR. 1962) NAGY 1967 ssp. *histiopteroides* — Fót 1. sz. f. 372,0 m
- 9—11. *P. histiopteroides* (W. KR. 1962) NAGY 1967 ssp. *minor* W. KR. 1967 — Fót 1. sz. f. 168,0—169,3 m



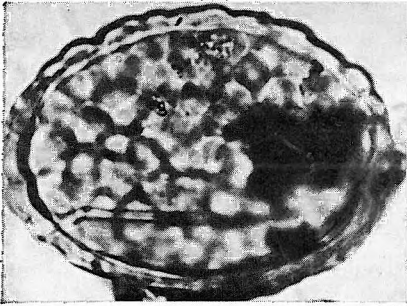
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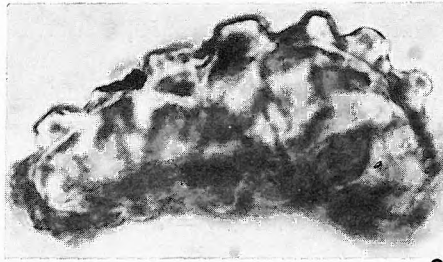
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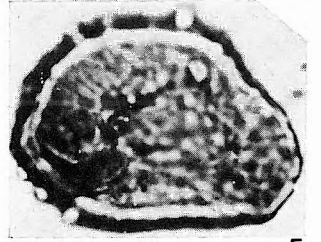
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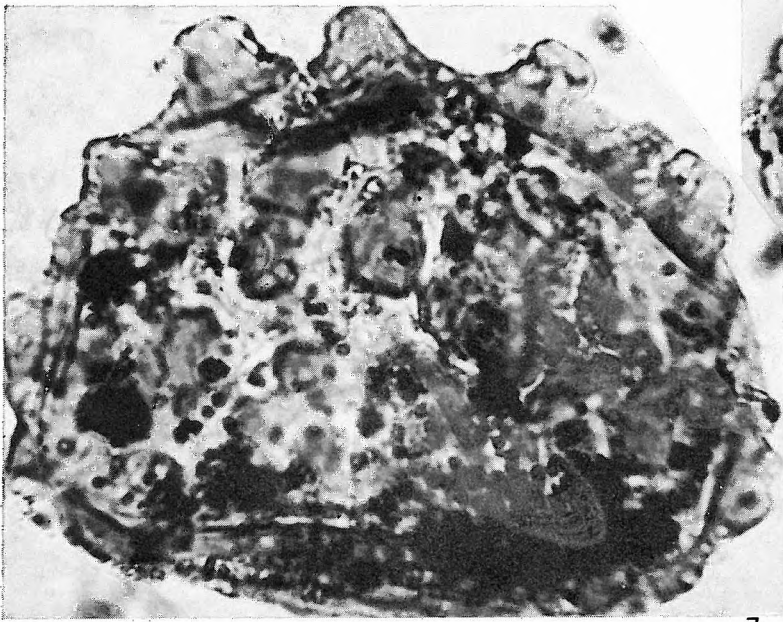
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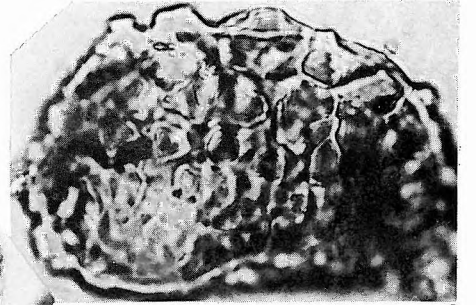
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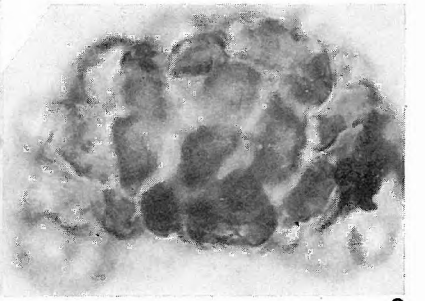
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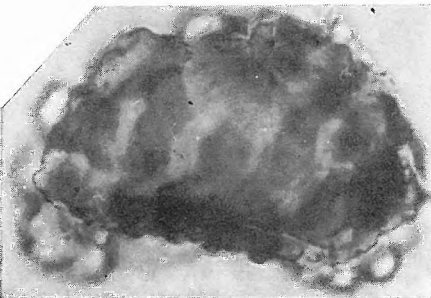
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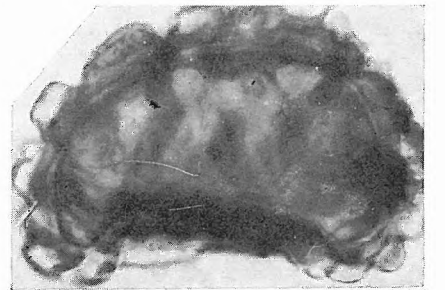
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9



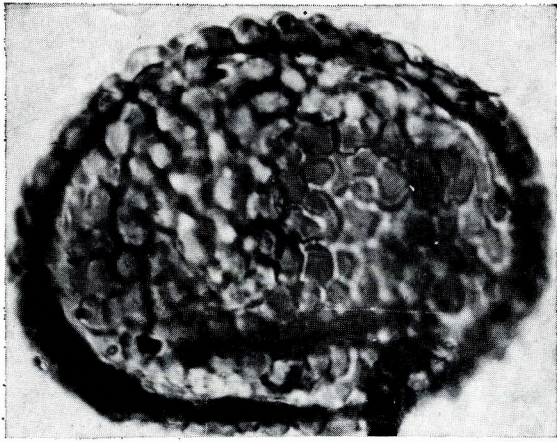
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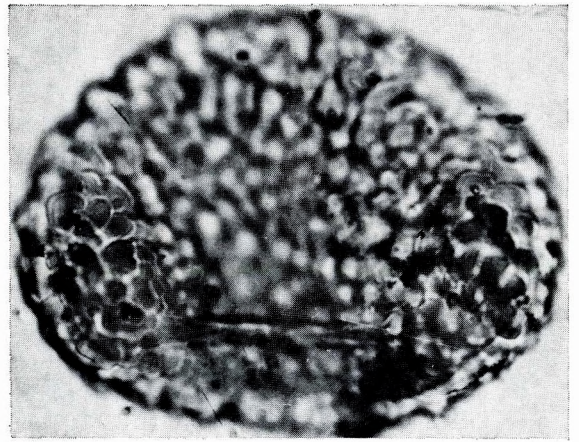
11

LII. tábla — Plate LII

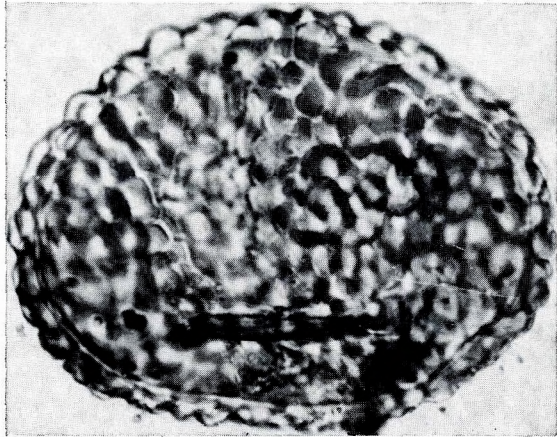
- 1—3. *Polypodiisporites inangahuensis* (COUPER 1953) NAGY 1973 — Tata (TVG) 26. sz. f. 33,0—35,0 m
4. *P. irregularis* (W. KR. 1967) NAGY 1973 — Tar-Fenyvespuszta körzete, felszíni feltárás; Tar-Fenyvespuszta area, surface exp.
5. *P. irregularis* (W. KR. 1967) NAGY 1973 — Litke 17. sz. f. 230,0—232,0 m
- 6—7. *P. keszoeensis* n. sp. — Holotypus — Várkesző 1. sz. f. 17,0—18,0 m
8. *P. margaënsis* (W. KR. 1967) NAGY 1973 — Szokolya 2. sz. f. 69,5—70,3 m



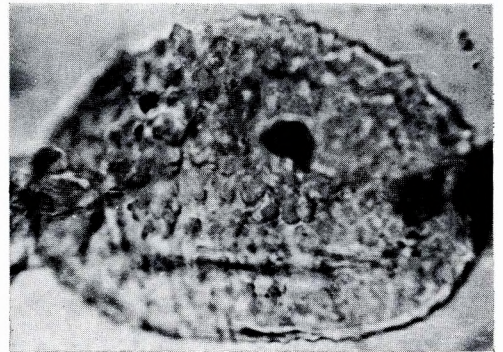
1



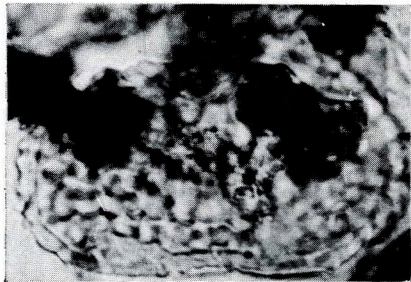
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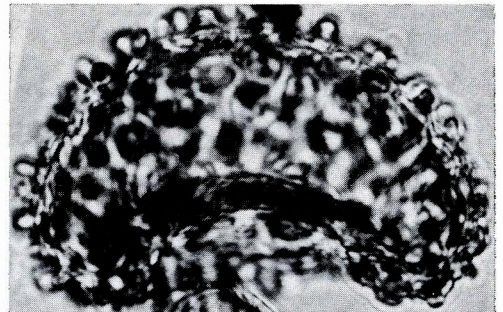
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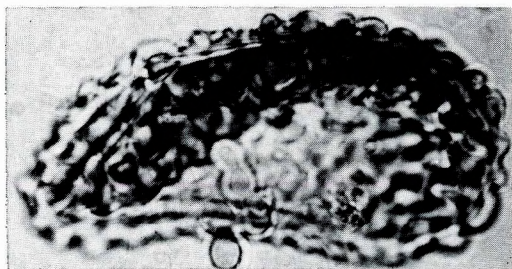
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6



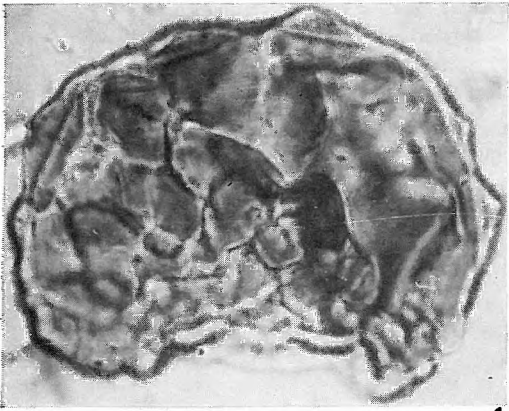
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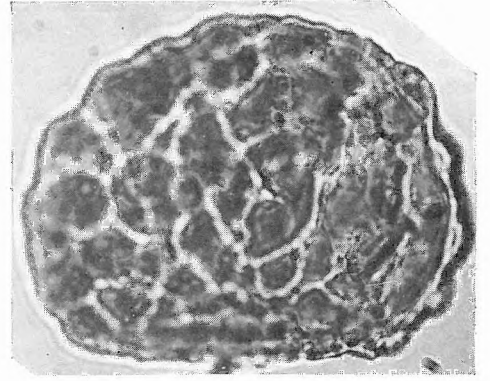
7

LIII. tábla — Plate LIII

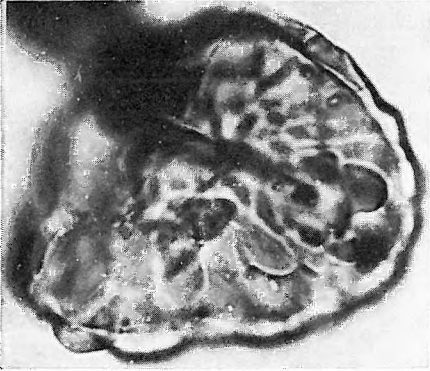
1. *Polypodiisporites maximus* (NAGY 1969) n. c. — Holotypus — Pusztakisfalu VI. sz. f. 10,5—12,5 m
2. *P. maximus* (NAGY 1969) n. c. — Fót 1. sz. f. 234,0—235,0 m
- 3—5. *P. maximus* (NAGY 1969) n. c. — Fót 1. sz. f. 196,4 m
6. *P. megabalticus* (W. KR. 1967) NAGY 1973 — Pusztakisfalu VI. sz. f. 12,5—15,0 m
7. *P. megabalticus* (W. KR. 1967) NAGY 1973 — Fót 1. sz. f. 346,5—348,0 m
8. *P. multiverrucosus* (NAGY 1963) n. c. — Pusztakisfalu VI. sz. f. 6,3—7,8 m
9. *P. multiverrucosus* (NAGY 1963) n. c. — Fót 1. sz. f. 369,0—370,5 m
10. *P. megafavus* (W. KR. 1967) NAGY 1973 — Hidas 53. sz. f. 672,5—676,0 m
11. *P. megafavus* (W. KR. 1967) NAGY 1973 — Fót 1. sz. f. 222,5—225,5 m



1



2



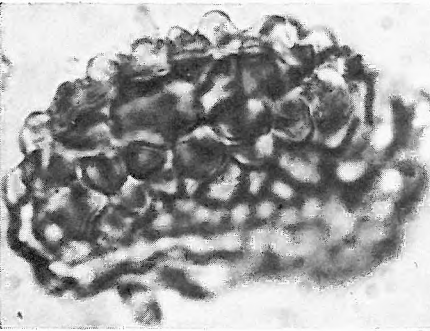
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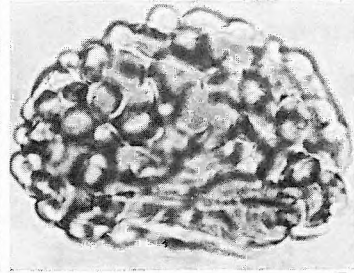
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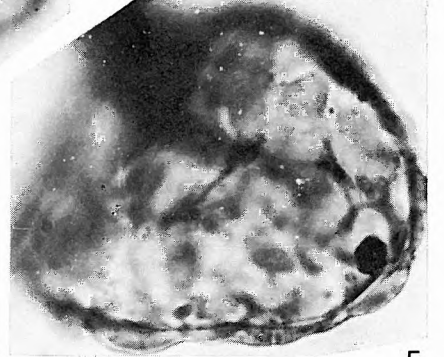
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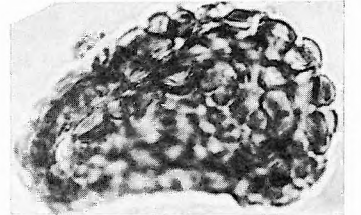
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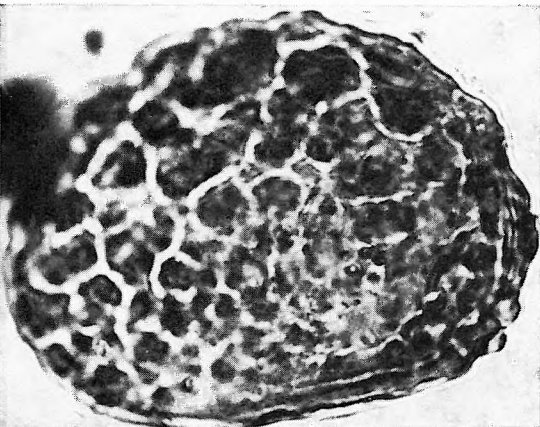
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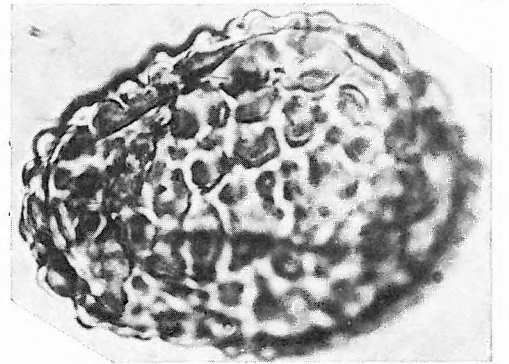
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9



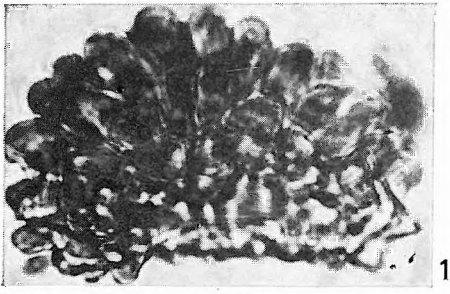
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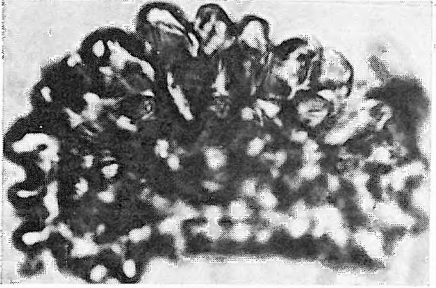
11

LIV. tábla — Plate LIV

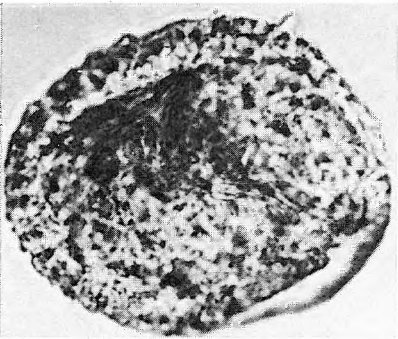
- 1—2. *Polypodiisporites multiverrucosus* (NAGY 1963) n. c. — Alsóvadász 1. sz. f. 1029,0—1034,6/5 m
3—5. *P. poriacus* (W. KR. 1959) NAGY 1973 — Tengelic 2. sz. f. 798,0—798,5 m
6. *P. poriacus* (W. KR. 1959) NAGY 1973 — Hidas 53. sz. f. 135,5—137,0 m
7—8. *P. potoniéi* NAGY 1969 — Szokolya 2. sz. f. 95,0—96,6 m
9—10. *P. potoniéi* NAGY 1969 — Zengővárkony 59. sz. f. 60,9—63,0 m



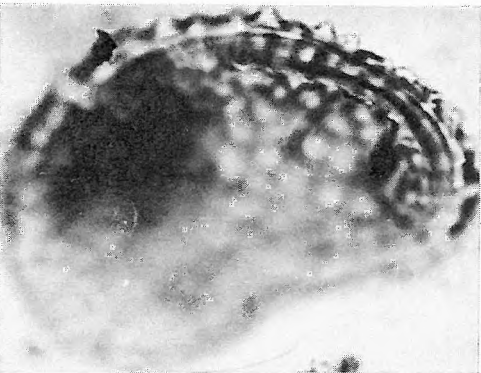
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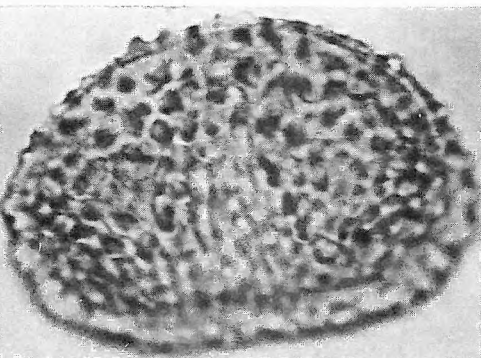
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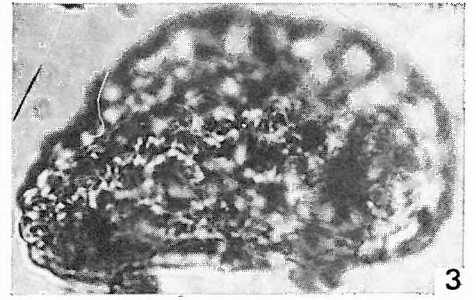
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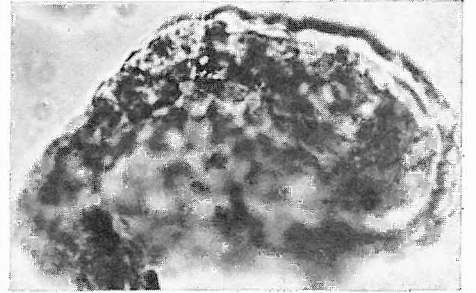
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9



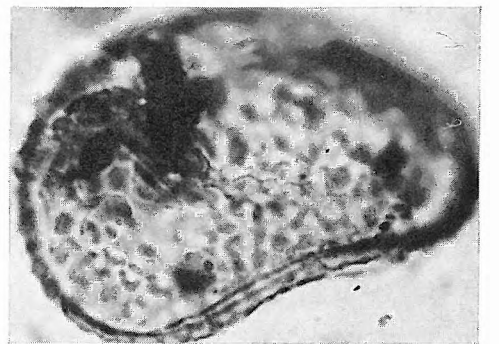
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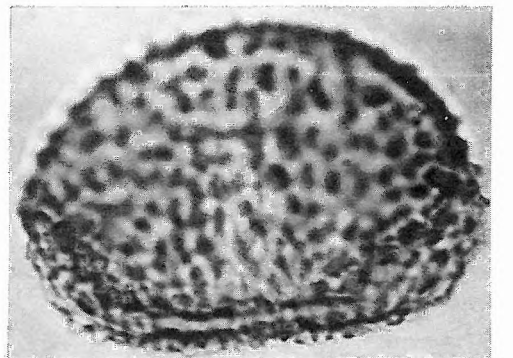
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5



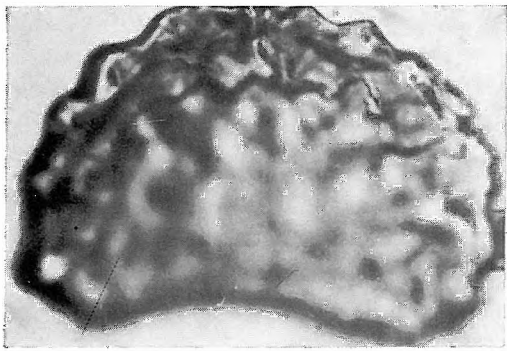
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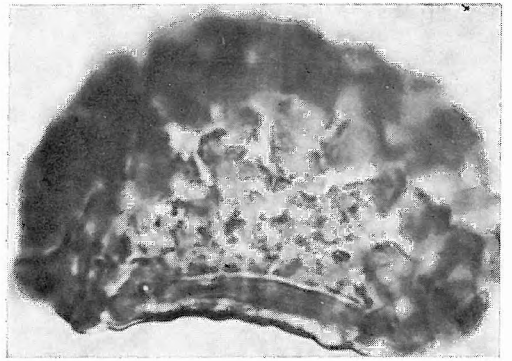
10

LV. tábla — Plate LV

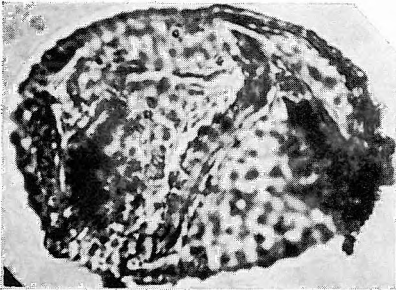
- 1—2. *Polypodiisporites pseudoalienus* (W. KR. 1967) NAGY 1973 — Alsóvadász 1. sz. f. 1029,0—1034,6 m
3. *P. pseudoregulatus* (W. KR. 1967) NAGY 1973 — Rákoskeresztúr I. sz. f. 204,0—205,0 m
4. *P. repandus* TAKAHASHI 1964 — Nógrádszakál 2. sz. f. 95,0—96,5 m
5. *P. repandus* TAKAHASHI 1964 — Szokolya 3. sz. f. 28,0—28,3 m
6. *P. secundus* (R. POT. 1934) R. POT. 1956 — Szederkény 8303. sz. f. 14,8—15,9 m
- 7—8. *P. secundus* (R. POT. 1934) R. POT. 1956 — Tekerés 1. sz. f. 881,9—883,2 m
9. *P. secundus* (R. POT. 1934) R. POT. 1956 ssp. *parasecundus* W. KR. 1959 — Püspökhatvan 4. sz. f. 192,0—195,0 m
10. *P. secundus* (R. POT. 1934) R. POT. 1956 ssp. *parasecundus* W. KR. 1959 — Fót 1. sz. f. 206,0—209,5 m
- 11—13. *Hydrosporites azollaënsis* W. KR. 1962 ssp. *azollaënsis* — Tekerés 1. sz. f. 886,7—886,9 m
- 14—15. *H. miocaenicus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 558,0—561,0 m
- 16—17. *H. levis* W. KR. 1962 — Tököl 1. sz. f. 823,8—824,3 m



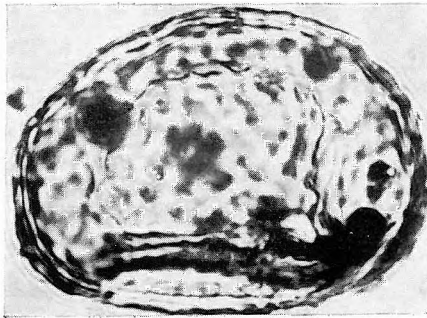
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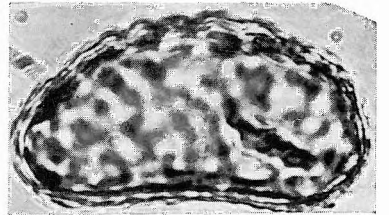
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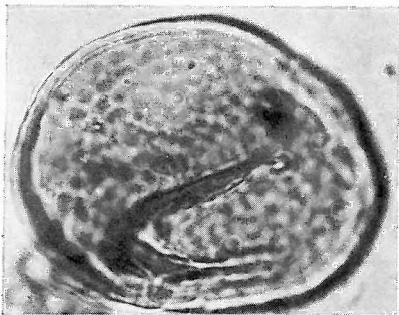
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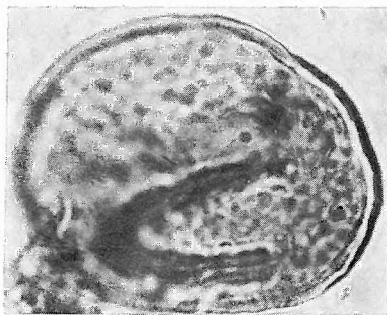
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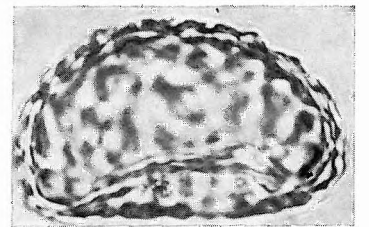
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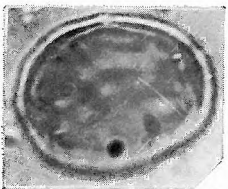
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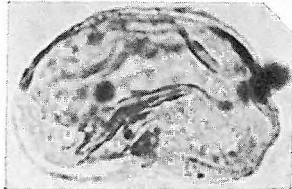
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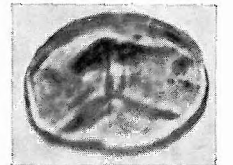
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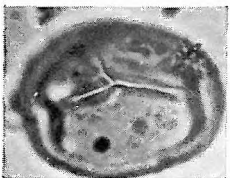
9



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12

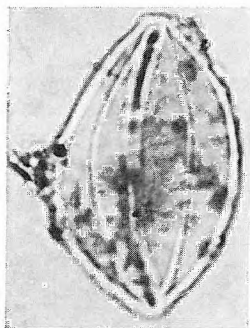


13



17

1. *Cycadopites cf. follicularis* WILSON et WEBSTER 1946 — Szokolya 3. sz. f. 40,0—40,8 m
2. *C. cf. follicularis* WILSON et WEBSTER 1946 — Fót 1. sz. f. 214,0—216,5 m
3. *C. gracilis* W. KR. 1970 — Rákoskeresztúr I. sz. f. 535,0—537,0 m
4. *C. gracilis* W. KR. 1970 — Pusztakisfalu VI. sz. f. 10,5—12,5 m
5. *C. intrastructus* W. KR. 1970 — Szokolya 2. sz. f. 82,3—83,1 m
6. *C. microsculptus* W. KR. 1970 — Szokolya 2. sz. f. 59,9—60,9 m
7. *C. microsculptus* W. KR. 1970 — Szokolya 2. sz. f. 81,5—82,3 m
8. *C. miocaenica* NAGY 1969 — Szokolya 2. sz. f. 78,8—79,1 m
9. *C. miocaenica* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 30,9—34,0 m
10. *Ginkgoretectina neogenica* NAGY 1969 — Tata térképező 26. sz. f. 16,8—24,6 m
11. *G. neogenica* NAGY 1969 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
12. *G. neogenica* NAGY 1969 — Holotypus — Hidas 53. sz. f. 479,1—482,0 m
- 13—14. *Pinuspollenites eocaenicus* (W. KR. 1971) n. c. — Fót 1. sz. f. 318,0—349,5 m
- 15—16. *P. eocaenicus* (W. KR. 1971) n. c. — Felsőpetényi bánya 1. sz. minta; Felsőpetény mine, sample N° 1.
17. *P. labdacus* (R. POT. 1932) R. POT. 1958 — Tekeres 1. sz. f. 886,7—886,9 m
18. *P. labdacus* (R. POT. 1932) R. POT. 1958 — Eger Wind-féle téglagyári feltárás „k” réteg; Eger, Wind brickyard pit, layer “k”
- 19—20. *P. labdacus* (R. POT. 1932) R. POT. 1958 — Püspökhatvan 4. sz. f. 198,0—201,0 m



1



2



3



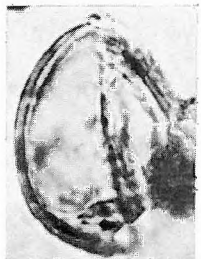
4



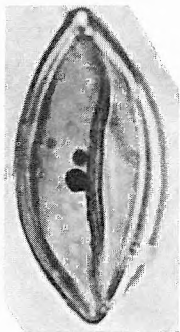
5



6



7



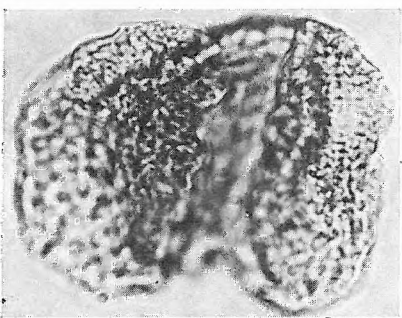
8



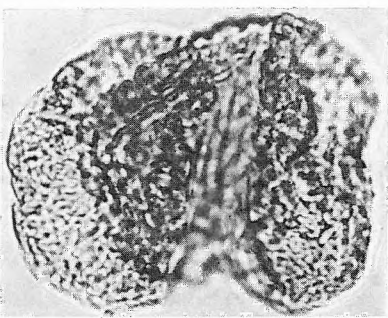
9



10



13



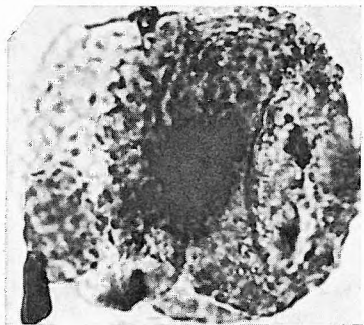
14



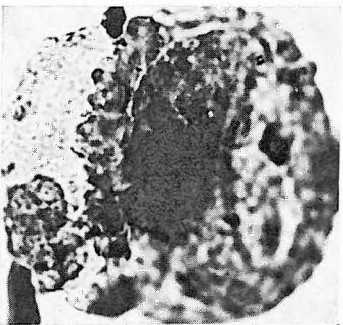
11



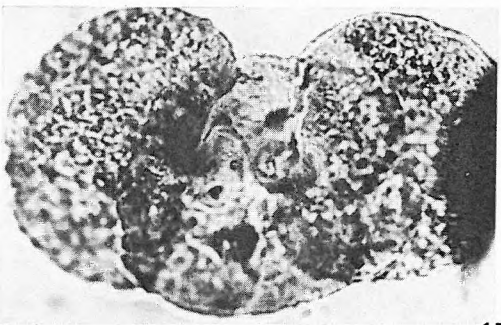
12



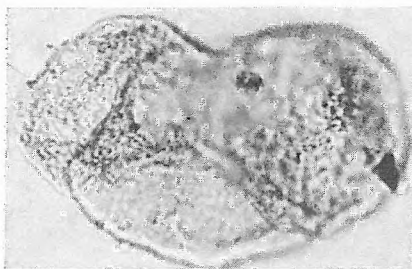
15



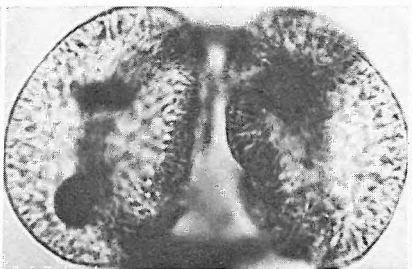
16



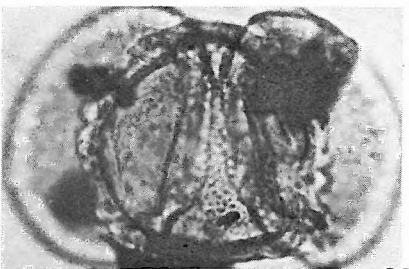
17



18



19



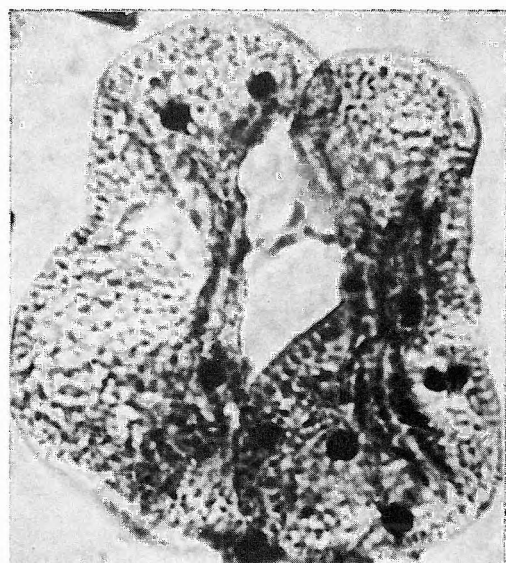
20

LVII. tábla — Plate LVII

- 1—2. *Pinuspollenites labdacus* (R. POT. 1932) R. POT. 1958 ssp. *reticulatus* (DOKT.-HREBN. 1960)
W. KR. 1971 — Tengelic 2. sz. f. 820,0—823,4 m
3. *P. labdacus* (összenőtt forma) (fused form) — Szokolya 2. sz. f. 46,3—47,1 m
4. *P. labdacus* (összenőtt forma) (fused form) — Fót 1. sz. f. 349,5—354,0 m
5. *P. latisaccatus* (TREVISAN 1967) n. c. ssp. *latisaccatus* — Szokolya 2. sz. f. 83,3—87,1 m
6. *P. latisaccatus* (TREVISAN 1967) n. c. ssp. *latisaccatus* — Szokolya 3. sz. f. 63,0—64,7 m
7. *P. latisaccatus* (TREVISAN 1967) n. c. ssp. *medius* TREVISAN 1967 — Naszály 1. sz. f. 29,7—
32,0 m



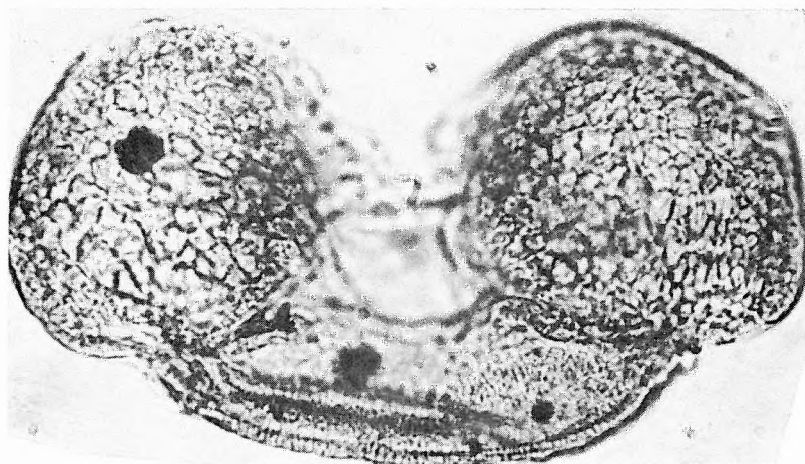
1



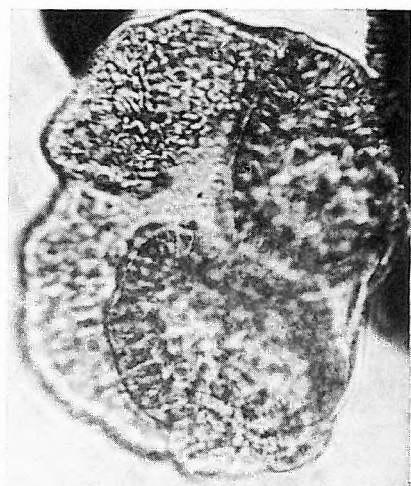
3



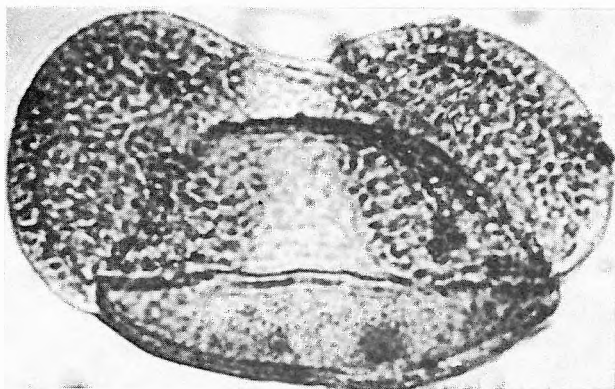
2



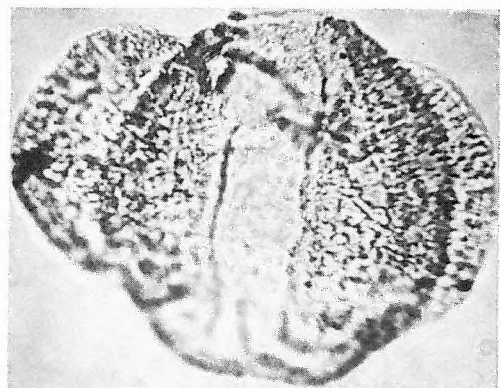
5



4



6



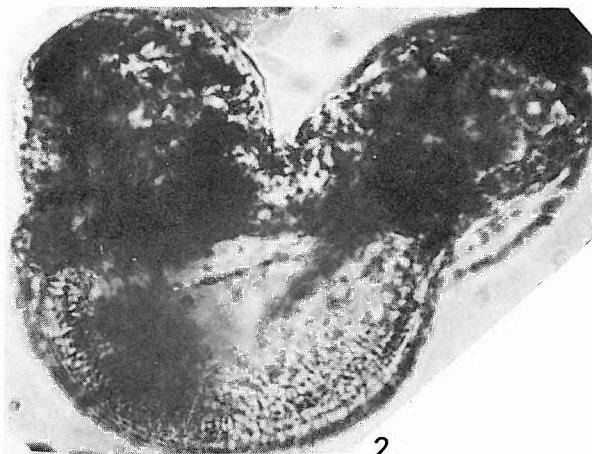
7

LVIII. tábla — Plate LVIII

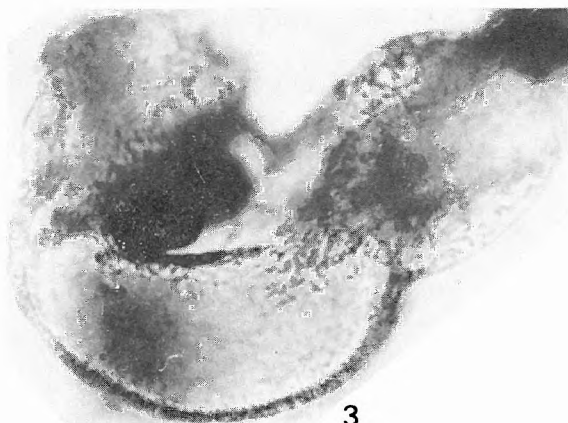
1. *Pinuspollenites latisaccatus* (TREVISAN 1967) n. c. ssp. *medius* TREVISAN 1967 — Fót 1. sz. f. 209,0—212,6 m
- 2—5. *P. longus* n. sp. — Holotypus — Fót 1. sz. f. 290,5—294,0 m
6. *P. longus* n. sp. — Fót 1. sz. f. 321,5—328,0 m
7. *P. microinsignis* (W. KR. 1971) n. c. — Fót 1. sz. f. 349,5—354,0 m
8. *P. minutus* (ZAKLINSKAIA 1959) n. c. — Eger Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
9. *P. minutus* (ZAKLINSKAIA 1959) n. c. — Eger Wind-féle téglagyári feltárás „k” réteg; Eger, Wind brickyard pit, layer “k”



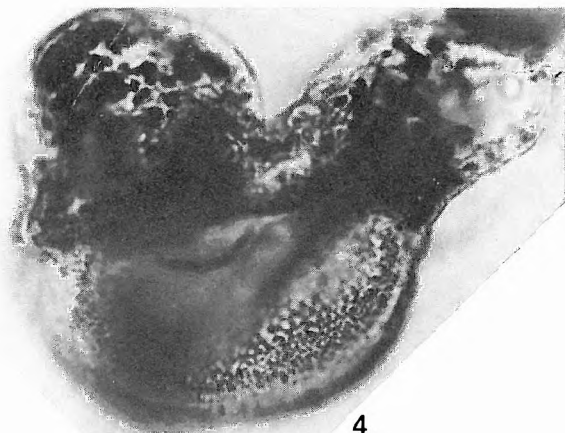
1



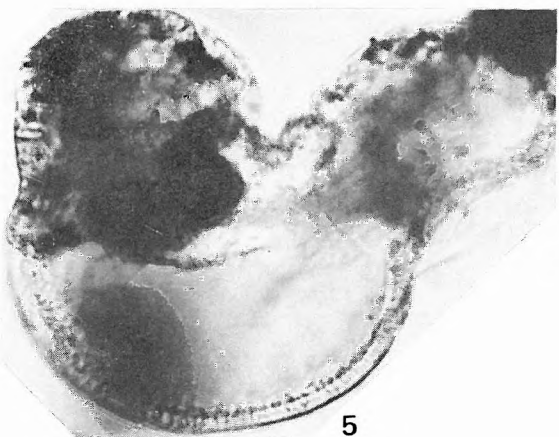
2



3



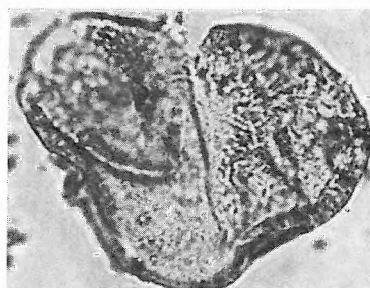
4



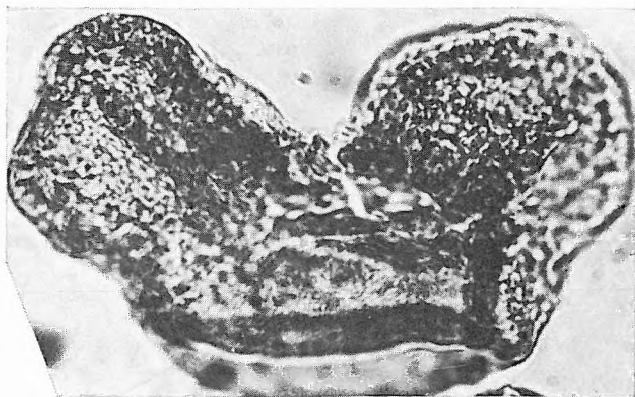
5



7



8



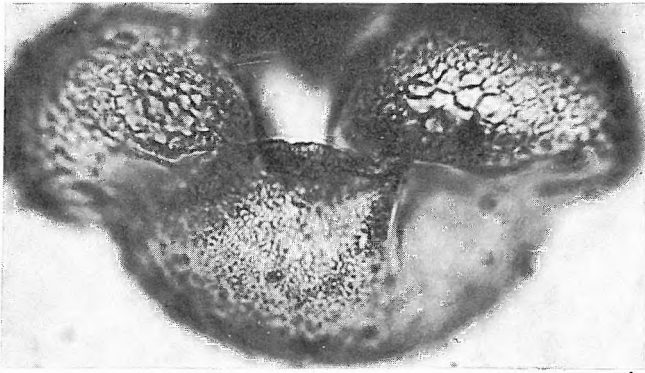
6



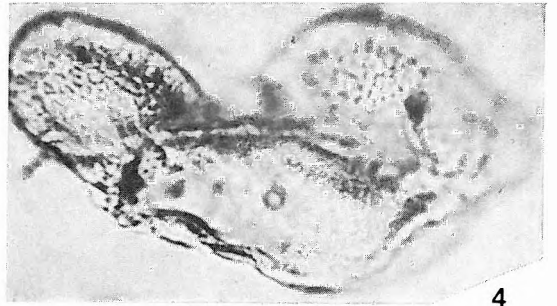
9

LIX. tábla — Plate LIX

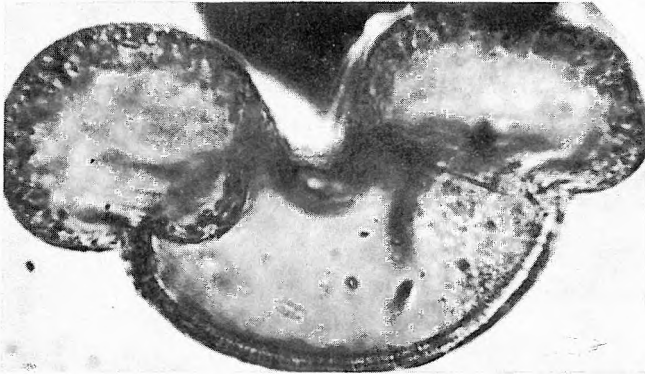
- 1—3. *Pinuspollenites miocaenicus* n. sp. — Holotypus — Szokolya 2. sz. f. 95,0—96,6 m
4—5. *P. miocaenicus* n. sp. — Rákoskeresztúr I. sz. f. 148,0—150,0 m
6. *P. miocaenicus* n. sp. — Eger Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard
pit, layer “u”
7—8. *P. miocaenicus* n. sp. — Hidas 53. sz. f. 755,0—757,0 m



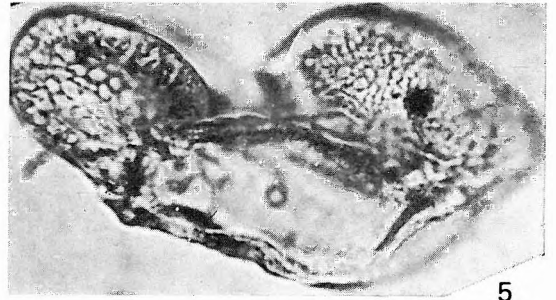
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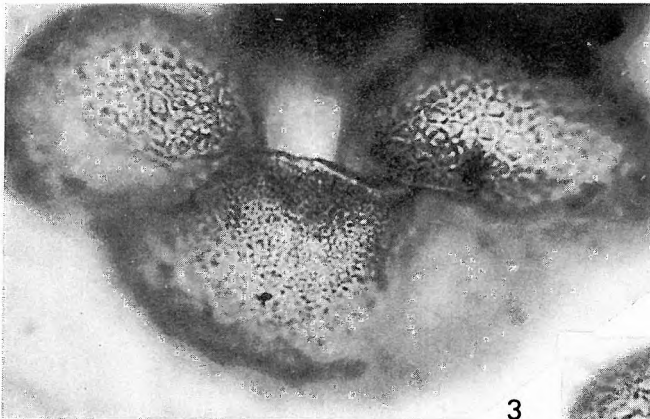
4



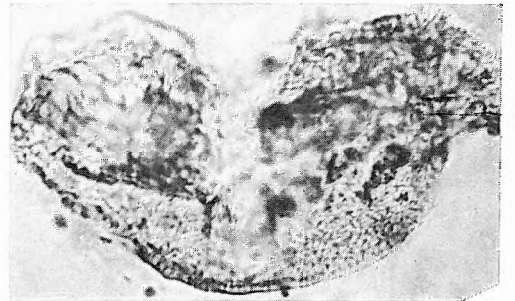
2



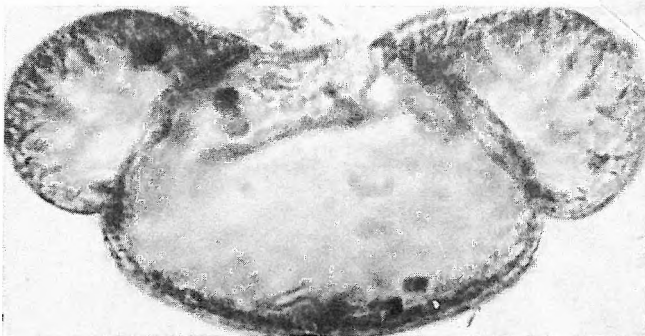
5



3



6



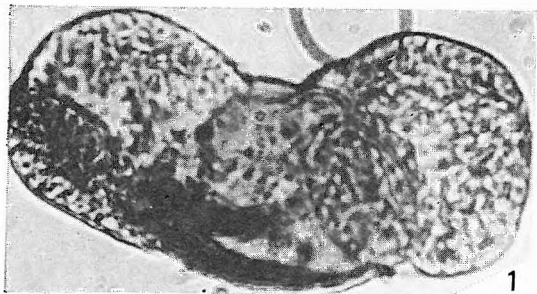
7



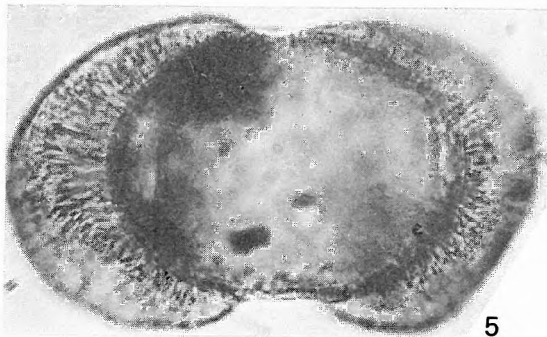
8

LX. tábla — Plate LX

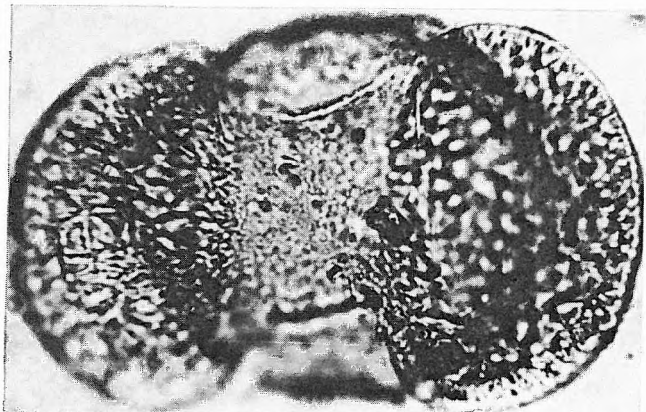
1. *Pinuspollenites pristinipollinius* (TRAVERSE 1955) n. c. — Fót 1. sz. f. 214,0—216,5 m
- 2—3. *P. thunbergiformis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 30,9—34,0 m
4. *P. thunbergiformis* NAGY 1969 — Szokolya 2. sz. f. 71,9—72,4 m
- 5—6. *P. zaklinskaiana* (NAGY 1969) n. c. — Tengelic 2. sz. f. 839,0—842,0 m
- 7—8. *P. verruculatus* (TREV. 1967) W. KR. 1971 — Tar 34. sz. f. 530,0—533,0 m
9. *P. verruculatus* (TREV. 1967) W. KR. 1971 — Eger Wind-féle téglagyári feltárás „u” réteg;
Eger, Wind brickyard pit, layer “u”



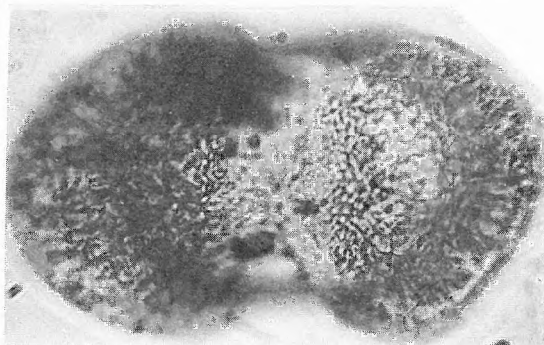
1



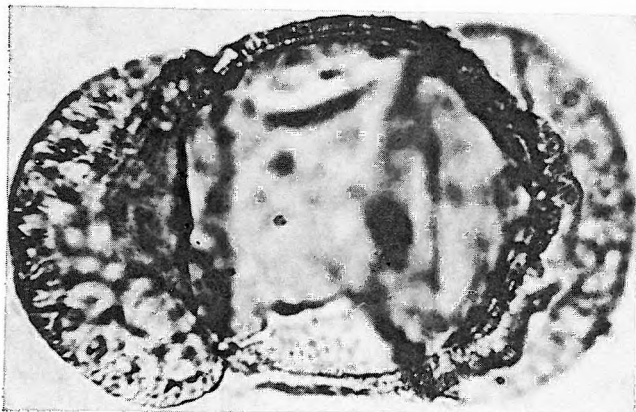
5



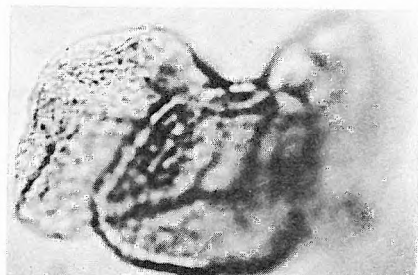
2



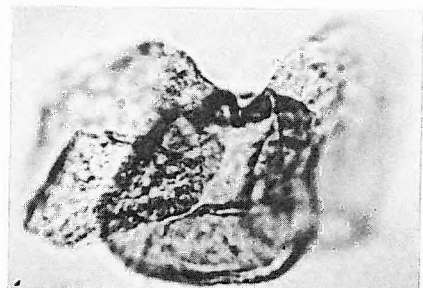
6



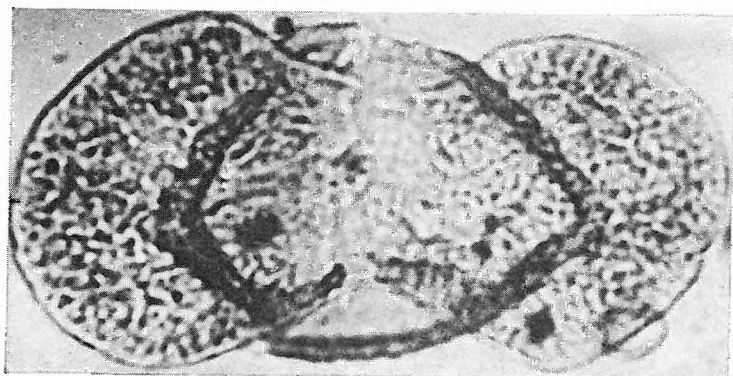
3



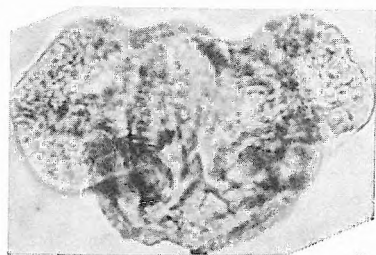
7



8



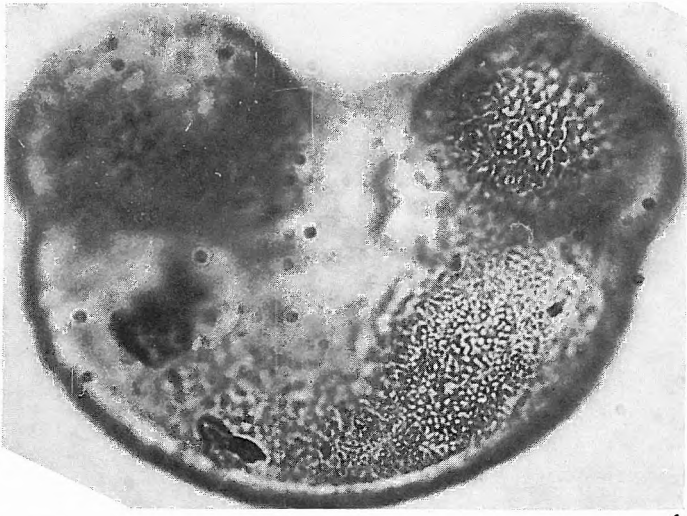
4



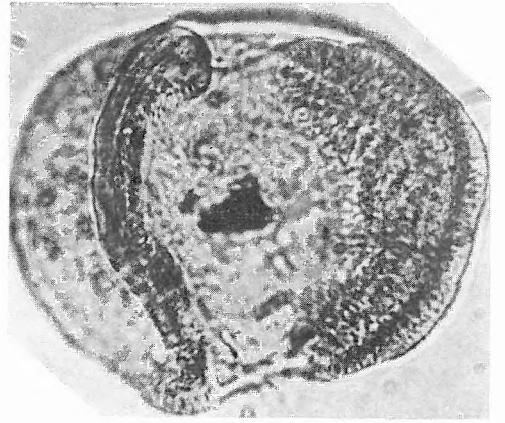
9

LXI. tábla — Plate LXI

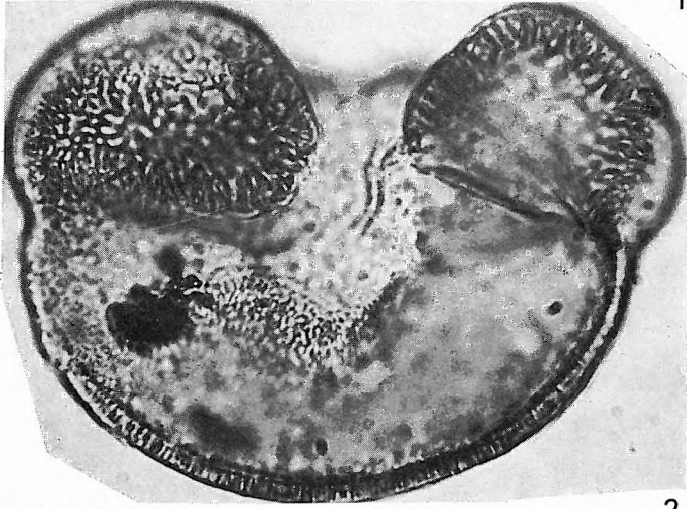
- 1—2. *Pinuspollenites zaklinskaiana* (NAGY 1969) n. c. — Szokolya 2. sz. f. 95,0—96,6 m
3—5. *Abietinaepollenites fotensis* n. sp. — Holotypus — Fót 1. sz. f. 209,5—209,9 m
6—7. *A. inclinatus* (NAGY 1969) n. c. — Zengővárkony 59. sz. f. 51,3—56,0 m
8. *A. microalatus* (R. POT. 1932) R. POT. 1951 ex DELC. et SPRUM. 1955 ssp. *microalatus* — Hidas
53. sz. f. 444,0 m



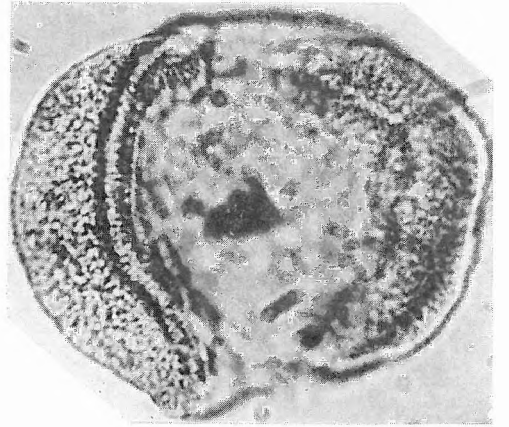
1



3



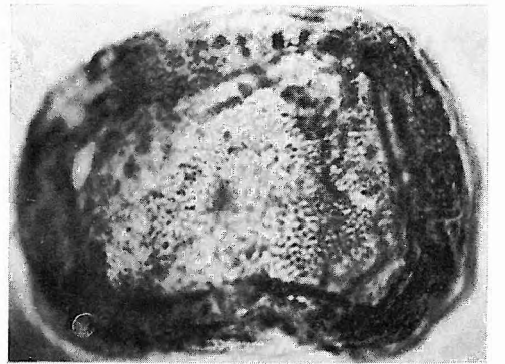
2



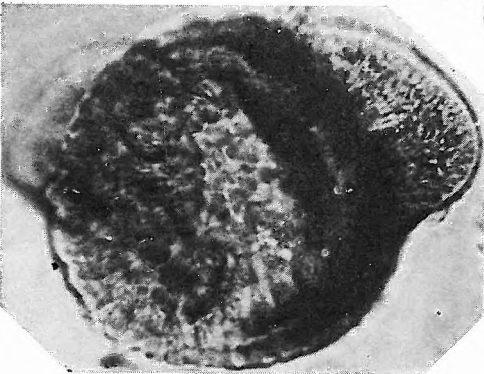
4



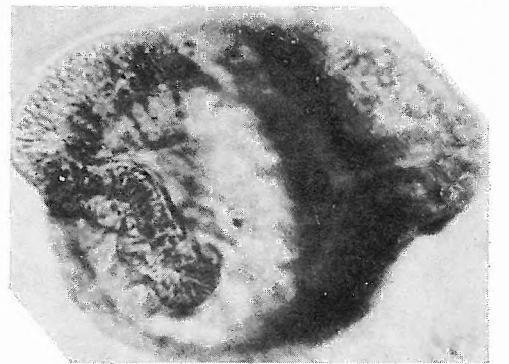
8



5



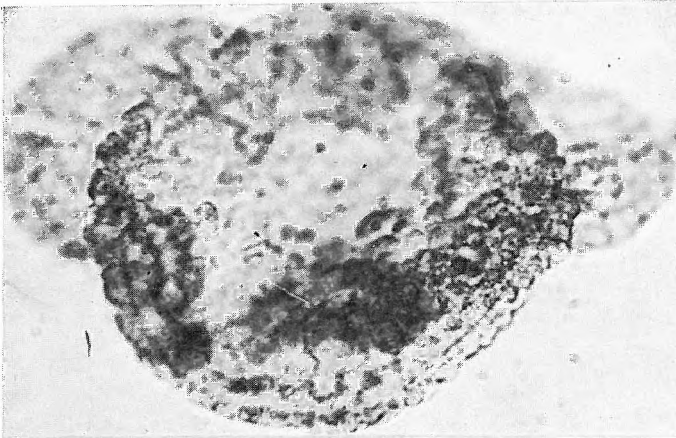
6



7

LXII. tábla — Plate LXII

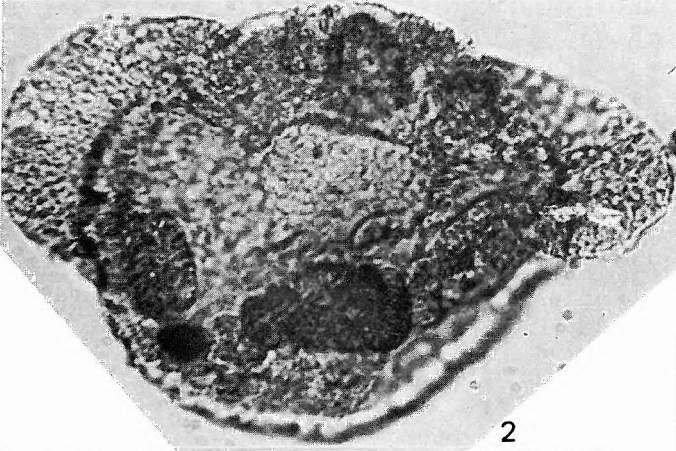
- 1—2. *Abietinaepollenites inclinatus* (NAGY 1969) n. c. — Holotypus — Zengővárkony 59. sz. f. 60,9—63,0 m
3. *A. microalatus* (R. POT. 1932) R. POT. 1951 ex DELC. et SPRUM. 1955 ssp. *microalatus* — Buda-
jenő 2. sz. f. 575,5—575,9 m
4. *A. microalatus* (R. POT. 1932) R. POT. 1951 ex DELC. et SPRUM. 1955 ssp. *microalatus* — Szász-
vár 8. sz. f. 432,5—432,7 m
5. *A. microalatus* (R. POT. 1932) R. POT. 1951 ex DELC. et SPRUM. 1955 f. *major* R. POT. 1951 —
Szászvár 8. sz. f. 433,8—434,1 m
6. *A. microalatus* (R. POT. 1932) R. POT. 1951 ex DELC. et SPRUM. 1955 f. *major* R. POT. 1951 —
Komló 120. sz. f. 374,7 m
7. *A. neogenicus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
8. *A. neogenicus* NAGY 1969 — Szokolya 3. sz. f. 71,2—74,5 m



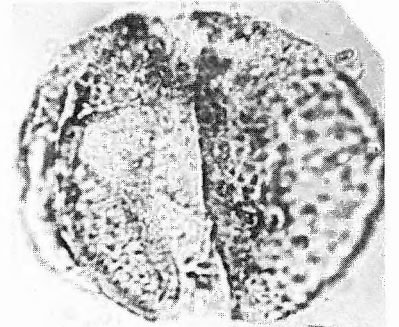
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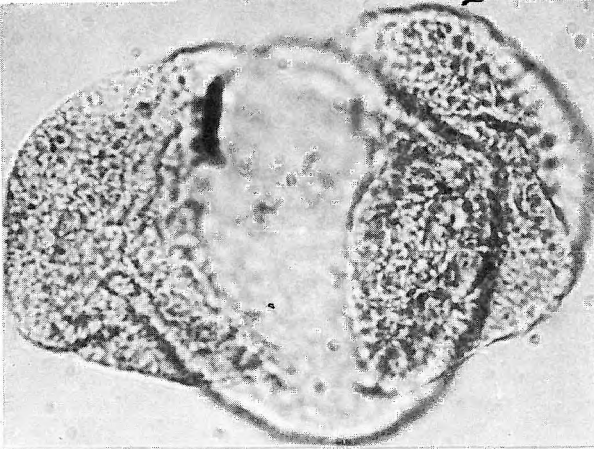
3



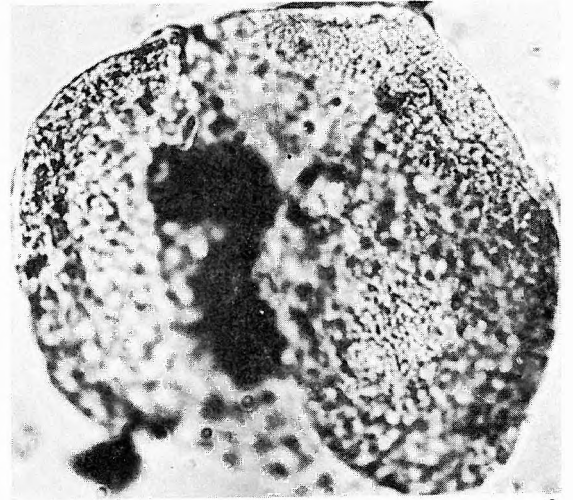
2



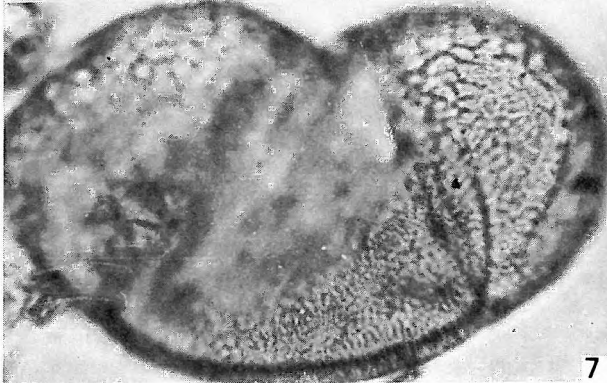
4



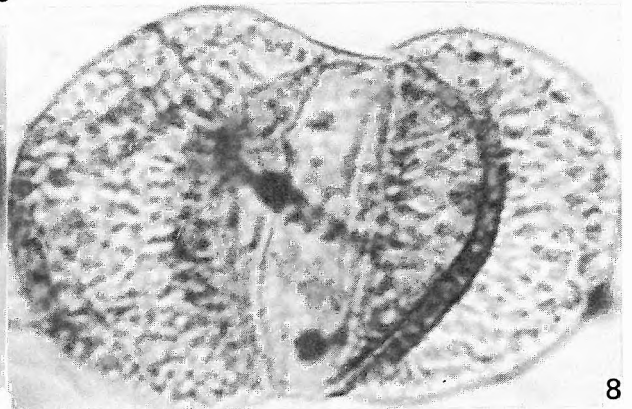
5



6

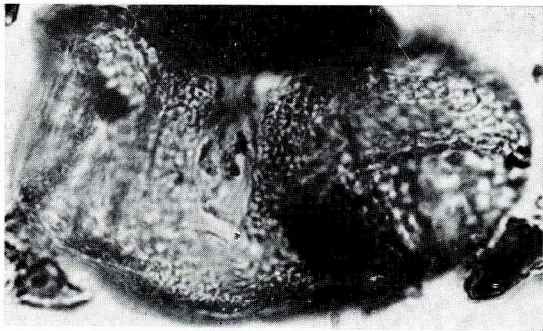


7

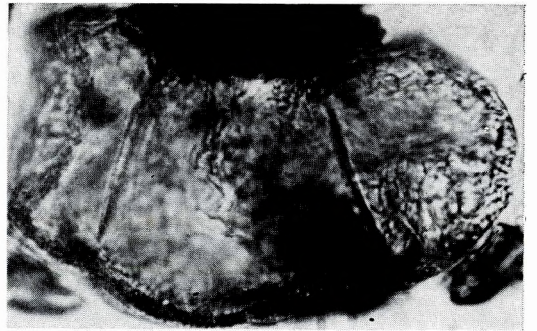


8

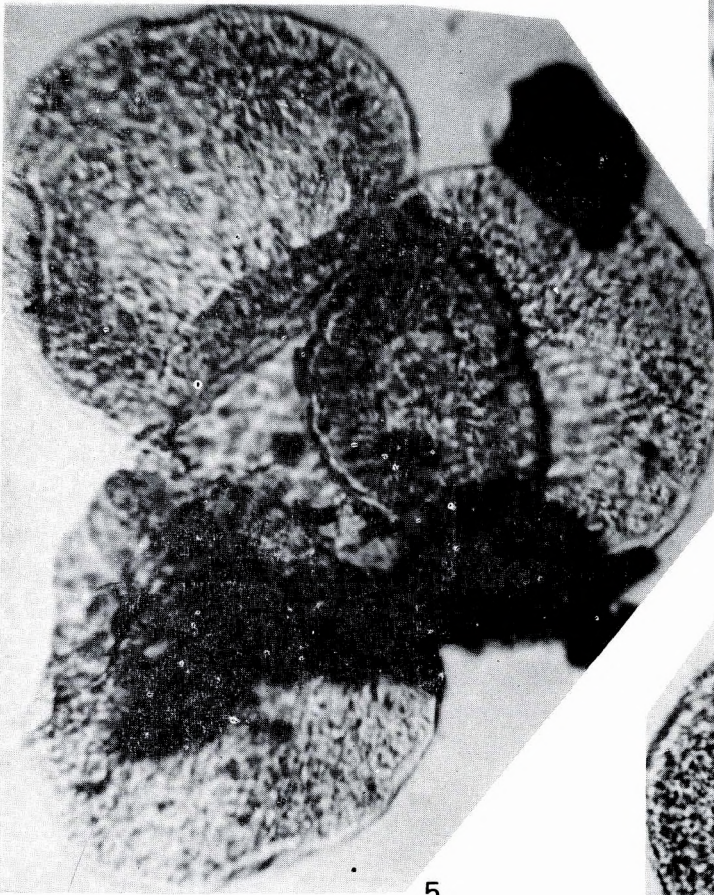
- 1—4. *Abietinaepollenites neogenicus* NAGY 1969 — Tekerés 1. sz. f. 874,0—874,5 m
5. *Abietinaepollenites* sp. összenőtt forma (fused form) — Komló 120. sz. f. 178,0—178,8 m
6. *Abietinaepollenites* sp. összenőtt forma (fused form) — Hidas 53. sz. f. 667,2—669,7 m



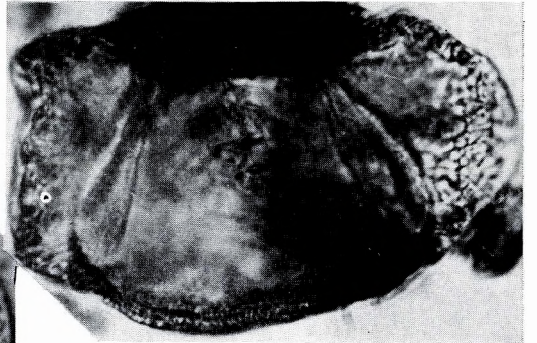
1



2



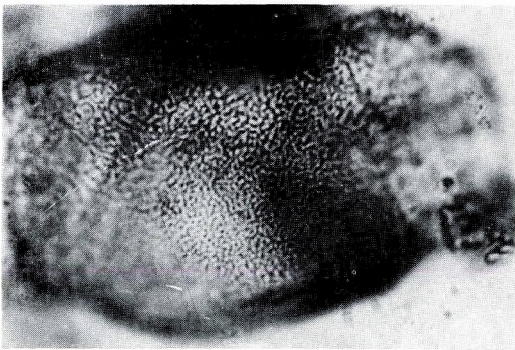
5



3



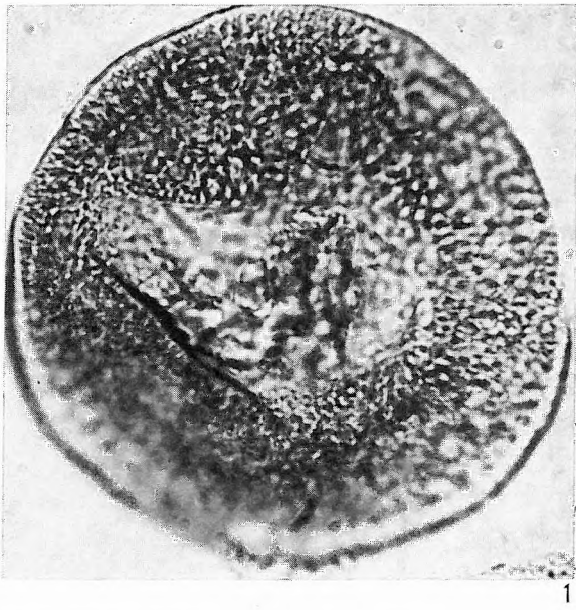
6



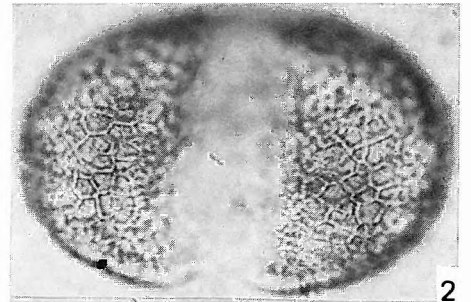
4

LXIV. tábla — Plate LXIV

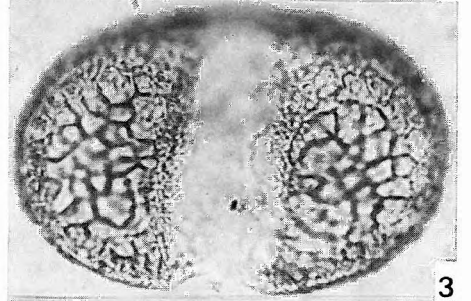
1. Abnormálisan fejlődött *Abietinae* pollen : abnormal *Abietinae* pollen -- Zengővárkony 59. sz. f. 78,0--81,0 m
- 2—4. *Cathaya gaussenii* SIVAK 1976 — Eger. Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
- 5—7. *C. gaussenii* SIVAK 1976 — Hidas 53. sz. f. 667,2—669,7 m
- 8—9. *C. pseudocristata* (DOKT.-HREBN. 1960) n. c. — Szokolya 2. sz. f. 82,1—83,9 m



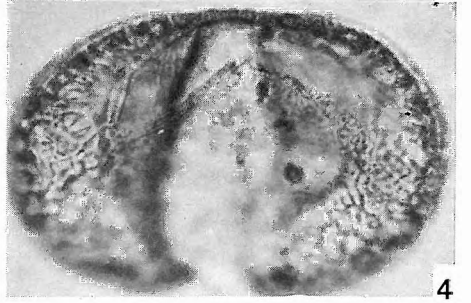
1



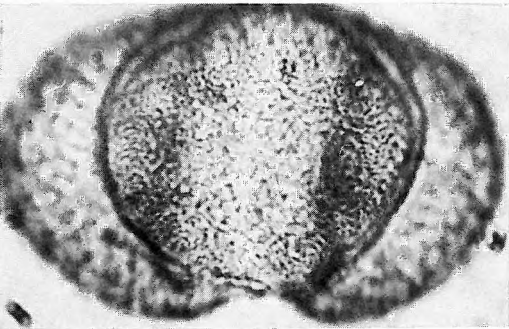
2



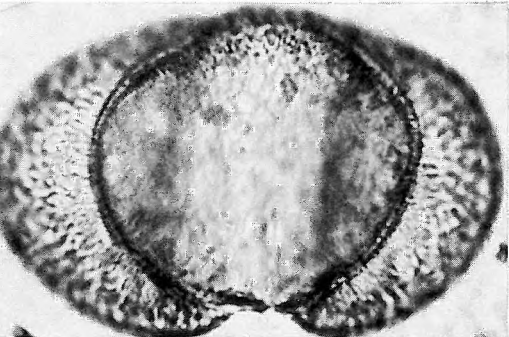
3



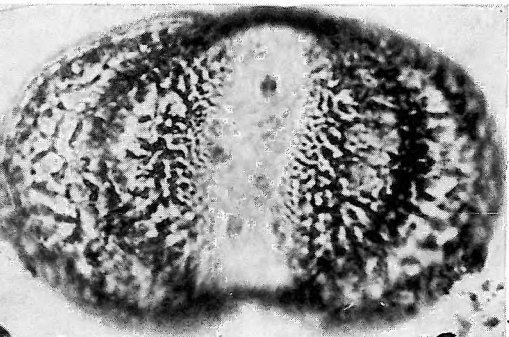
4



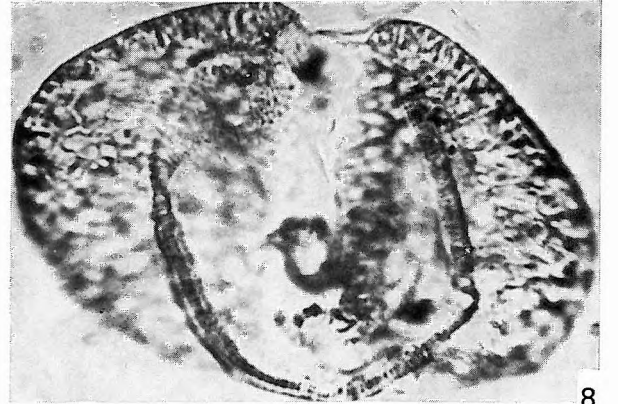
5



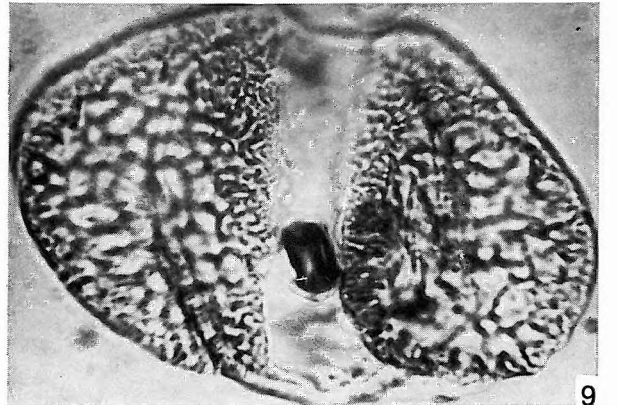
6



7



8



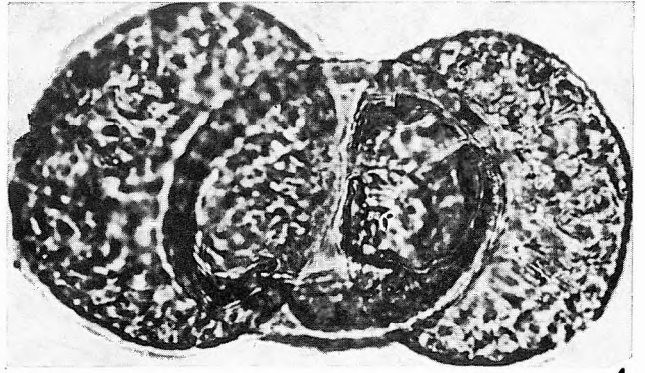
9

LXV. tábla — Plate LXV

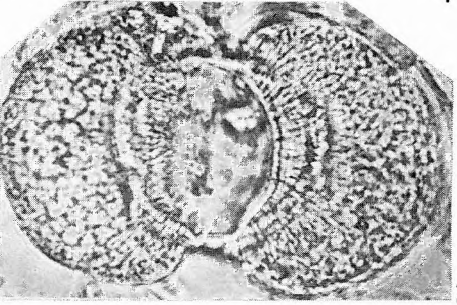
- 1—3. *Cathaya pulaënsis* n. sp. — Holotypus — Pula 3. sz. f. 13,5—14,0 m
- 4—5. *C. pulaënsis* n. sp. — Pula 3. sz. f. 14,0—14,5 m
6. *Tsugaepollenites gracilis* (W. KR. 1971) n. c. — Gérce 1. sz. f. 31,0—31,5 m
7. *T. helenensis* (W. KR. 1971) n. c. — Pula 3. sz. f. 13,5—14,0 m
8. *T. igniculus* (R. POT. 1934) R. POT. et VENITZ 1934 — Fót 1. sz. f. 288,0—290,5 m
- 9—10. *T. igniculus* (R. POT. 1934) R. POT. et VEN. 1934 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit. layer “u”



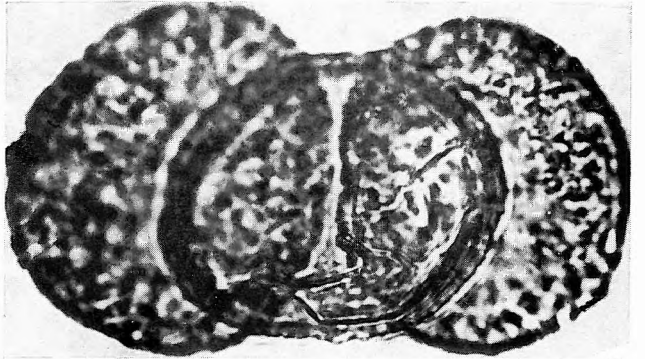
1



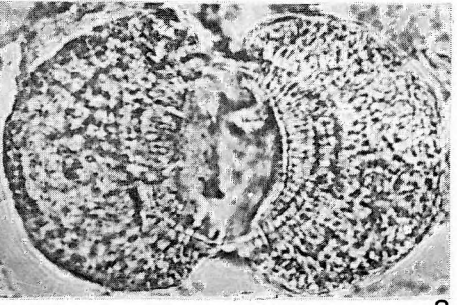
4



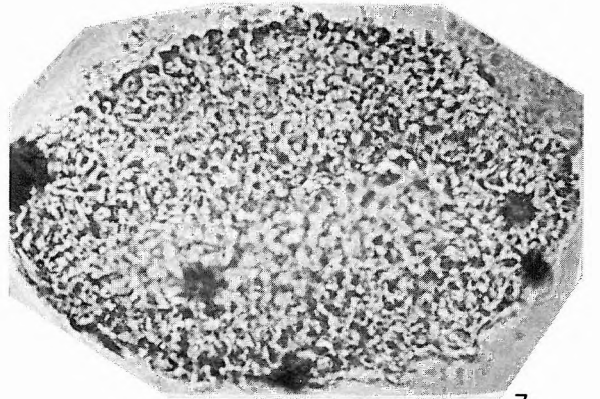
2



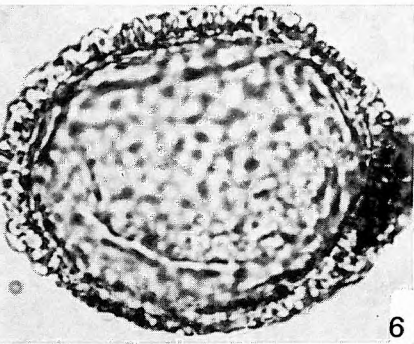
5



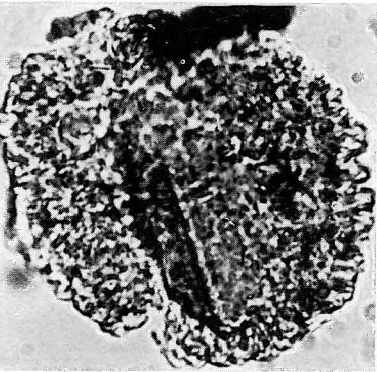
3



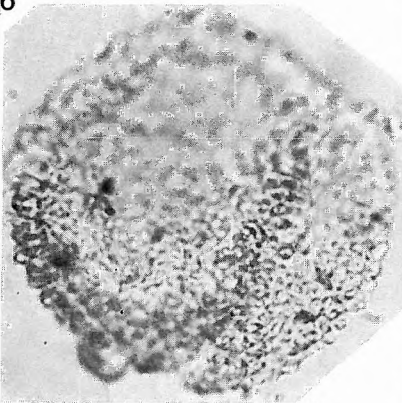
7



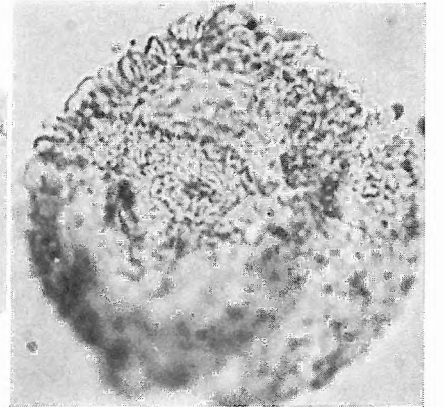
6



8



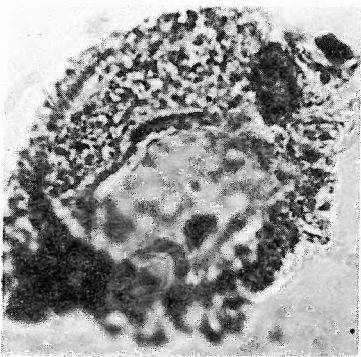
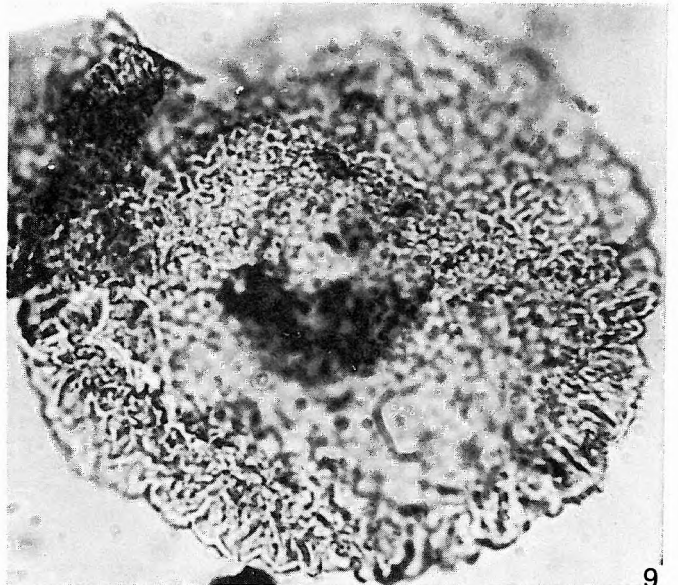
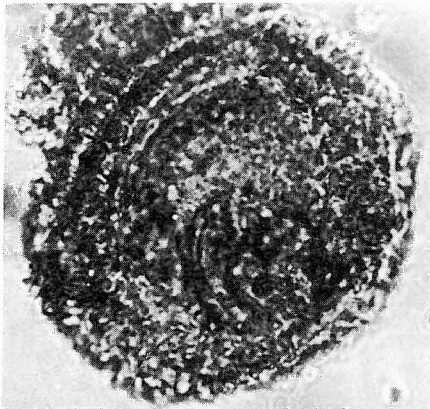
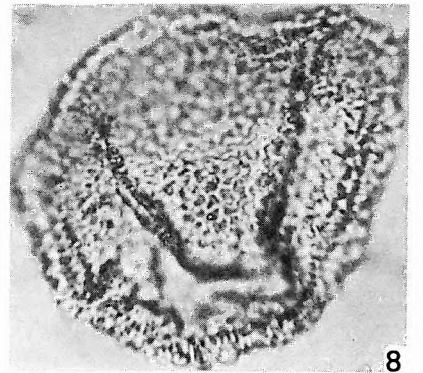
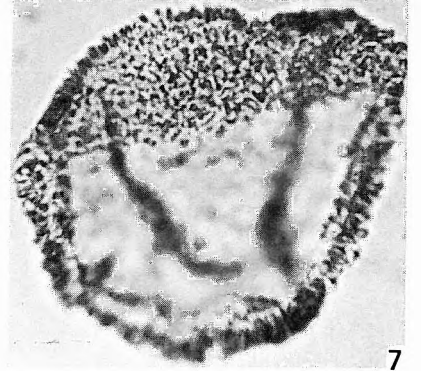
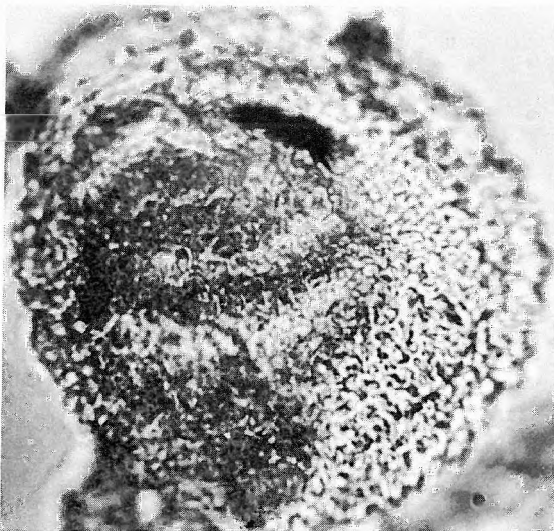
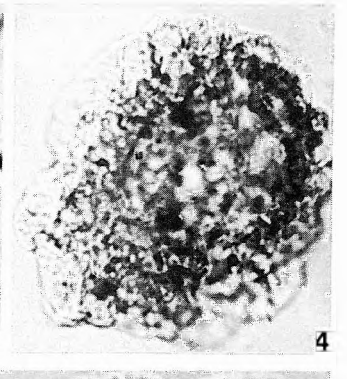
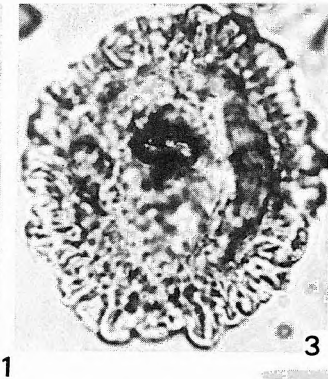
9



10

LXVI. tábla — Plate LXVI

1. *Tsugaeipollenites maximus* (RAATZ 1937) n. c. — Hidas 53. sz. f. 572,0—575,0 m
2. *T. maximus* (RAATZ 1937) n. c. — Várkesző 1. sz. f. 38,0—39,0 m
3. *T. igniculus* (R. POT. 1934) R. POT. et VEN. 1934 — Pula 3. sz. f. 36,5 m
4. *T. minimus* (W. KR. 1971) n. c. — Fót 1. sz. f. 172,7 m
5. *T. minimus* (W. KR. 1971) n. c. — Hidas 53. sz. f. 600,5—602,3 m
6. *T. minimus* (W. KR. 1979) n. c. — Szokolya 2. sz. f. 51,1—51,9 m
- 7—8. *T. multispinus* (W. KR. 1971) n. c. — Tar 34. sz. f. 530,0—533,0 m
9. *T. rueterbergensis* (W. KR. 1971) n. c. — Budapest-Kőbánya, I. szelvény 1. sz. minta; Budapest-Kőbánya, Profil I. sample 1



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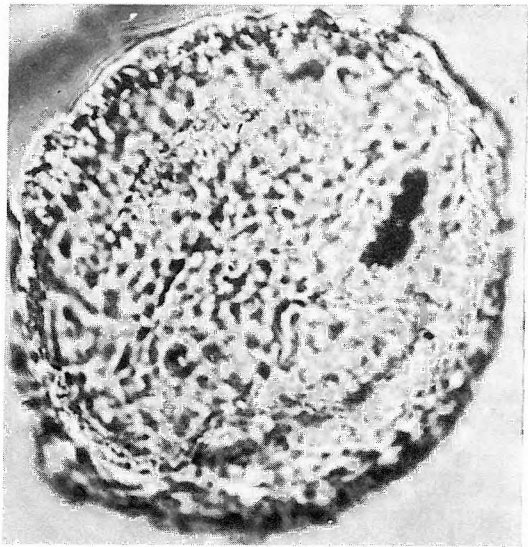
5

9

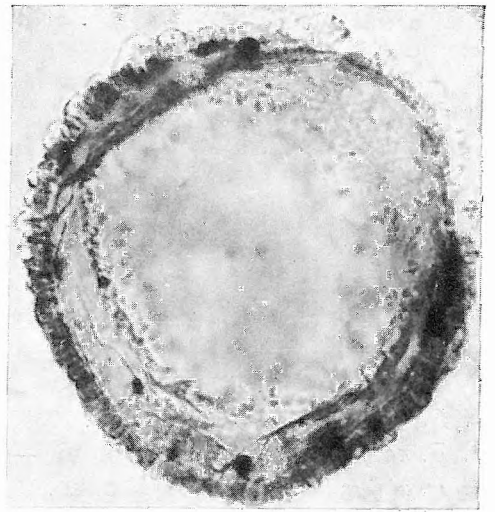
6

LXVII. tábla — Plate LXVII

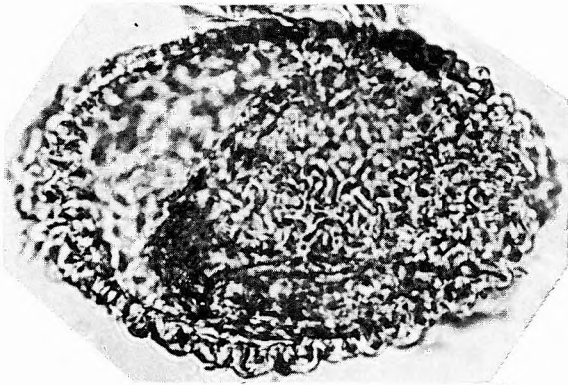
1. *Tsugapollenites robustus* (W. KR. 1971) n. c. — Várkesző 1. sz. f. 38,0—39,0 m
2. *T. spinulosus* (W. KR. 1971) n. c. — Fót 1. sz. f. 166,0—168,0 m
3. *T. verrucatus* (W. KR. 1971) n. c. — Gérce 1. sz. f. 34,5—37,5 m
4. *T. verrucatus* (W. KR. 1971) n. c. — Fót 1. sz. f. 122,0—123,2 m
5. *T. viridifluminipites* (WODEHOUSE 1933) R. Pot. 1958 — Budajenő 2. sz. f. 544,4—548,7 m
6. *T. viridifluminipites* (WODEH. 1933) R. Pot. 1958 — Tata térképező 26. sz. f. 4,5—10,5 m



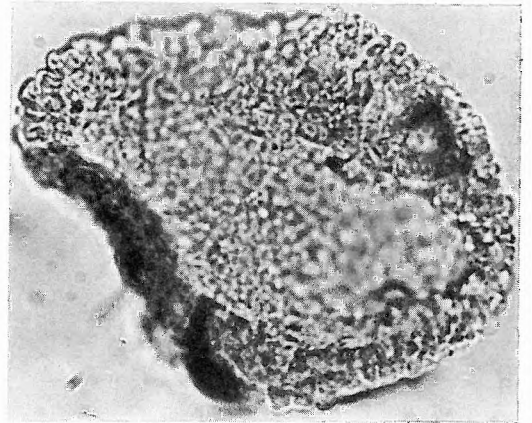
1



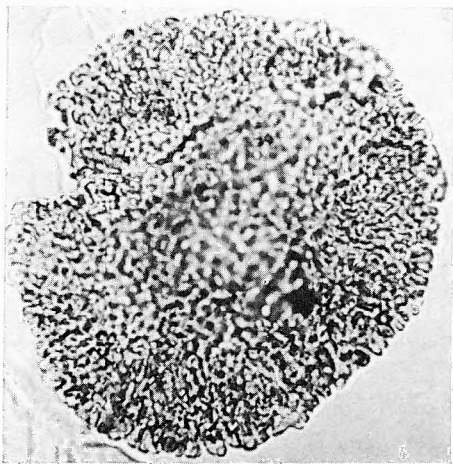
2



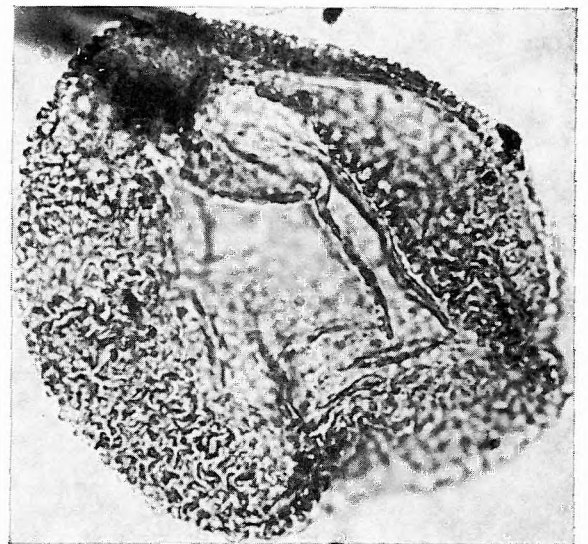
3



4



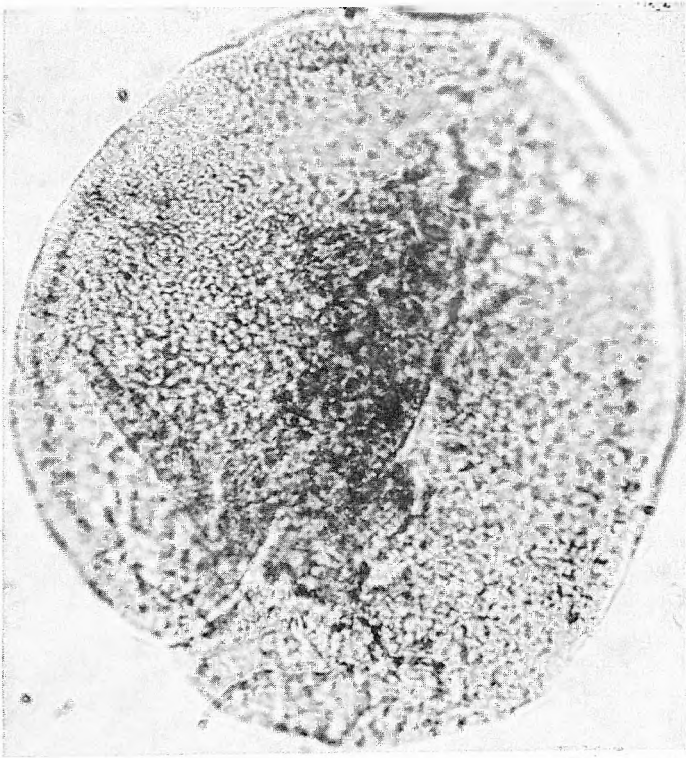
5



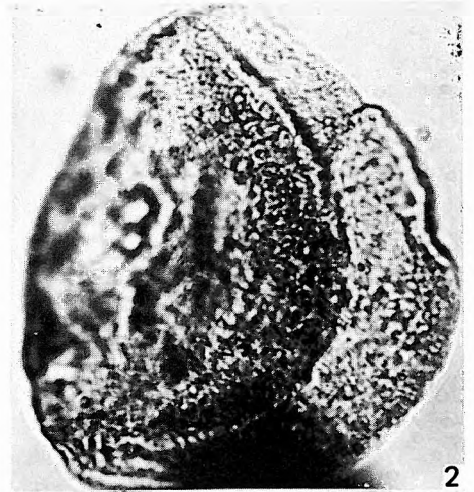
6

LXVIII. tábla — Plate LXVIII

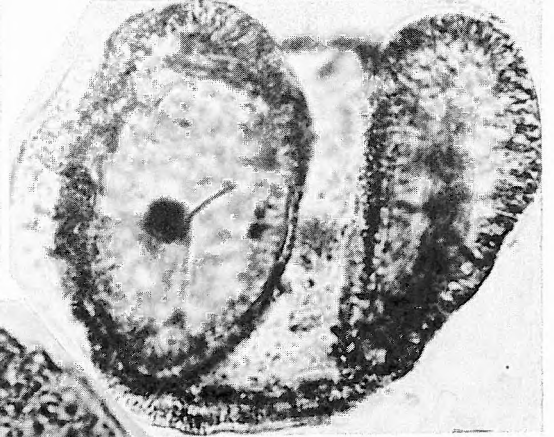
1. *Piceapollenites alatus* (R. POT. 1931) THIERG. 1937 — Várpalota 133. sz. f. 208,3—214,3 m
2. *P. neogenicus* NAGY 1969 emend. — Fót 1. sz. f. 266,0—269,0 m
3. *P. alatus* (R. POT. 1931) THIERG. 1937 — Hidas 53. sz. f. 667,2—669,7 m
4. *P. neogenicus* NAGY 1969 emend. — Pápa 2. sz. f. 142,8—143,3 m
5. *P. neogenicus* NAGY 1969 emend. — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”



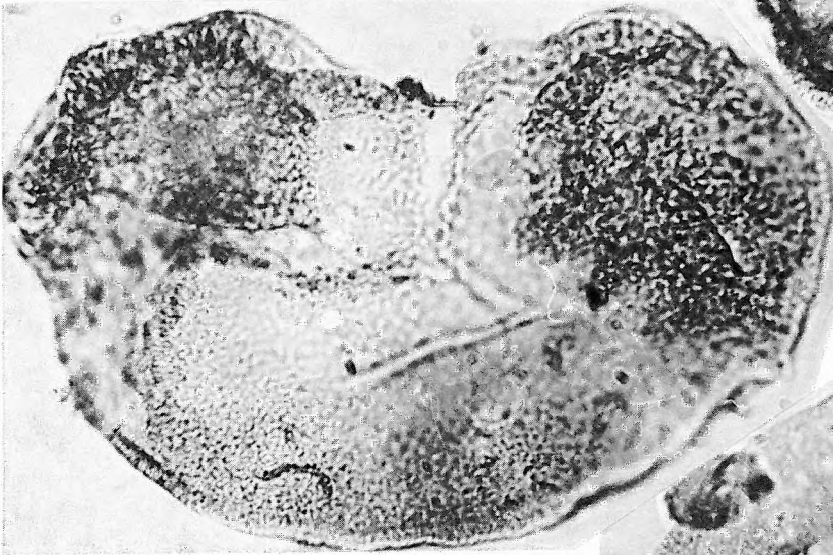
1



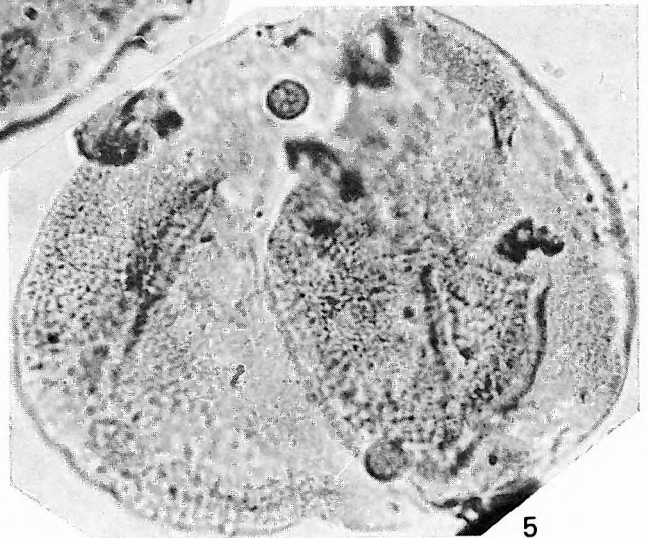
2



3



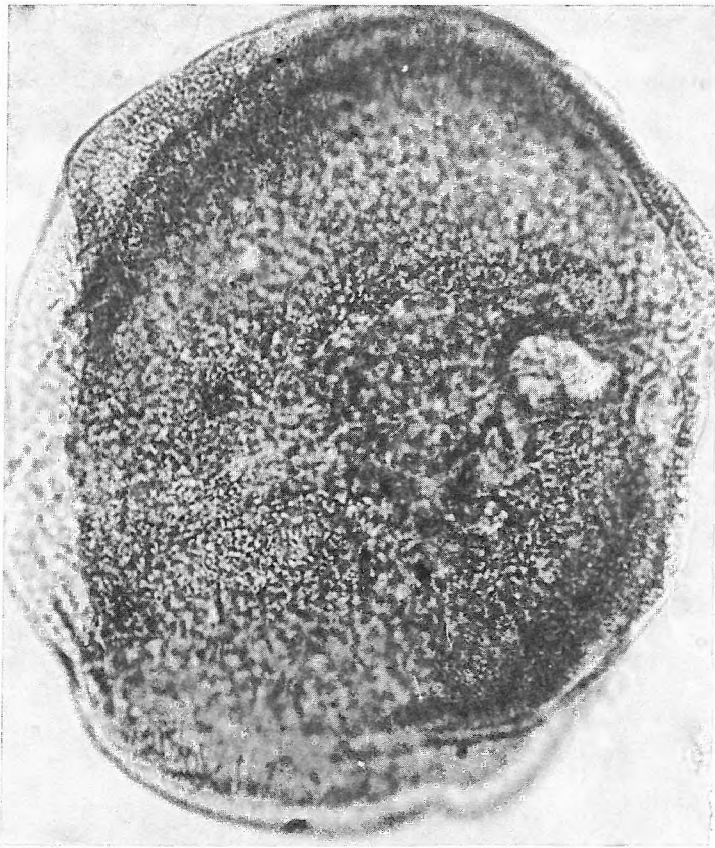
4



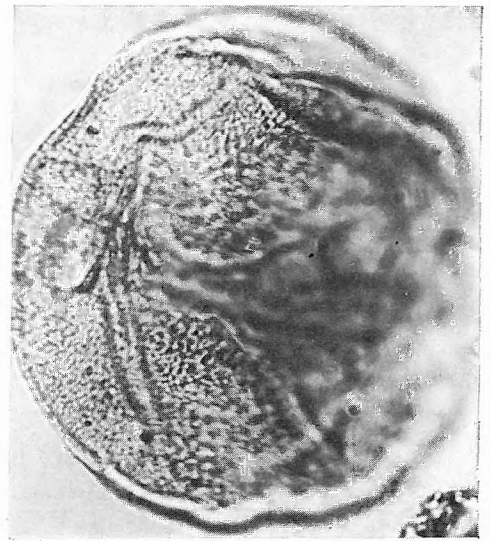
5

LXIX. tábla — Plate LXIX

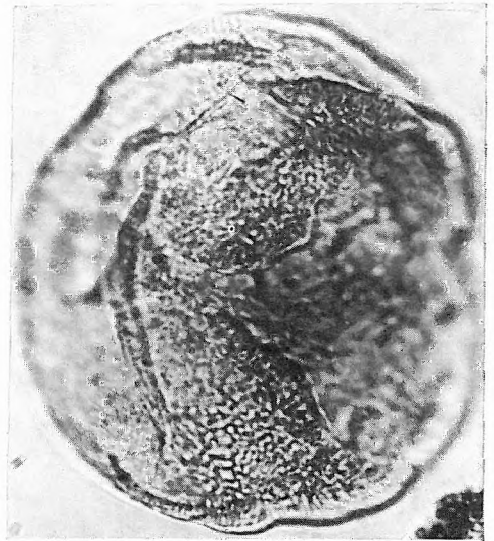
1. *Piceapollenites planoides* (W. KR. 1971) n. c. — Várpalota 133. sz. f. 208,3—214,2 m
- 2—3. *P. sacculiferoides* (W. KR. 1971) n. c. — Fót 1. sz. f. 328,0—332,8 m
- 4—5. *P. sacculiferoides* (W. KR. 1971) n. c. — Megyaszó 1. sz. f. 25,0—32,0/6 m



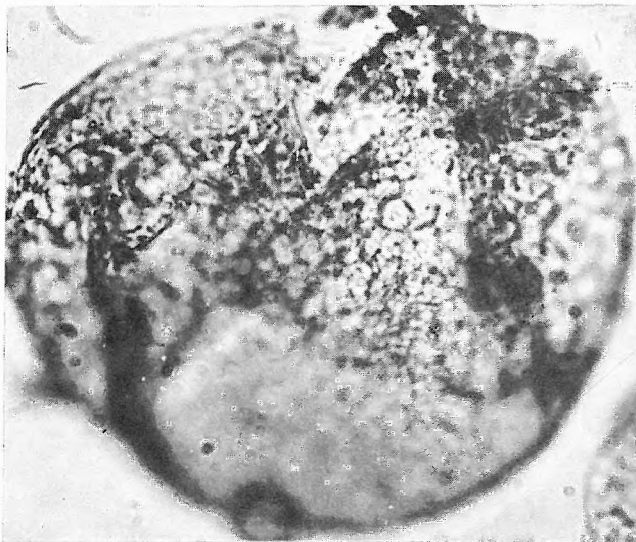
1



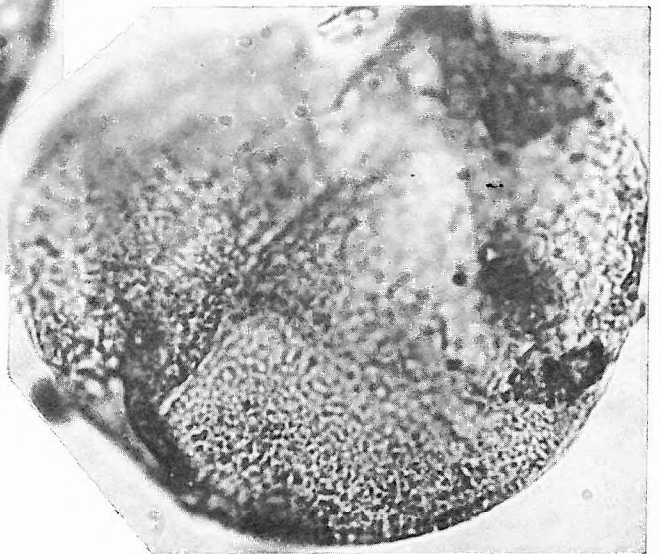
2



3



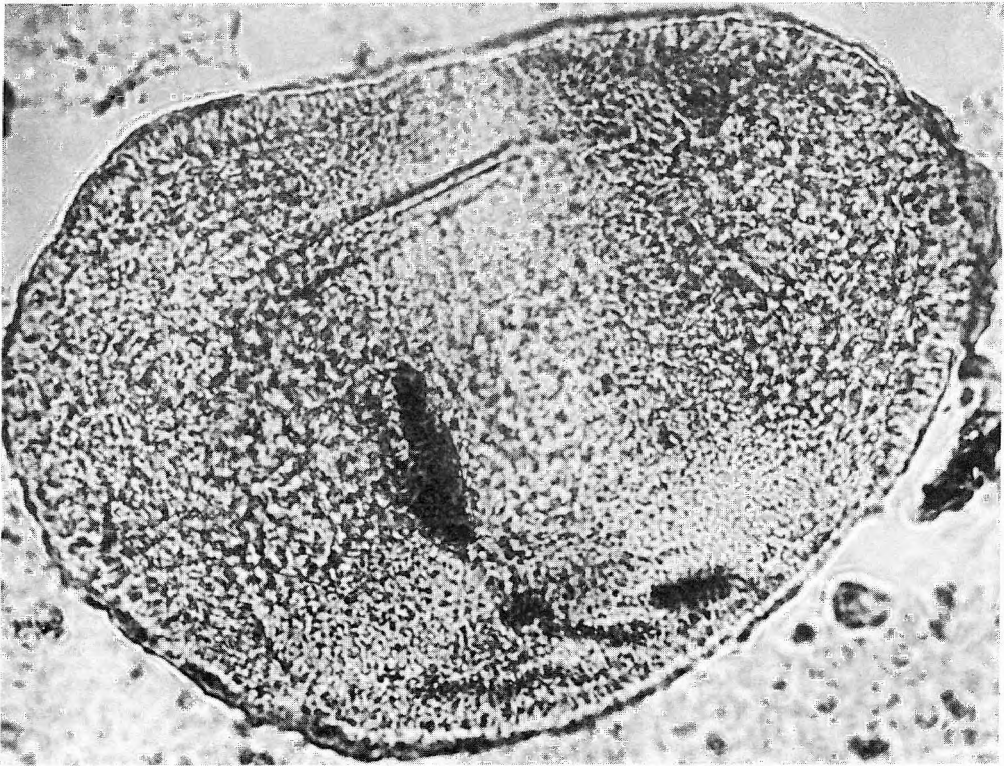
4



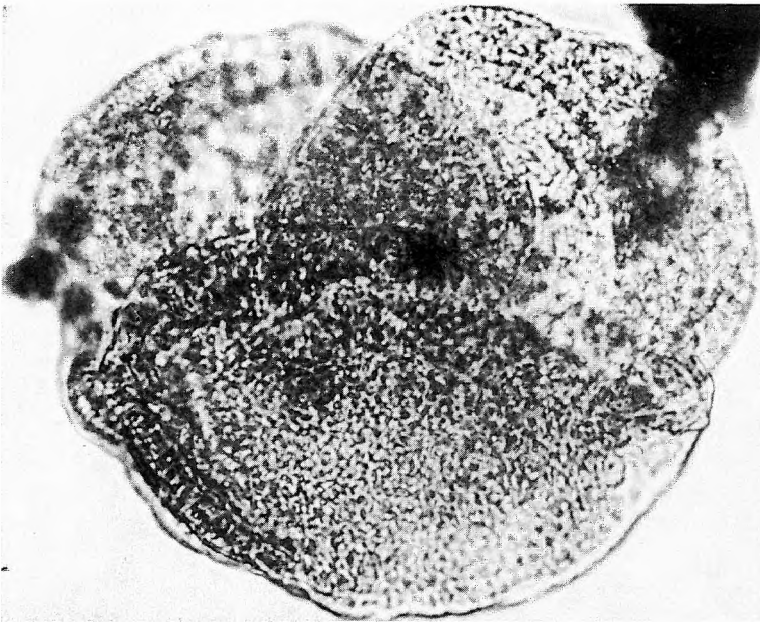
5

LXX. tábla — Plate LXX

1. *Piceapollenites tobolicus* (PANOVA 1966) n. c. — Pula 3. sz. f. 14,5—15,0 m
2. *Abiespollenites absolutus* THIERG. 1937 — Fót 1. sz. f. 348,0—349,5 m
3. *Pseudotsugoidites mecsekensis* NAGY 1969 — Generotypus — Mecseknádasd, felszíni feltárás; Mecseknádasd, surface section



1



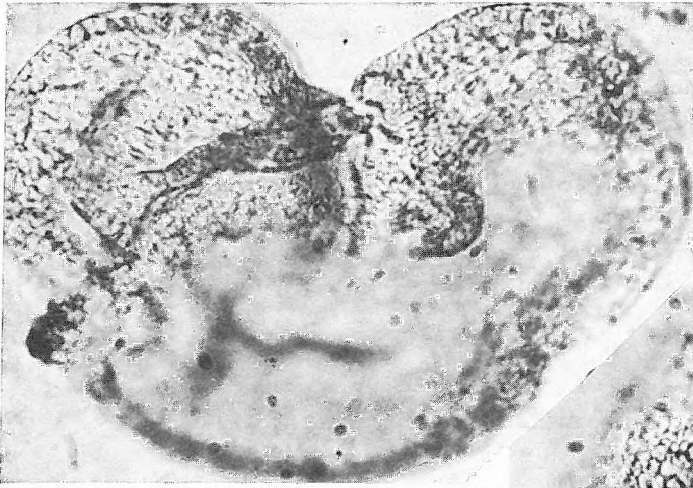
2



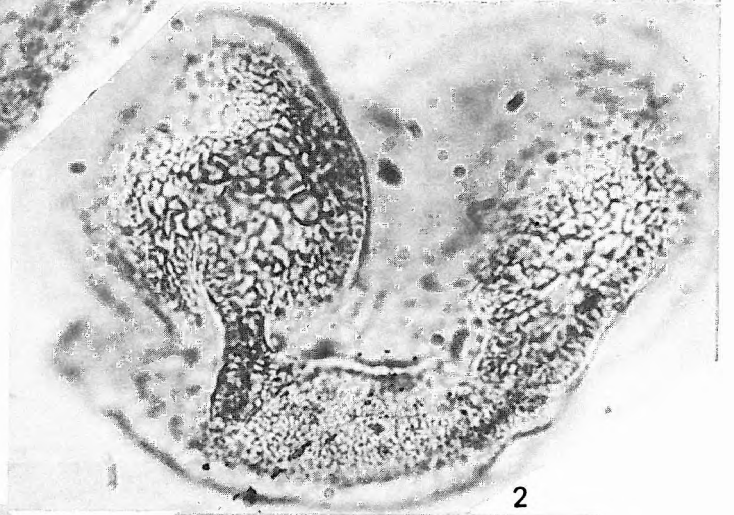
3

LXXI. tábla — Plate LXXI

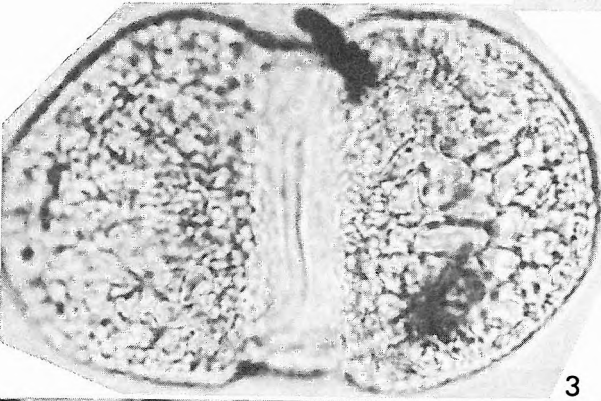
- 1—2. *Abiespollenites absolutus* THIERGART 1937 — Szokolya 2. sz. f. 91,1—92,7 m
3—4. *A. crassus* NAGY 1969 — Várkesző 1. sz. f. 36,0—37,0 m
5. *A. crassus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m



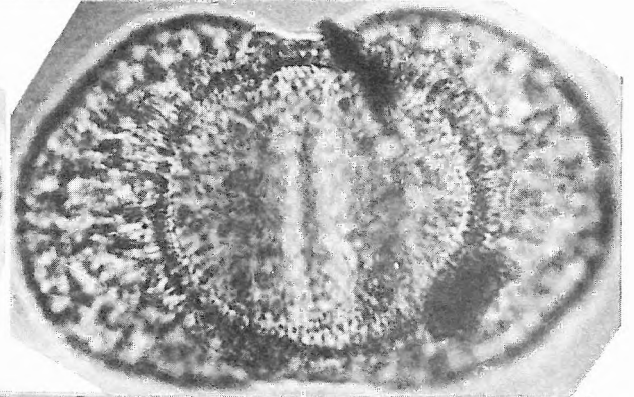
1



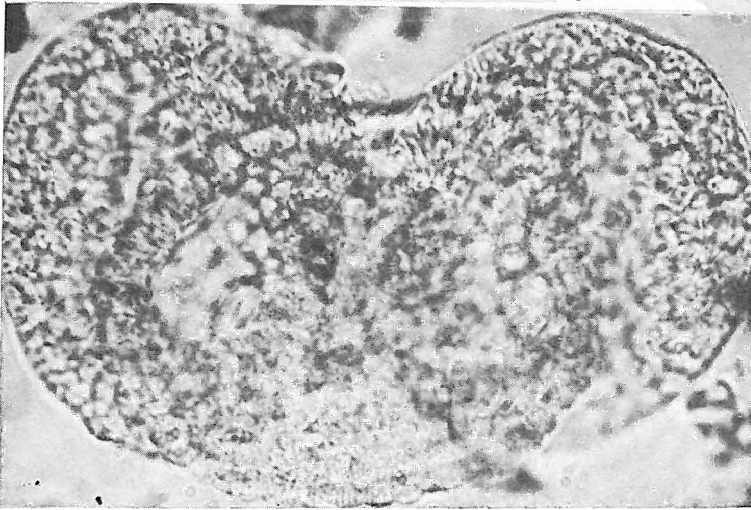
2



3



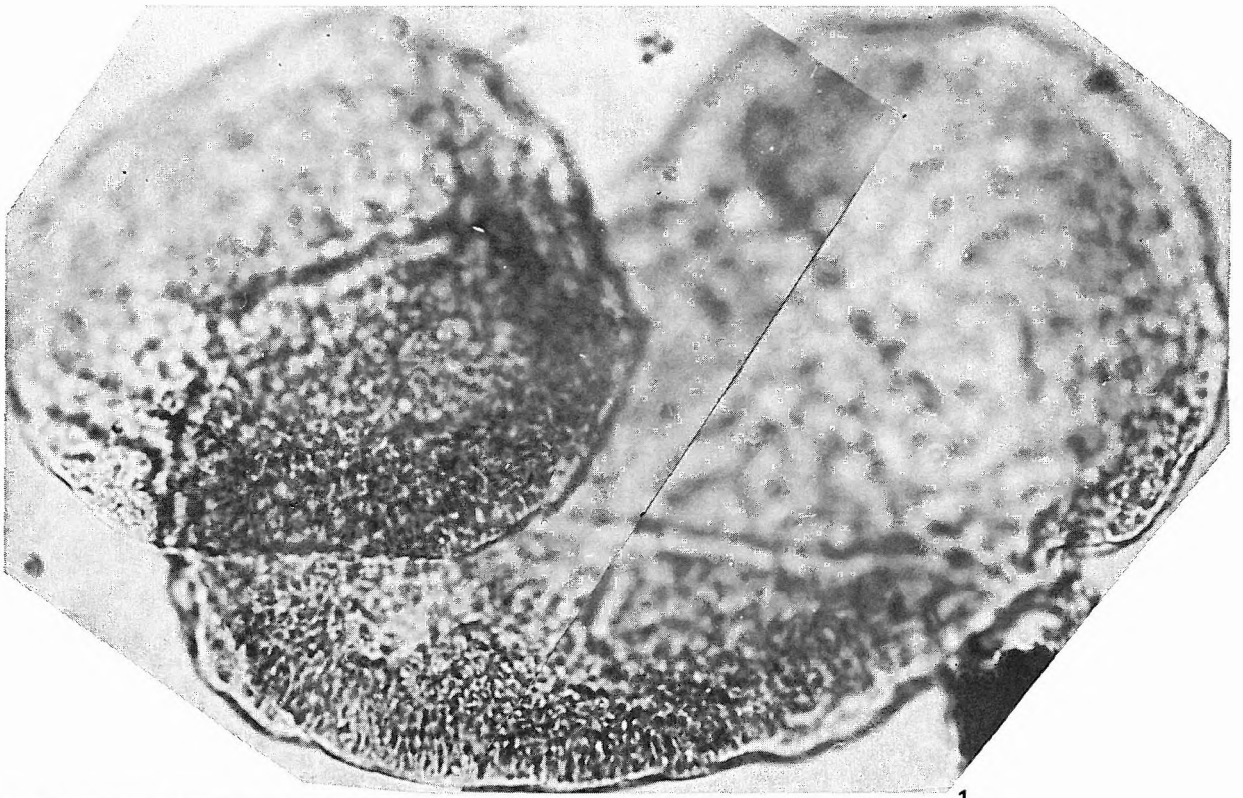
4



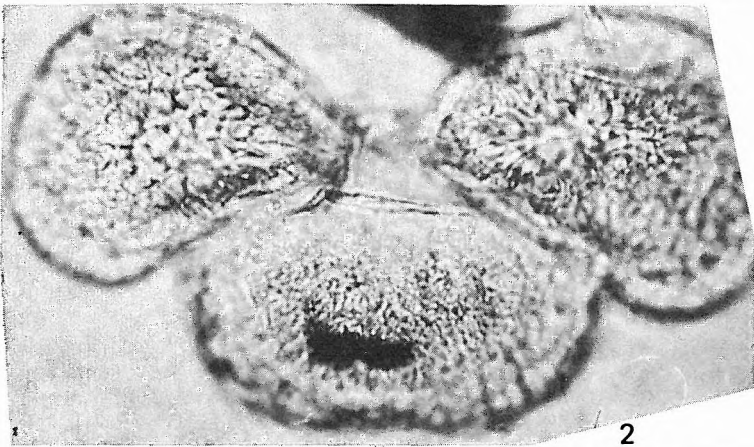
5

LXXII. tábla — Plate LXXII

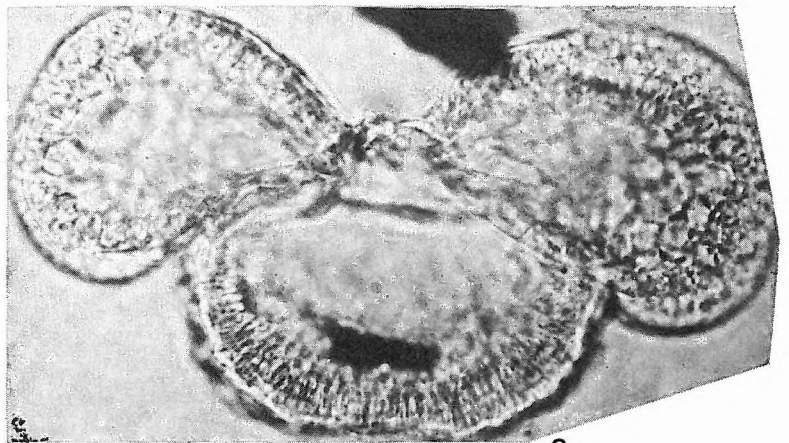
1. *Abiespollenites maximus* W. KR. 1971 — Budajenő 2. sz. f. 575,5—575,9 m
- 2—3. *A. sivaki* n. sp. — Holotypus — Várkesző 1. sz. f. 36,0—37,0 m



1



2



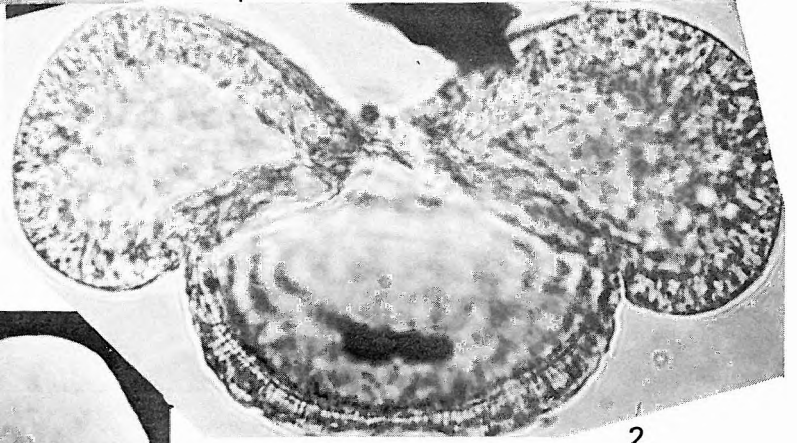
3

LXXIII. tábla — Plate LXXIII

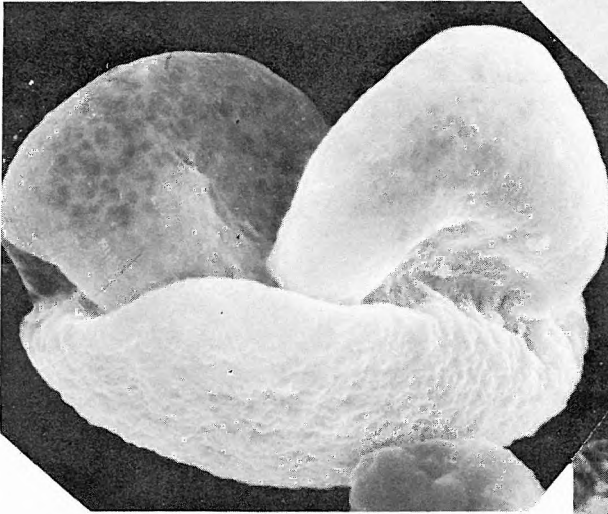
- 1—2. *Abiespollenites sivaki* n. sp. — Holotypus — Várkesző 1. sz. f. 36,0—37,0 m
3—4. *A. sivaki* n. sp. — Várkesző 1. sz. f. 34,0—35,0 m. Scan felvétel 1600×, ill. 4000×; SEMG
1600× (Fig. 3.), 4000× (Fig. 4.)



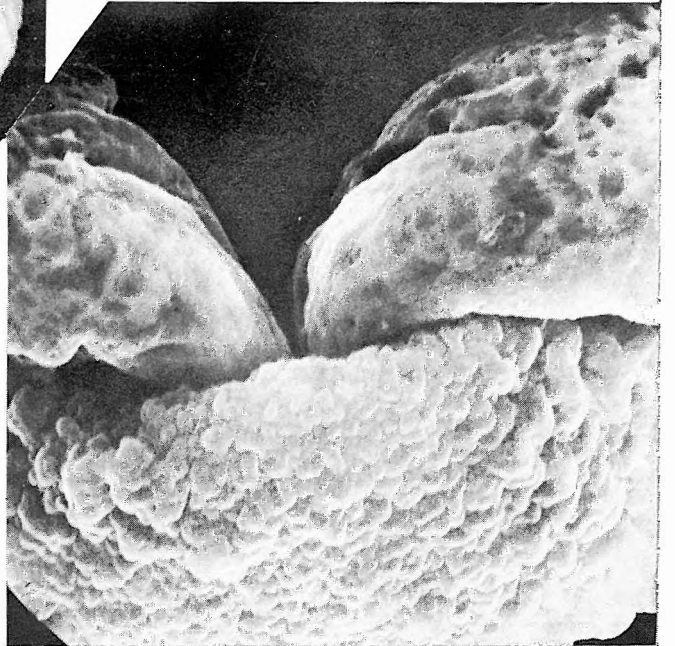
1



2



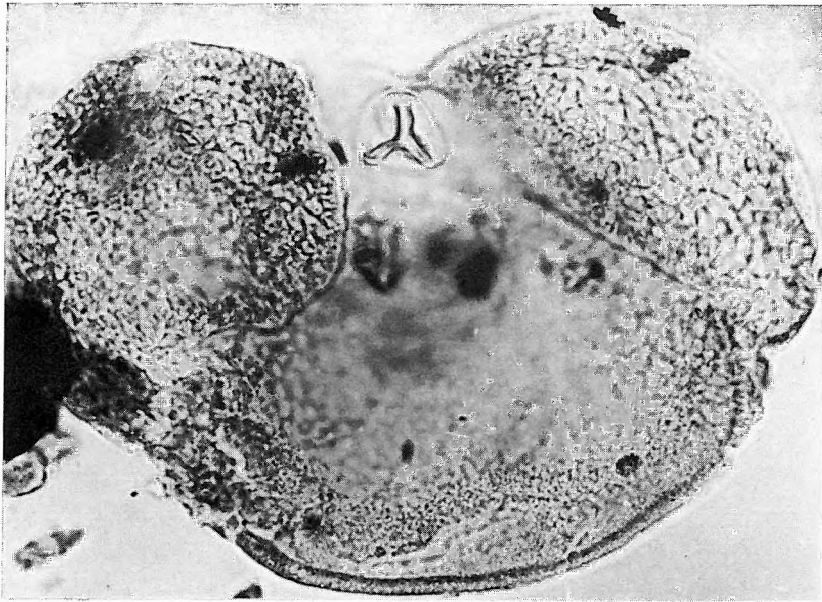
3



4

LXXIV. tábla — Plate LXXIV

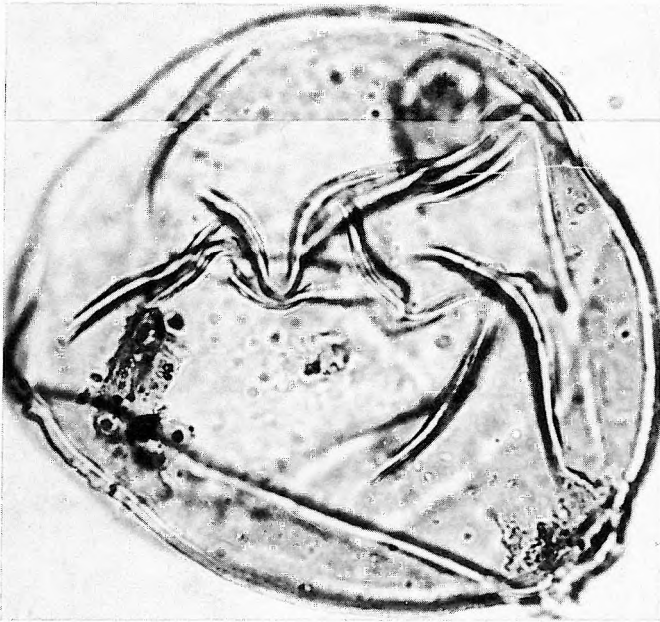
1. *Keteleeriaepollenites komloënsis* NAGY 1969 — Szokolya 2. sz. f. 51,1—51,9 m
2. *Laricispollenites gerceensis* n. g. n. sp. — Tekeres 1. sz. f. 850,0—855,0 m
3. *L. gerceensis* n. g. n. sp. — Generotypus — Gérce 1. sz. f. 31,0—31,5 m
- 4—5. *L. gerceensis* n. g. n. sp. — Naszály 1. sz. f. 26,7—29,7 m
6. *Cedripites crassiundulicristatus* (TREVISAN 1967) W. KR. 1971 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”



1



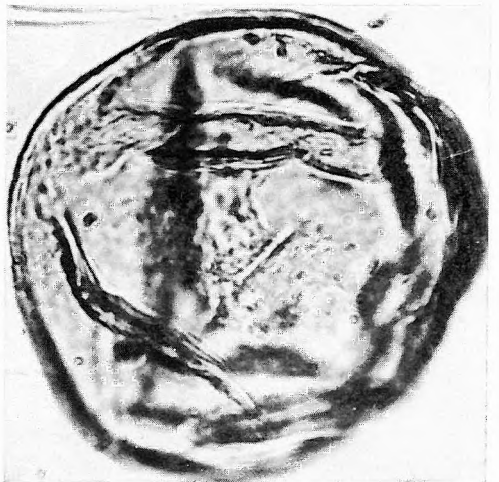
2



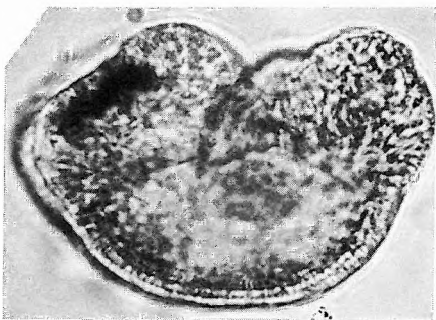
3



4



5



6

LXXV. tábla — Plate LXXV

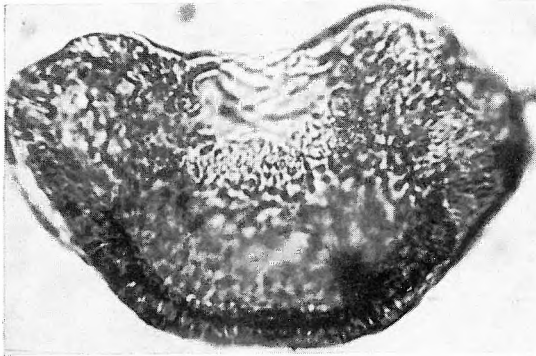
- 1—2. *Cedripites crassiundulicristatus* (TREVISAN 1967) W. KR. 1971 — Naszály 1. sz. f. 60,0—66,0 m
3. *C. crassiundulicristatus* (TREVISAN 1967) W. KR. 1971 — Tata (TVG) 26. sz. f. 11,0—15,0 m
- 4—8. *C. balansaeformis* (NAGY 1969) n. c. — Holotypus — Zengővárkony 59. sz. f. 34,0—37,5 m



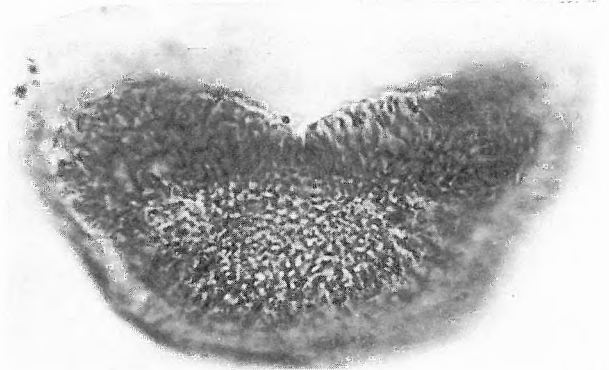
1



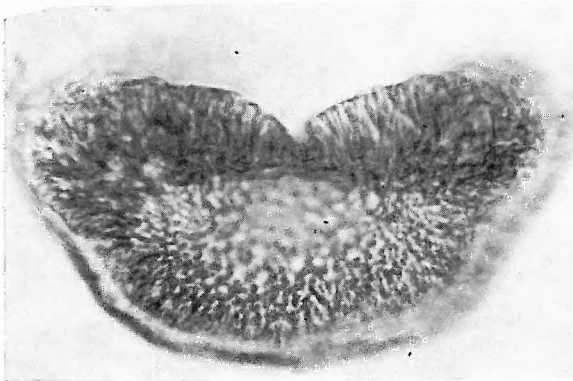
2



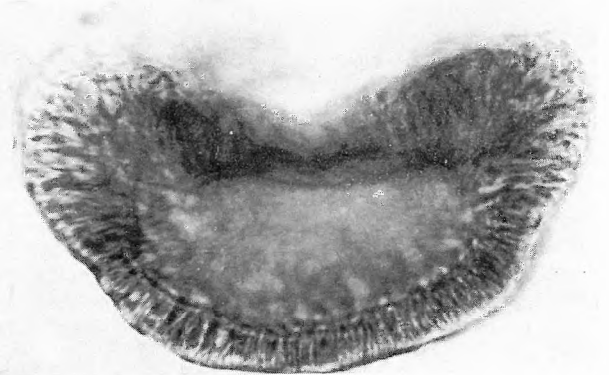
3



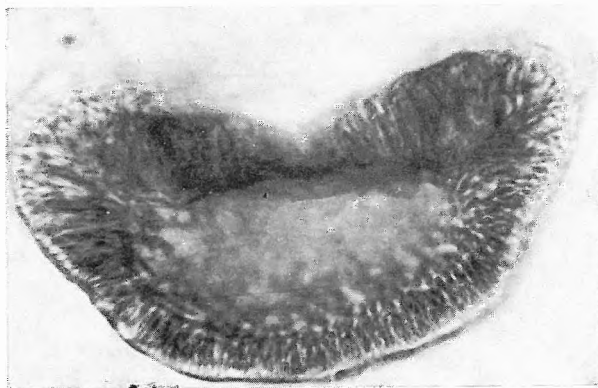
4



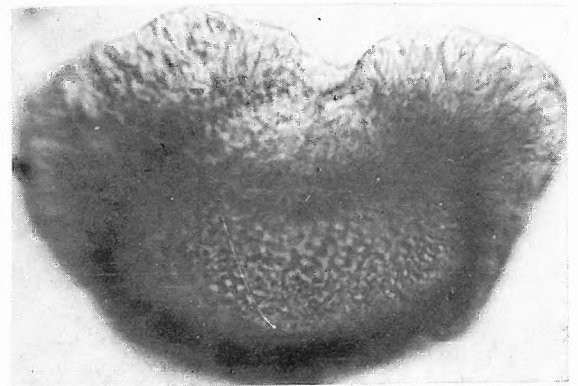
5



6



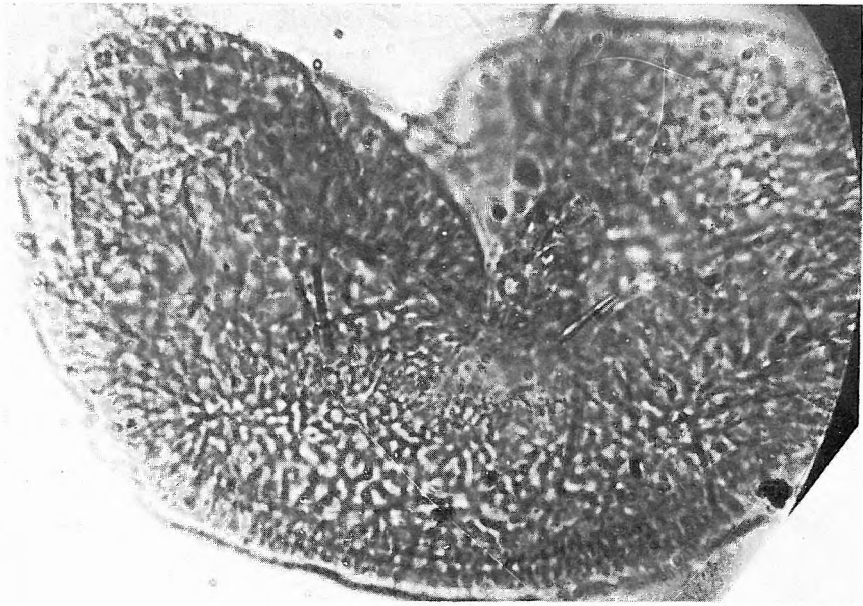
7



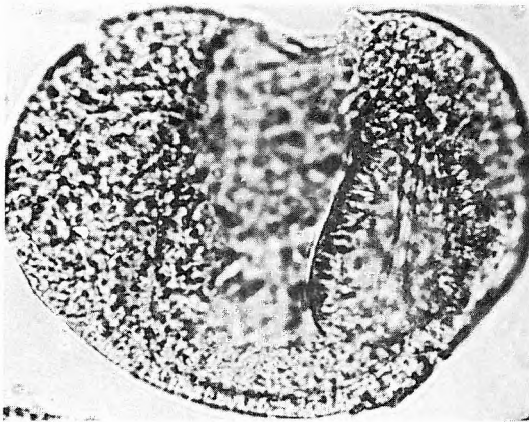
8

LXXVI. tábla — Plate LXXVI

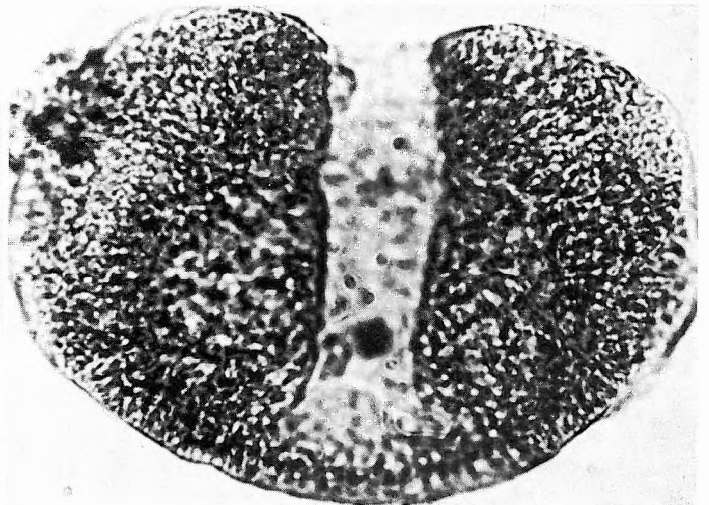
1. *Cedripites crassus* NAGY 1969 -- Holotypus -- Hidas 53. sz. f. 73,3—89,5 m
2. *C. deodaraesimilis* (NAGY 1969) nom. nov. — Pula 3. sz. f. 36,5 m
3. *C. deodaraesimilis* (NAGY 1969) nom. nov. — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
4. *C. deodaraesimilis* (NAGY 1969) nom. nov. — Szokolya 2. sz. f. 87,2—87,9 m
5. *C. deodaraesimilis* (NAGY 1969) nom. nov. — Tengelic 2. sz. f. 830,0—833,0 m



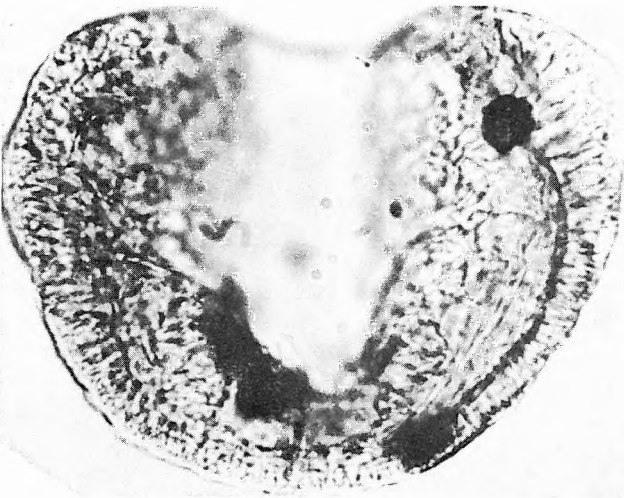
1



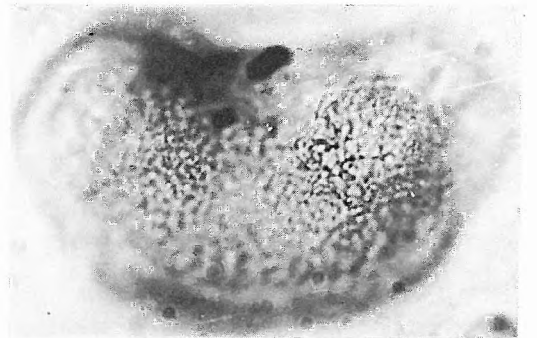
2



3



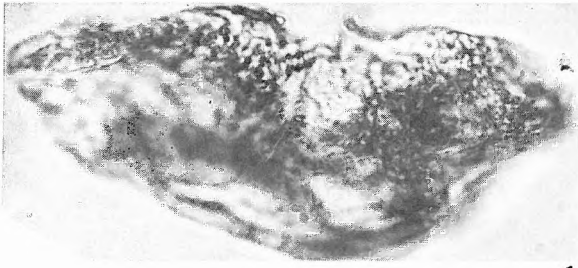
4



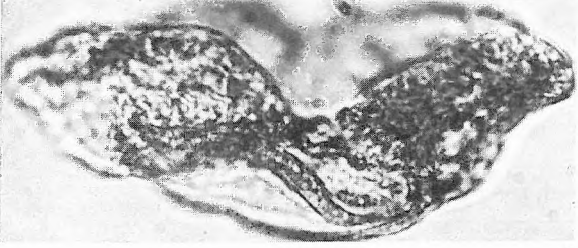
5

LXXVII. tábla — Plate LXXVII

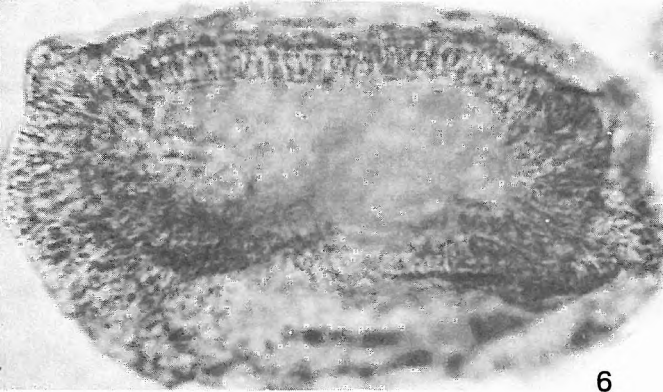
- 1—2. *Cedripites eocaenicus* WODEHOUSE 1933 — Fót 1. sz. f. 349,5—354,0 m
3—5. *C. eocaenicus* WODEH. 1933 — Fót 1. sz. f. 275,0—278,7 m
6—8. *C. grandis* (NAGY 1969) n. c. — Holotypus — Zengővárkony 59. sz. f. 65,0—67,0 m
9. *C. lusaticus* W. KR. 1971 — Eger, Wind-féle téglagyári fúrás 46,0—46,8 m; Eger, Wind brick-yard borehole 46.0—46.8 m



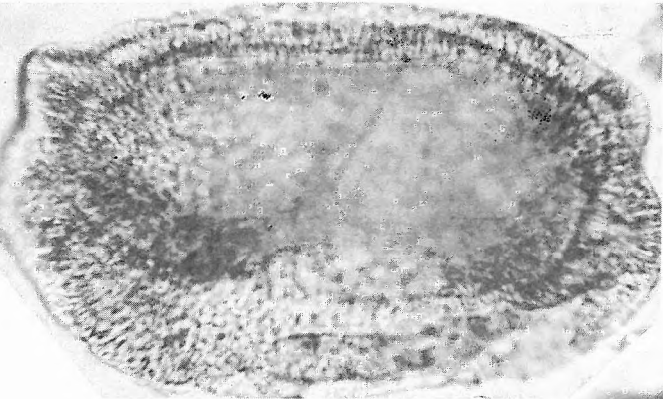
1



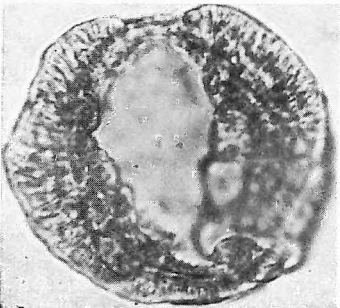
2



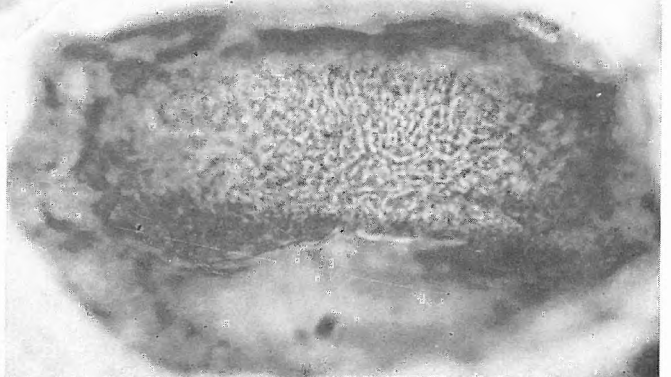
6



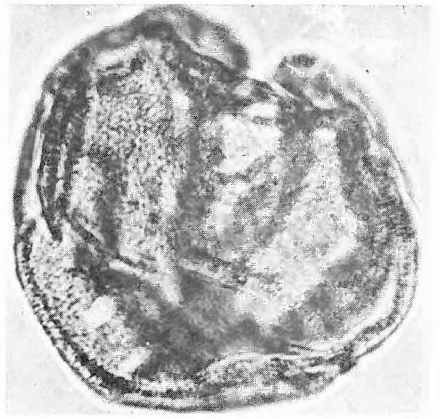
7



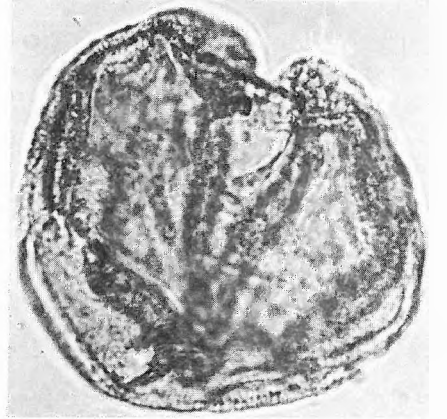
9



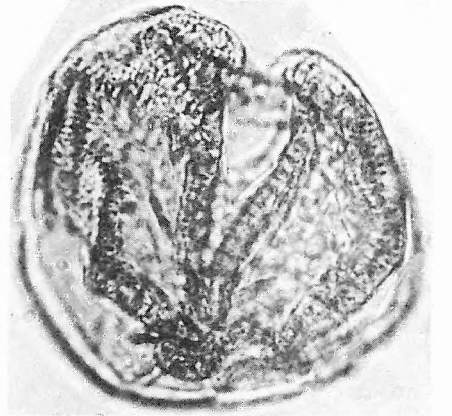
8



3



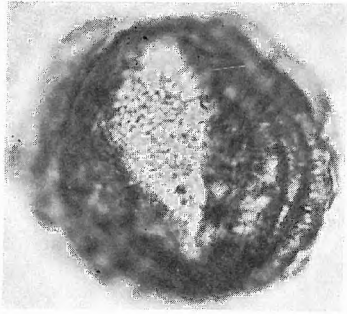
4



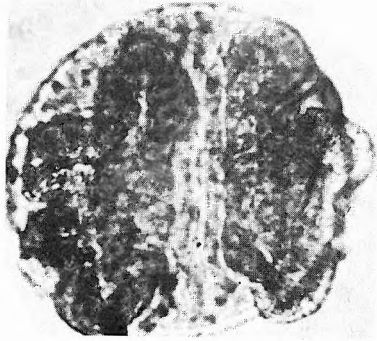
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LXXVIII. tábla — Plate LXXVIII

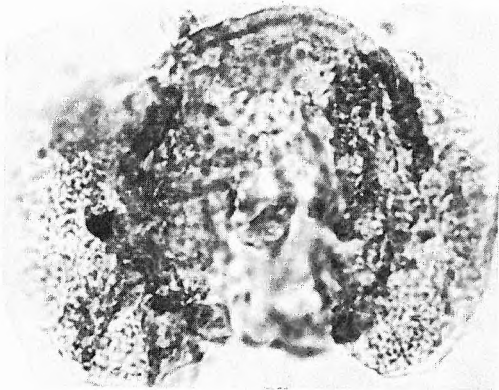
1. *Cedripites lusaticus* W. KR. 1971 — Eger, Wind-féle téglagyári fúrás 46,0—46,8 m; Eger, Wind brickyard borehole 46.0—46.8 m
2. *C. lusaticus* W. KR. 1971 — Szokolya 2. sz. f. 44,7—45,5 m
- 3—4. *C. maximus* n. sp. — Holotypus — Zengővárkony 59. sz. f. 56,0—60,7 m
- 5—6. *C. hidasensis* n. sp. — Holotypus — Hidas 53. sz. f. 630,8—632,0 m
- 7—8. *C. szaszvarensis* NAGY 1969 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”



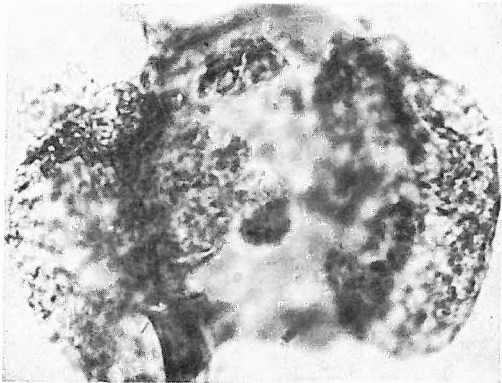
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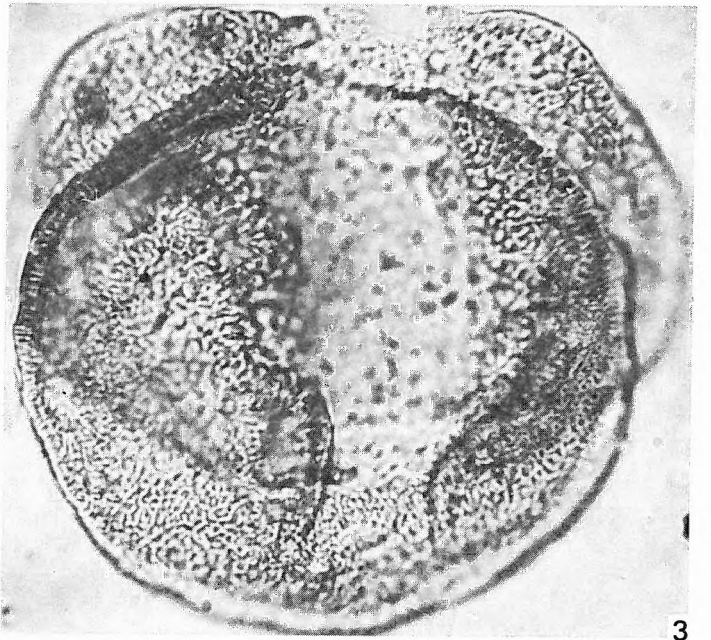
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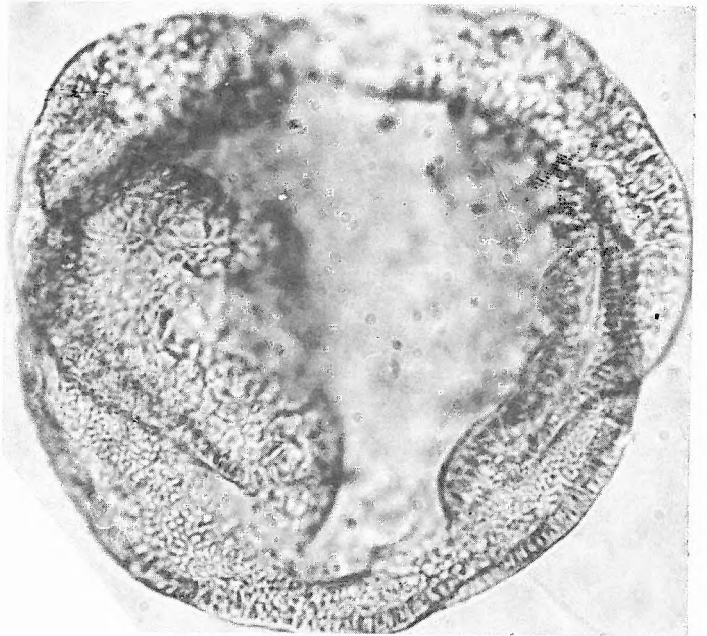
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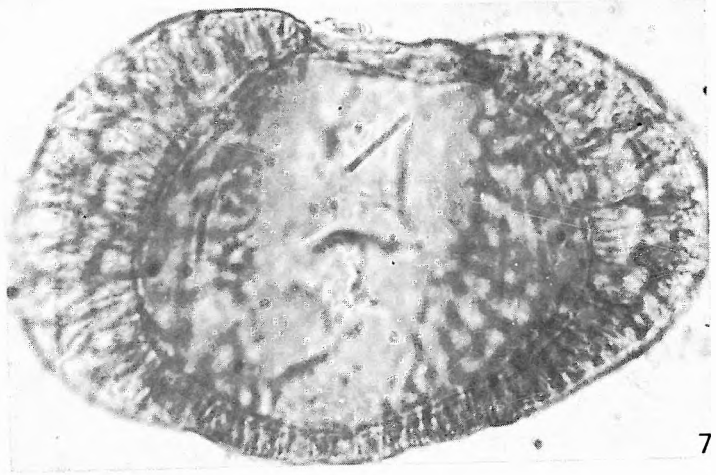
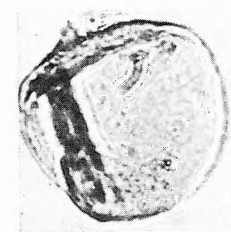
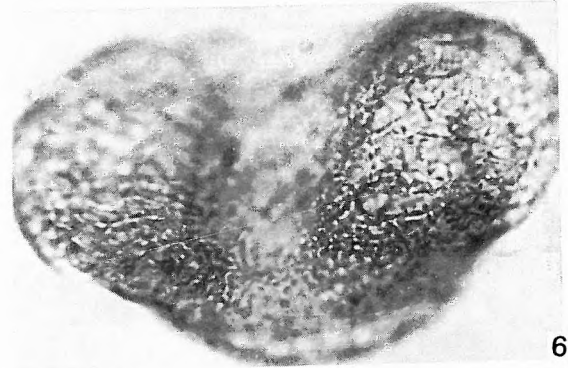
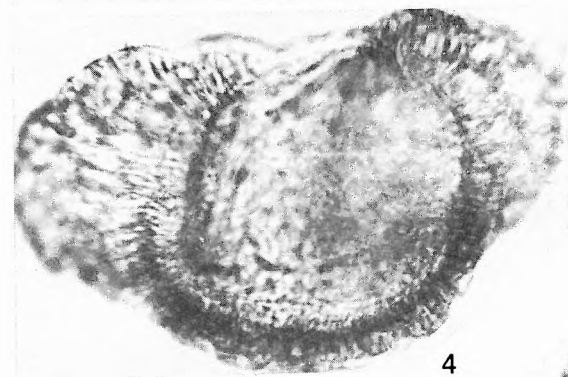
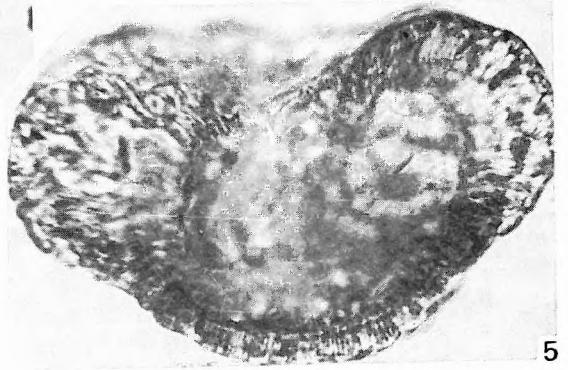
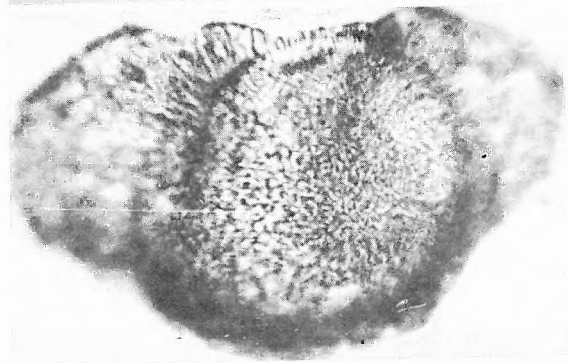
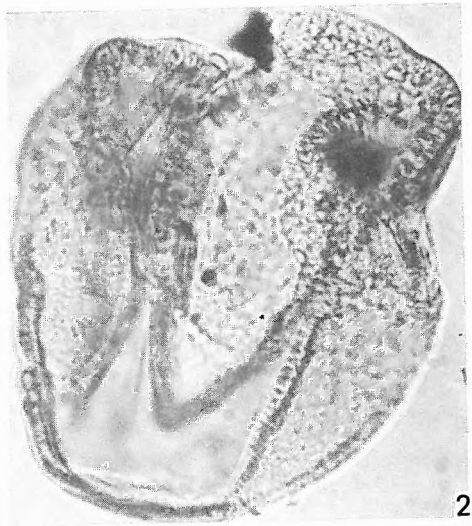
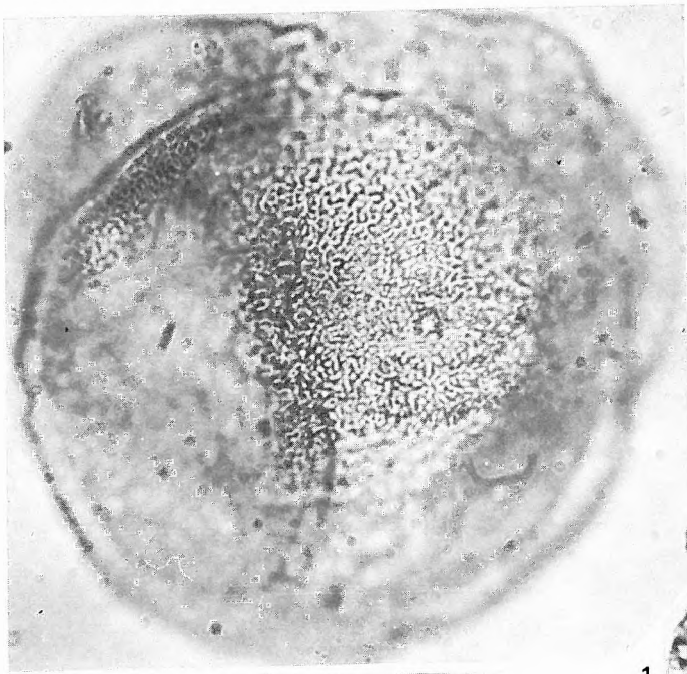


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1. *Cedripites maximus* n. sp. — Holotypus — Zengővárkony 59. sz. f. 56,0—60,7 m
2. *C. saszvarensis* NAGY 1969 — Fót 1. sz. f. 132,5—133,4 m
- 3—6. *C. taxoidiformis* (NAGY 1969) n. c. — Holotypus — Zengővárkony 59. sz. f. 30,9—34,0 m
7. *C. taxoidiformis* (NAGY 1969) n. c. — Hidas 53. sz. f. 73,3—89,5 m
8. *Taxodiaceapollenites* sp. — Hidas 53. sz. f. 755,0—757,0 m
9. *Taxodiaceapollenites* sp. — Zengővárkony 45. sz. f. 13,2—13,7 m



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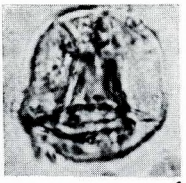
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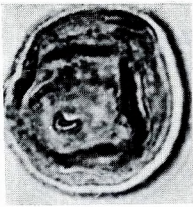
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1. *Taxodiaceapollenites* sp. — Hidas 53. sz. f. 135,5—137,0 m
2. *Taxodiaceapollenites* sp. — Eger, Wind-féle téglagyári fúrás 7,8—8,3 m; Eger, Wind brickyard borehole 7.8—8.3 m
3. *Sequoiapollenites gracilis* W. KR. 1971 — Szászvár 8. sz. f. 454,5—435,0 m
4. *S. major* W. KR. 1971 — Cserhátszentiván 1. sz. f. 163,0—165,0 m
5. *S. macropapillatus* (TREVISAN 1967) n. c. — Cserhátszentiván 1. sz. f. 163,0—165,0 m
6. *S. major* W. KR. 1971 — Fót 1. sz. f. 288,0—290,5 m
7. *S. major* W. KR. 1971 — Cserhátszentiván 1. sz. f. 167,0—169,0 m
8. *S. megaligulus* W. KR. 1971 — Fót 1. sz. f. 288,0—290,5 m
9. *S. polyformosus* THIERG. 1938 ex R. POT. 1958 — Fót 1. sz. f. 142,0—142,8 m
10. *S. polyformosus* THIERG. 1938 ex R. POT. 1958 — Fót 1. sz. f. 171,7—172,7 m
11. *S. polyformosus* THIERG. 1938 ex R. POT. 1958 — Püspökhatvan 4. sz. f. 257,0—260,0 m
12. *S. polyformosus* THIERG. 1938 ex R. POT. 1958 — Fót 1. sz. f. 181,0—182,7 m
13. *S. polyformosus* THIERG. 1938 ex R. POT. 1958 — Fót 1. sz. f. 340,5—354,0 m
14. *S. rotundus* W. KR. 1971 — Bogács 9/5. sz. f. 151,0—151,5 m
15. *Cunninghamiaepollenites lignitus* NAGY 1969 — Hidasbánya II. telep 6. minta; mine Hidasbánya, seam II. sample 6.
- 16—17. *Sciadopityspollenites catenatus* (R. POT. 1931) W. KR. 1971 — Kapolcs 2. sz. f. 34,0—34,5 m
- 18—19. *S. serratus* (R. POT. et VEN. 1934) RAATZ 1937 — Zengővárkony 59. sz. f. 51,3—56,0 m
- 20—22. *S. serratus* (R. POT. et VEN. 1934) RAATZ 1937 — Tar 34. sz. f. 450,0—454,0 m
- 23—24. *S. quintus* W. KR. 1971 — Szokolya 3. sz. f. 58,7—59,9 m



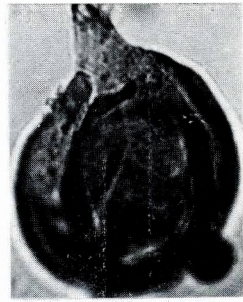
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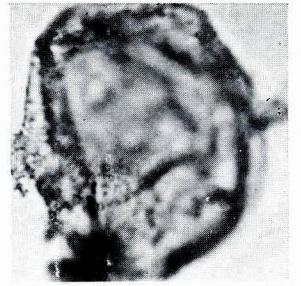
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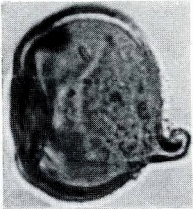
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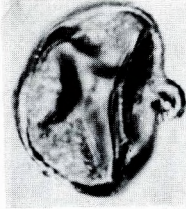
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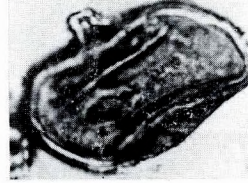
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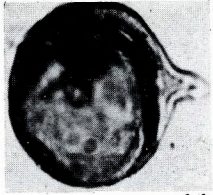
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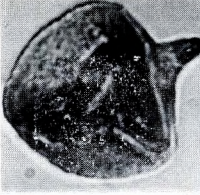
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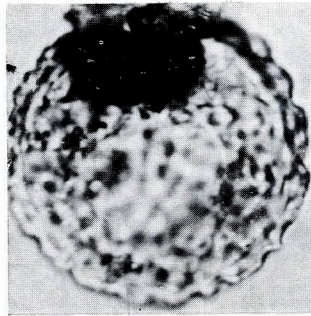
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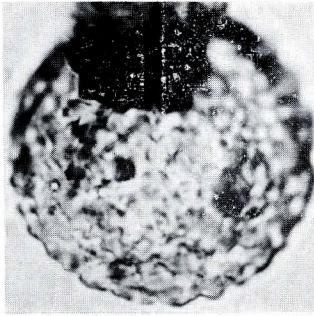
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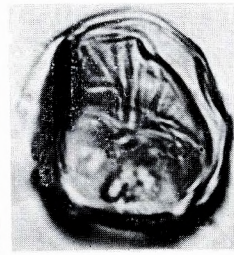
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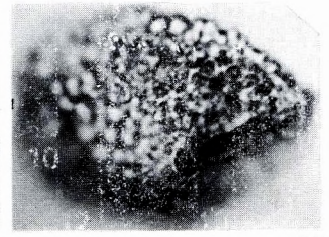
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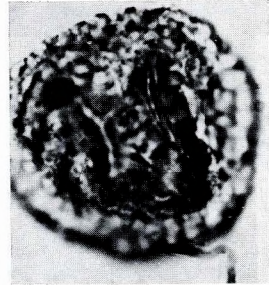
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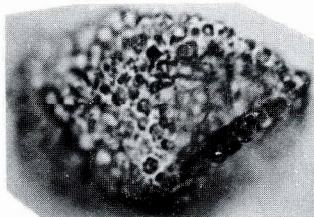
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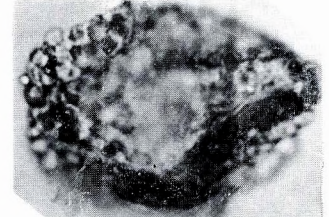
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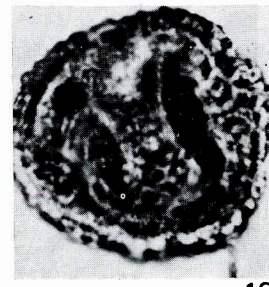
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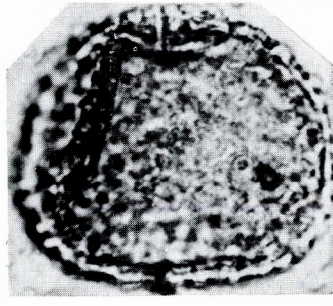
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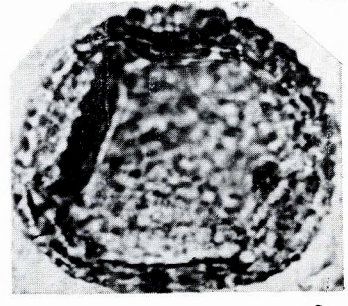
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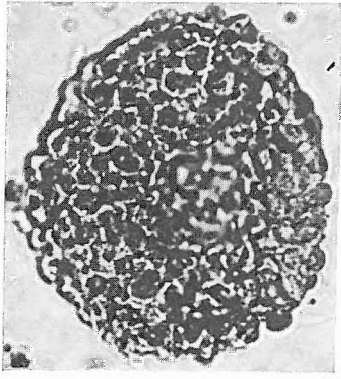


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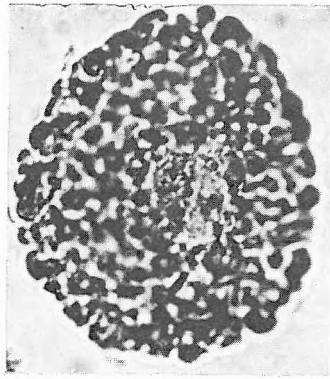


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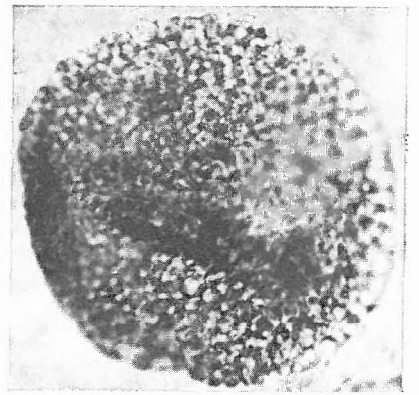
- 1—2. *Sciadopityspollenites tuberculatus* (ZAKLINSK. 1957) W. KR. 1971 — Zengővárkony 59. sz. f. 51,3—56,0 m
3. *S. varius* W. KR. 1971 — Zengővárkony 59. sz. f. 76,0—78,0 m
- 4—5. *S. verticillatiformis* (SAUER 1960) W. KR. 1971 — Szokolya 11. sz. f. 26,0 m
6. *Cupressacites* cf. *bockwitzensis* W. KR. 1971 — Hidas 53. sz. f. 600,5—602,3 m
7. *C. bockwitzensis* W. KR. 1971 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
8. *C. cf. cuspidataeformis* (ZAKL. 1957) W. KR. 1971 — Hidas 53. sz. f. 708,1—708,5 m
9. *C. insulipapillatus* (TREVISAN 1967) W. KR. 1971 — Hidas 53. sz. f. 600,5—602,3 m
- 10—11. *C. insulipapillatus* (TREVISAN 1967) W. KR. 1971 — Hidas 53. sz. f. 630,8—632,0 m
12. *Cupressacites* sp. — Tekeres 1. sz. f. 845,0—850,0 m
13. *Cupressacites* sp. — Szokolya 2. sz. f. 51,1—51,9 m
- 14—16. *Chamaecyparidipollenites flexuosus* NAGY 1969 — Megyaszó 1. sz. f. 25,0—32,0/1 m
- 17—18. *C. flexuosus* NAGY 1969 — Hidas 53. sz. f. 444,0 m



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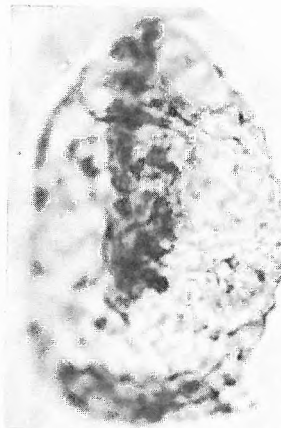
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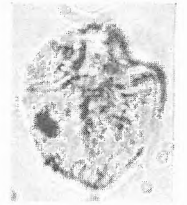
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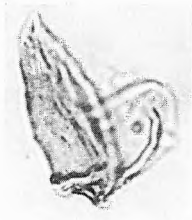
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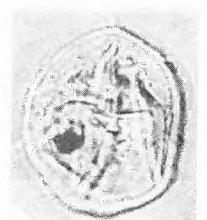
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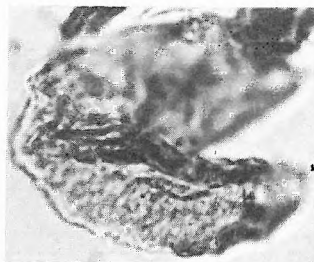
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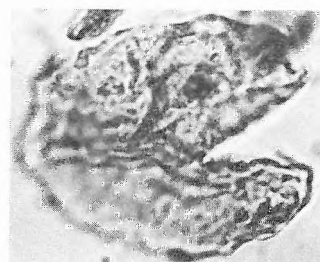
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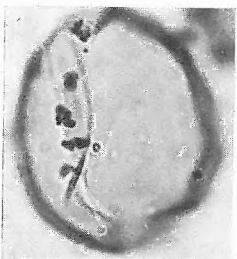
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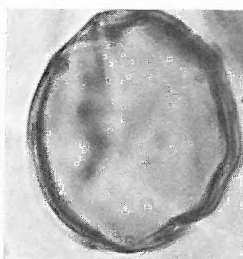
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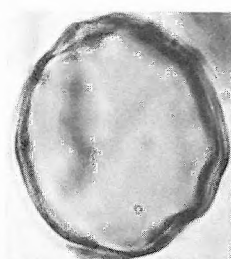
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16



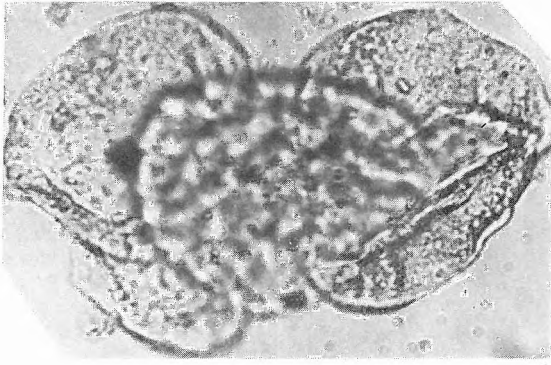
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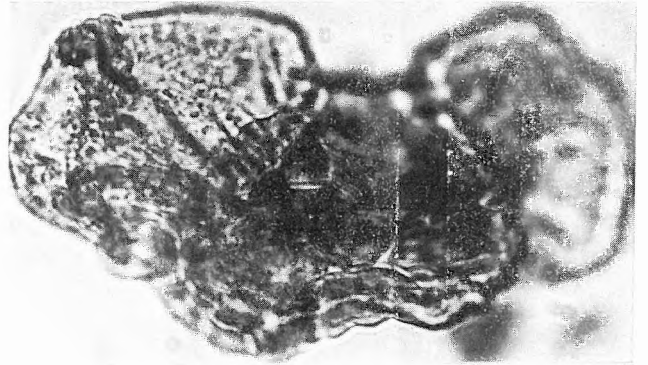
18

LXXXII. tábla — Plate LXXXII

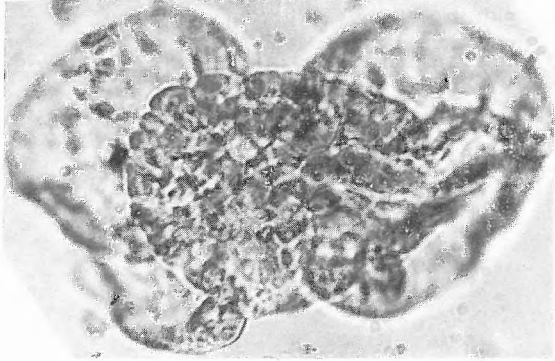
- 1—2. *Podocarpidites acmopyleformis* NAGY 1969 — Holotypus — Szászvár 8. sz. f. 433,8—434,1 m
3. *P. acmopyleformis* NAGY 1969 — Fót 1. sz. f. 214,0—216,5 m
4. *P. acmopyleformis* NAGY 1969 — Eger, Wind-féle téglagyári fúrás 8,2—9,2 m; Eger, Wind brickyard borehole 8.2—9.2 m
5. *P. gigantea* (ZAKL. 1957) n. c. — Szokolya 3. sz. f. 71,2—74,5 m
6. *P. libellus* (R. POT. 1932) W. KR. 1971 — Litke 17. sz. f. 55,0—57,0 m
7. *P. libellus* (R. POT. 1932) W. KR. 1971 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
- 8—9. *P. libellus* (R. POT. 1932) W. KR. 1971 — Szászvár 8. sz. f. 432,5—432,7 m



1



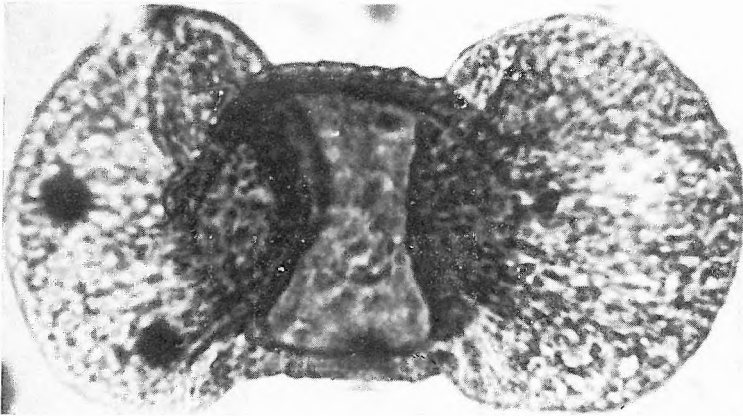
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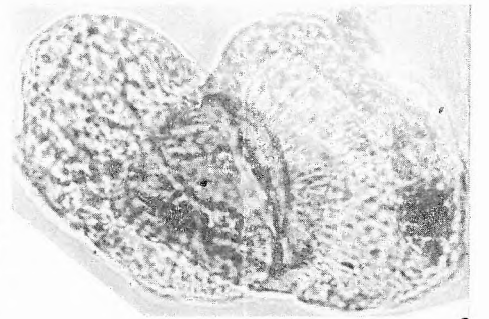
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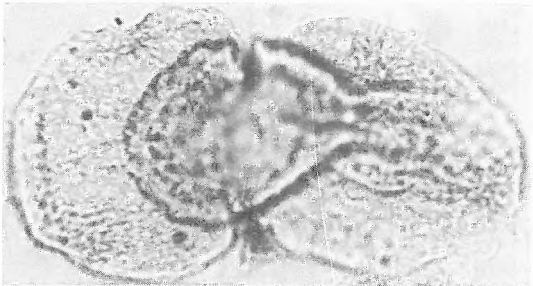
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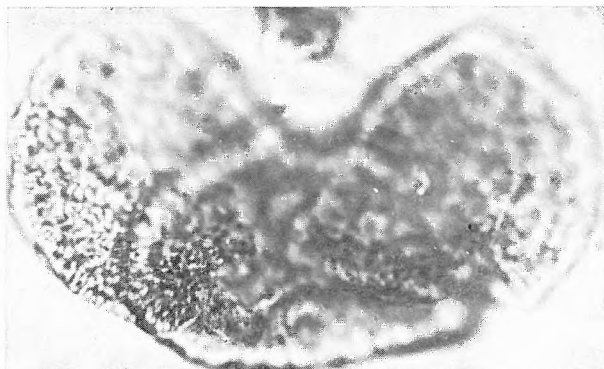
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LXXXIII. tábla — Plate LXXXIII

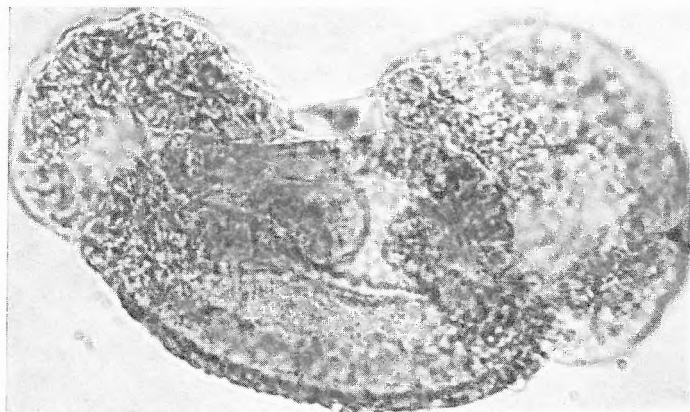
- 1—2. *Podocarpidites macrophylliformis* NAGY 1969 — Holotypus — Komló 120. sz. f. 178,0—178,8 m
3. *P. macrophylliformis* NAGY 1969 — Zengővárkony 59. sz. f. 56,0—60,9 m
4. *P. macrophylliformis* NAGY 1969 — Szokolya 3. sz. f. 58,7—59,9 m
5. *P. microreticuloidata* (COOKSON 1947) NAGY 1969 — Zengővárkony 59. sz. f. 28,6—28,8 m
6. *P. microreticuloidata* (COOKSON 1947) NAGY 1969 — Fót 1. sz. f. 228,0 m
7. *P. nageiaformis* (ZAKL. 1957) W. KR. 1971 — Fót 1. sz. f. 209,9—212,6 m
8. *P. nageiaformis* (ZAKL. 1957) W. KR. 1971 — Fót 1. sz. f. 131,5—132,5 m



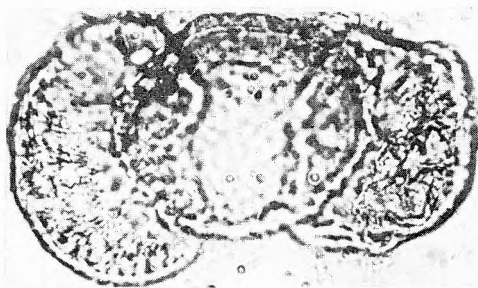
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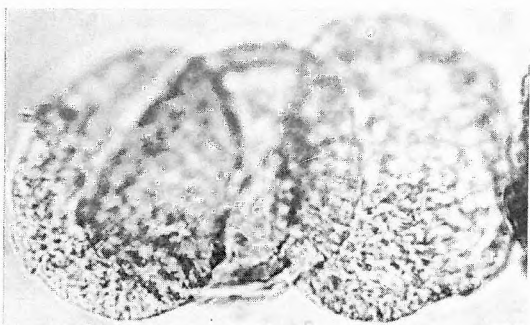
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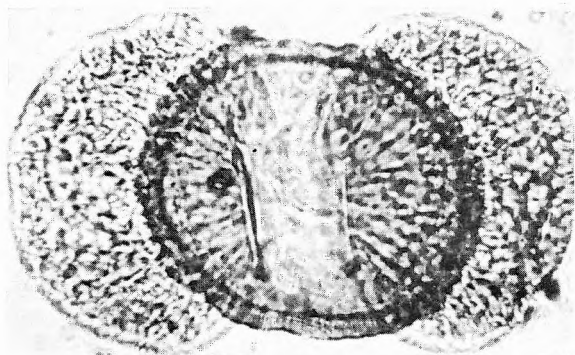
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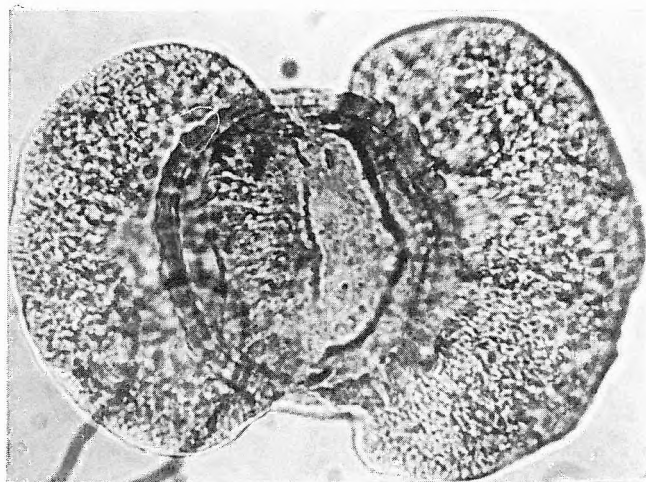
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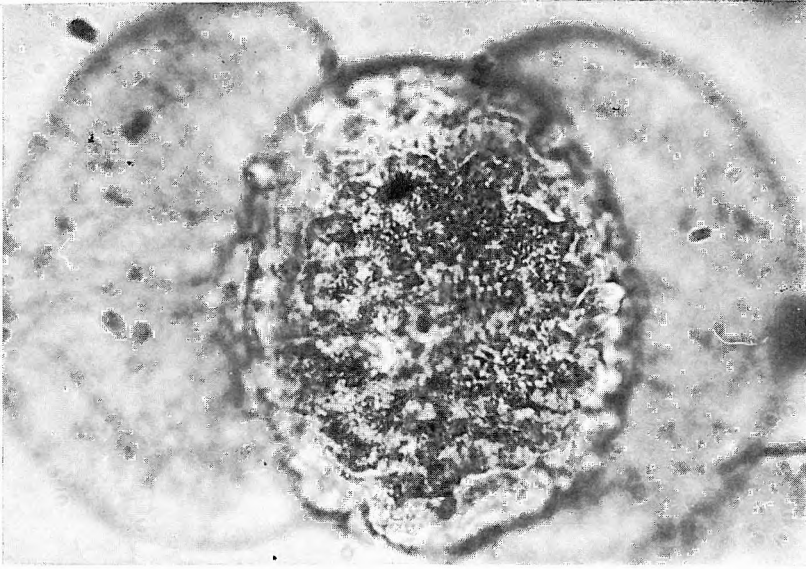
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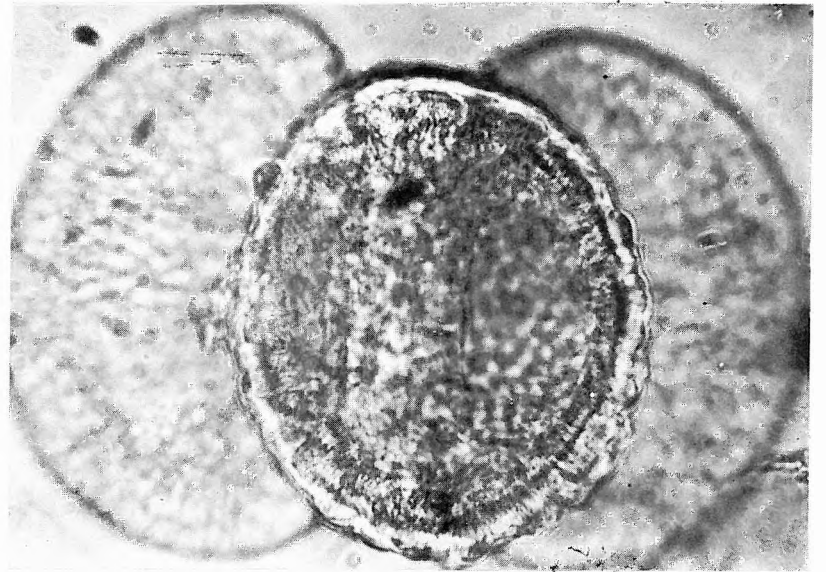
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LXXXIV. tábla — Plate LXXXIV

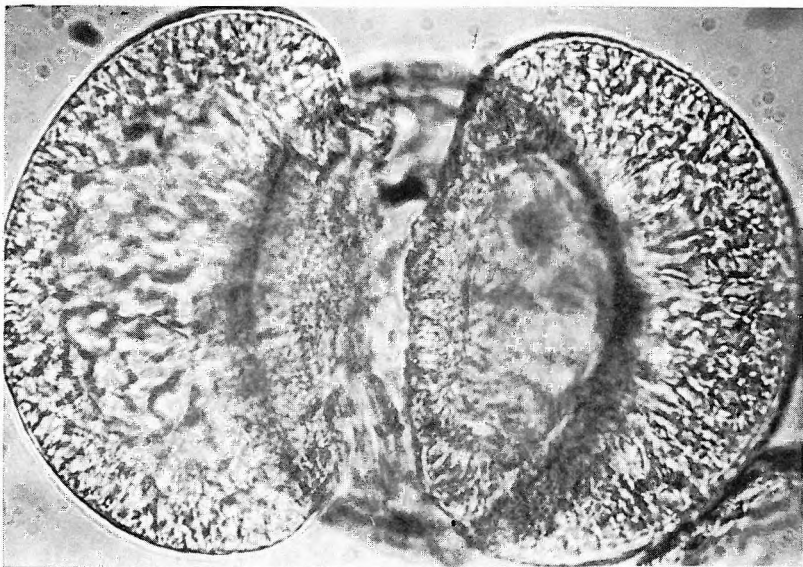
1—3. *Podocarpidites multicristatus* (TREVISAN 1967) n. c. — Püspökatvan 4. sz. f. 153,3—157,0 m



1



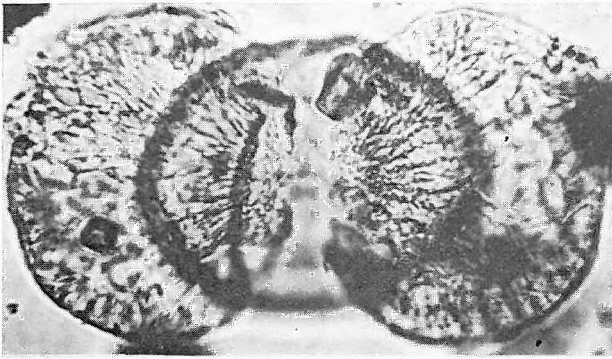
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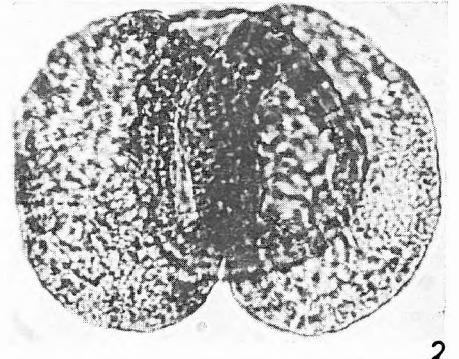
3

LXXXV. tábla — Plate LXXXV

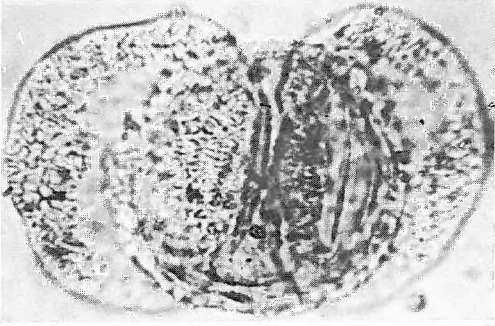
1. *Podocarpidites nageiaformis* (ZAKL. 1957) W. KR. 1971 — Szokolya 11. sz. f. 26,0 m
2. *P. piniverrucatus* W. KR. 1971 — Fót 1. sz. f. 346,5—348,0 m
- 3—4. *P. piniverrucatus* W. KR. 1971 — Budapest-Kőbánya I. szelvény: Budapest-Kőbánya, Profil N^o I.
- 5—10. *Dacrydiumites elegans* n. sp. — Holotypus — Fót 1. sz. f. 237,5—238,0 m



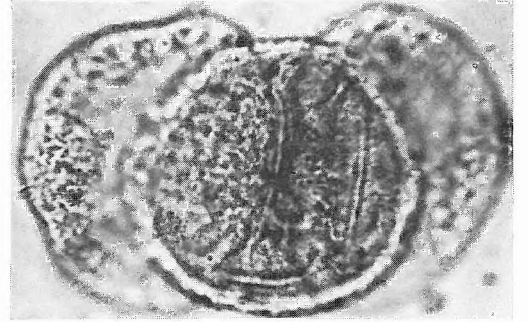
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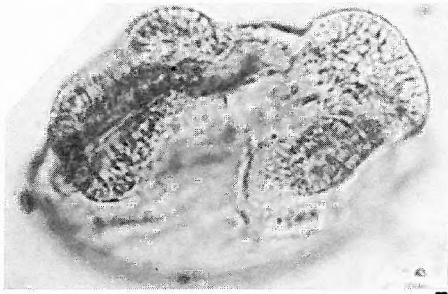
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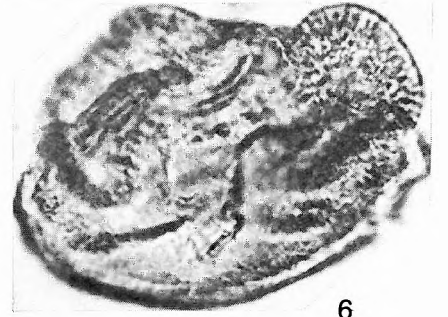
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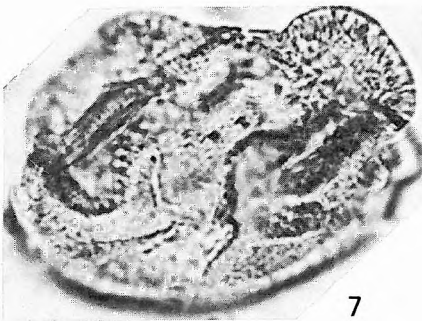
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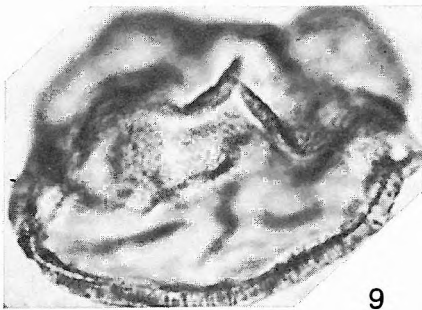
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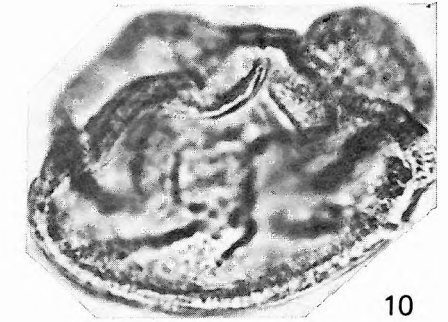
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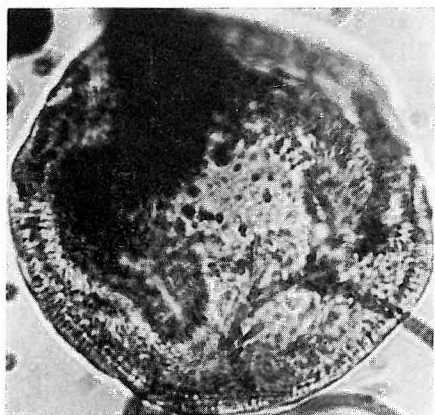
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LXXXVI. tábla — Plate LXXXVI

1. *Dacrydiumites elegans* n. sp. — Fót 1. sz. f. 209,5—209,9 m
- 2—3. *Dacrycarpites* cf. *australiensis* COOKSON et PIKE 1953 — Fót 1. sz. f. 121,0—122,0 m
- 4—5. *Dacrydiumites mawsonii* (COOKSON 1947) COOKSON et PIKE 1953 — Fót 1. sz. f. 216,5—218,8 m
- 6—8. *D. mawsonii* (COOKSON 1947) COOKSON et PIKE 1953 — Szokolya 2. sz. f. 80,7—81,5 m
- 9—10. *D. mawsonii* (COOKSON 1947) COOKSON et PIKE 1953 — Szokolya 2. sz. f. 37,9—38,3 m
- 11—15. *Ephedripites* sg. *Ephedripites boerzsoenyensis* n. sp. — Holotypus — Szokolya 2. sz. f. 52,6—53,6 m



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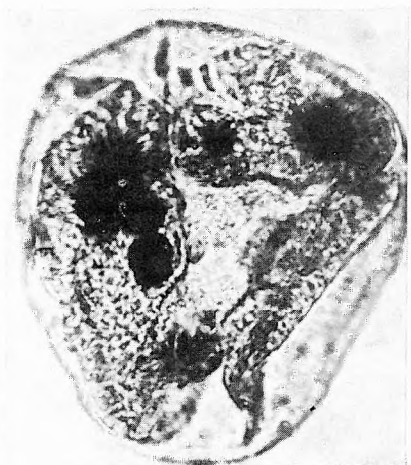
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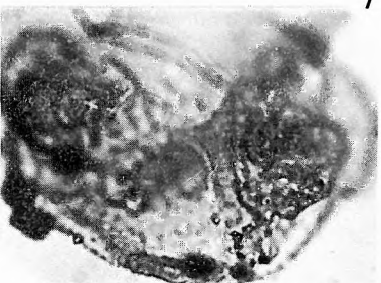
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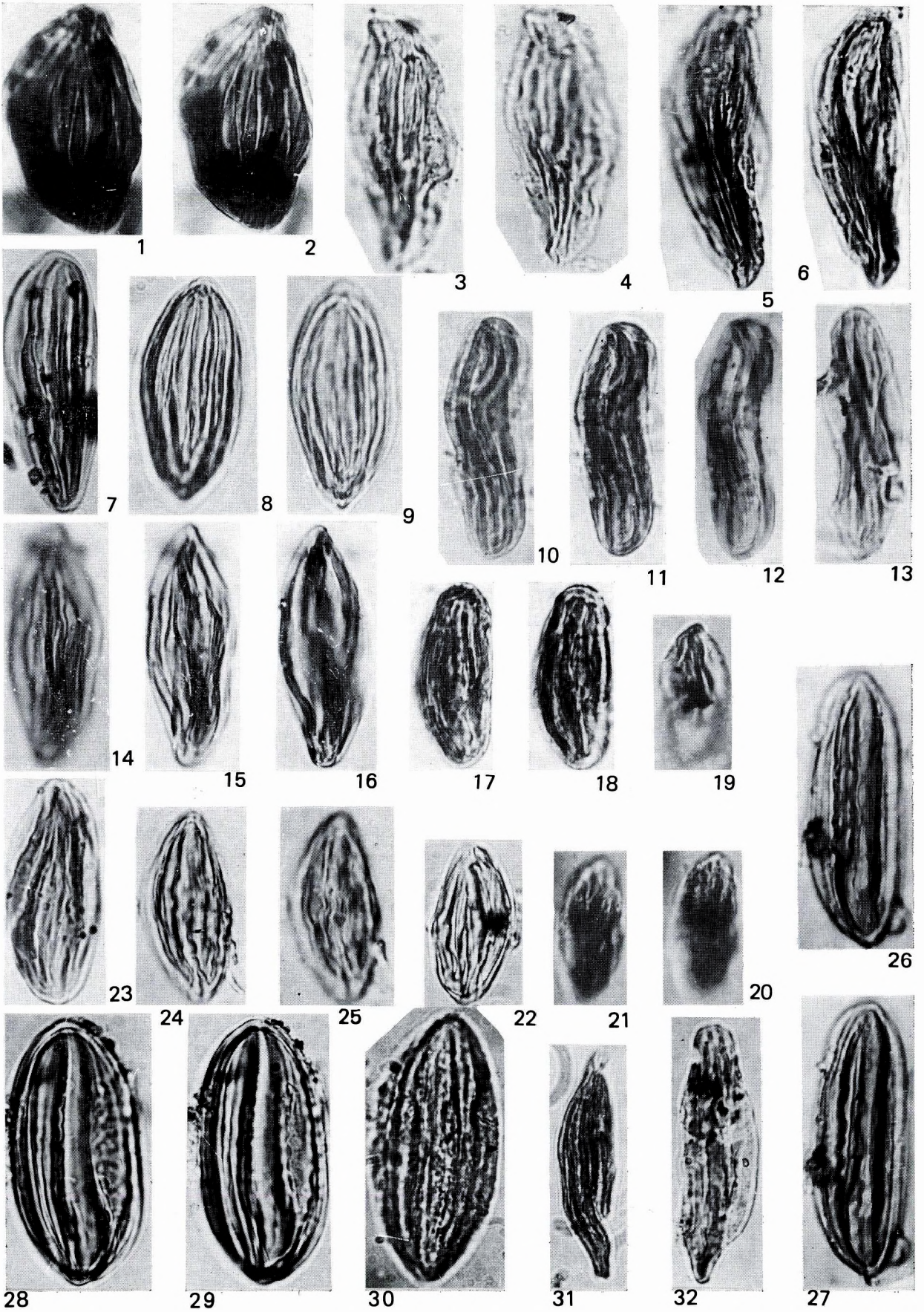
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LXXXVII. tábla — Plate LXXXVII

- 1—2. *Ephedripites* sg. *Ephedripites crassoides* W. KR. 1961 — Fót 1. sz. f. 193,4—194,4 m
 3—4. *E.* sg. *E. hungaricus* NAGY 1963 — Holotypus — Szászvár 8. sz. f. 432,5—432,7 m
 5—6. *E.* sg. *E. hungaricus* NAGY 1963 — Szokolya 2. sz. f. 93,0—95,0 m
 7. *E.* sg. *E. hungaricus* NAGY 1963 — Szokolya 2. sz. f. 115,3—118,3 m
 8—9. *E.* sg. *E. landenensis* W. KR. 1977 — Nógrádszakál 2. sz. f. 95,0—95,5 m
 10—12. *E.* sg. *E. mecsekensis* NAGY 1963 — Holotypus — Hidas 53. sz. f. 479,1—482,0 m
 13. *E.* sg. *E. mecsekensis* NAGY 1963 — Szilvássvár 1. sz. f. 130,0 m
 14—16. *E.* sg. *E. treplinensis* W. KR. 1961 — Cserhátszentiván 1. sz. f. 185,5—188,0 m
 17—18. *E.* sg. *E. treplinensis* W. KR. 1961 — Fót 1. sz. f. 240,0—241,6 m
 19—21. *E.* sg. *E.* cf. *viesenensis* W. KR. 1961 — Alsóvadász 1. sz. f. 1029,0—1034,6/16 m
 22. *E.* sg. *E.* cf. *viesenensis* W. KR. 1961 — Nógrádszakál 2. sz. f. 121,2—122,0 m
 23. *E.* sg. *E. wolkenbergensis* W. KR. 1961 — Fót 1. sz. f. 222,5—225,5 m
 24—25. *E.* sg. *E. wolkenbergensis* W. KR. 1961 — Szokolya 11. sz. f. 26,0 m
 26—27. *Ephedripites* sg. *Distachyapites bernheidensis* W. KR. 1961 — Szokolya 2. sz. f. 100,0—101,0 m
 28—29. *E.* sg. *Distachyapites bernheidensis* W. KR. 1961 — Nógrádszakál 2. sz. f. 99,5—101,0 m
 30. *E.* sg. *D. ellipticus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 48,5—51,3 m
 31. *E.* sg. *D. fusiformis* (SHAKMUNDES 1965) W. KR. 1970 — Fót 1. sz. f. 214,0—216,5 m
 32. *E.* sg. *D. fusiformis* (SHAKMUNDES 1965) W. KR. 1970 — Litke 17. sz. f. 242,0—244,0 m



- 1—2. *Ephedripites* sg. *Distachyapites bicostatus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
- 3—4. *E.* sg. *D. bicostatus* NAGY 1969 — Szokolya 2. sz. f. 115,3—118,3 m
5. *E.* sg. *D. ellipticus* NAGY 1969 — Szokolya 2. sz. f. 60,1—60,8 m
6. *E.* sg. *D. miocaenicus* NAGY 1969 — Zengővárkony 59. sz. f. 63,0—65,0 m
7. *E.* sg. *D. miocaenicus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
- 8—10. *E.* sg. *D. matraënsis* NAGY — Nógrádszakál 2. sz. f. 99,5—101,0 m
11. *E.* sg. *D. miocaenicus* NAGY 1969 — Szokolya 3. sz. f. 51,6—52,6 m
- 12—14. *E.* sg. *D. minimus* NAGY 1969 — Budajenő 2. sz. f. 538,4—539,4 m
15. *E.* sg. *D. minimus* NAGY 1959 — Holotypus — Pusztakisfalu VI. sz. f. 22,5—25,0 m
- 16—18. *Epedripites* sg. *Distachyapites* sp. — Nógrádszakál 2. sz. f. 95,0—95,5 m
- 19—20. *E.* sg. *D. tertiaris* W. KR. 1970 — Budapest-Kőbánya IV. szelvény; Budapest-Kőbánya, Profil N° IV.



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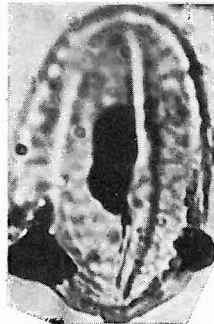
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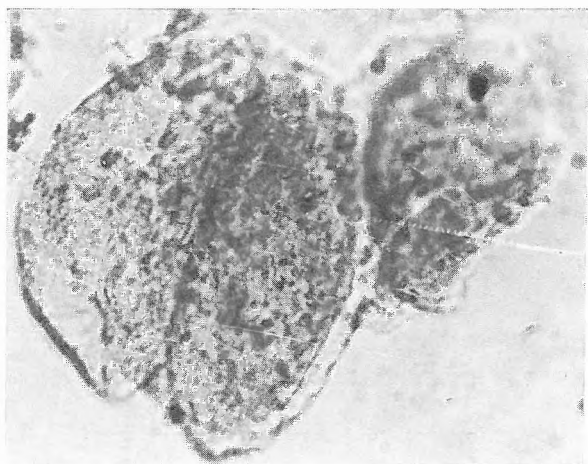
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LXXXIX. tábla — Plate LXXXIX

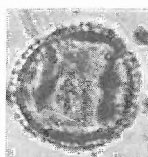
1. *Magnoliaepollenites simplex* NAGY 1969 — Holotypus — Hidas 53. sz. f. 665,1—666,8 m
2. *M. simplex* NAGY 1969 — Felsőnyárád 166/v No 71
3. *Tetracentracearumpollenites komloënsis* NAGY 1969 — Holotypus — Komló 120. sz. f. 367,0 m
4. *T. komloënsis* NAGY 1969 — Nógrádszakál 2. sz. f. 91,4—93,0 m
5. *T. minimus* NAGY 1969 — Generotypus — Pusztakisfalu VI. sz. f. 10,5—12,5 m
6. *T. minimus* NAGY 1969 — Komló 120. sz. f. 374,7 m
7. *T. minimus* NAGY 1969 — Fót 1. sz. f. 222,5—225,5 m
- 8—9. *Liriodendronpollenites semiverrucatus* (W. KR. 1970) n. c. ssp. *semiverrucatus* — Fót 1. sz. f. 142,8—144,0 m
- 10—11. *Nymphaeaepollenites minor* n. sp. — Szokolya 2. sz. f. 59,1—59,9 m
- 12—13. *Nupharipollenites kedvesi* NAGY 1969 — Naszály 1. sz. f. 14,9—15,1 m
- 14—15. *N. kedvesi* NAGY 1969 — Generotypus — Zengővárkony 59. sz. f. 60,9—63,0 m



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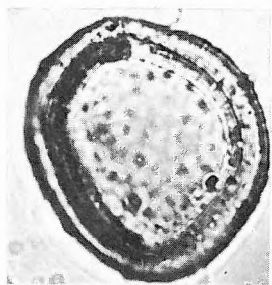
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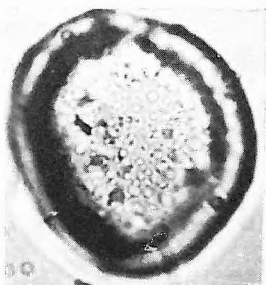
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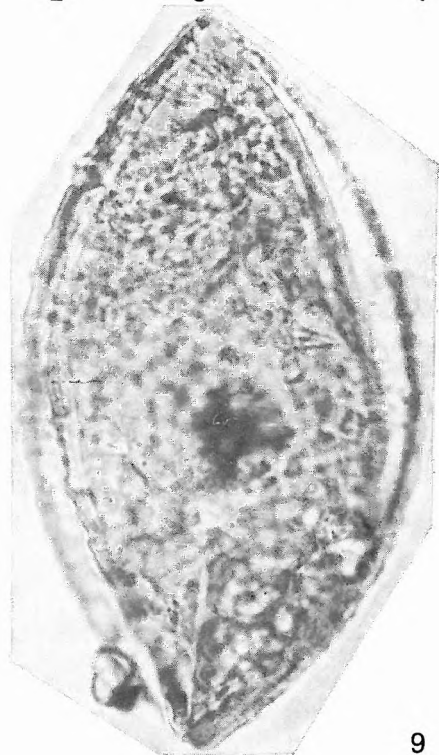
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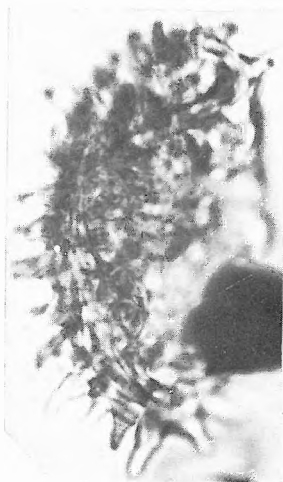
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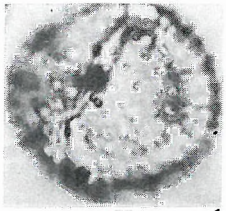


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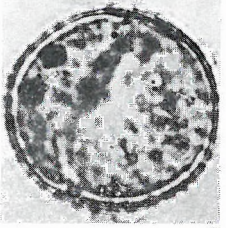


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- 1—3. *Nymphaeaepollenites minor* n. sp. — Szokolya 2. sz. f. 71,9—72,4 m
 4. *Nymphaeaepollenites* sp. — Szokolya 2. sz. f. 75,9—76,7 m, Scan felvétel 6000×; SEMG 6000×
 5—8. *N. minor* n. sp. — Holotypus — Várkesző 1. sz. f. 15,0—16,0 m
 9. *N. minor* n. sp. — Szokolya 2. sz. f. 55,1—55,9 m
 10—11. *N. minor* n. sp. — Naszály 1. sz. f. 14,9—15,1 m
 12. *N. pannonicus* (NAGY 1969) n. c. — Holotypus — Hidasbánya, II. telep 1. minta
 13—14. *N. pannonicus* (NAGY 1969) n. c. — Szokolya 3. sz. f. 31,0—32,0 m
 15. *N. pannonicus* (NAGY 1969) n. c. — Naszály 1. sz. f. 29,7—32,0 m
 16—17. *Chloranthacearumpollenites dubius* NAGY 1969 — Generotypus — Hidas 53. sz. f. 669,2—669,8 m
 18. *Liquidambarpollenites formosanaeformis* NAGY 1969 — Szilvásvárad 1. sz. f. 130,0 m
 19. *L. formosanaeformis* NAGY 1969 — Tekeres 1. sz. f. 870,0 m
 20. *L. formosanaeformis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
 21. *L. orientalisformis* NAGY — Zengővárkony 59. sz. f. 65,0—67,0 m
 22. *L. orientalisformis* NAGY 1969 — Szokolya 3. sz. f. 58,7—59,9 m



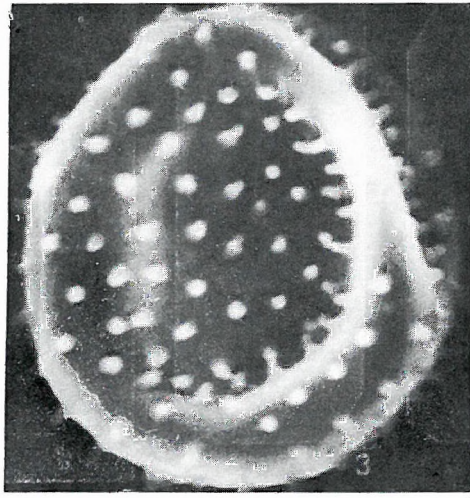
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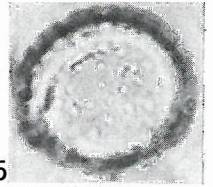
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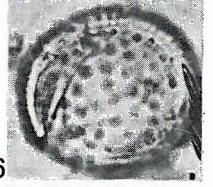
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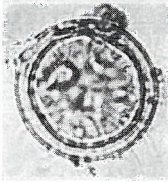
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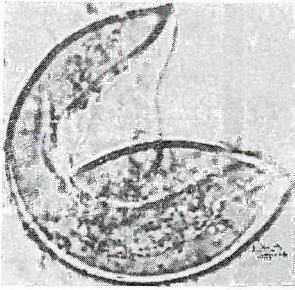
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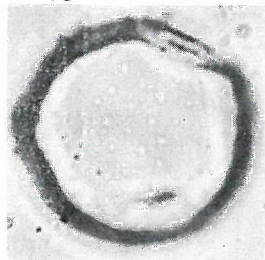
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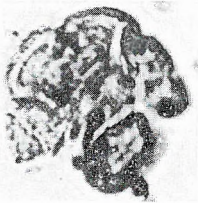
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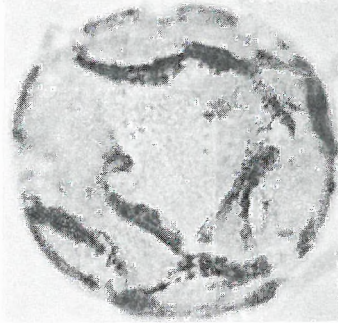
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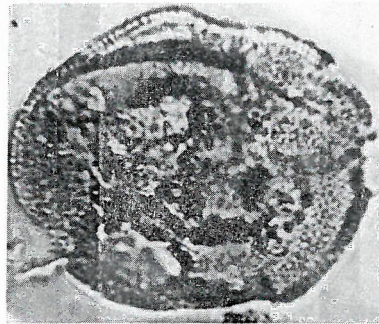
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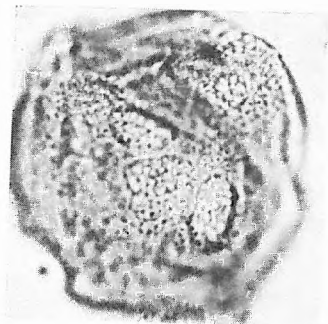


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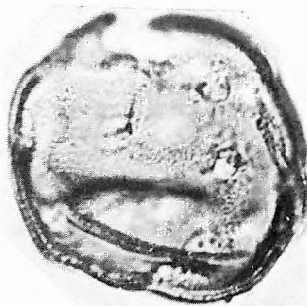


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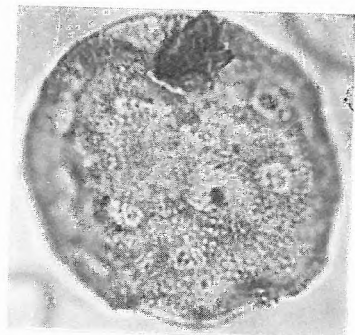
1. *Liquidambarpollenites orientalisformis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 71,4—73,0 m
2. *L. styracifluaeformis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 71,4—73,0 m
3. *L. styracifluaeformis* NAGY 1969 — Cserhátszentiván 1. sz. f. 180,7—183,7 m
4. *L. styracifluaeformis* NAGY 1969 — Fót 1. sz. f. 288,0—290,5 m
5. *Acaciapollenites varpalotaënsis* (NAGY 1962) n. c. — Holotypus — Várpalota 133. sz. f. 208,3—214,3 m
- 6—7. *Tricolporopollenites caesalpiniaceaeformis* NAGY 1969 — Holotypus — Zengővárkony 45. sz. f. 14,0—14,5 m
- 8—9. *Slovakipollis cechowici* (PACLT. 1958) W. KR. 1962 — Alsóvadász 1. sz. f. 1029,0—1034,6/5 m
- 10—11. *S. elaeagnoides* W. KR. 1962 — Cserhátszentiván 1. sz. f. 165,0—167,0 m
- 12—13. *S. mecsekensis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 67,5—70,5 m
14. *S. mecsekensis* NAGY 1969 — Szokolya 3. sz. f. 48,6—50,6 m
15. *S. elaeagnoides* W. KR. 1962 — Budapest-Kőbánya I. szelvény, 1. sz. minta; Budapest-Kőbánya Profil N° I, sample N° 1.
16. *S. neogenicus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m
- 17—18. *S. neogenicus* NAGY 1969 — Budajenő 2. sz. f. 518,2—523,0 m



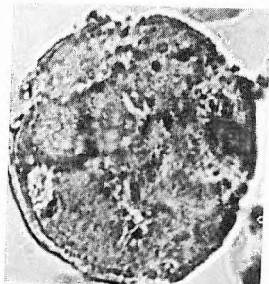
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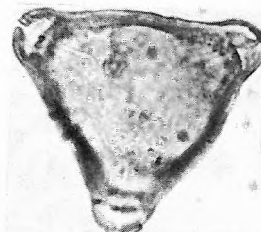
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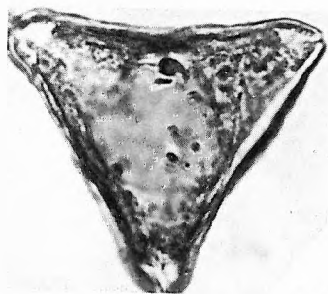
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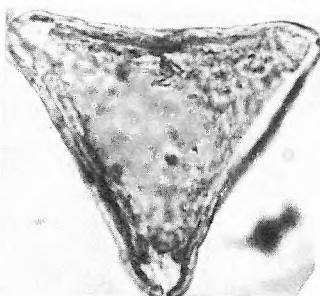
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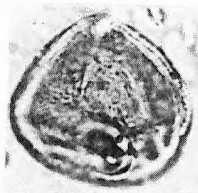
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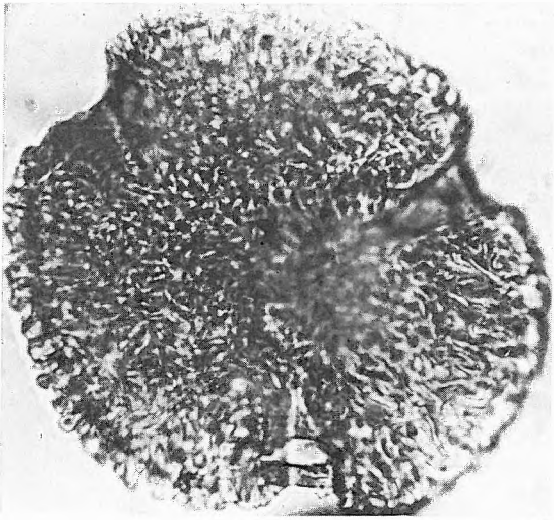
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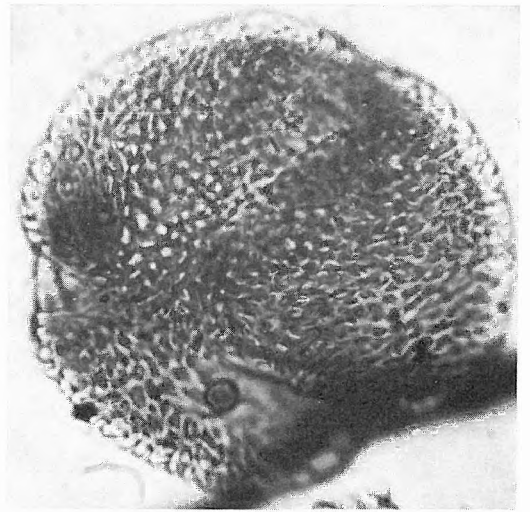
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XCII. tábla — Plate XCII

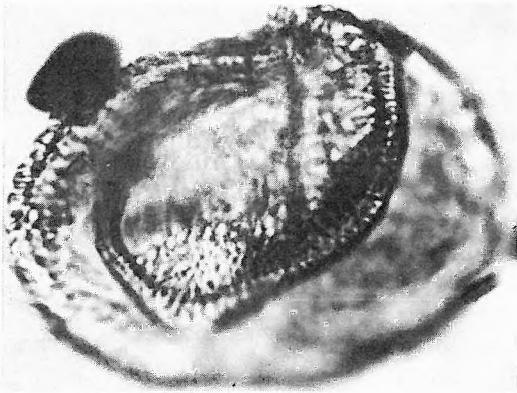
1. *Alangiopollis barghoornianum* (TRAVERSE 1955) W. KR. 1962 — Fót 1. sz. f. 120,0—121,0 m
2. *A. barghoornianum* (TRAVERSE 1955) W. KR. 1962 — Alsóvadász 1. sz. f. 155,8—163,1/4 m
- 3—4. *A. barghoornianum* (TRAVERSE 1955) W. KR. 1962 — Naszály 1. sz. f. 17,0—18,0 m
- 5—6. *A. simplex* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m



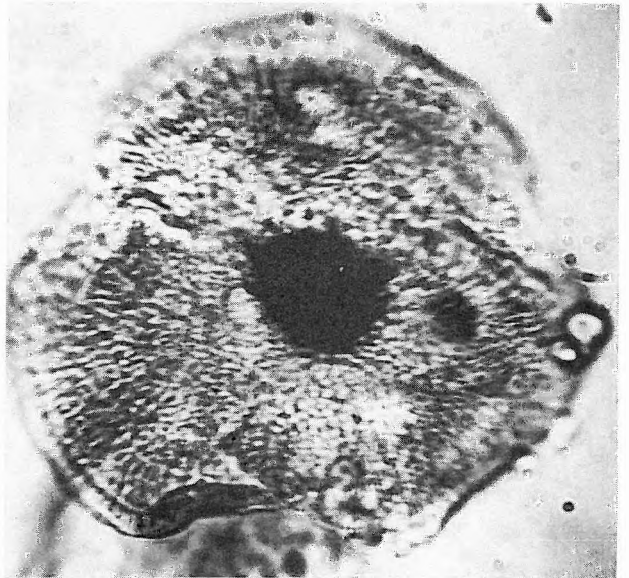
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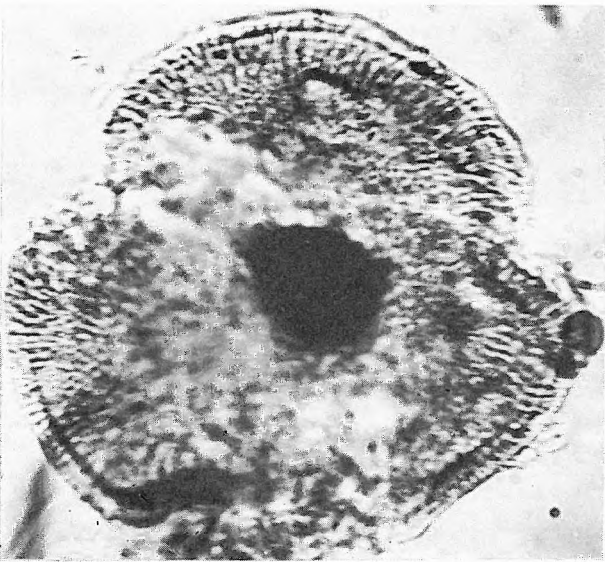
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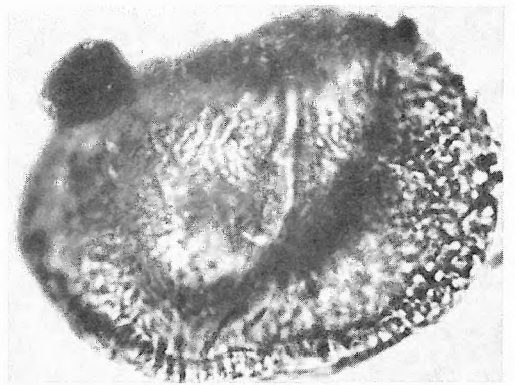
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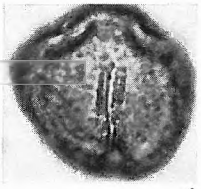
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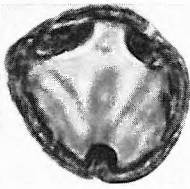
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XCIH. tábla — Plate XCIH

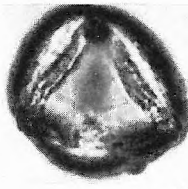
- 1—3. *Nyssapollenites contortus* (PF. et TH. 1953) n. c. — Szokolya 2. sz. f. 91,1—92,7 m
- 4—5. *N. pseudocruciatus* (R. POT. 1931) THIERG. 1937 — Hidas 53. sz. f. 761,0—763,3 m
6. *N. pseudocruciatus* (R. POT. 1931) THIERG. 1937 — Szokolya 2. sz. f. 102,2—104,7 m
- 7—9. *Myrtacidites mesonesus* COOKS. et PIKE 1954 — Szokolya 2. sz. f. 37,0—37,9 m
- 10—11. *M. mesonesus* COOKS. et PIKE 1954 — Tihany 62. sz. f. 161,4—161,7 m
12. *M. myrtiformis* SIMONCSICS 1964 — Fót 1. sz. f. 237,5—238,0 m
13. *M. myrtiformis* SIM. 1964 — Fót 1. sz. f. 220,8—222,5 m
- 14—17. *Jussiaepollenites champlainensis* (TRAVERSE 1955) NAGY 1969 — Budapest-Kőbánya I. szelvény 2. sz. minta; Budapest-Kőbánya Profil N^o I., sample N^o 2.
- 18—19. *Sporotrapoidites erdtmani* (NAGY 1969) n. c. — Holotypus — Nagygörbő 1. sz. f. 908,5—914,0 m (911,0 m)
20. *Sporotrapoidites erdtmani* (NAGY 1979) n. c. — Nagygörbő 1. sz. f. 908,5—914,0 m (911,0 m); Scan felvétel 1000×; SEMG 1000×



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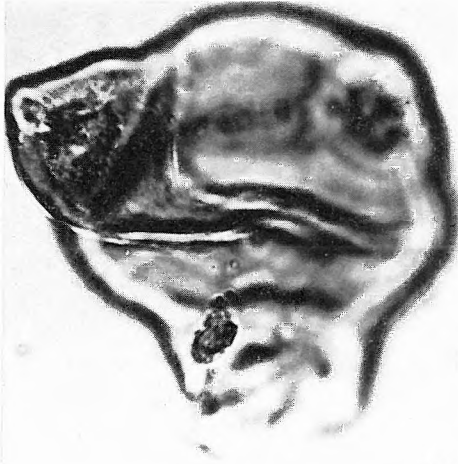
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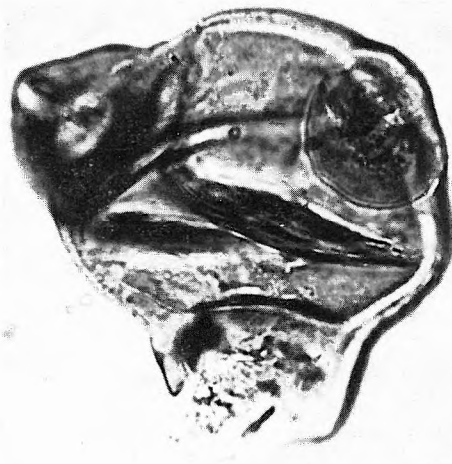
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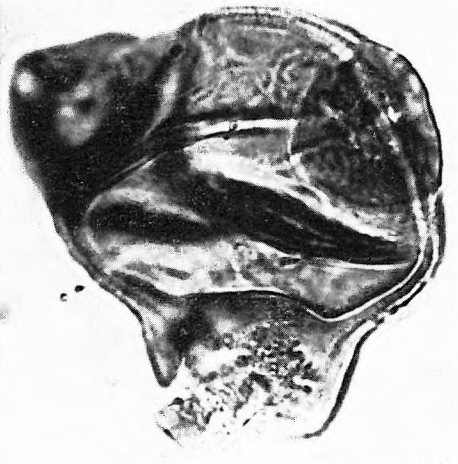
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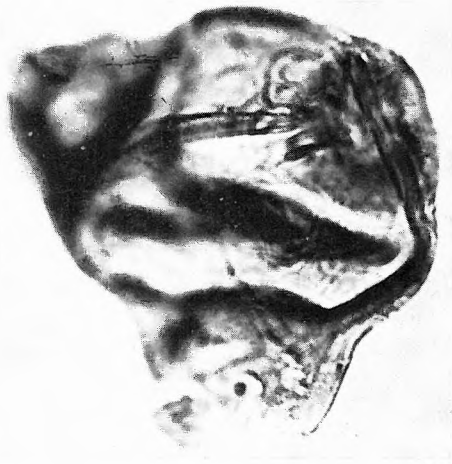
10



11



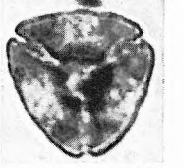
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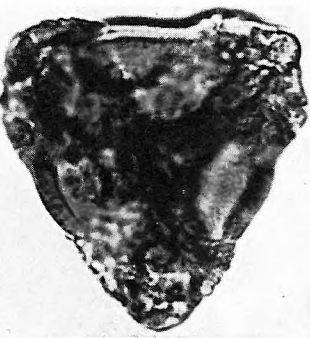
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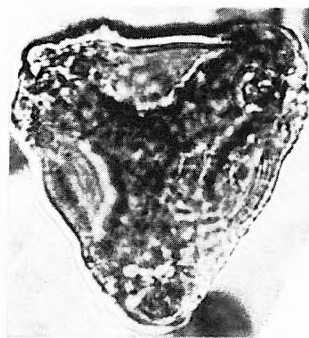
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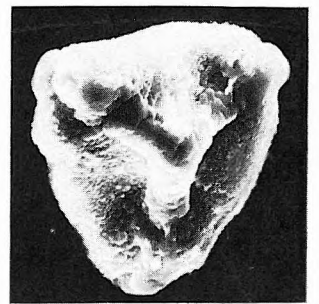
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18



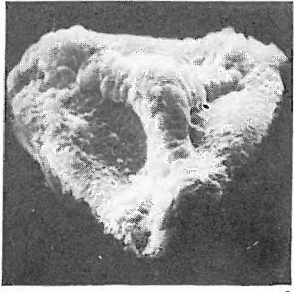
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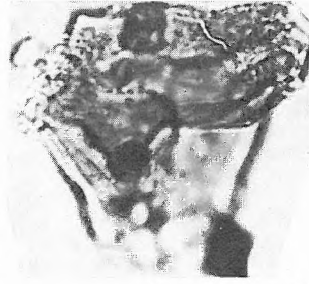
20

XCIV. tábla — Plate XCIV

1. *Sporotrapoidites erdtmani* (NAGY 1979) n. c. — Nagygörbő 1. sz. f. 908,5—914,0 m (911,0 m), Scan felvétel, 1000×; SEMG, 1000×
- 2—4. *S. erdtmani* (NAGY 1979) n. c. — Nagygörbő 1. sz. f. 908,5—914,0 m (911,0 m)
- 5—8. *S. erdtmani* (NAGY 1979) n. c. — Nagygörbő 1. sz. f. 908,5—914,0 m (911,0 m), Scan felvételek, 6=2000×, 7=3000×, 8=10 000× (részlet); SEMG, 6=2000×, 7=3000×, 8=10,000× (detail)



1



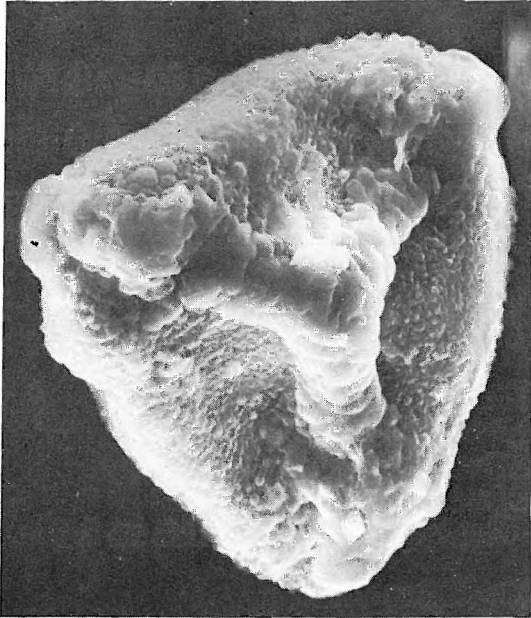
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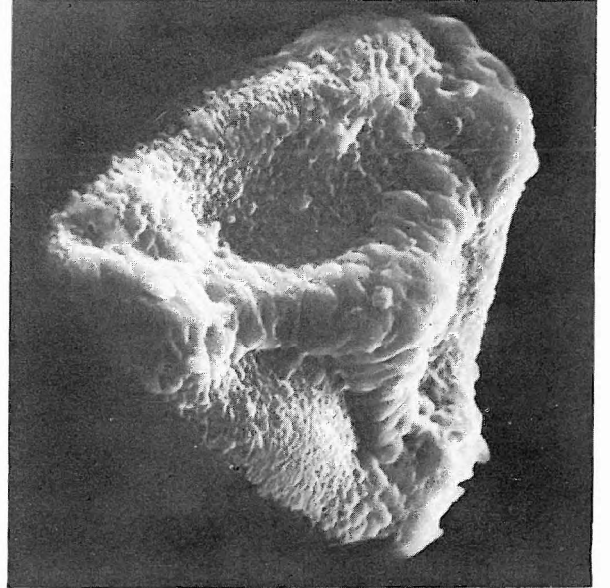
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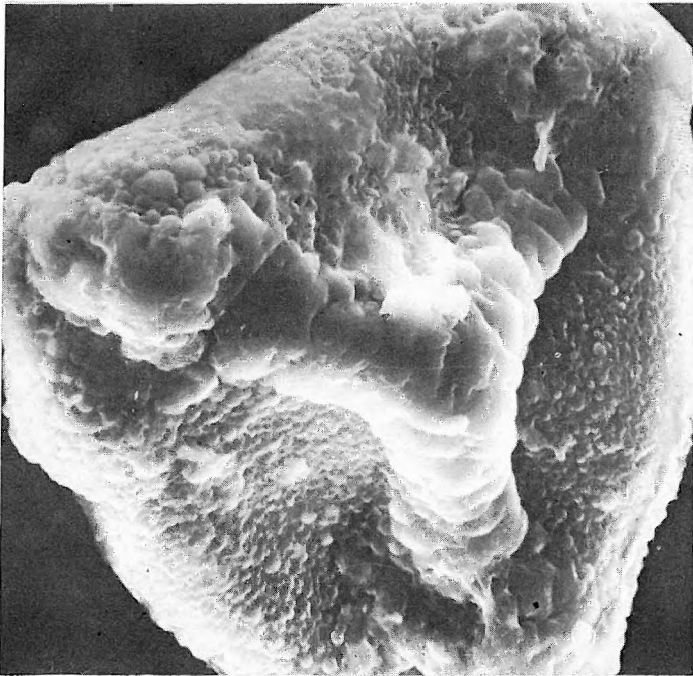
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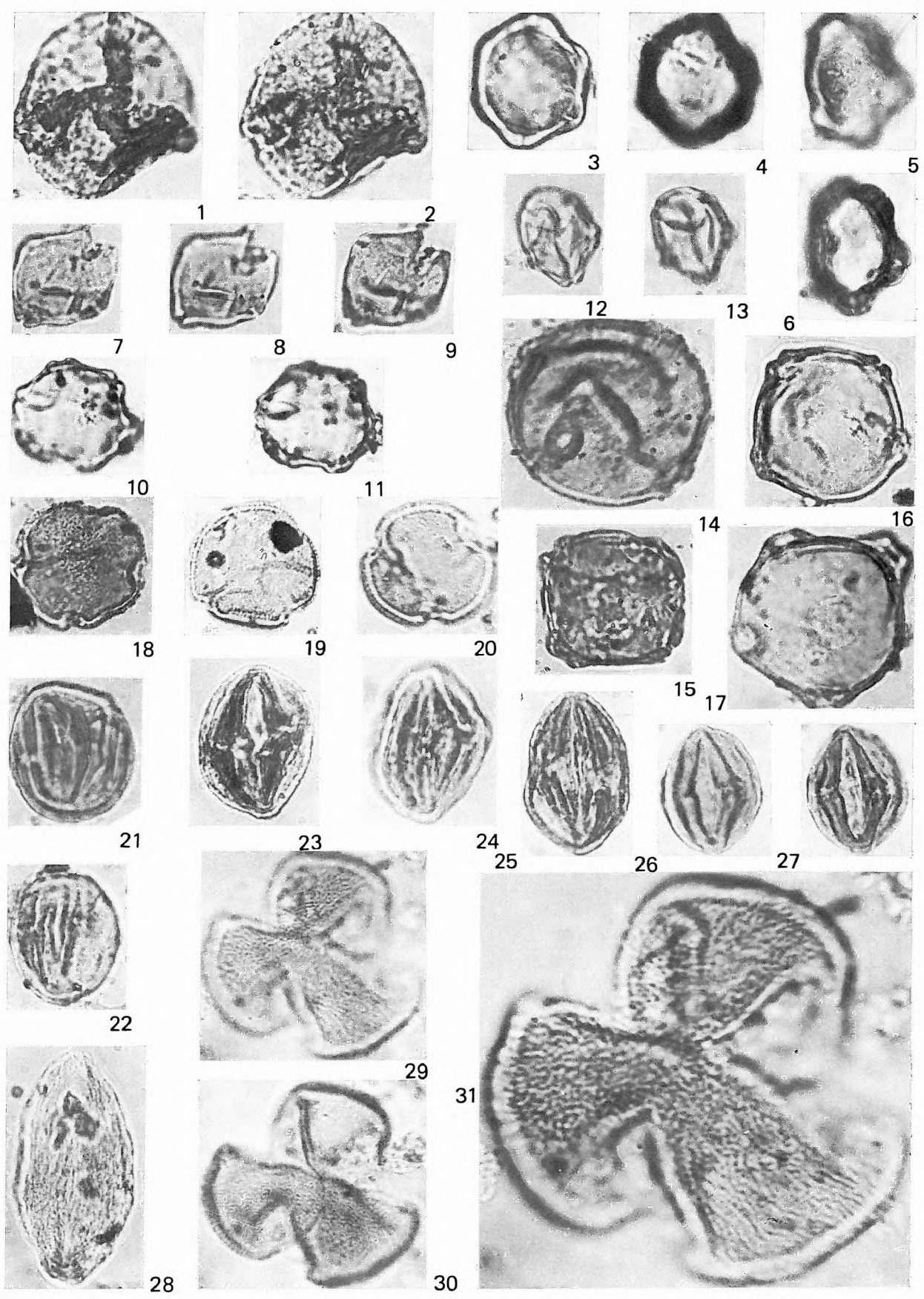
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8

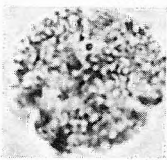
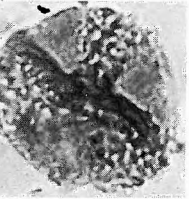
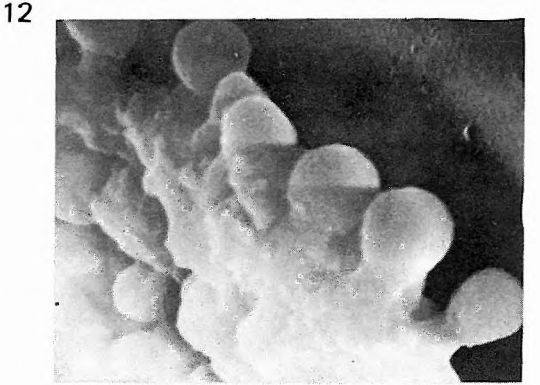
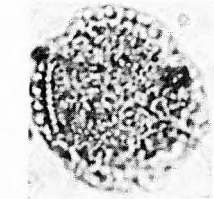
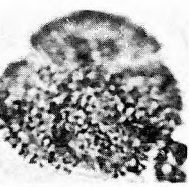
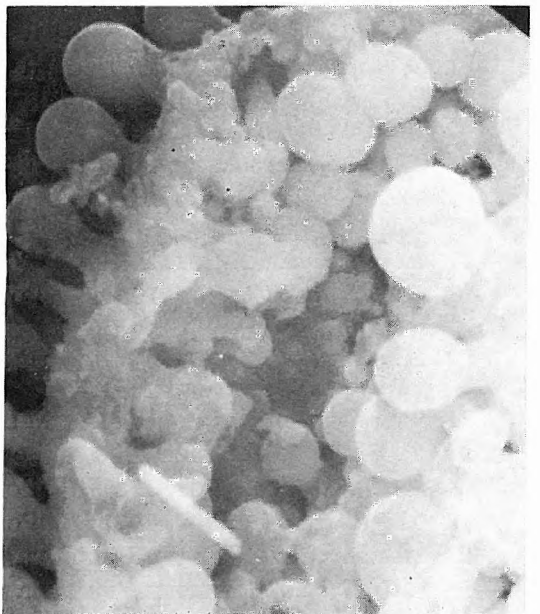
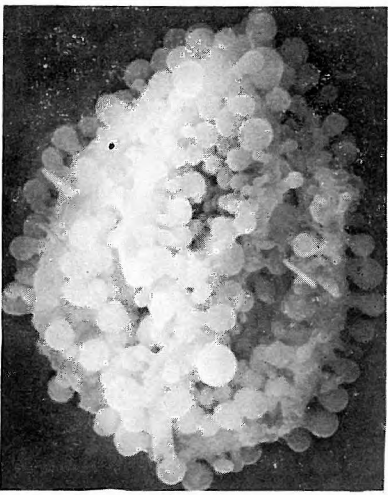
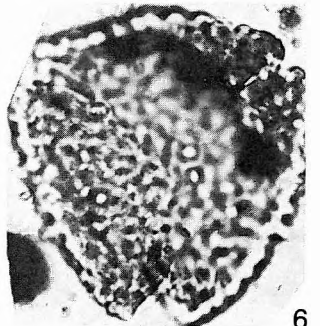
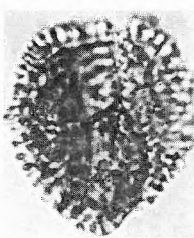
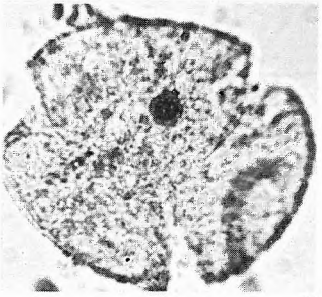
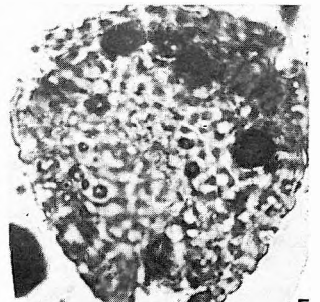
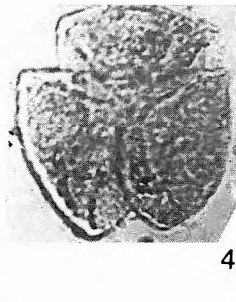
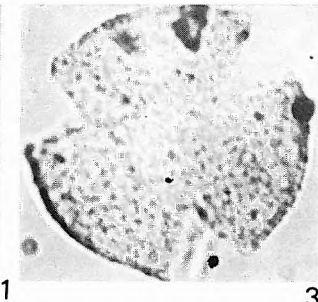
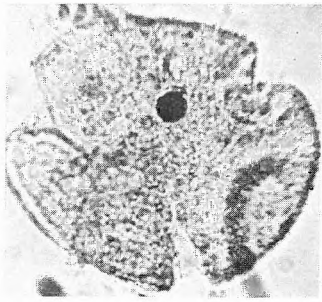
XCV. tábla — Plate XCV

- 1—2. *Sporotrapoidites hungaricus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m
- 3—4. *Myriophyllumpollenites balatonensis* n. sp. — Holotypus — Balatonkenese 1. sz. f. 65,9—66,4 m
- 5—6. *M. balatonensis* n. sp. — Balatonkenese 1. sz. f. 62,4—63,0 m
- 7—9. *M. minimus* n. sp. — Holotypus — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
- 10—11. *M. minimus* n. sp. — Püspökhátvan 4. sz. f. 299,0—302,0 m
- 12—13. *M. minimus* n. sp. — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
14. *M. quadratus* NAGY 1969 — Generotypus — Hidas 53. sz. f. 147,5—148,5 m
15. *M. quadratus* NAGY 1969 — Hidas 53. sz. f. 147,5—148,5 m
16. *M. quadratus* NAGY 1969 — Szokolya 2. sz. f. 75,9—76,7 m
17. *M. quadratus* NAGY 1969 — Szokolya 2. sz. f. 43,1—43,9 m
18. *Rutacearumpollenites komloënsis* NAGY 1969 — Generotypus — Komló 120. sz. f. 178,0—178,8 m
19. *R. komloënsis* NAGY 1969 — Szokolya 3. sz. f. 60,1—60,8 m
20. *R. komloënsis* NAGY 1969 — Szokolya 3. sz. f. 60,1—60,8 m
21. *Polygalacidites miocaenicus* (NAGY 1969) n. c. — Holotypus — Pusztakisfalu VI. sz. f. 25,0—27,1 m
22. *P. miocaenicus* (NAGY 1969) n. c. — Zengővárkony 45. sz. f. 13,2—13,7 m
23. *Rhoipites pseudocingulum* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 119,2—120,0 m
24. *R. pseudocingulum* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 294,0—301,0 m
25. *R. pseudocingulum* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 349,5—354,0 m
- 26—27. *Rhoipites* sp. — Tata (TVG) 26. sz. f. 72,8—74,7 m
28. *Aceripollenites reticulatus* NAGY 1969 — Tengelic 2. sz. f. 722,7—723,1 m
- 29—31. *A. reticulatus* NAGY 1969 — Generotypus — Zengővárkony 59. sz. f. 65,0—67,0 m (31=2000×)

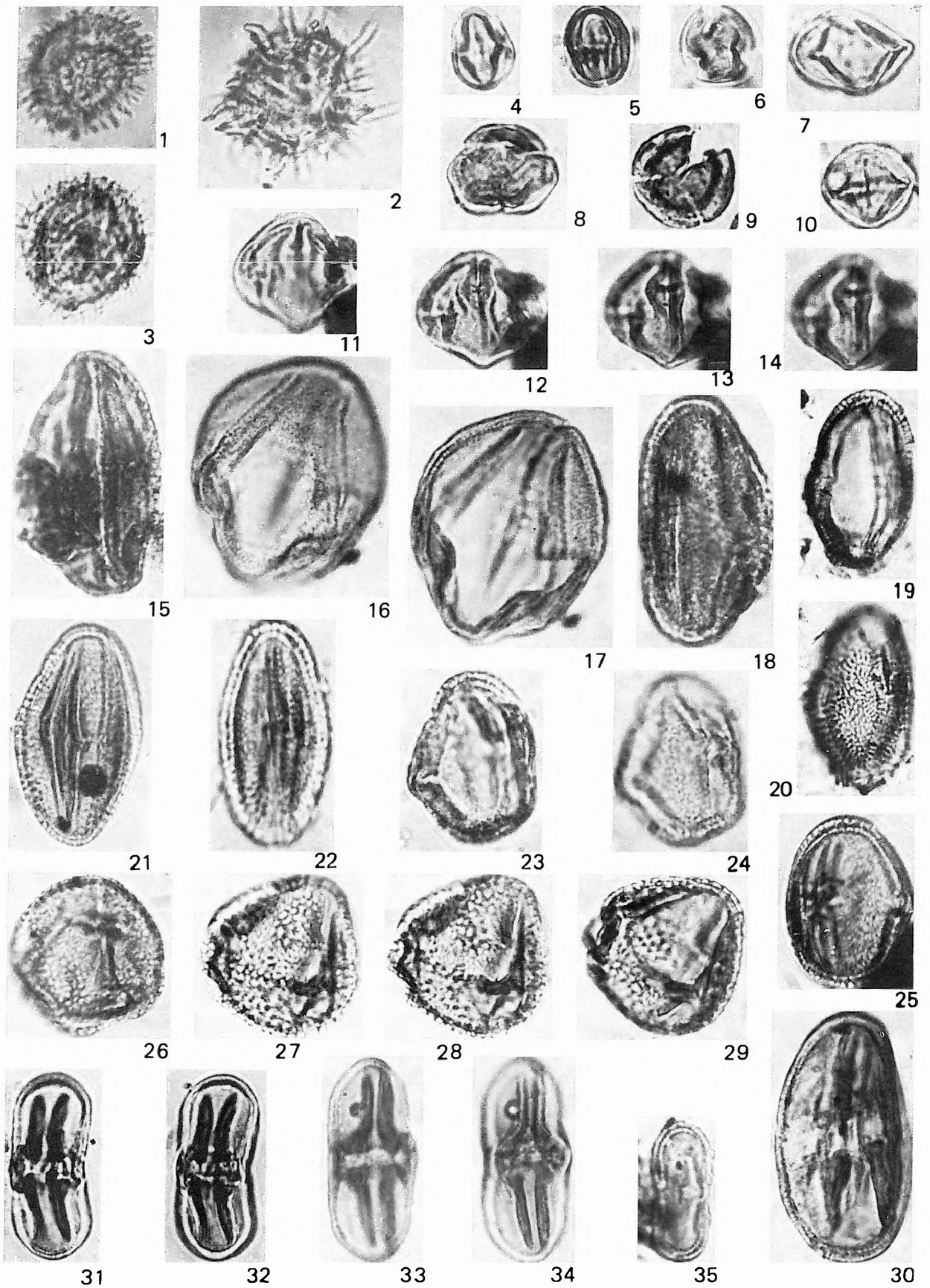


XCVI. tábla — Plate XCVI

- 1—2. *Aceripollenites rotundus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
 3. *A. rotundus* NAGY 1969 — Zengővárkony 45. sz. f. 16,0—16,4 m
 4. *A. rotundus* NAGY 1969 — Kapolcs 2. sz. f. 41,7—42,3 m
 5—6. *Hydrocerapollis miocaenicus* NAGY 1962 — Generotypus — Várpalota 133. sz. f. 161,0—165,5 m
 7. *Ilexpollenites iliacus* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 349,5—354,0 m
 8—9. *I. iliacus* (R. POT. 1931) R. POT. 1960 — Tar 34. sz. f. 530,0—533,0 m
 10—13. *I. iliacus* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 354,0—355,0 m; Scan felvételek, 10=1000×, 11=2000×, 12—13=6000×; SEMG, 10=1000×, 11=2000×, 12—13=6000×
 14. *I. margaritatus* (R. POT. 1931) R. POT. 1960 — Szokolya 3. sz. f. 60,8—63,0 m
 15. *I. margaritatus* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 237,5—239,0 m
 16. *I. margaritatus* (R. POT. 1931) R. POT. 1960 — Szokolya 3. sz. f. 58,7—59,9 m
 17. *I. propinquus* (R. POT. 1934) R. POT. 1960 — Tekeres 1. sz. f. 908,9—911,7 m
 18. *I. propinquus* (R. POT. 1934) R. POT. 1960 — Tihany 62. sz. f. 161,4—161,7 m
 19. *I. propinquus* (R. POT. 1934) R. POT. 1960 — Tekeres 1. sz. f. 881,9—883,2 m
 20. *Siphonodontipollenites hungaricus* NAGY 1969 — Generotypus — Hidas 53. sz. f. 757,0—759,0 m
 21. *S. hungaricus* NAGY 1969 — Tököl 1. sz. f. 823,8—824,3 m

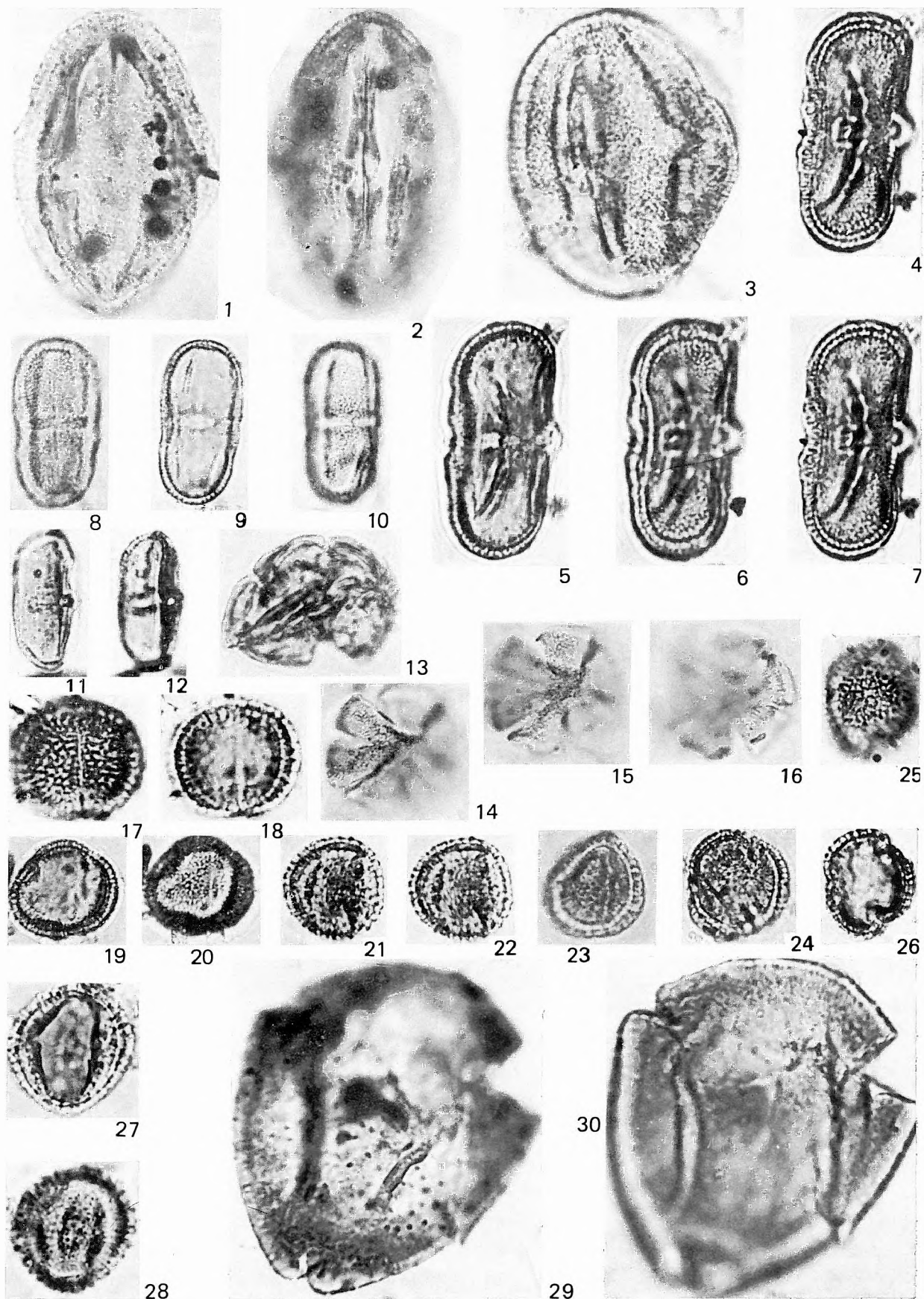


1. *Spinuliferoidaepollenites zolyomii* NAGY 1969 — Generotypus — Pusztakisfalu VI. sz. f. 10,5—12,5 m
2. *S. zolyomii* NAGY 1969 — Nagygörbő 1. sz. f. 861,2—879,2 m (862,0 m)
3. *S. zolyomii* NAGY 1969 — Szokolya 3. sz. f. 41,0—42,5 m
4. *Cyrrillaceapollenites exactus* (R. POT. 1931) R. POT. 1960 — Püspökhatvan 4. sz. f. 233,0—236,0 m
5. *C. exactus* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 216,5—218,8 m
6. *C. exactus* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 361,8 m
7. *C. megaexactus* (R. POT. 1931) R. POT. 1960 — Nógrádszakál 2. sz. f. 122,0—123,0 m
8. *C. megaexactus* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 372,0 m
9. *C. megaexactus* (R. POT. 1931) R. POT. 1960 — Rákoskeresztúr I. sz. f. 535,0—537,0 m
10. *C. megaexactus* (R. POT. 1931) R. POT. 1960 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
- 11—14. *Rhamnaceapollenites triquetus* THIELE-PFEIFFER 1980 — Felsőpetényi bánya 1. sz. minta; Felsőpetény mine, sample N° 1.
15. *Araliaceapollenites edmundi* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 348,0—349,5 m
- 16—17. *A. edmundi* (R. POT. 1931) R. POT. 1960 — Szokolya 2. sz. f. 115,3—118,3 m
18. *A. edmundi* (R. POT. 1931) R. POT. 1960 f. *reticulatus* NAGY 1969 — Szokolya 2. sz. f. 93,0—95,0 m
- 19—20. *A. edmundi* (R. POT. 1931) R. POT. 1960 f. *reticulatus* NAGY 1969 — Formatypus — Zengővárkony 59. sz. f. 67,5—70,5 m
21. *Tricolporopollenites hedwigae* PFLANZL 1956 — Pusztakisfalu VI. sz. f. 12,5—15,0 m
22. *T. hedwigae* PFLANZL 1956 — Fót 1. sz. f. 301,0—305,0 m
- 23—24. *A. euphorii* (R. POT. 1931) R. POT. 1960 — Szokolya 2. sz. f. 71,9—72,4 m
25. *A. euphorii* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 290,5—294,0 m
26. *A. reticuloides* THIELE-PFEIFFER 1980 — Fót 1. sz. f. 288,0—290,5 m
- 27—29. *A. reticuloides* THIELE-PFEIFFER 1980 — Fót 1. sz. f. 171,7—172,7 m
30. *Tricolporopollenites satzveyensis* PFLUG 1953 — Szokolya 2. sz. f. 107,9—109,0 m
- 31—32. *Umbelliferoipollenites nogradensis* n. sp. — Holotypus — Nógrádszakál 2. sz. f. 78,0—79,5 m
- 33—34. *U. nogradensis* n. sp. — Szokolya 2. sz. f. 109,0—111,2 m
35. *U. speciosus* n. sp. — Szokolya 3. sz. f. 68,6—69,6 m



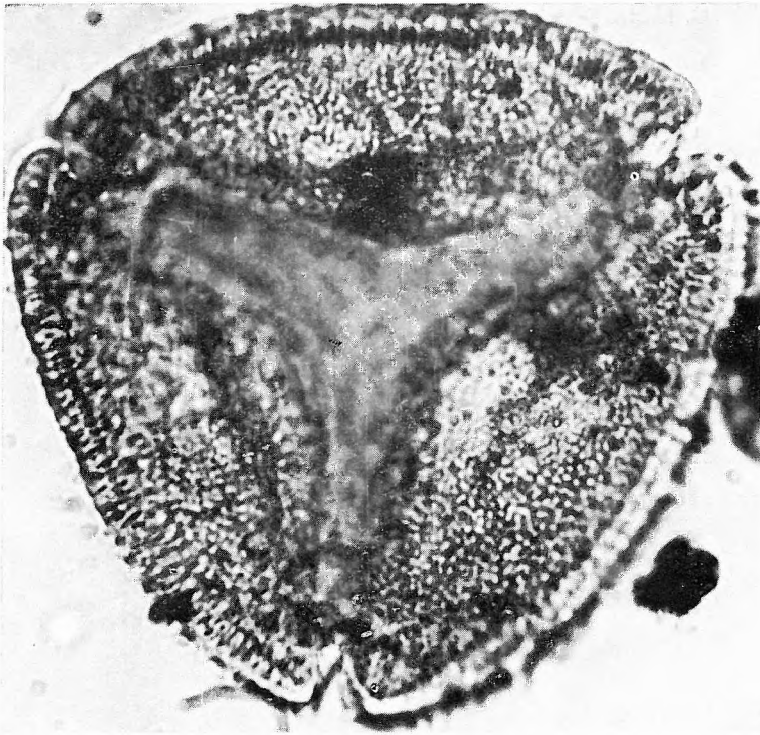
XCVIII. tábla — Plate XCVIII

- 1—2. *Tricolporopollenites edmundi* (R. POT. 1931) TH. et PF. 1953 f. *major* NAGY 1969 — Szokolya 2. sz. f. 89,5—93,3 m
3. *T. edmundi* (R. POT. 1931) TH. et PF. 1953 f. *major* NAGY 1969 — Zengővárkony 59. sz. f. 65,0—67,0 m
- 4—7. *Umbelliferoipollenites speciosus* n. sp. — Holotypus — Szokolya 2. sz. f. 60,7—61,5 m
- 8—10. *U. tenuis* n. sp. — Holotypus — Szokolya 2. sz. f. 93,0—95,0 m
- 11—12. *U. tenuis* n. sp. — Szirma 2. sz. f. 51,9—52,0 m
13. *Rubiaceae* sp. — Hidas 53. sz. f. 600,5—602,3 m
- 14—16. *Rubiaceae* sp. — Lak 1. sz. f. 206,0—210,0 m
- 17—18. *Caprifoliipites andreanszkyi* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 30,9—34,0 m
- 19—20. *C. andreanszkyi* NAGY 1969 — Hidas 53. sz. f. 667,2—669,2 m
- 21—22. *C. gracilis* NAGY 1969 — Holotypus — Zengővárkony 45. sz. f. 16,4—17,2 m
23. *C. gracilis* NAGY 1969 — Fót 1. sz. f. 234,0—235,0 m
24. *C. gracilis* NAGY 1969 — Hidas 53. sz. f. 688,0—688,5 m
- 25—26. *C. sambucoides* NAGY 1969 — Zengővárkony 59. sz. f. 71,4—73,0 m
- 27—28. *C. sambucoides* NAGY 1969 — Holotypus — Hidas 53. sz. f. 667,2—669,2 m
- 29—30. *Lonicerapollis gallwitzi* W. KR. 1962 — Tar—Fenyvespuszta környéke, felszíni feltárás; Outcrop around of Tar—Fenyvespuszta

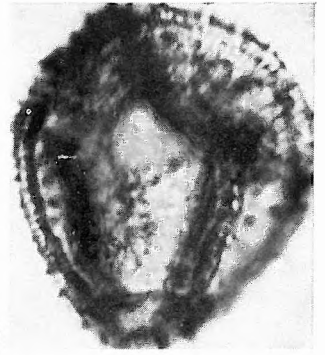


XCIX. tábla — Plate XCIX

1. *Lonicera pollis gallwiti* W. KR. 1962 — Cserhátszentiván 1. sz. f. 165,0—167,0 m
- 2—3. *L. gallwiti* W. KR. 1962 — Zengővárkony 59. sz. f. 60,9—63,0 m
4. *L. gallwiti* W. KR. 1962 — Cserhátszentiván 1. sz. f. 165,0—167,0 m
- 5—6. *L. gallwiti* W. KR. 1962 — Szokolya 2. sz. f. 62,3—63,1 m



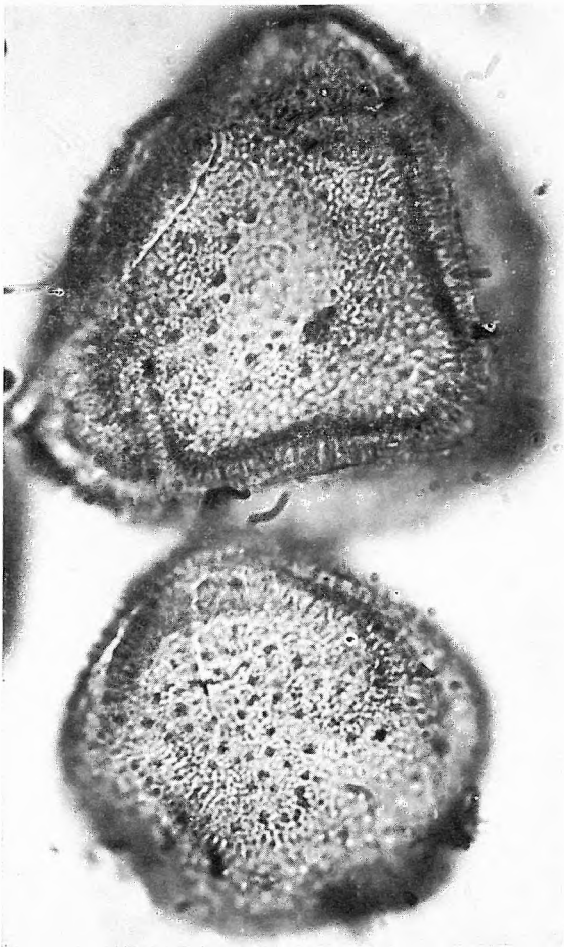
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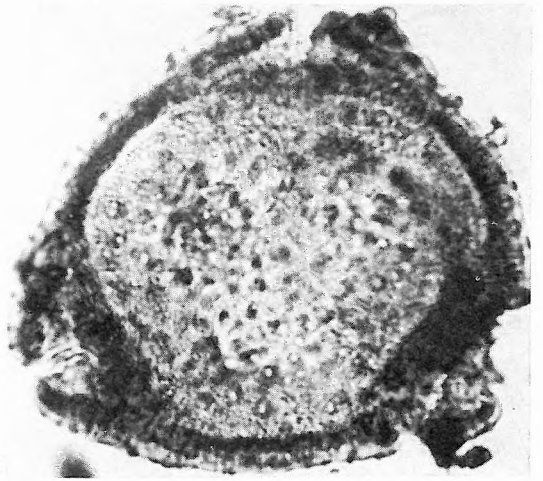


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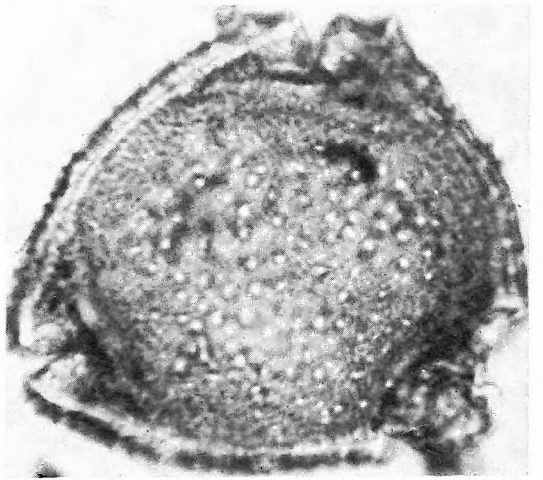


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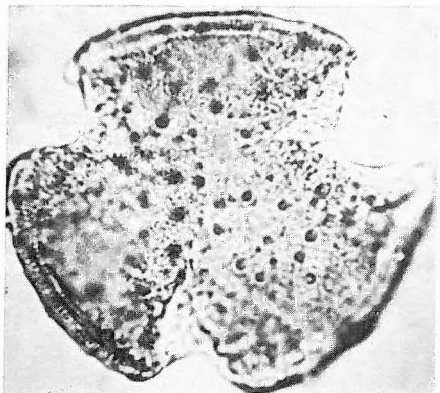


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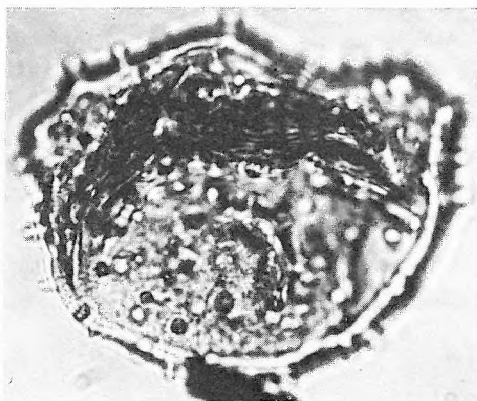


C. tábla — Plate C

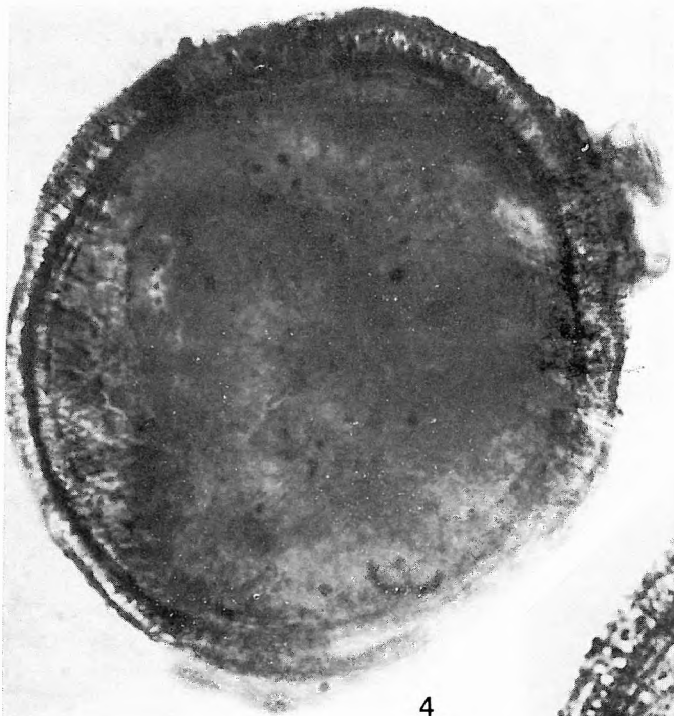
1. *Lonicerapollis gallwitzi* W. KR. 1962 — Naszály 1. sz. f. 22,0—25,0 m
- 2—3. *Diervillapollenites megaspinosus* DOKT.-HREBN. 1957 — Várkesző 1. sz. f. 15,0—16,0 m
4. *Scabiosaepollenites magnus* NAGY 1969 — Generotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
5. *S. minimospinuosus* NAGY 1969 — Naszály 1. sz. f. 22,0—25,0 m
6. *S. minimospinuosus* NAGY 1969 — Szokolya 2. sz. f. 71,9—72,4 m



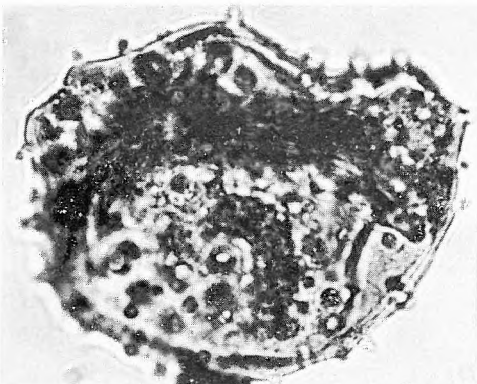
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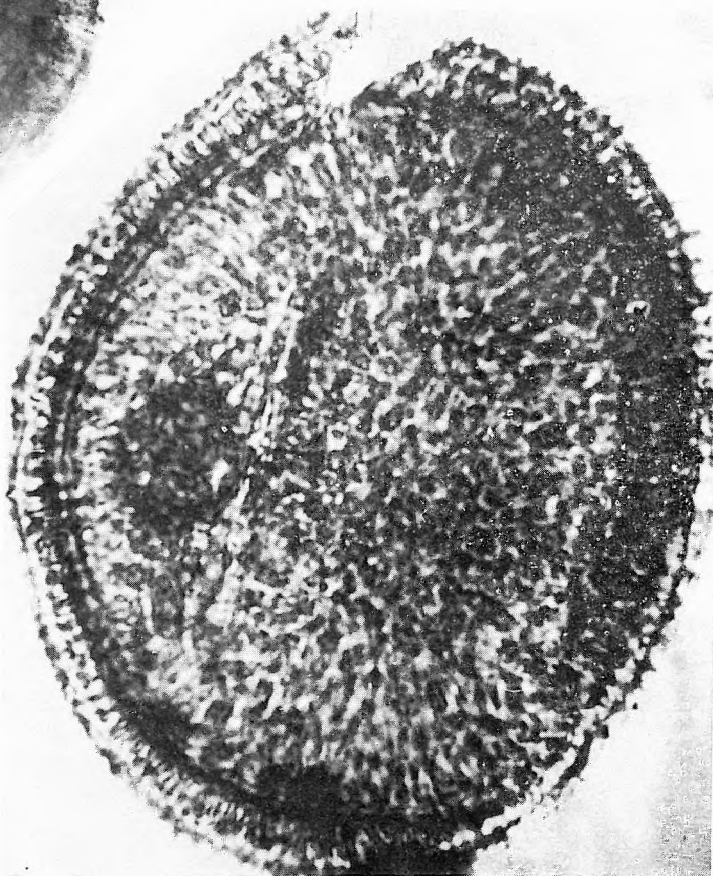
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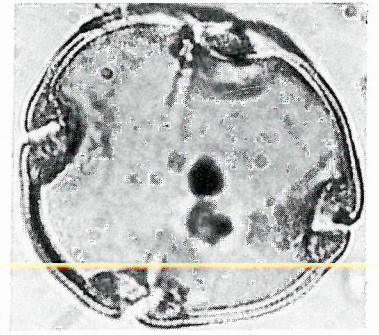
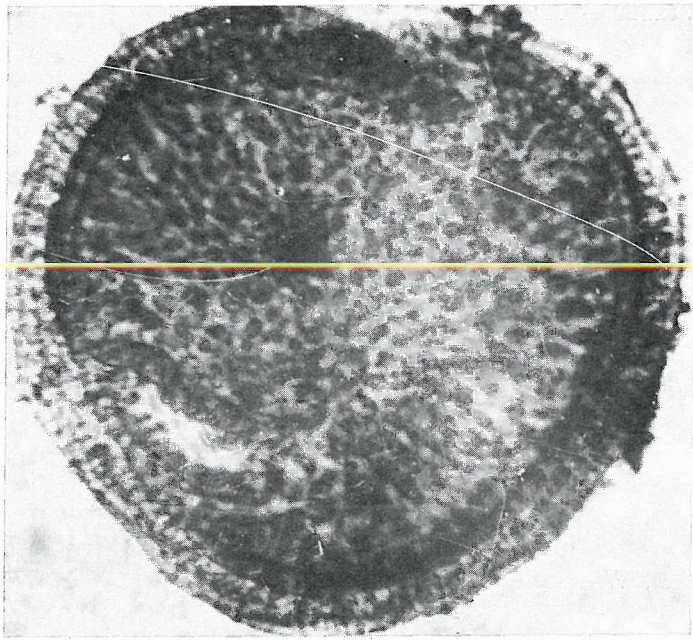


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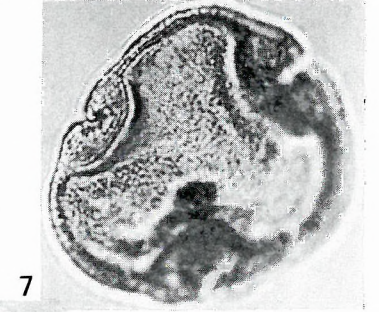


6

1. *Scabiosaepollenites magnus* NAGY 1969 — Szokolya 3. sz. f. 77,2—77,4 m
2. *Intratropopollenites cordataeformis* (WOLFF 1934) MAI 1961 — Várkesző 1. sz. f. 34,0—35,0 m
3. *I. cordataeformis* (WOLFF 1934) MAI 1961 — Litke 17. sz. f. 242,0—244,0 m
- 4—5. *I. cordataeformis* (WOLFF 1934) MAI 1961 — Várkesző 1. sz. f. 34,0—35,0 m
6. *I. insculptus* MAI 1961 — Nógrádszakál 2. sz. f. 121,2—122,0 m
- 7—8. *I. insculptus* MAI 1961 — Litke 17. sz. f. 218,0—220,0 m
9. *I. instructus* (R. POT. 1931) TH. et PF. 1953 ssp. *instructus* — Püspökhátvan 4. sz. f. 153,3—157,0 m
10. *I. instructus* (R. POT. 1931) TH. et PF. 1953 ssp. *instructus* — Hidas 53. sz. f. 667,2—669,0 m
11. *I. instructus* (R. POT. 1931) TH. et PF. 1953 ssp. *instructus* — Cserhátszentiván 1. sz. f. 169,0—171,0 m
- 12—13. *I. instructus* (R. POT. 1931) TH. et PF. 1953 ssp. *macroreticulatus* MAI 1961 — Cserhátszentiván 1. sz. f. 153,0—161,0 m

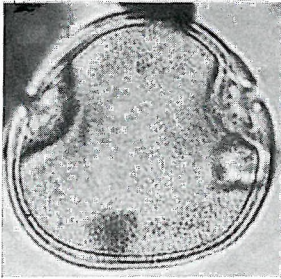


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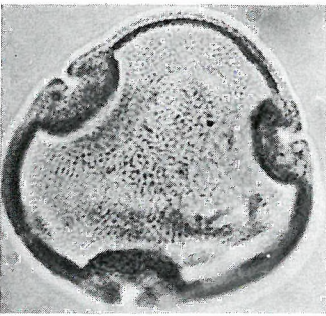
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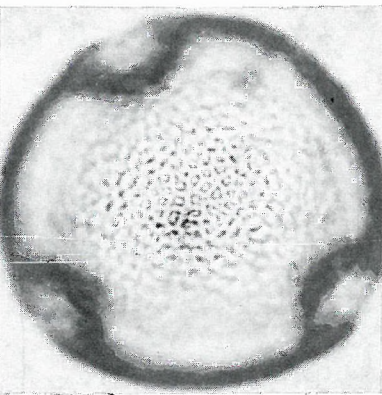
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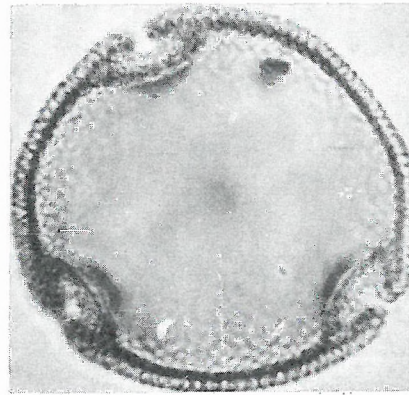
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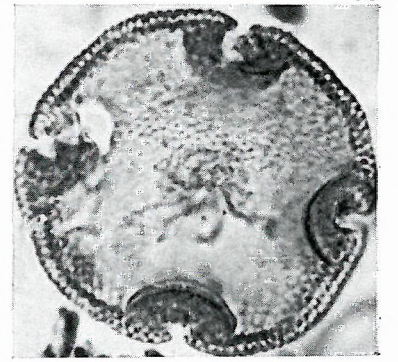
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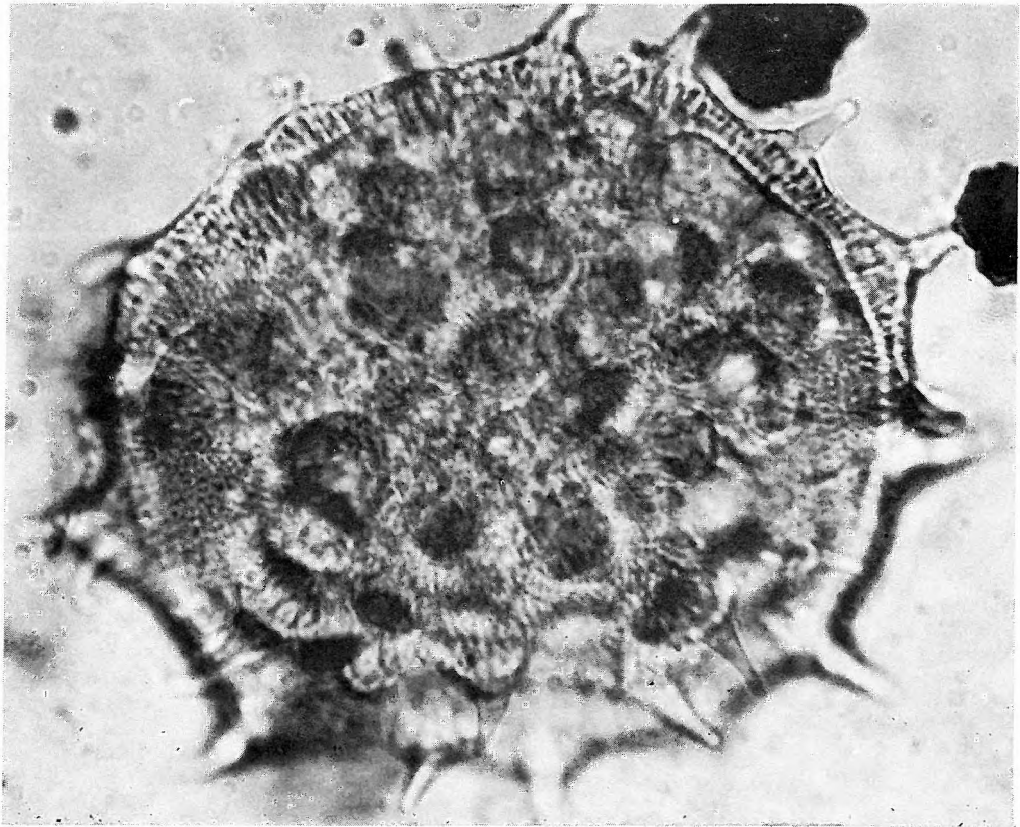
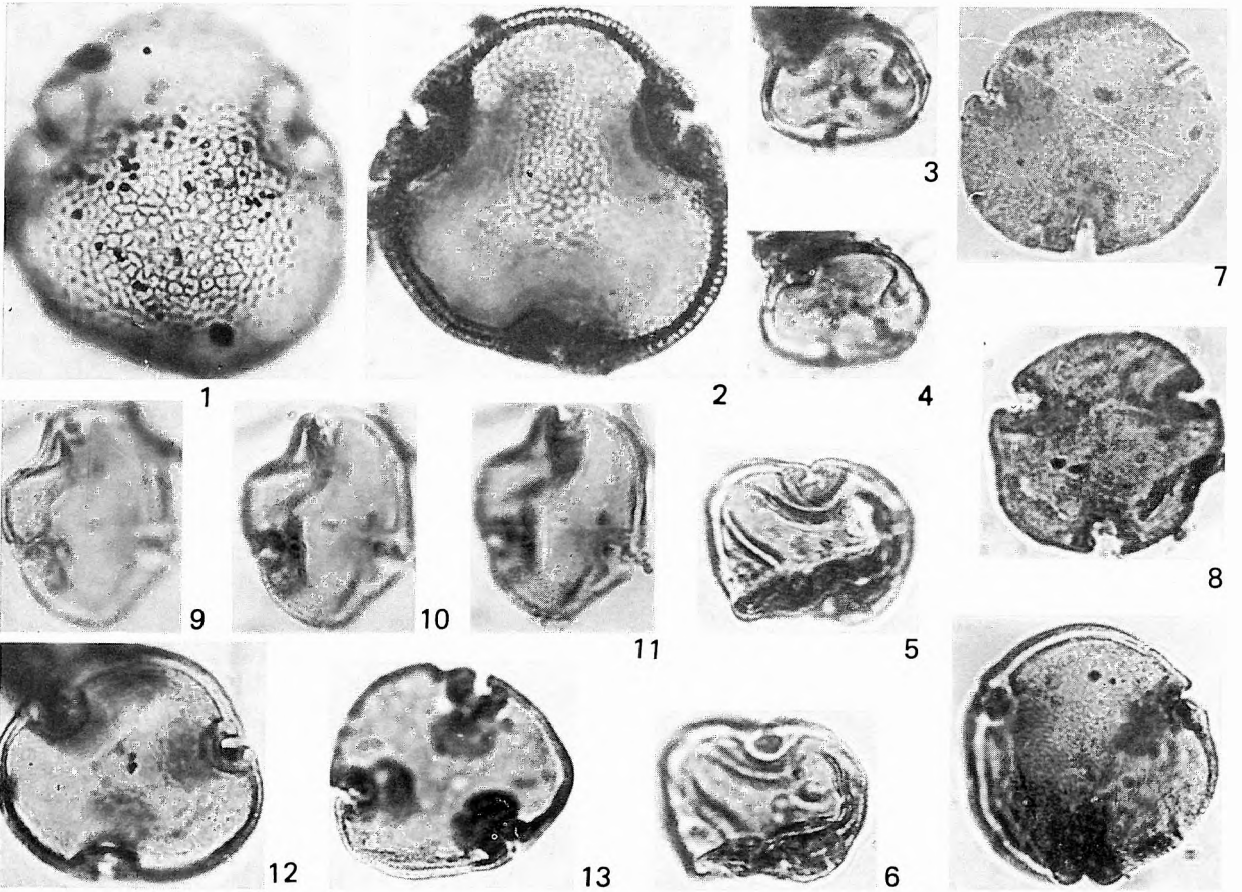


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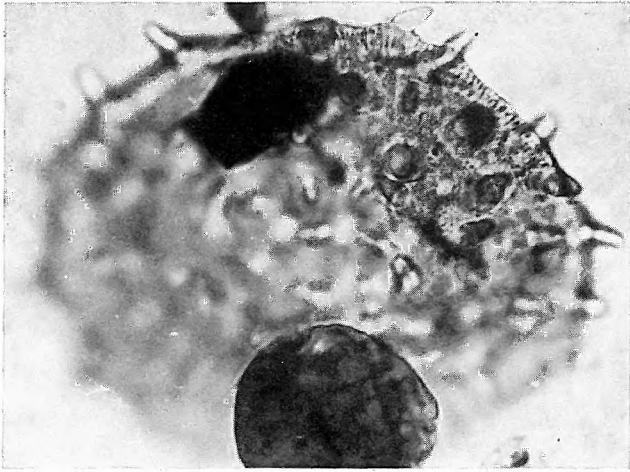
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- 1—2. *Intratriporopollenites instructus* (R. POT. 1931) TH. et PF. 1953 ssp. *macroreticulatus* MAI 1961 — Szokolya 2. sz. f. 99,0—100,0 m
- 3—4. *I. minimus* MAI 1961 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
- 5—6. *I. minimus* MAI 1961 — Fót 1. sz. f. 349,5—354,0 m
7. *I. microreticulatus* MAI 1961 — Eger, Wind-féle téglagyári fúrás 8,3—9,2 m; Eger, Wind brickyard borehole 8.3—9.2 m
8. *I. microreticulatus* MAI 1961 — Zengővárkony 45. sz. f. 17,2—17,8 m
- 9—11. *I. polonicus* MAI 1961 — Pápa 2. sz. f. 142,8—143,3 m
12. *I. pseudoinstructus* MAI 1961 — Fót 1. sz. f. 142,0—142,8 m
13. *I. pseudoinstructus* MAI 1961 — Budajenő 2. sz. f. 556,5—557,7 m
14. *I. pseudoinstructus* MAI 1961 — Fót 1. sz. f. 241,6—243,2 m
15. *Malvacearumpollis bakonyensis* NAGY 1962 — Generotypus — Várpalota 133. sz. f. 208,3—214,2 m

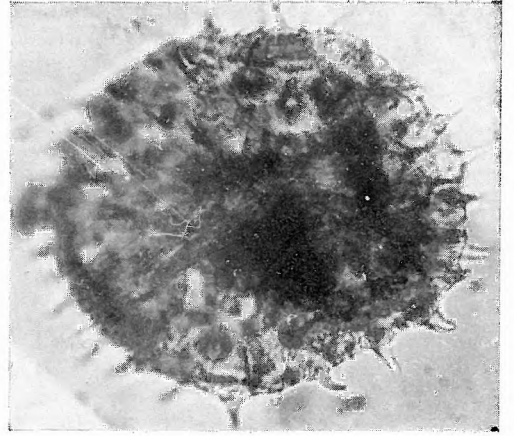


CIII. tábla — Plate CIII

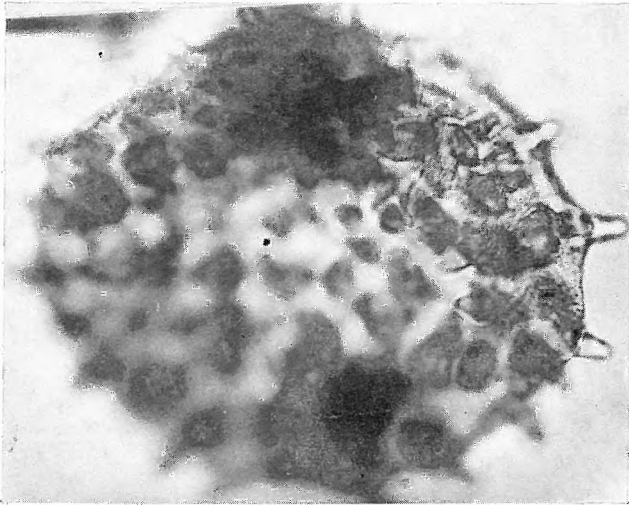
- 1—2. *Malvacearumpollis bakonyensis* NAGY 1962 — Budajenő 2. sz. f. 575,5—575,9 m
3. *M. bakonyensis* NAGY 1962 — Tengelic 2. sz. f. 850,0—851,3 m
4. *M. rotundus* NAGY 1969 — Holotypus — Szászvár 8. sz. f. 433,8—434,1 m
- 5—6. *M. rotundus* NAGY 1969 — Budapest-Kőbánya IV. szelvény, 107. minta; Budapest-Kőbánya, Profil N° IV., sample N° 107.



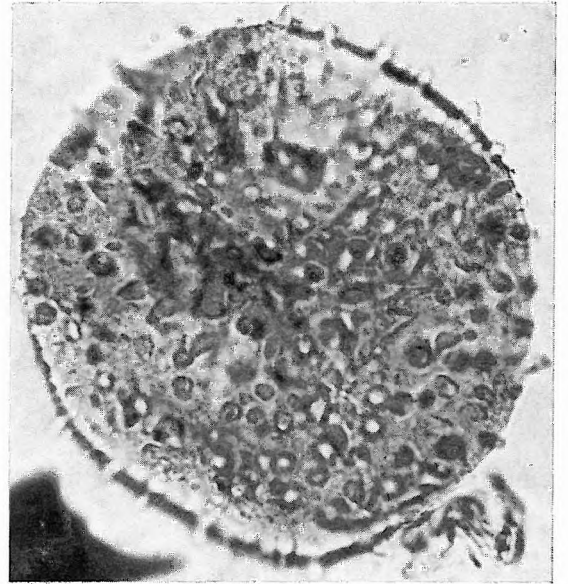
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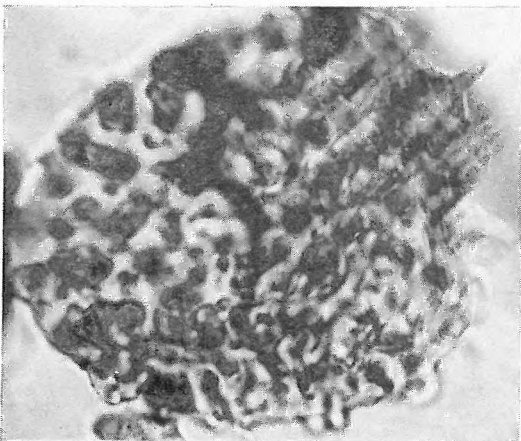
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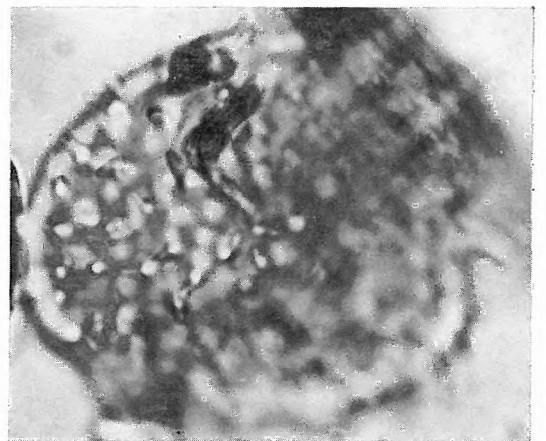
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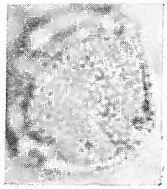
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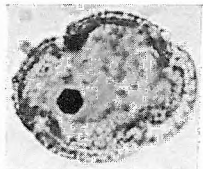
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CIV. tábla — Plate CIV

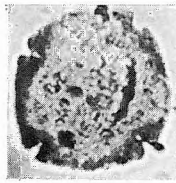
1. *Reevesiapollis triangulus* (MAMCZAR 1960) W. KR. 1970 — Cserhátszentiván 1. sz. f. 185,0—185,5 m
2. *R. triangulus* (MAMCZAR 1960) W. KR. 1970 — Szokolya 2. sz. f. 50,3—51,1 m
3. *R. triangulus* (MAMCZAR 1960) W. KR. 1970 — Fót 1. sz. f. 351,0—352,5 m
4. *Oleoidearumpollenites chinensis* NAGY 1969 — Szokolya 2. sz. f. 97,1—99,0 m
5. *O. chinensis* NAGY 1969 — Eger, Wind-féle téglagyári fúrás 9,2—9,7 m; Eger. Wind brickyard borehole 9.2—9.7 m
6. *O. reticulatus* NAGY 1969 — Fót 1. sz. f. 352,5—354,0 m
7. *O. reticulatus* NAGY 1969 — Generotypus — Komló 120. sz. f. 178,0—178,8 m
- 8—10. *Calystegiapollis sarmaticus* n. sp. — Holotypus — Cserhátszentiván 1. sz. f. 15,5—16,5 m
11. *Manikinipollis tetradoides* W. KR. 1970 — Cserhátszentiván 1. sz. f. 169,0—171,0 m
12. *M. tetradoides* W. KR. 1970 — Vajta vízkutató fúrás 724,0—728,0 m
13. *Heliotropioidearumpollenites gracilis* NAGY 1969 — Generotypus — Zengővárkony 59. sz. f. 67,5—70,5 m
14. *H. gracilis* NAGY 1969 — Szokolya 2. sz. f. 101,0—102,2 m
15. *H. rotundus* NAGY 1969 — Holotypus — Hidasbánya II. telep 53. sz. minta; mine Hidasbánya, seam II., sample N° 53.
- 16—17. *Utriculariaepollenites elegans* NAGY 1969 — Generotypus — Komló 120. sz. f. 372,0—374,0 m
18. *U. elegans* NAGY 1969 — Fót 1. sz. f. 171,2—172,2 m
19. *U. elegans* NAGY 1969 — Zengővárkony 45. sz. f. 13,2—13,7 m
- 20—22. *Pteracanthopollenites discordatus* NAGY 1969 — Generotypus — Szászvár 8. sz. f. 433,8—434,1 m



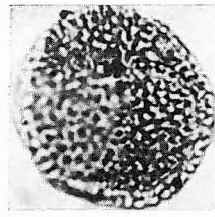
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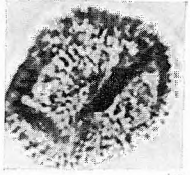
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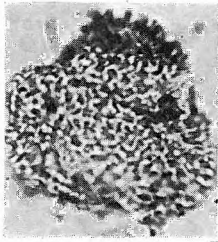
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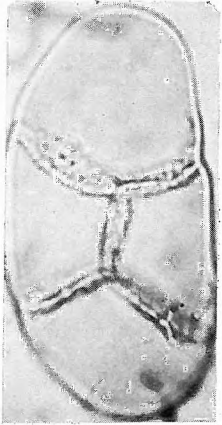
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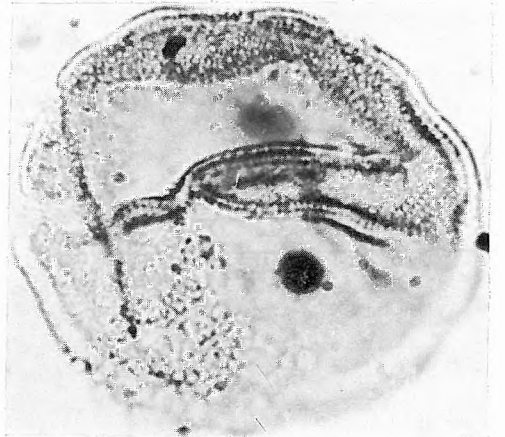
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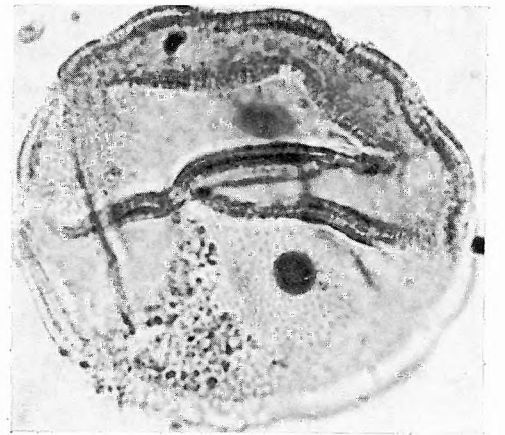
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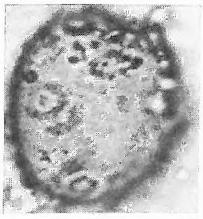
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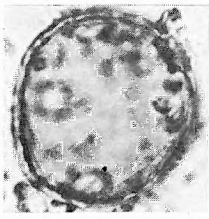
22

CV. tábla — Plate CV

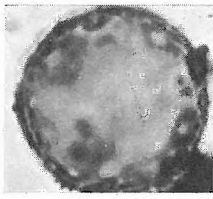
- 1—2. *Plantaginacearumpollis miocaenicus* NAGY 1963 — Generotypus — Hidas 53. sz. f. 572,0—575,0 m
- 3—4. *P. miocaenicus* NAGY 1963 — Megyaszó 1. sz. f. 74,5—77,5 m
5. *P. miocaenicus* NAGY 1963 — Szokolya 2. sz. f. 68,7—69,5 m
6. *P. soói* NAGY 1963 — Holotypus — Zengővárkony 59. sz. f. 65,0—67,6 m
7. *P. soói* NAGY 1963 — Tata (TVG) 26. sz. f. 21,0—24,0 m
- 8—9. *Droseridites cf. spinosa* COOKS. 1947 — Nagygörbő 1. sz. f. 908,5—914,0 m
10. *Droseridites cf. spinosa* COOKS. 1947 — Püspökhátvan 4. sz. f. 254,0—257,0 m
- 11—12. *Fischeripollis undulatus* W. KR. 1970 — Várkesző 1. sz. f. 17,0—18,0 m
13. *Cistacearumpollenites macrodurensis* (PF. et TH. 1953) NAGY 1969 — Cserhátszentiván 1. sz. f. 16,5—19,0 m
14. *C. macrodurensis* (PF. et TH. 1953) NAGY 1969 — Megyaszó 1. sz. f. 140,3—146,3/2 m
15. *C. rotundus* NAGY 1969 — Fót 1. sz. f. 209,5—209,9 m
16. *C. rotundus* NAGY 1969 — Szokolya 2. sz. f. 54,6—55,6 m
17. *C. rotundus* NAGY 1969 — Generotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
18. *Lobeliaepollenites erdtmani* NAGY 1969 — Generotypus — Hidas 53. sz. f. 630,8—632,0 m
- 19—20. *L. erdtmani* NAGY 1969 — Szokolya 2. sz. f. 71,2—74,5 m
21. *Dipterocarpacearumpollenites hidasensis* NAGY 1969 — Cserhátszentiván 1. sz. f. 186,0—188,0 m



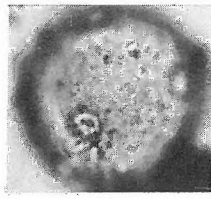
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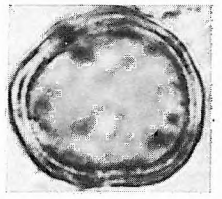
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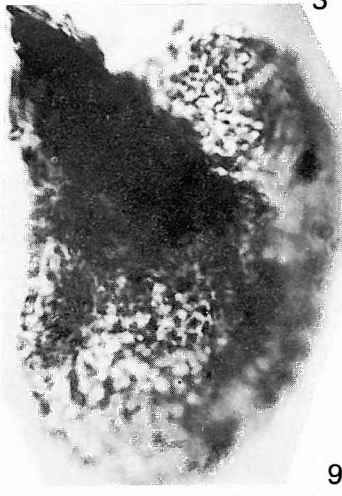
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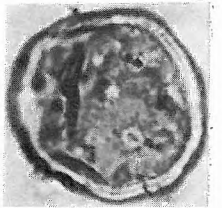
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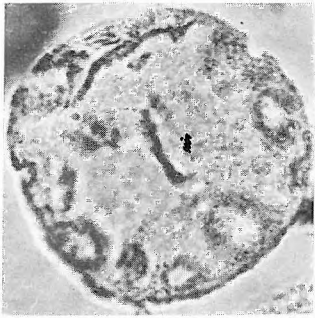
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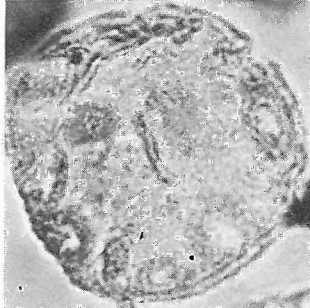
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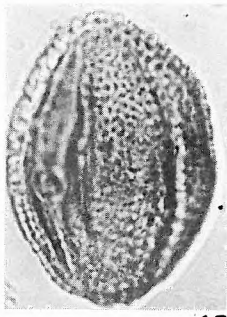
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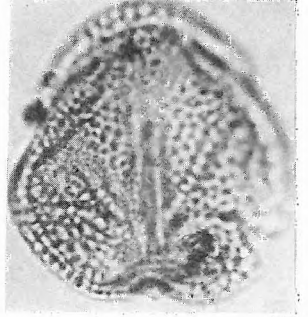
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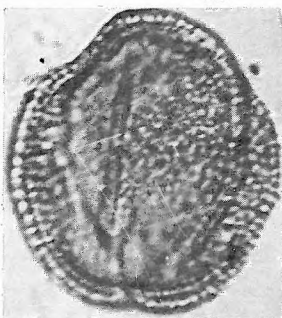
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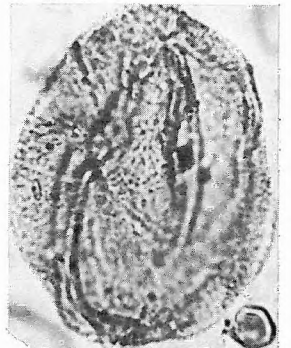
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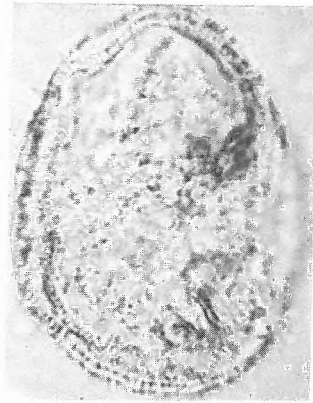
21

CVI. tábla — Plate CVI

1. *Dipterocarpacearumpollenites hidasensis* NAGY 1969 — Generotypus — Hidas 53. sz. f. 667,2—669,2 m
2. *D. spinosus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 667,2—669,2 m
- 3—4. *D. spinosus* NAGY 1969 — Hidas 53. sz. f. 669,2—669,8 m
- 5—6. *Tubulifloridites ambrosiinae* NAGY 1969 — Holotypus — Hidas 53. sz. f. 761,0—763,3 m
- 7—8. *T. ambrosiinae* NAGY 1969 — Szokolya 3. sz. f. 68,6—69,6 m
9. *T. anthemidearum* NAGY 1969 — Holotypus — Hidas 53. sz. f. 534,0—537,0 m
10. *T. anthemidearum* NAGY 1969 — Ipolytarnóc—Mihálygerge felszíni feltárás 1. minta; Ipolytarnóc—Mihálygerge surface exposure, sample N° 1.
- 11—12. *T. anthemidearum* NAGY 1969 — Ipolytarnóc—Mihálygerge felszíni feltárás 1. minta; Ipolytarnóc—Mihálygerge surface exposure, sample N° 1.
13. *T. grandis* NAGY 1969 — Pusztakisfalu VI. sz. f. 10,5—12,5 m
14. *T. grandis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
- 15—16. *T. granulatus* NAGY 1969 — Holotypus — Zengővárkony 45. sz. f. 10,5—12,5 m
17. *T. granulatus* NAGY 1969 — Zengővárkony 59. sz. f. 34,0—37,5 m
- 18—19. *T. macroechinatus* (TREV. 1967) n. c. — Szokolya 3. sz. f. 58,7—59,9 m
- 20—21. *T. macroechinatus* (TREV. 1967) n. c. — Szokolya 3. sz. f. 71,2—74,5 m



1



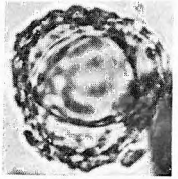
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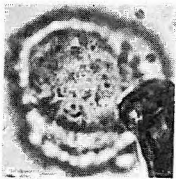
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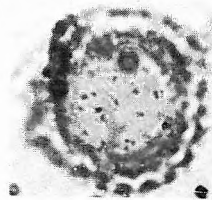
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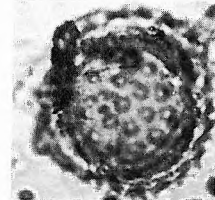
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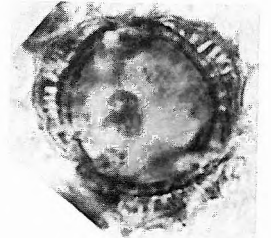
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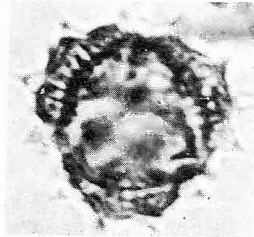
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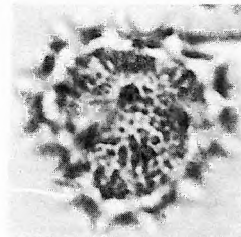
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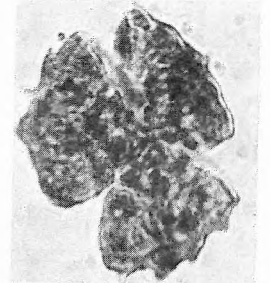
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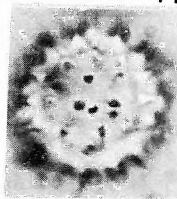
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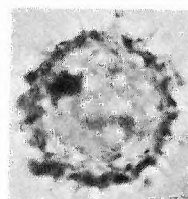
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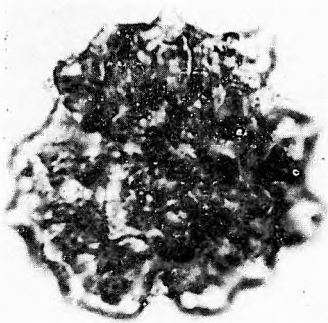
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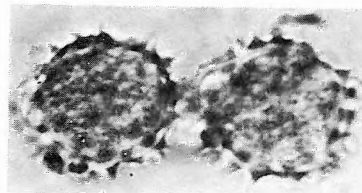
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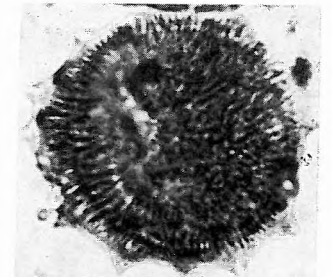
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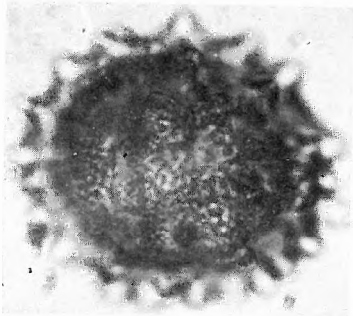
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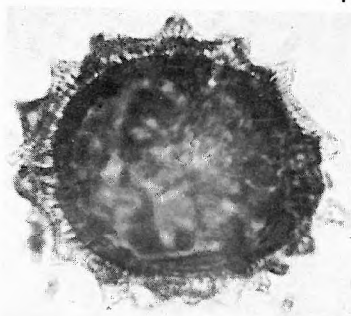
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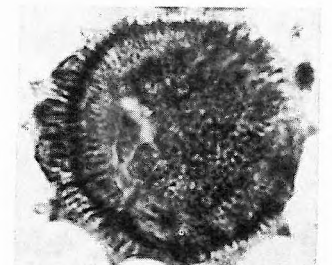
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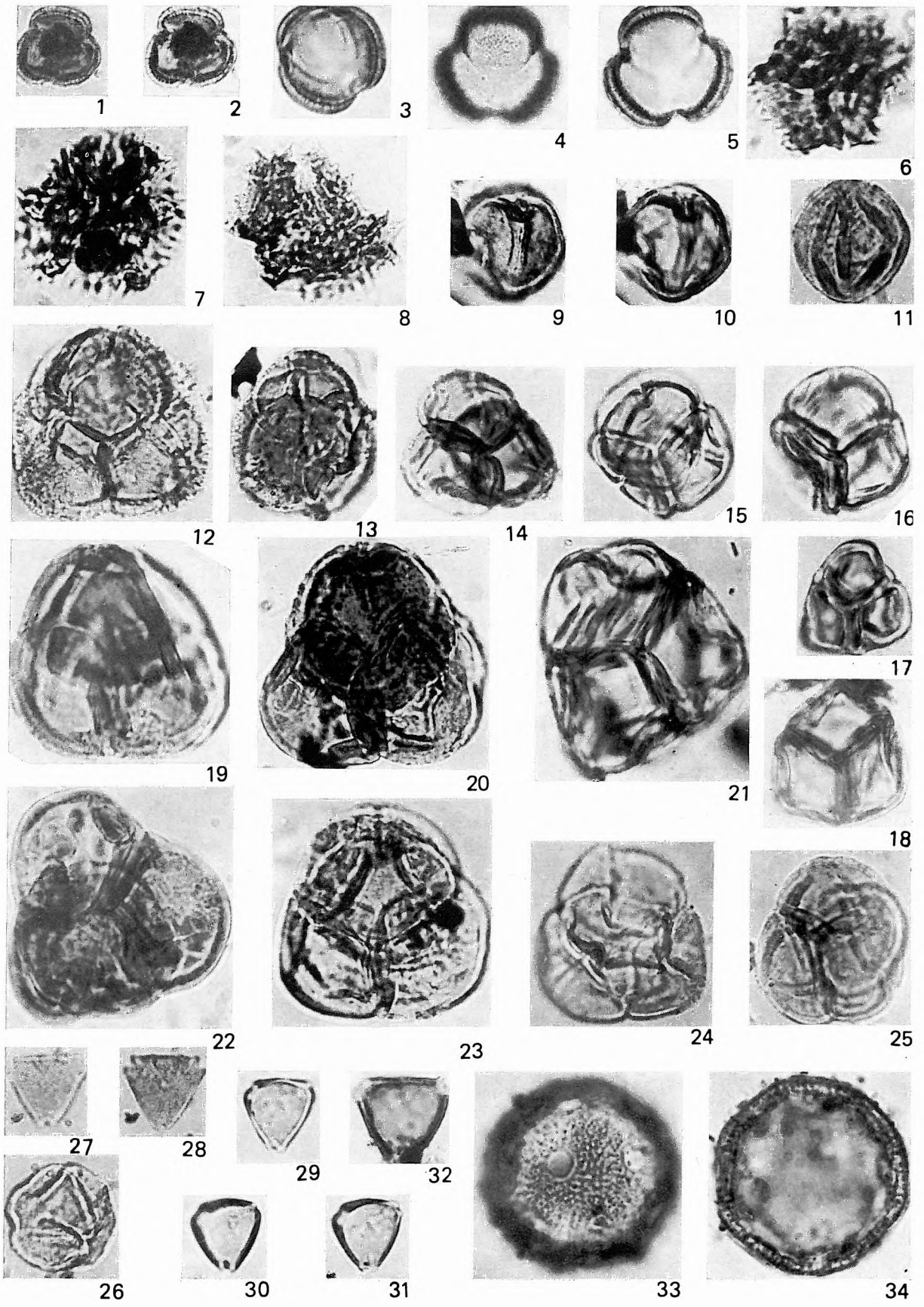


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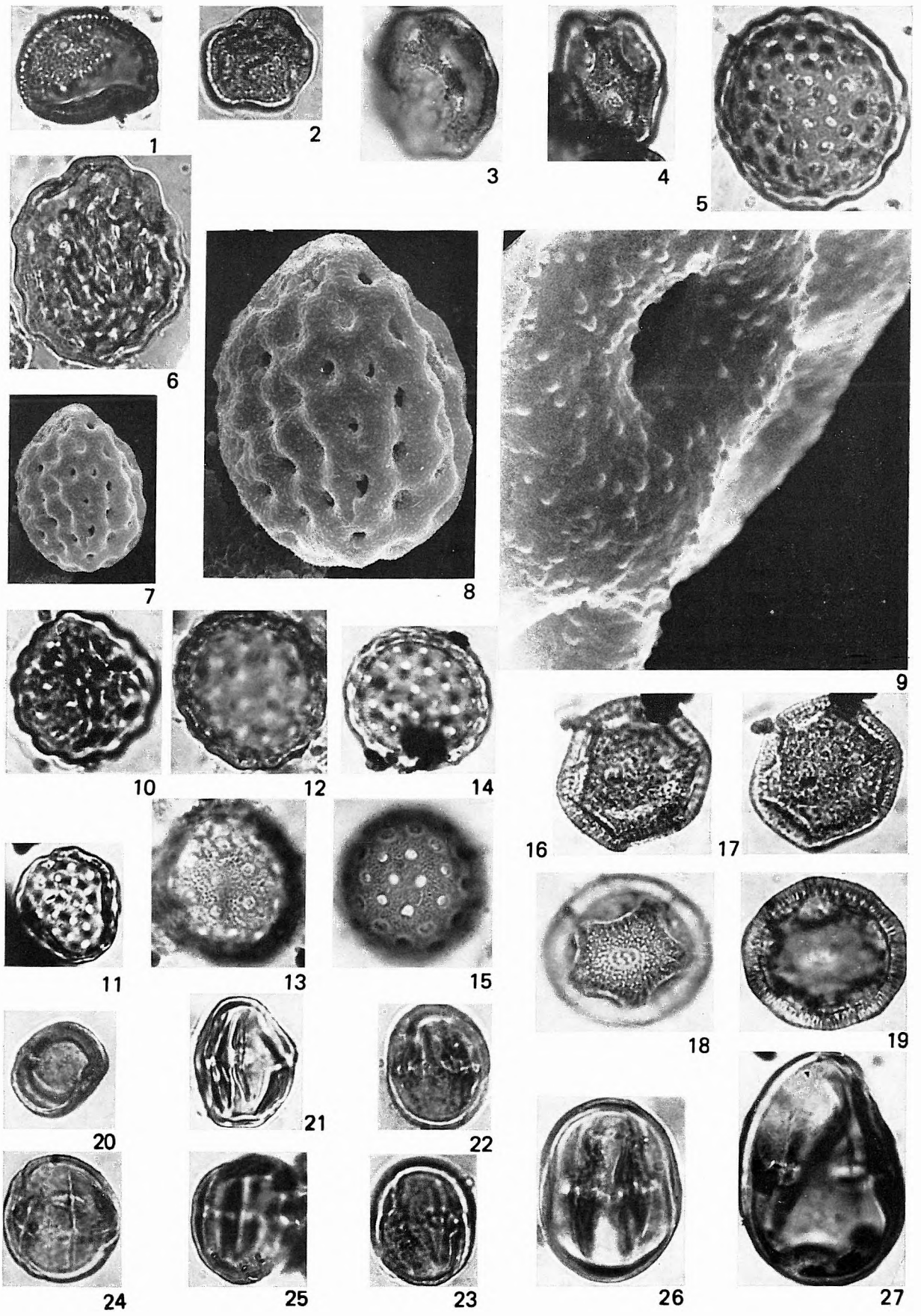


19

- 1—2. *Artemisiaepollenites sellularis* NAGY 1969 — Generotypus — Hidas 53. sz. f. 572,0—575,0 m
 3. *A. sellularis* NAGY 1969 — Szokolya 3. sz. f. 54,6—55,6 m
 4—5. *A. sellularis* NAGY 1969 — Szokolya 2. sz. f. 107,9—109,0 m
 6. *Cichoreacidites gracilis* (NAGY 1969) n. c. — Generotypus — Zengővárkony 59. sz. f. 51,3—56,0 m
 7. *C. gracilis* NAGY 1969 — Szokolya 2. sz. f. 40,7—41,5 m
 8. *C. gracilis* NAGY 1969 — Vigántpetend 1. sz. f. 86,0—86,2 m
 9—10. *Tricolporopollenites clethraceiformis* NAGY 1969 — Generotypus — Zengővárkony 59. sz. f. 67,5—70,5 m
 11. *T. clethraceiformis* NAGY 1969 — Hidas 53. sz. f. 667,2—669,2 m
 12. *Ericipites baculatus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m
 13. *E. baculatus* NAGY 1969 — Zengővárkony 59. sz. f. 56,0—60,9 m
 14. *E. baculatus* NAGY 1969 — Pápa 2. sz. f. 142,9—143,3 m
 15—16. *E. callidus* (R. POT. 1931) W. KR. 1970 — Naszály 1. sz. f. 60,0—66,0 m
 17. *E. callidus* (R. POT. 1931) W. KR. 1970 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
 18. *E. callidus* (R. POT. 1931) W. KR. 1970 — Fót 1. sz. f. 130,5—131,5 m
 19. *E. discretus* (R. POT. 1934) NAGY 1969 — Zengővárkony 59. sz. f. 60,9—63,0 m
 20. *E. discretus* (R. POT. 1934) NAGY 1969 — Eger, Wind-féle téglagyári feltárás „x₂” réteg; Eger, Wind brickyard pit, layer “x₂”
 21. *E. ericius* (R. POT. 1931) R. POT. 1960 — Cserhátszentiván 1. sz. f. 165,0—167,0 m
 22. *E. ericius* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 346,5—348,0 m
 23. *E. hidasensis* NAGY 1969 — Holotypus — Hidas 53. sz. f. 600,5—602,3 m
 24. *E. hidasensis* NAGY 1969 — Naszály 1. sz. f. 42,4—51,0 m
 25. *E. hidasensis* NAGY 1969 — Litke 17. sz. f. 160,0—162,0 m
 26. *Spinulaepollis arceuthobioides* W. KR. 1962 — Komló 120. sz. f. 367,0 m
 27—28. *Proteacidites egerensis* NAGY 1963 — Holotypus — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
 29—31. *P. egerensis* NAGY 1963 — Püspökatvan 4. sz. f. 233,0—236,0 m
 32. *P. egerensis* NAGY 1963 — Szokolya 2. sz. f. 109,0—111,2 m
 33—34. *Caryophyllidites hidasensis* NAGY 1969 — Holotypus — Hidas 53. sz. f. 688,0—688,5 m



1. *Caryophyllidites microreticulatus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 30,9—34,0 m
2. *C. microreticulatus* NAGY 1969 — Fót 1. sz. f. 357,0—358,5 m
3. *C. rueterbergensis* W. KR. 1966 — Szokolya 2. sz. f. 95,0—96,6 m
4. *C. rueterbergensis* W. KR. 1966 — Szokolya 2. sz. f. 93,0—95,0 m
5. *Chenopodipollis maximus* NAGY 1969 — Szokolya 3. sz. f. 63,0—64,7 m
6. *Ch. maximus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 558,0—561,0 m
- 7—9. *Chenopodipollis* sp. — Szokolya 2. sz. f. 72,7—73,5 m; Scan felvételek 7 = 1000×, 8 = 2000×, 9 = 10 000×; SEMG. 7 = 1000×, 8 = 2000×, 9 = 10,000×
10. *Ch. multiplex* (WEYL. et PF. 1957) W. KR. 1960 — Hidas 53. sz. f. 669,2—669,8 m
11. *Ch. multiplex* (WEYL. et PF. 1957) W. KR. 1960 — Naszály 1. sz. f. 17,0—18,0 m
- 12—13. *Ch. neogenicus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 147,5—148,5 m
14. *Ch. neogenicus* NAGY 1969 — Szokolya 3. sz. f. 53,6—54,6 m
15. *Ch. neogenicus* NAGY 1969 — Szokolya 2. sz. f. 109,0—111,2 m
- 16—17. *Vaclavipollis sooiana* NAGY 1973 — Holotypus — Alsóvadász 1. sz. f. 94,4—101,0 m
- 18—19. *V. sooiana* NAGY 1973 — Szokolya 2. sz. f. 50,3—51,1 m
20. *Sapotaceoidaepollenites abditus* (PF. 1953) NAGY 1969 — Fót 1. sz. f. 361,8—364,5 m
21. *S. biconus* (PF. 1953) NAGY 1969 — Eger, Wind-féle téglagyári fúrás 7.8—8,3 m; Eger, Wind brickyard borehole 7.8—8.3 m
- 22—23. *S. brevicolpus* (ROCHE 1973) n. c. — Fót 1. sz. f. 209,5—209,9 m
24. *S. folliformis* (PF. 1953) n. c. — Tab, termál fúrás 654,0—656,0 m
25. *S. folliformis* (PF. 1953) n. c. — Tekeres 1. sz. f. 881,9—883,2 m
26. *S. hungaricus* (KEDVES 1965) n. c. — Fót 1. sz. f. 120,0—121,0 m
27. *S. kirchheimeri* (REISS. 1950) NAGY 1969 — Szokolya 2. sz. f. 114,0—115,3 m



CIX. tábla — Plate CIX

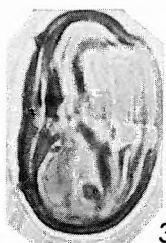
1. *Sapotaceoidaepollenites manifestus* (R. POT. 1931) R. POT. 1960 ssp. *contractus* PF. 1953 — Szokolya 2. sz. f. 51,1—51,9 m
2. *S. manifestus* (R. POT. 1931) R. POT. 1960 ssp. *contractus* PF. 1953 — Eger Wind-féle téglagyári fúrás 9,2—9,7 m; Eger, Wind brickyard borehole 9.2—9.7 m
3. *S. cf. microellipsus* (PF. 1953) n. c. — Szokolya 2. sz. f. 52,7—53,7 m
4. *S. microrhombus* (PF. 1953) NAGY 1969 — Tengelic 2. sz. f. 845,0—847,6 m
5. *S. microrhombus* (PF. 1953) NAGY 1969 — Rákoskeresztúr I. sz. f. 148,0—159,0 m
6. *S. microrhombus* (PF. 1953) NAGY 1969 f. *miocaenica* NAGY 1969 — Litke 17. sz. f. 242,0—244,0 m
7. *S. obscurus* (PF. et TH. 1953) NAGY 1969 — Eger, Wind-féle téglagyári fúrás 7.8—8.3 m; Eger, Wind brickyard borehole 7.8—8.3 m
8. *S. obscurus* (PF. et TH. 1953) NAGY 1969 — Szokolya 2. sz. f. 85,5—86,3 m
9. *S. obscurus* (PF. et TH. 1953) NAGY 1969 — Litke 17. sz. f. 220,0—222,0 m
10. *S. obscurus* (PF. et TH. 1953) NAGY 1969 — Nógrádszakál 2. sz. f. 257,0—259,0 m
11. *S. sapotoides* (PF. 1953) R. POT. 1960 — Szokolya 2. sz. f. 82,3—83,1 m
12. *S. sapotoides* (PF. 1953) R. POT. 1960 — Nógrádszakál 2. sz. f. 229,0—231,0 m
13. *S. sapotoides* (PF. 1953) R. POT. 1960 — Szokolya 2. sz. f. 89,5—90,3 m
- 14—16. *S. rotundus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 30,9—34,0 m
17. *S. rotundus* NAGY 1969 — Szokolya 2. sz. f. 37,9—38,3 m
18. *S. rotundus* NAGY 1969 — Cserhátszentiván 1. sz. f. 169,0—171,0 m
19. *S. rotundus* NAGY 1969 — Szokolya 2. sz. f. 71,9—72,4 m
- 20—22. *S. thomsoni* n. sp. — Püspökhatvan 4. sz. f. 257,0—260,0 m
23. *S. turgidus* NAGY 1969 — Püspökhatvan 4. sz. f. 201,0—204,0 m
24. *S. turgidus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 71,4—73,0 m
25. *S. turgidus* NAGY 1969 — Tengelic 2. sz. f. 861,8—863,6 m
- 26—27. *Porocolpopollenites hemicolpis* PFLUG 1953 — Szokolya 2. sz. f. 93,0—95,0 m
28. *P. hidasensis* NAGY 1963 — Holotypus — Hidas 53. sz. f. 572,0—575,0 m
- 29—30. *P. hidasensis* NAGY 1963 — Hidas 89. sz. f. 326,0 m



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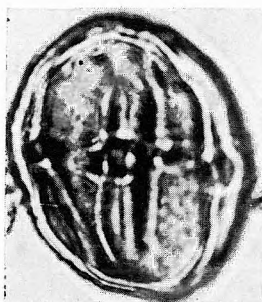
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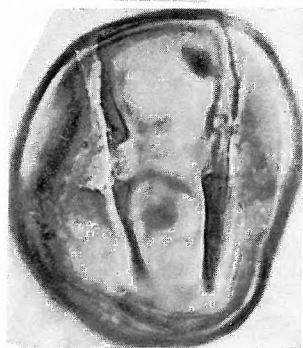
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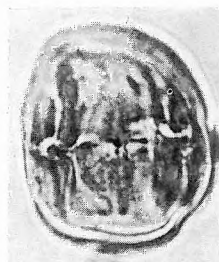
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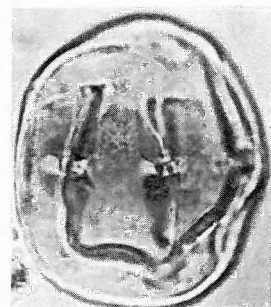
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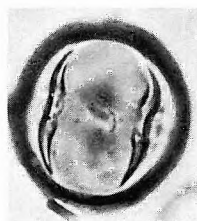
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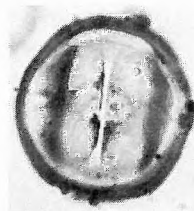
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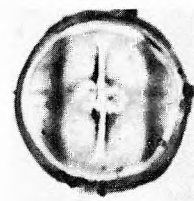
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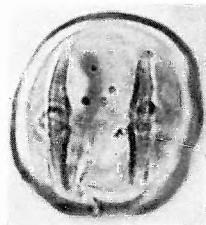
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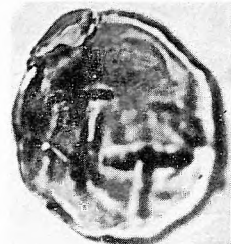
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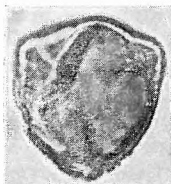
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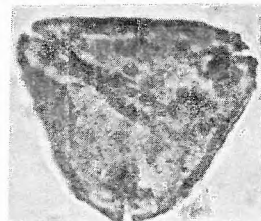
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26



27



28



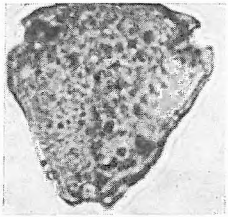
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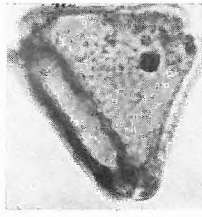
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CX. tábla — Plate CX

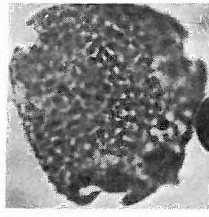
1. *Porocolpopollenites latiporis* PF. et TH. 1953 — Vajta vízkutató fúrás 704,0—728,0 m
2. *P. latiporis* PF. et TH. 1953 — Fót 1. sz. f. 168,0—169,3 m
3. *P. orbiformis* PF. et TH. 1953 — Alsóvadász 1. sz. f. 1029,0—1034,6/2 m
- 4—5. *P. orbiformis* PF. et TH. 1953 — Szokolya 2. sz. f. 43,9—44,7 m
- 6—7. *P. stereiformis* PFLUG 1953 — Hidasbánya II. telep 6. minta; mine Hidasbánya, seam II., sample N^o 6.
8. *P. triangulus* (R. POT. 1931) TH. et PF. 1953 — Fót 1. sz. f. 214,0—216,5 m
- 9—10. *P. vestibulum* (R. POT. 1931) TH. et PF. 1953 — Tengelic 2. sz. f. 780,0—783,0 m
11. *P. vestibulum* (R. POT. 1931) TH. et PF. 1953 — Szokolya 12. sz. f. 52,9—56,0 m
12. *Persicarioipollis franconicus* W. KR. 1962 — Naszály 1. sz. f. 82,0—93,4 m
- 13—14. *P. franconicus* W. KR. 1962 — Jászladány 1. sz. f. 397,35—397,49 m
15. *P. lusaticus* W. KR. 1962 — Szászvár 8. sz. f. 433,8—434,1 m
16. *P. lusaticus* W. KR. 1962 — Szokolya 3. sz. f. 60,8—63,0 m
- 17—18. *P. meuseli* W. KR. 1962 — Pásztó 4. sz. f. 145,5 m
19. *P. welzowense* W. KR. 1962 — Naszály 1. sz. f. 60,0—66,0 m
20. *P. welzowense* W. KR. 1962 — Ipolytarnóc—Mihálygerge, felszíni feltárás, 1. minta; Ipolytarnóc—Mihálygerge, surface exposure, sample N^o 1.



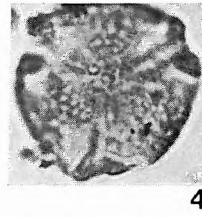
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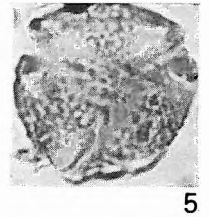
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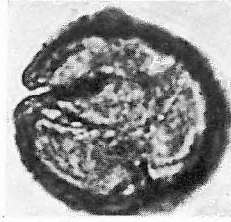
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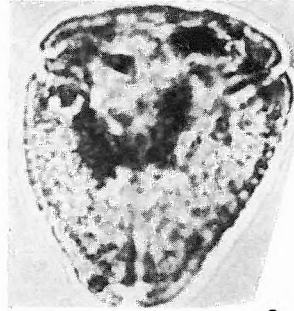
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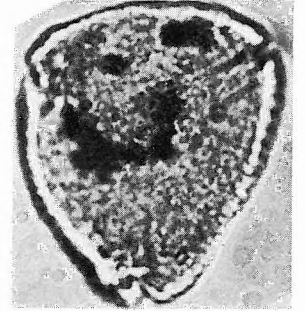
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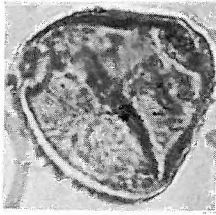
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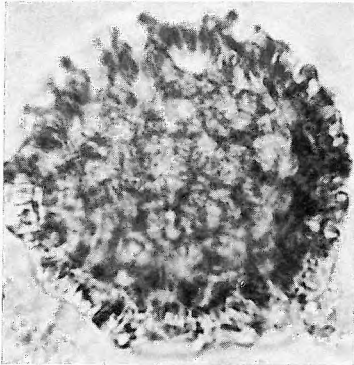
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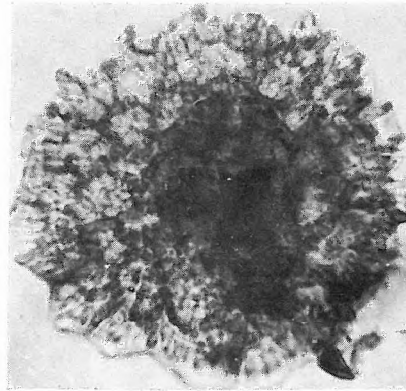
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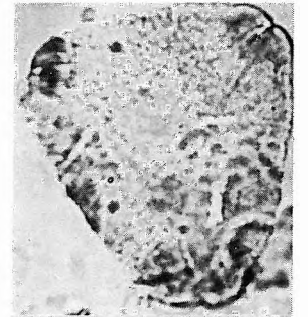
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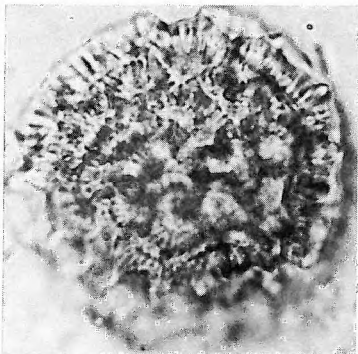
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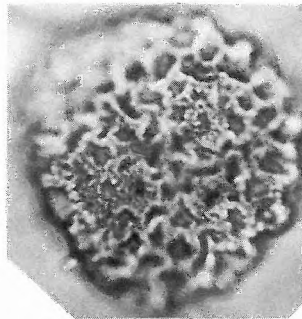
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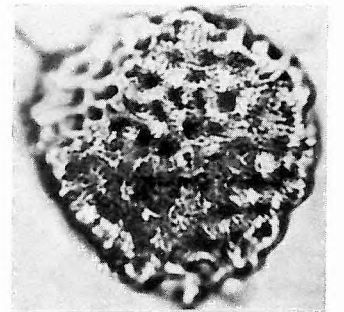
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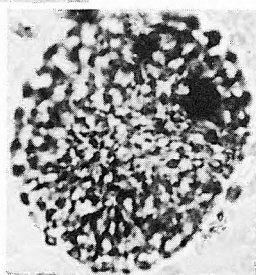
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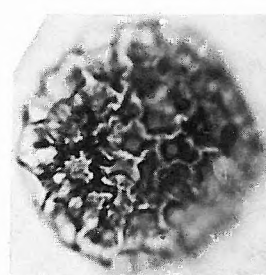
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16



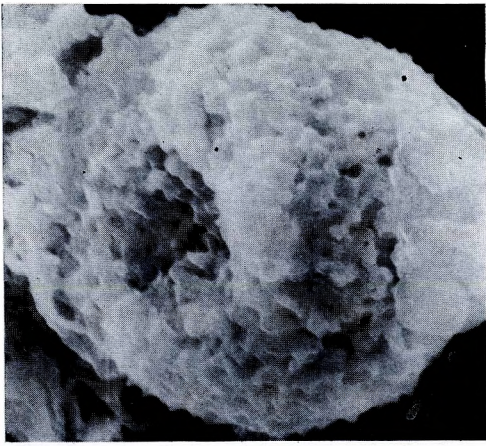
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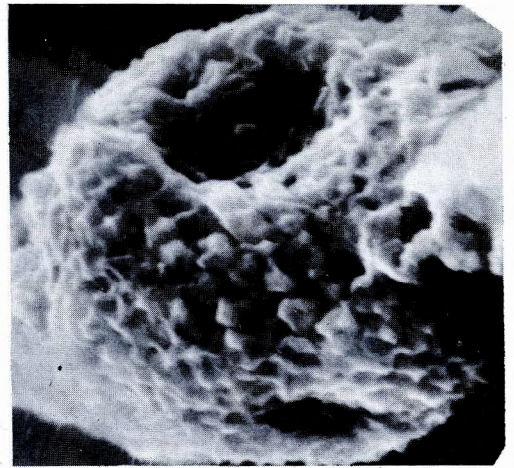
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CXI. tábla — Plate CXI

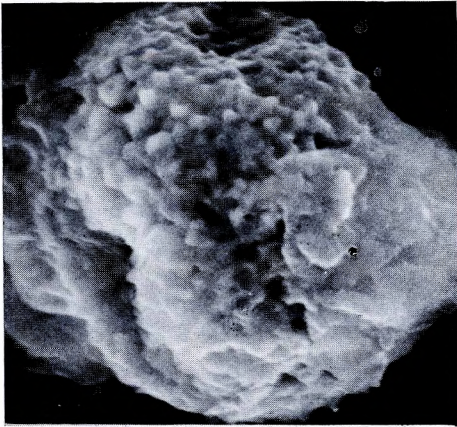
- 1—3. *Moraceae* pollen — Szokolya 2. sz. f. 95,0—96,5 m; Scan felvételek, 1=6000×, 2=6000×, 3=7800×; SEMG, 1=6000×, 2=6000×, 3=7800×
4. *Triporopollenites urticoides* NAGY 1969 — Holotypus — Zengővárkony 45. sz. f. 17,2—17,8 m
5. *T. urticoides* NAGY 1969 — Alsóvadász 1. sz. f. 1029,0—1034,6/14 m
6. *Ulmipollenites maculosus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 667,2—669,2 m
7. *U. maculosus* NAGY 1969 — Szokolya 3. sz. f. 60,1—60,8 m
8. *U. miocaenicus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 667,2—669,2 m
9. *U. miocaenicus* NAGY 1969 — Komló 120. sz. f. 374,4—374,7 m
10. *U. polyangulus* (PF. 1953) n. c. — Fót 1. sz. f. 301,0—305,0 m
11. *U. polyangulus* (PF. 1953) n. c. — Budajenő 2. sz. f. 556,5—557,7 m
- 12—13. *U. stillatus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 479,1—482,0 m
14. *U. stillatus* NAGY 1969 — Hidas 53. sz. f. 688,0—688,5 m
15. *U. undulosus* WOLFF 1934 — Naszály 1. sz. f. 26,7—29,7 m
16. *U. undulosus* WOLFF 1934 — Szokolya 3. sz. f. 77,2—77,4 m
17. *Celtipollenites komloënsis* NAGY 1969 — Megyaszó 1. sz. f. 72,5—74,5/1 m
18. *C. komloënsis* NAGY 1969 — Megyaszó 1. sz. f. 140,3—146,3/2 m
- 19—20. *C. komloënsis* NAGY 1969 — Generotypus — Komló 120. sz. f. 178,0—178,8 m



1



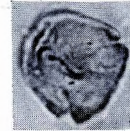
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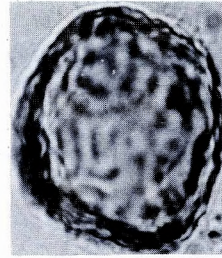
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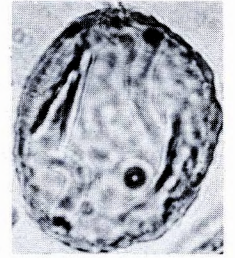
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5



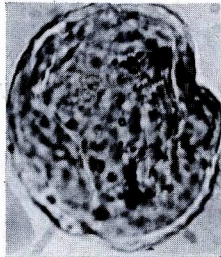
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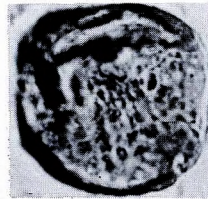
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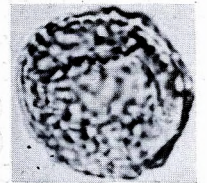
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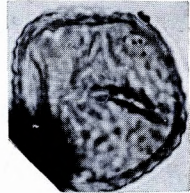
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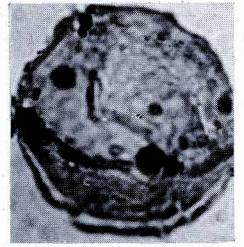
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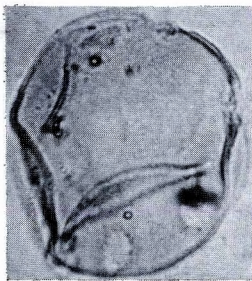
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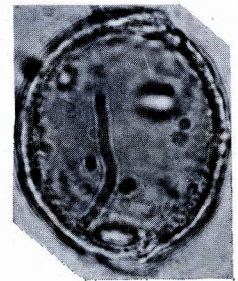
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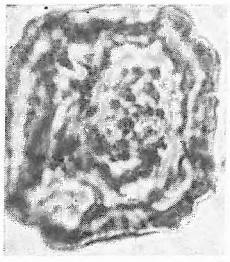
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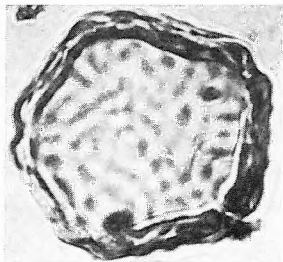
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CXII. tábla — Plate CXII

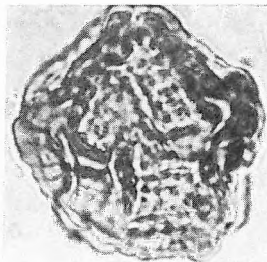
1. *Zelkovaepollenites potoniéi* NAGY 1969 — Generotypus — Hidas 53. sz. f. 669,0—669,8 m
2. *Z. potoniéi* NAGY 1969 — Szokolya 2. sz. f. 71,9—72,4 m
3. *Z. potoniéi* NAGY 1969 — Hidas 53. sz. f. 667,2—669,2
4. *Z. potoniéi* NAGY 1969 — Cserhátszentiván 1. sz. f. 169,0—171,0 m
5. *Z. thiergarti* NAGY 1969 — Szászvár 8. sz. f. 433,6—433,8 m
6. *Z. thiergarti* NAGY 1969 — Holotypus — Szászvár 8. sz. f. 432,5—432,7 m
7. *Z. thiergarti* NAGY 1969 — Tar 34. sz. f. 530,0—533,0 m
8. *Z. thiergarti* NAGY 1969 — Fót 1. sz. f. 355,5—357,0 m
9. *Carpinipites carpinoides* (PF. 1953) n. c. — Budapest-Kőbánya 1/b. szelvény; Budapest-Kőbánya, profil N° 1/b
10. *C. carpinoides* (PF. 1953) n. c. — Nógrádszakál 2. sz. f. 78,0—79,5 m
11. *C. carpinoides* (PF. 1953) n. c. — Szokolya 3. sz. f. 60,1—60,8 m
12. *C. carpinoides* (PF. 1953) n. c. — Szokolya 3. sz. f. 28,0—28,3 m
13. *C. carpinoides* (PF. 1953) n. c. — Fót 1. sz. f. 351,0—352,5 m
14. *C. carpinoides* (PF. 1953) n. c. — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
15. *Ostryapollenites rhenanus* (THOMS. 1950) NAGY 1969 — Cserhátszentiván 1. sz. f. 122,0—124,0 m
16. *O. rhenanus* (THOMS. 1950) NAGY 1969 — Budajenő 2. sz. f. 556,5—557,7 m
17. *O. rhenanus* (THOMS. 1950) NAGY 1969 — Fót 1. sz. f. 361,8 m
18. *Myricipites bituitus* (R. POT. 1931) NAGY 1969 — Fót 1. sz. f. 214,0—216,5 m
19. *Triporopollenites coryloides* PF. 1953 — Tar 34. sz. f. 63,0—69,0 m
20. *Betulaepollenites betuloides* (PF. 1953) NAGY 1969 — Szokolya 2. sz. f. 100,0—101,0 m
21. *B. betuloides* (PF. 1953) NAGY 1969 — Cserhátszentiván 1. sz. f. 132,0—134,0 m
22. *B. betuloides* (PF. 1953) NAGY 1969 — Budajenő 2. sz. f. 566,3—557,7 m
23. *B. betuloides* (PF. 1953) NAGY 1969 — Szokolya 3. sz. f. 58,7—59,9 m
24. *Alnipollenites verus* R. POT. 1934 — Szokolya 2. sz. f. 75,1—75,9 m
25. *A. verus* R. POT. 1934 — Püspökhatvan 4. sz. f. 248,0—251,0 m
26. *A. verus* R. POT. 1934 — Császárs 1. sz. f. 99,5 m
27. *A. verus* R. POT. 1934 — Litke 17. sz. f. 148,0—150,0 m
28. *A. verus* R. POT. 1934 — Fót 1. sz. f. 201,0—205,0 m
29. *A. verus* R. POT. 1934 — Tököl 1. sz. f. 845,0—846,0 m



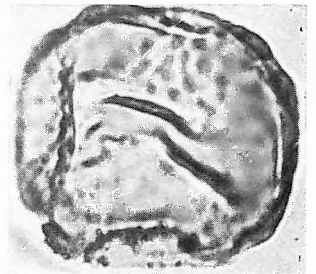
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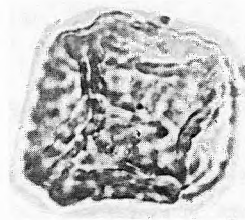
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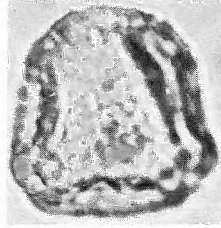
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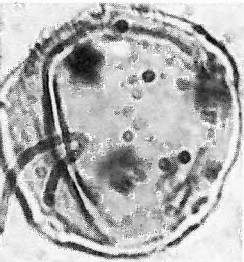
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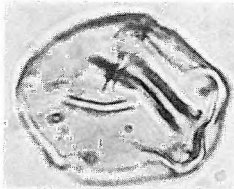
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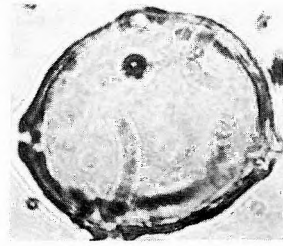
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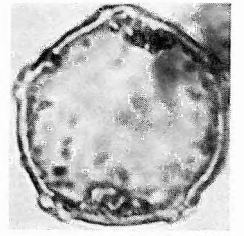
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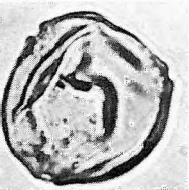
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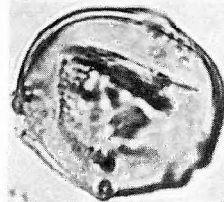
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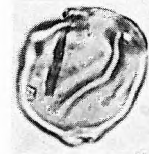
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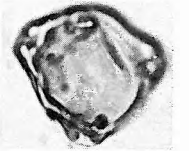
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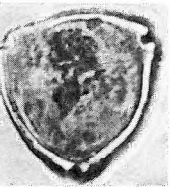
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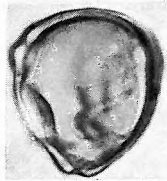
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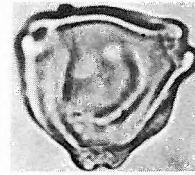
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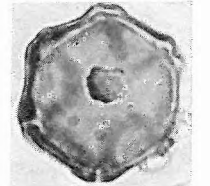
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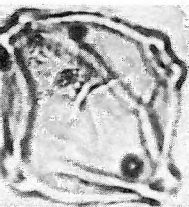
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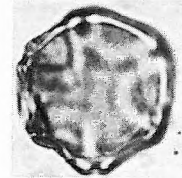
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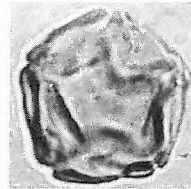
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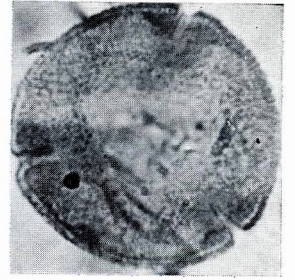
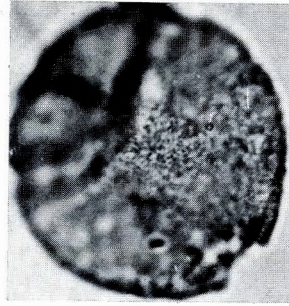
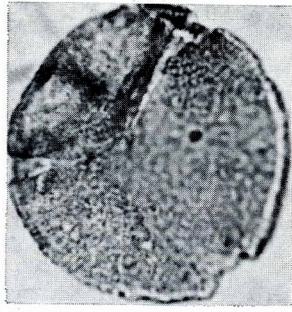


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1. *Faguspollenites crassus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 669,0—669,8 m
- 2—3. *F. crassus* NAGY 1969 — Naszály 1. sz. f. 106,0—112,0 m
4. *F. crassus* NAGY 1969 — Megyaszó 1. sz. f. 140,3—146,3/2 m
5. *F. crassus* NAGY 1969 — Budajenő 2. sz. f. 544,4—548,7 m
6. *F. gemmatus* NAGY 1969 — Holotypus — Hidas 53. sz. f. 600,5—602,3 m
7. *F. gemmatus* NAGY 1969 — Szokolya 3. sz. f. 51,6—52,6 m
8. *F. gemmatus* NAGY 1969 — Budajenő 2. sz. f. 575,5—575,9 m
9. *F. minor* NAGY 1969 — Fót 1. sz. f. 351,0—352,5 m
10. *F. minor* NAGY 1969 — Tata (TVG) 27. sz. f. 30,7—32,1 m
11. *F. minor* NAGY 1969 — Szokolya 2. sz. f. 52,7—53,5 m
12. *F. minor* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 67,5—70,5 m
13. *F. subtilis* NAGY 1969 — Naszály 1. sz. f. 104,0—106,0 m
14. *F. subtilis* NAGY 1969 — Zengővárkony 59. sz. f. 71,4—73,0 m
15. *F. verus* RAATZ 1937 — Komló 120. sz. f. 374,7 m
16. *F. verus* RAATZ 1937 — Fót 1. sz. f. 131,5—132,5 m
17. *F. vivus* NAGY 1969 — Fót 1. sz. f. 209,0—212,6 m

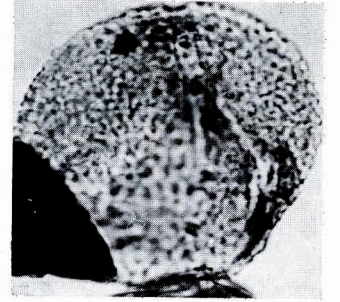
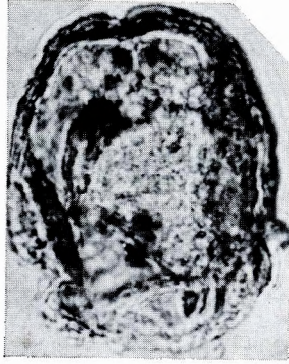
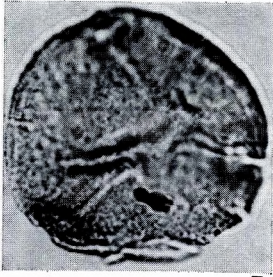


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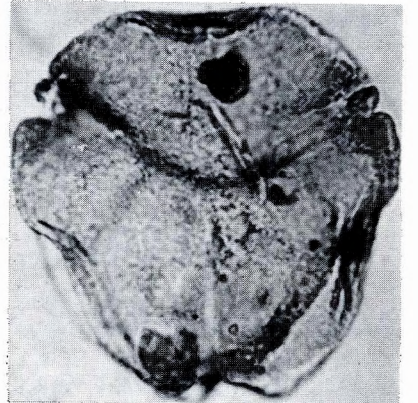
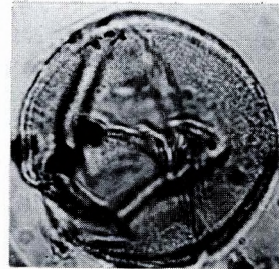
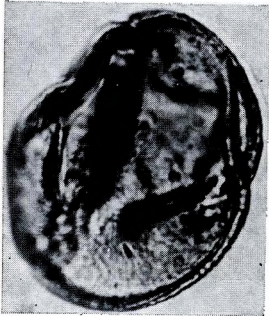


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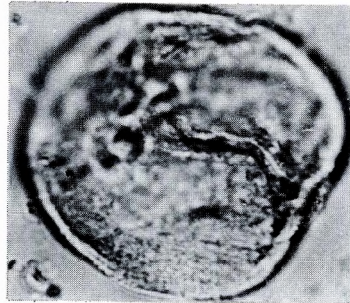
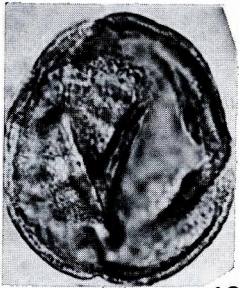


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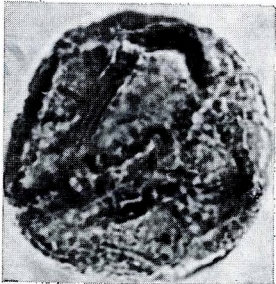
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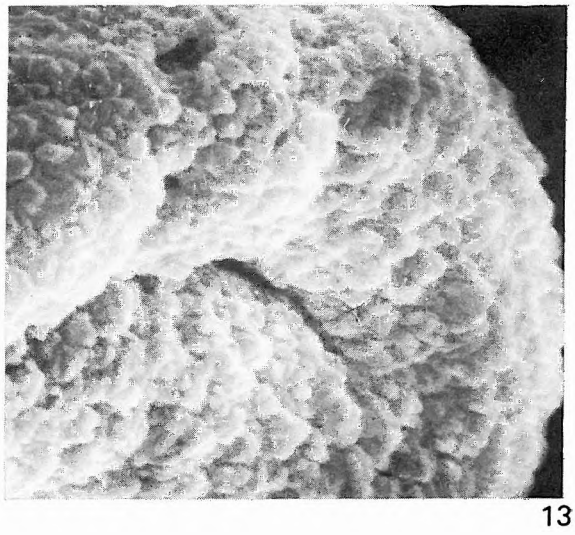
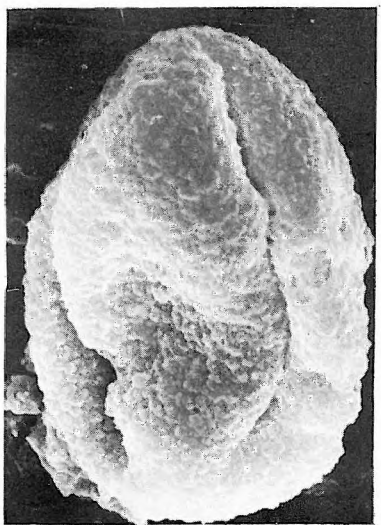
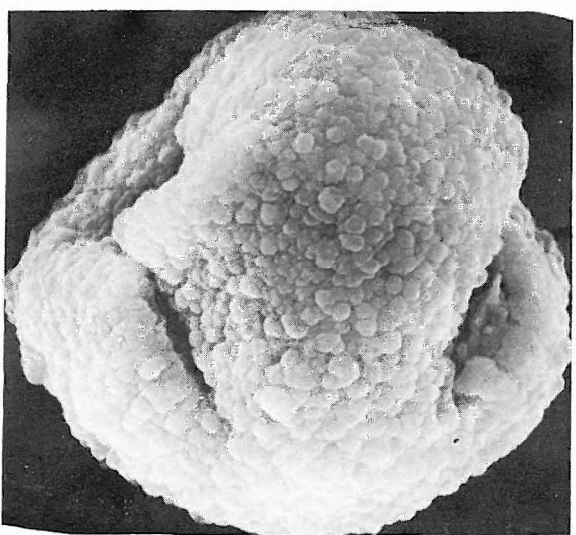
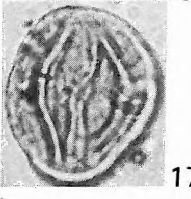
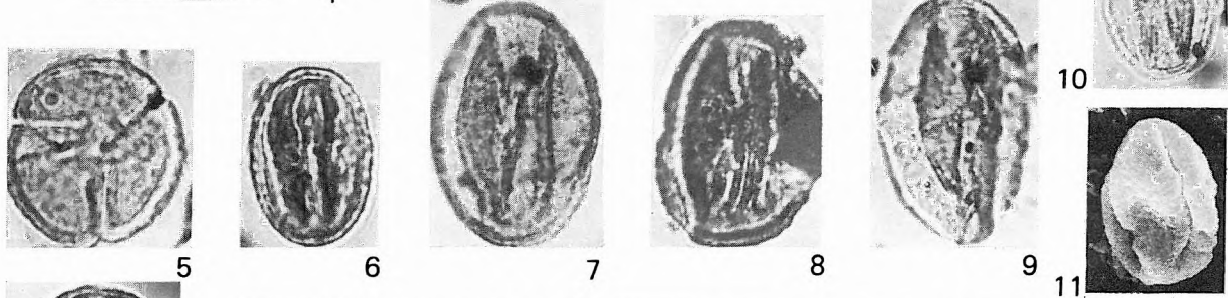
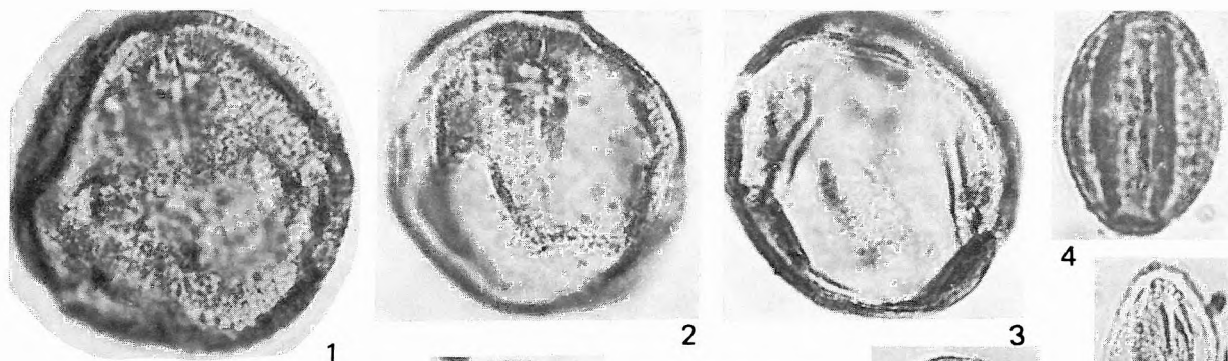
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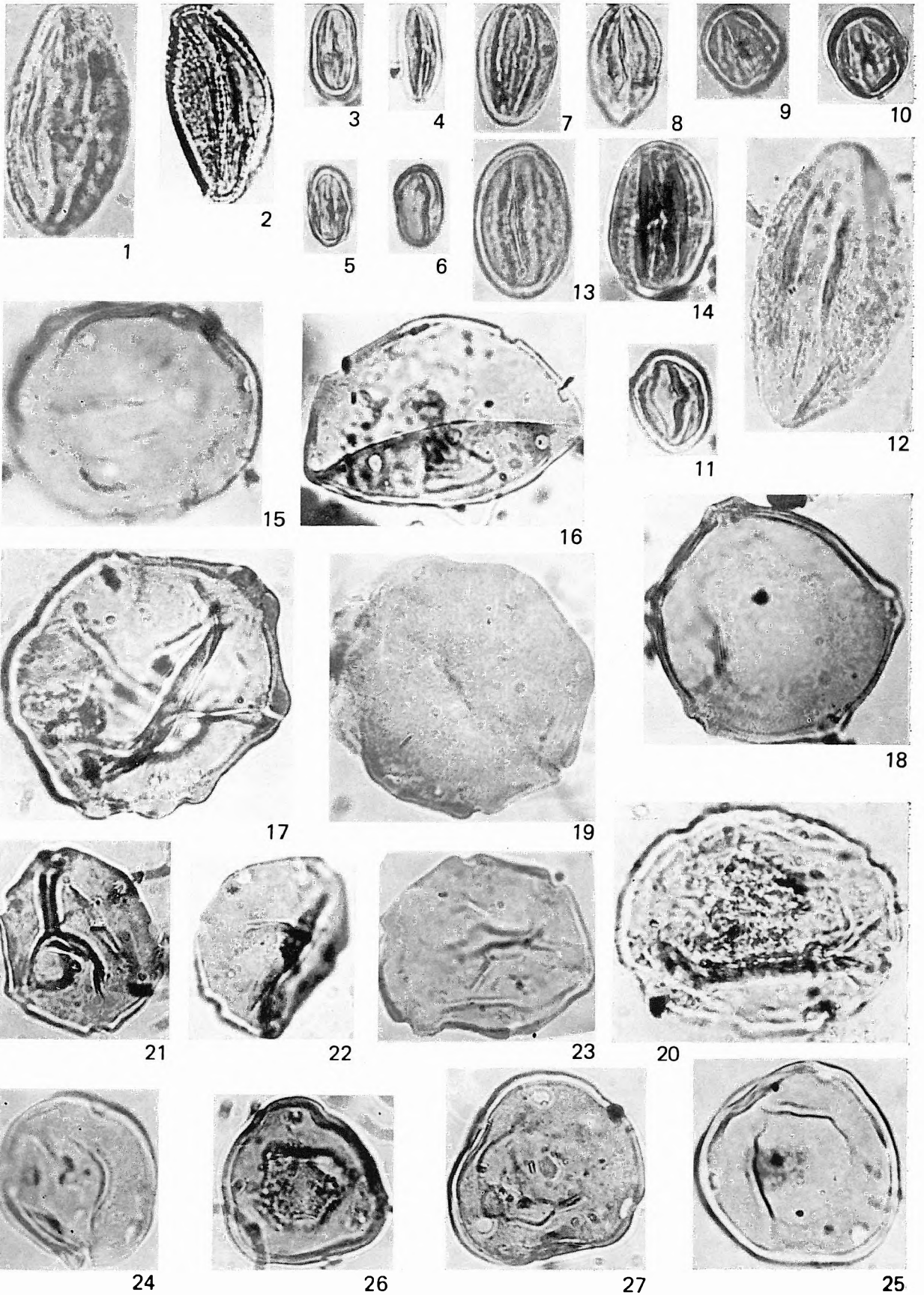


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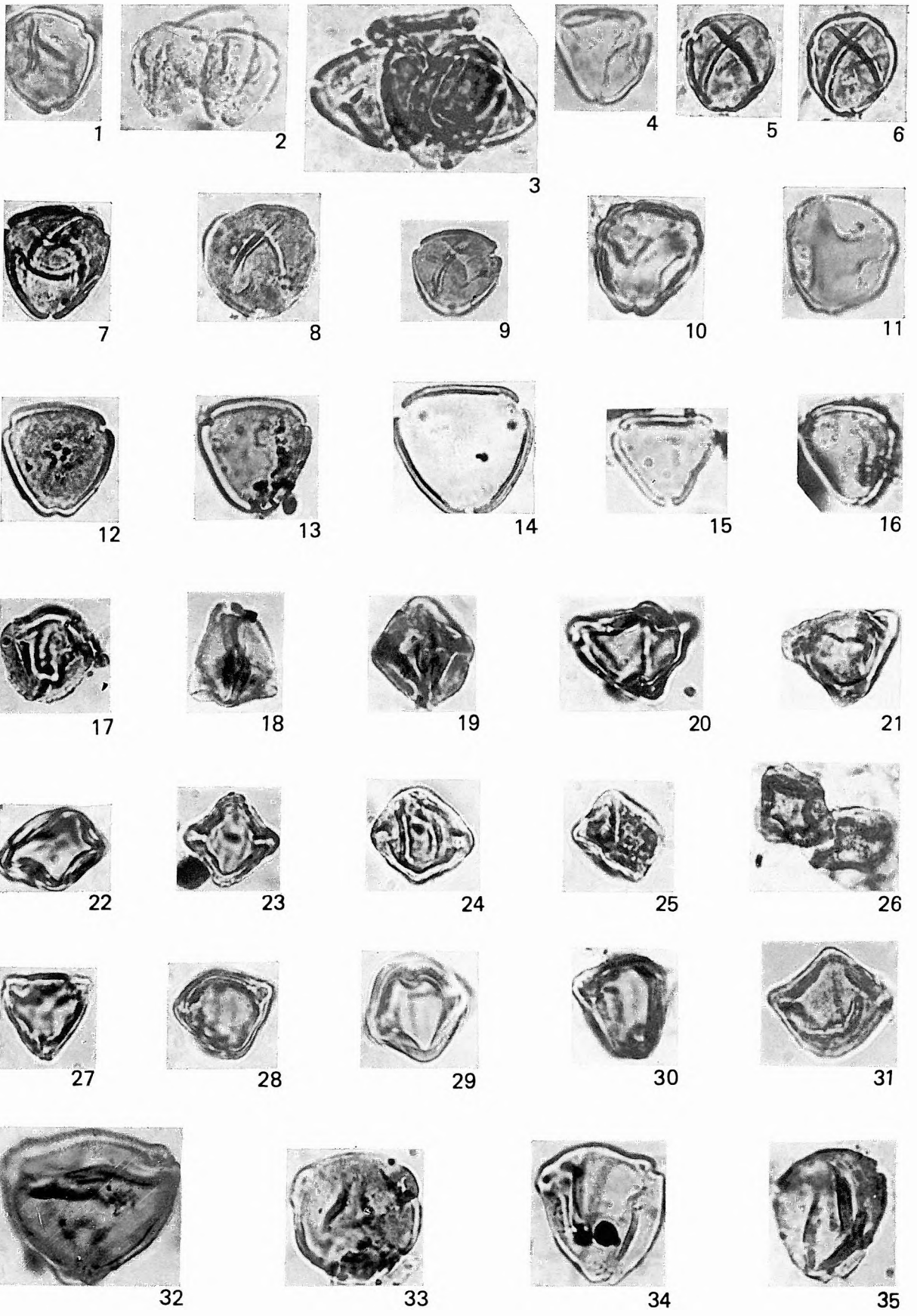
1. *Faguspollenites vivus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—67,5 m
- 2—3. *F. vivus* NAGY 1969 — Szokolya 2. sz. f. 90,3—91,1 m
4. *Quercopollenites granulatus* NAGY 1969 — Generotypus — Hidas 53. sz. f. 147,5—148,5 m
5. *Q. granulatus* NAGY 1969 — Szokolya 2. sz. f. 71,9—72,4 m
6. *Q. granulatus* NAGY 1969 — Fót 1. sz. f. 259,8—260,0 m
7. *Q. petrea* typus — Tata térképező 26. sz. f. 16,8—24,6 m
8. *Q. petrea* typus — Tata (TVG) 26. sz. f. 35,0—39,0 m
9. *Q. petrea* typus — Komló 120. sz. f. 372,0—374,0 m
10. *Q. robur* typus — Tengelic 2. sz. f. 735,7—738,0 m
- 11—13. *Quercopollenites* sp. — Szokolya 2. sz. f. 72,7—73,5 m
Scan felvételek, 11=1000×, 12=3000×, 13=10 000×; SEMG, 11=1000×, 12=3000×,
13=10,000×
14. *Quercopollenites robur* typus — Cserhátszentiván 1. sz. f. 136,0—138,0 m
15. *Quercopollenites* sp. — Várkesző 1. sz. f. 34,0—35,0 m; Scan felvétel 4000×; SEMG 4000×
16. *Tricolporopollenites asper* (TH. et PF. 1953) W. KR. 1961 — Szokolya 2. sz. f. 44,7—45,5 m
17. *T. asper* (TH. et PF. 1953) W. KR. 1961 — Hidas 53. sz. f. 757,0—759,0 m
18. *Tricolporopollenites cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *fuscus* R. POT. 1931 —
Rákoskeresztúr I. sz. f. 535,0—537,0 m
19. *T. cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *fuscus* R. POT. 1934 — Alsóvadász 1. sz. f.
1029,0—1034,6/3 m
20. *T. cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *fuscus* R. POT. 1934 — Fót 1. sz. f. 142,8—
144,0 m
21. *T. cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *pusillus* (R. POT. 1934) TH. et PF. 1953 —
Szokolya 2. sz. f. 114,0—115,3 m
- 22—23. *T. cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *pusillus* (R. POT. 1934) TH. et PF. 1953 —
Fót 1. sz. f. 364,5—367,5 m
24. *T. cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *pusillus* (R. POT. 1934) TH. et PF. 1953 —
Beremend 9. sz. f. 76,0 m
25. *T. cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *oviformis* (R. POT. 1931) TH. et PF. 1953 —
Tata térképező 26. sz. f. 16,8—24,6 m
26. *T. cingulum* (R. POT. 1931) TH. et PF. 1953 ssp. *oviformis* (R. POT. 1931) TH. et PF. 1953 —
Zengővárkony 45. sz. f. 16,0—16,4 m



1. *Tricolporopollenites henrici* (R. POT. 1931) W. KR. 1961 — Zengővárkony 45. sz. f. 16,0—16,4 m
2. *T. henrici* (R. POT. 1931) W. KR. 1961 — Szokolya 2. sz. f. 82,1—83,9 m
3. *Tricolporopollenites liblarensis* (THOMS. 1950) TH. et PF. 1953 ssp. *liblarensis* — Fót 1. sz. f. 228,2 m
4. *T. liblarensis* (THOMS. 1950) TH. et PF. 1953 ssp. *liblarensis* — Eger, Wind-féle téglagyári fúrás 9,2—9,7 m; Eger, Wind brickyard borehole 9.2—9.7 m
5. *T. liblarensis* (THOMS. 1950) TH. et PF. 1953 ssp. *fallax* (R. POT. 1934) TH. et PF. 1953 — Tököl 1. sz. f. 830,0—833,0 m
6. *T. liblarensis* (THOMS. 1950) TH. et PF. 1953 ssp. *fallax* (R. POT. 1934) TH. et PF. 1953 — Fót 1. sz. f. 241,6—243,2 m
7. *Tricolporopollenites microhenrici* (R. POT. 1931) W. KR. 1961 — Fót 1. sz. f. 222,5—225,5 m
8. *T. microhenrici* (R. POT. 1931) W. KR. 1961 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
- 9–10. *T. minimus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 81,0—83,0 m
11. *T. minimus* NAGY 1969 — Nógrádszakál 2. sz. f. 122,0—123,0 m
12. *T. porasper* PFLUG 1953 — Szászvár 8. sz. f. 433,6—433,8 m
13. *T. villensis* (THOMS. 1950) TH. et PF. 1953 — Szokolya 2. sz. f. 87,2—87,9 m
14. *T. villensis* (THOMS. 1950) TH. et PF. 1953 — Tengelic 2. sz. f. 805,0—808,0 m
15. *Juglanspollenites maculosus* (R. POT. 1931) n. c. — Megyaszó 1. sz. f. 52,0—54,5/2 m
16. *J. verus* RAATZ 1937 — Lak 1. sz. f. 307,7—313,0 m
17. *Pterocaryapollenites mecsekensis* NAGY 1969 — Szokolya 2. sz. f. 71,9—72,4 m
18. *P. mecsekensis* NAGY 1969 — Szokolya 2. sz. f. 115,3—118,3 m
19. *P. rotundiformis* NAGY 1969 — Cserhátszentiván 1. sz. f. 194,0—196,0 m
20. *P. rotundiformis* NAGY 1969 — Holotypus — Hidas 53. sz. f. 667,2—669,2 m
21. *P. stellatus* (R. POT. 1931) THIERG. 1937 — Fót 1. sz. f. 288,0—290,5 m
22. *P. stellatus* (R. POT. 1931) THIERG. 1937 — Nagybörzsöny 14. sz. f. 717,7—782,5 m
23. *P. stellatus* (R. POT. 1931) THIERG. 1937 — Naszály 1. sz. f. 51,0—54,3 m
24. *Caryapollenites simplex* (R. POT. 1931) RAATZ 1937 ssp. *simplex* — Litke 17. sz. f. 194,0—196,0 m
25. *C. simplex* (R. POT. 1931) RAATZ 1937 ssp. *simplex* — Litke 17. sz. f. 256,0—258,0 m
26. *C. simplex* (R. POT. 1931) RAATZ 1937 ssp. *triangulus* PF. 1953 — Fót 1. sz. f. 216,5—218,8 m
27. *C. simplex* (R. POT. 1931) RAATZ 1937 ssp. *triangulus* PF. 1953 — Fót 1. sz. f. 266,0—269,0 m

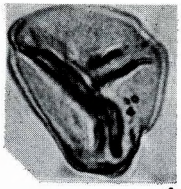


1. *Engelhardtoidites microcoryphaeus* (R. POT. 1931) R. POT. 1960 — Fót 1. sz. f. 115,0 m
2. *E. microcoryphaeus* (R. POT. 1931) R. POT. 1960 — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
3. *E. microcoryphaeus* (R. POT. 1931) R. POT. 1960 — Zengővárkony 45. sz. f. 16,4—17,2 m
4. *E. microcoryphaeus* (R. POT. 1931) R. POT. 1960 — Cserhátszentiván 1. sz. f. 30,0—32,5 m
- 5—6. *Platycaryapollenites miocaenicus* NAGY 1969 — Generotypus — Pusztakisfalu VI. sz. f. 22,5—25,0 m
7. *Platycaryapollenites miocaenicus* NAGY 1969 — Hidas 53. sz. f. 683,0—686,5 m
8. *P. miocaenicus* NAGY 1969 — Zengővárkony 59. sz. f. 76,0—78,0 m
9. *P. miocaenicus* NAGY 1969 — Vajta vízkutató fúrás 724,0—728,0 m
10. *Plicatopollis plicatus* (R. POT. 1934) W. KR. 1962 — Hidas 53. sz. f. 667,2—669,2 m
11. *P. plicatus* (R. POT. 1934) W. KR. 1962 — Pápa 2. sz. f. 142,8—143,3 m
12. *Momipites punctatus* (R. POT. 1931) NAGY 1969 — Fót 1. sz. f. 176,7—181,0 m
13. *M. punctatus* (R. POT. 1931) NAGY 1969 — Szokolya 2. sz. f. 100,0—101,0 m
14. *M. punctatus* (R. POT. 1931) NAGY 1969 — Cserhátszentiván 1. sz. f. 165,0—167,0 m
15. *M. quietus* (R. POT. 1931) NICHOLS 1973 — Tengelic 2. sz. f. 850,0—851,3 m
16. *M. quietus* (R. POT. 1931) NICHOLS 1973 — Fót 1. sz. f. 214,0—216,5 m
17. *Pentapollenites neogenicus* SIM. 1964 — Nagygörbő 1. sz. f. 908,5—914,0 m
18. *P. neogenicus* SIM. 1964 — Nagygörbő 1. sz. f. 903,2—908,5 m
19. *P. neogenicus* SIM. 1964 — Kóspallag 11. sz. f. 180,4—182,8 m
20. *P. pentangulus* (PF. 1953) W. KR. 1958 ssp. *pentangulus* — Szokolya 2. sz. f. 69,5—70,3 m
21. *P. pentangulus* (PF. 1953) W. KR. 1958 ssp. *pentangulus* — Tata (TVG) 27. sz. f. 72,8—74,7 m
22. *P. pentangulus* (PF. 1953) W. KR. 1958 ssp. *pentangulus* — Fót 1. sz. f. 241,6—243,0 m
23. *P. punctoides* W. KR. 1962 — Szokolya 2. sz. f. 34,0—37,0 m
24. *P. punctoides* W. KR. 1962 — Eger, Wind-féle téglagyári fúrás 7,8—8,3 m; Eger, Wind brickyard borehole, 7.8—8.3 m
25. *P. punctoides* W. KR. 1962 — Eger, Wind-féle téglagyári fúrás 8,3—9,2 m; Eger, Wind brickyard borehole 8.3—9.2 m
26. *P. punctoides* W. KR. 1962 — Eger, Wind-féle téglagyári feltárás „u” réteg; Eger, Wind brickyard pit, layer “u”
27. *P. regulatius* W. KR. 1962 ssp. *regulatius* — Litke 17. sz. f. 256,0—258,0 m
28. *P. regulatius* W. KR. 1962 ssp. *regulatius* — Fót 1. sz. f. 361,8 m
29. *P. regulatius* W. KR. 1962 ssp. *concauus* W. KR. 1962 — Szokolya 2. sz. f. 76,7—77,5 m
30. *P. regulatius* W. KR. 1962 ssp. *concauus* W. KR. 1962 — Szokolya 2. sz. f. 80,7—81,5 m
31. *P. regulatius* W. KR. 1962 ssp. *concauus* W. KR. 1962 — Litke 17. sz. f. 206,0—208,0 m
32. *Myricipites bituitus* (R. POT. 1931) NAGY 1969 — Szokolya 2. sz. f. 85,5—86,3 m
33. *M. bituitus* (R. POT. 1931) NAGY 1969 — Fót 1. sz. f. 321,5—328,0 m
34. *M. bituitus* (R. POT. 1931) NAGY 1969 — Püspökhatvan 4. sz. f. 293,0—396,0 m
35. *Myricipites myricoides* (KREMP 1950) NAGY 1969 — Szászvár 432,5—432,7 m



CXVII. tábla — Plate CXVII

1. *Myricipites myricoides* (KREMP 1950) NAGY 1969 — Tar 34. sz. f. 518,0—552,0 m
2. *M. myricoides* (KREMP 1950) NAGY 1969 — Alsóvadász 1. sz. f. 155,8—163,1/4 m
3. *Salixipollenites densibaculatus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 63,0—65,0 m
4. *Salixipollenites densibaculatus* NAGY 1969 — Vajta vízkutató fúrás 724,0—728,0 m
5. *S. densibaculatus* NAGY 1969 — Szokolya 2. sz. f. 78,8—79,1 m
6. *S. helveticus* NAGY 1969 — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
7. *S. helveticus* NAGY 1969 — Fót 1. sz. f. 228,2 m
- 8—10. *S. helveticus* NAGY 1969 — Holotypus — Pusztakisfalva VI. sz. f. 15,0—17,0 m
11. *S. helveticus* NAGY 1969 — Alsóvadász 1. sz. f. 1029,0—1034,6/2 m
12. *S. helveticus* NAGY 1969 — Komló 120. sz. f. 374,4 m
13. *Liliacidites ellipticus* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 56,0—60,9 m
14. *Myricipites rurensis* (PF. et TH. 1953) NAGY 1969 — Fót 1. sz. f. 116,8 m
15. *M. rurensis* (PF. et TH. 1953) NAGY 1969 — Szokolya 3. sz. f. 60,1—60,8 m
- 16—17. *Cyperaceapollis neogenicus* W. KR. 1970 — Tengelic 2. sz. f. 830,0—833,0 m
- 18—19. *Graminidites crassiglobosus* (TREV. 1967) W. KR. 1970 — Szokolya 2. sz. f. 107,9—109,0 m
20. *Graminidites media* (COOKS. 1947) R. POT. 1960 — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
21. *G. media* (COOKS. 1947) R. POT. 1960 — Fót 1. sz. f. 237,5—238,0 m
22. *G. media* (COOKS. 1947) R. POT. 1960 — Szokolya 11. sz. f. 26,0 m
23. *Arecipites chamaedoriformis* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 76,0—78,0 m
24. *A. chamaedoriformis* NAGY 1969 — Fót 1. sz. f. 288,0—290,5 m



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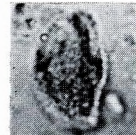
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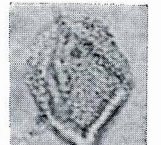
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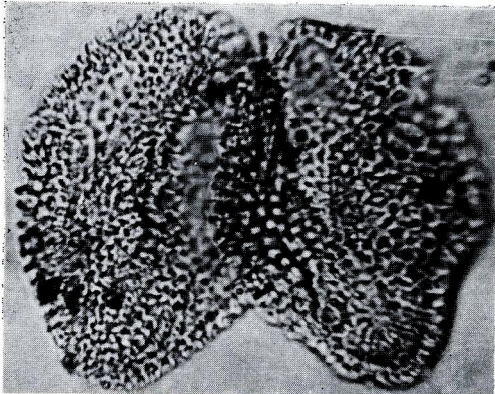
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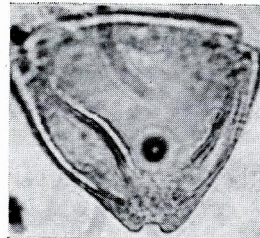
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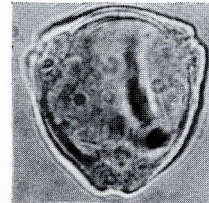
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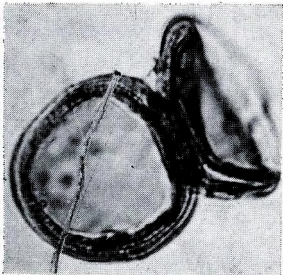
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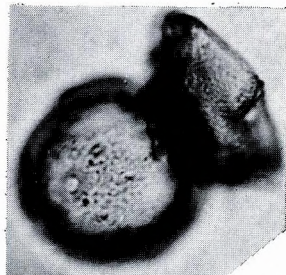
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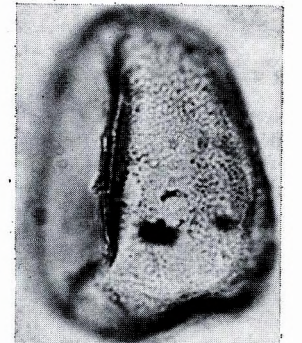
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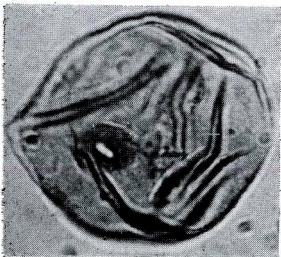
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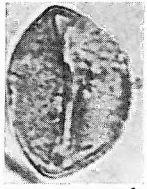


23



24

1. *Arecipites trachycarpoides* NAGY 1969 — Holotypus — Zengővárkony 59. sz. f. 81,0—83,0 m
2. *A. trachycarpoides* NAGY 1969 — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
3. *Monocolpopollenites tranquillus* (R. POT. 1934) TH. et PF. 1953 — Szászvár 8. sz. f. 433,6—433,8 m
4. *M. tranquillus* (R. POT. 1934) TH. et PF. 1953 — Fót 1. sz. f. 288,0—290,5 m
5. *Sabalpollenites papillosus* (MÜRR. et PF. 1953) NAGY 1969 — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
6. *S. papillosus* (MÜRR. et PF. 1953) NAGY 1969 — Fót 1. sz. f. 133,4—138,5 m
- 7—8. *S. retareolatus* (PF. 1953) NAGY 1969 — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
9. *S. retareolatus* (PF. 1953) NAGY 1969 — Eger, Wind-féle téglagyári fúrás 9,2—9,7 m; Eger, Wind brickyard borehole 9.2—9.7 m
10. *Dicolpopollenites calamoides* NAGY 1963 — Holotypus — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
11. *D. calamoides* NAGY 1963 — Alsóvadász 1. sz. f. 1029,0—1034,6/2 m
12. *D. calamoides* NAGY 1963 — Eger, Wind-féle téglagyári feltárás, „u” réteg; Eger, Wind brickyard pit, layer “u”
13. *Sparganiaceapollenites polygonalis* THIERG. 1937 — Szokolya 3. sz. f. 52,6—53,6 m
14. *S. polygonalis* THIERG. 1937 — Tata térképező 26. sz. f. 16,8—24,6 m
15. *S. polygonalis* THIERG. 1937 — Pápa 2. sz. f. 146,0—146,3 m
16. *S. polygonalis* THIERG. 1937 — Tata (TVG) 27. sz. f. 8,5—18,3 m
- 17—20. *Tetradomonoporites typhoides* W. KR. 1970 — Várkesző 1. sz. f. 34,0—35,0 m; Scan felvételek, 17=4000×, 18=6000×, 19—20=1000×; SEMG, 17=4000×, 18=6000×, 19—20=1000×
- 21—22. *T. typhoides* W. KR. 1970 — Beremend 9. sz. f. 76,0 m



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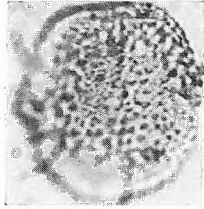
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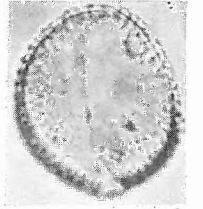
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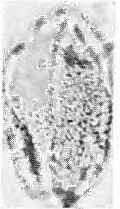
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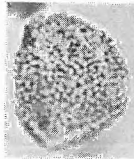
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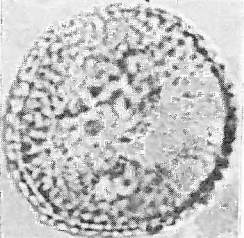
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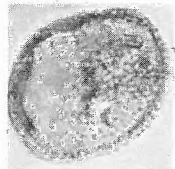
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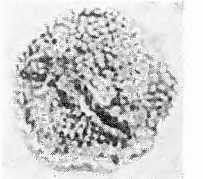
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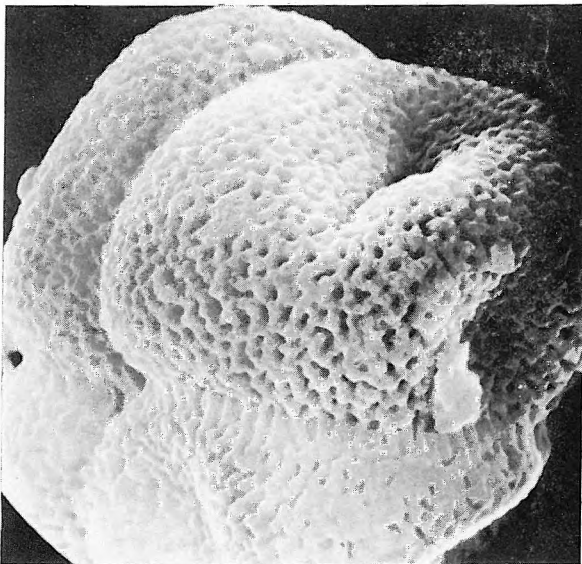
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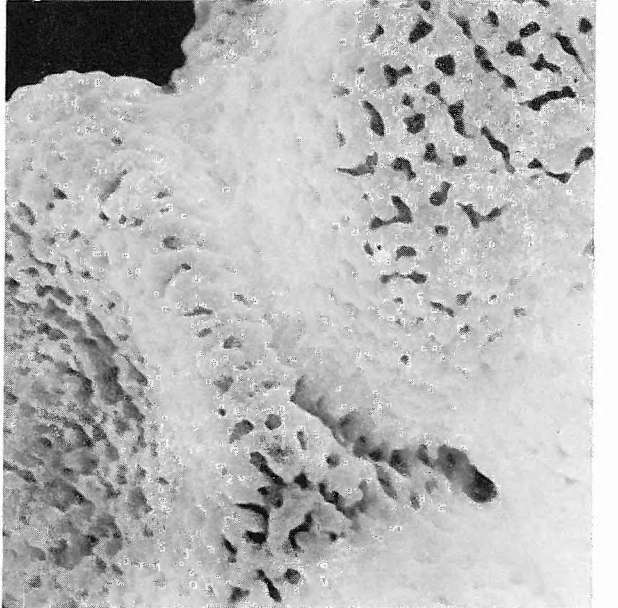
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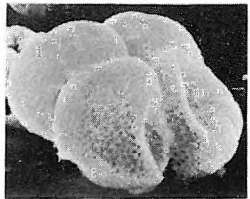
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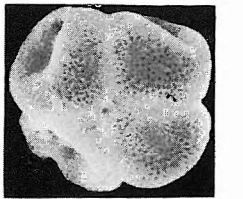
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