Acta Palaeobot. Suppl. 1: 31–56, 1994

CHECKLIST OF SELECTED GENERA AND SPECIES OF SPORES AND POLLEN GRAINS ORDERED IN MORPHOLOGICAL SYSTEM

MARIA ZIEMBIŃSKA-TWORZYDŁO, IRENA GRABOWSKA,
ALEKSANDRA KOHLMAN-ADAMSKA, ANNA SADOWSKA,
BARBARA SŁODKOWSKA, LEON STUCHLIK and HANNA WAŻYŃSKA

A checklist of taxa contains a basic genera and species of sporomorphs the most often occurred in Neogene deposits, wich were ordered in a morphological system. The checklist firstly consists of spores arranged in trilete – monolete system. The pollen grains were set in systematic order started from Gymnospermae pollen, amoung which following morphological types were distinguished: inaperturate, saccate, polyplicate; to Angiospermae with morphological types: monoporate, diporate, triporate, polyporate, monocolpate, tricolpate – tricolporate, polycolpate – polycolporate, syncolpate and tetrade.

In the checklist, below the generic and species names of fossil sporomorphs, an information on their botanical affinity was included, adding the word "type". It informs on a close morphological similarity to spores or pollen grains of a given taxon in the rank of the genus or botanical species. The "type" indication was not used when the botanical affinity was in the family rank. When the botanical affinity in the family, genus or species rank was not univocal, the morphological name was used instead.

On the right margin, in the one line with the information on a botanical affinity, a letter denotes geofloristic element in which a given taxon is connected. The letter symbols denote:

P – generally palaeotropical element
P1 – tropical
P2 – subtropical
A – generally arctotertiary element
A1 – warm-temperate
A2 – cool-temperate
Abbrevation "p.p." in the text – pro parte

SPORITES

TRILETES

1. ***Cingulisporis*** Ważyńska 1994
   p.p. Schizaeaceae, p.p. Dicksoniaceae, p.p. Polypodiaceae, p.p. Pteridaceae, p.p. Cyatheaceae — P
   1.1 ***Cingulisporis corrutoratus*** (Nagy 1985) Ważyńska 1994
   ? Polypodiaceae, p.p. Pteridaceae, Pteris type — P1
   Pl. 1, fig. 5a–c; p. 9
   1.2 ***Cingulisporis gracillimus*** (Nagy 1969) Ważyńska 1994
   ? Polypodiaceae, p.p. Pteridaceae, Pteris type — P1
   Pl. 1, figs 1a, b; 2; p. 9
   1.3 ***Cingulisporis marxheimensis*** (Mürriger & Pflug 1952) Ważyńska 1994
   p.p. Schizaeaceae, p.p. Dicksoniaceae — P1
   Pl. 1, figs 3a, b; 4a, b; p. 9
2. ***Corrugatisporites*** Ibrahim 1933 ex Thomson & Pflug 1953
   p.p. Schizaeaceae — P
   2.1 ***Corrugatisporites asolidus*** (Krutzsch 1959) Nagy 1985
   ? Lygodium type — P2
   Pl. 1, fig. 7
   2.2 ***Corrugatisporites corruvallatus*** (Krutzsch 1967) Nagy 1985
   ? Lygodium type — P2
   Pl. 1, fig. 6
   2.3 ***Corrugatisporites tekeresensis*** Nagy 1985
   ? Lygodium type — P2
   Pl. 1, fig. 8

2.4 ***Corrugatisporites*** sp. sp.
p.p. Schizaeaceae P2

3. ***Cryptogrammasporis*** Skawińska 1994
Pteridaceae, Cryptogramma type A
3.1 ***Cryptogrammasporis magnoides*** (Krutzsch 1963b) Skawińska 1994
Cryptogramma type A1
Pl. 2, fig. 1a–c; p. 10

4. ***Leiotriletes*** Naumova 1937 ex Potonié & Kremp 1954
p.p. Schizaeaceae, p.p. Cyatheaceae P
4.1 ***Leiotriletes adriennis*** (Potonié & Gelletich 1933) Krutzsch 1959
Schizaeaceae, ? Lygodium type P
Pl. 2, fig. 6
4.1.1 ***Leiotriletes adriennis pseudomaximus*** (Pflug & Thomson 1953) Krutzsch 1959
Schizaeaceae, ? Lygodium type P
Pl. 2, fig. 5
4.2 ***Leiotriletes apheles*** (Hunger 1952) Krutzsch 1959
Schizaeaceae, ? Lygodium type P
Pl. 3, fig. 2
4.3 ***Leiotriletes maxoides*** Krutzsch 1962b
Schizaeaceae, ? Lygodium type P
Pl. 2, fig. 2
4.3.1 ***Leiotriletes maxoides maximus*** (Pflug 1953b) Krutzsch 1962b
? Lygodium type P
Pl. 2, fig. 4
4.3.2 ***Leiotriletes maxoides maxoides*** Krutzsch 1962b
? Lygodium type P
Pl. 2, fig. 7
4.4 ***Leiotriletes neddenioides*** Krutzsch 1962b
Schizaeaceae, Lygodium type P
Pl. 3, fig. 1
4.5 ***Leiotriletes wolffi*** Krutzsch 1962b
p.p. Cyatheaceae P
Pl. 3, figs 3, 4
4.6 ***Leiotriletes*** sp. sp.
p.p. Cyatheaceae, p.p. Schizaeaceae, Lygodium type P
Pl. 2, fig. 3

5. ***Lusatisporis*** Krutzsch 1963
Selaginellaceae, ? Selaginella sibirica type A
5.1 ***Lusatisporis perinatus*** Krutzsch 1963b
? Selaginella sibirica type A
Pl. 3, fig. 6
5.2 ***Lusatisporis punctatus*** Krutzsch 1963b
? Selaginella sibirica type A
Pl. 3, fig. 5

6. ***Lycopodiaceaesporis*** Ważyńska 1994
Lycopodiaceae A/P
6.1 ***Lycopodiaceaesporis (Camarozonosporites*** ex Krutzsch 1963a) ***decorus*** (Wolff 1934) Ważyńska 1994
Lycopodiella cernua (= Lycopodium cernuum) type P1
Pl. 3, fig. 7a, b; p. 11
6.2 ***Lycopodiaceaesporis (Camarozonosporites*** ex Krutzsch 1963a) ***heskemensis*** (Pflanzl 1955) Ważyńska 1994
Lycopodiella cernua (=Lycopodium cernuum) type P1
Pl. 3, figs 9, 10; p. 11
6.3 ***Lycopodiaceaesporis (Hamulatisporis*** ex Krutzsch 1959) ***helenensis*** (Krutzsch 1963a) Ważyńska 1994
p.p.Lycopodiella caroliniana (=Lycopodium carolinianum) type P2/A
Pl. 4, fig. 1; p. 11
6.4 ***Lycopodiaceaesporis (Hamulatisporis*** ex Krutzsch 1959) ***rarus*** (Doktorowicz-Hrebnicka 1960) Ważyńska 1994
p.p. Lypodiella caroliniana (= Lycopodium carolinianum) type P2
Pl. 4, figs 2, 3; p. 11
6.5 ***Lycopodiaceaesporis (Retitriletes*** ex Krutzsch 1963a) ***lusaticus*** (Krutzsch 1963a) Ziembińska-Tworzydło 1994
Lycopodium clavatum type A1
Pl. 3, figs 11a, b; 12a–c; p. 12
6.5 ***Lycopodiaceaesporis (Retitriletes*** ex Krutzsch 1963a) ***pseudoclavatus*** (Krutzsch 1963a) Ważyńska 1994
Lycopodium clavatum type A1
Pl. 3, fig. 8a, b; p. 11

7. ***Neogenisporis*** Krutzsch 1962a
p.p. Gleicheniaceae P
7.1 ***Neogenisporis neogenicus*** Krutzsch 1962a
p.p. Gleicheniaceae P2
Pl. 4, figs 4, 5

8. ***Osmundacidites*** Couper 1953
Osmundaceae A
8.1 ***Osmundacidites nanus*** (Wolff 1934) Nagy 1985

Osmunda claytoniania type A1
Pl. 4, fig. 6a, b

8.2 ***Osmundacidites primarius*** (Wolff 1934) Nagy 1985 Osmunda type A1
Pl. 4, fig. 7

8.2.1 ***Osmundacidites primarius crassiprimarius*** (Krutzsch 1967) Nagy 1985
Osmunda banksiaefolia type A1
Pl. 4, fig. 9

8.2.2 ***Osmundacidites primarius major*** (Raatz 1937) Ziembińska-Tworzydło 1994
Osmunda type A1
Pl. 4, fig. 11a, b; p. 12

8.2.3 ***Osmundacidites primarius oligocaenicus*** (Krutzsch 1967) Nagy 1985
Osmunda bromeliana type A1
Pl. 4, fig. 12

8.2.4 ***Osmundacidites primarius primarius*** (Krutzsch 1967) Nagy 1985
Osmunda vachelii type A1
Pl. 4, fig. 8

8.3 ***Osmundacidites quintus*** (Pflug & Thomson 1953) Nagy 1985
Osmunda regalis type A1
Pl. 4, fig. 10

9. ***Radialisporis*** Krutzsch 1967
p.p. Schizaeaceae P

9.1 ***Radialisporis radiatus*** (Krutzsch 1959) Krutzsch 1967
p.p. Schizaeaceae P2
Pl. 5, figs 1, 2

10. ***Selaginellisporis*** Ważyńska 1994
Selaginellaceae, Selaginella type P/A

10.1 ***Selaginellisporis (Echinatisporis*** Krutzsch 1963b) ***echinoides*** (Krutzsch & Pacltová 1963) Ważyńska 1994
Selaginella type P2/A1
Pl. 5, fig 5a, b; p. 13

10.2 ***Selaginellisporis (Echinatisporis*** Krutzsch 1963b) ***longechinus*** (Krutzsch 1959) Ważyńska 1994
Selaginella type P2
Pl. 5, fig. 3; p. 13

10.3 ***Selaginellisporis (Echinatisporis*** Krutzsch 1963b) ***miocenicus*** (Krutzsch & Sontag 1963) Ważyńska 1994
Selaginella type P1
Pl. 5, fig. 4; p. 12

11. ***Selagosporis*** Krutzsch 1963a
Lycopodiaceae, Huperzia selago (=Lycopodium selago) type A1

11.1 ***Selagosporis selagoides*** Krutzsch 1963a
Huperzia selago (=Lycopodium selago) type A1
Pl. 5, fig. 6

12. ***Stereisporites*** Pflug 1953b
Sphagnaceae, p.p. Selaginellaceae A

12.1 ***Stereisporites stereoides*** (Potonié & Venitz 1934) Thomson & Pflug 1953.
Sphagnaceae, Sphagnum type A1
Pl. 5, fig. 7

13. ***Toroisporis*** Krutzsch 1959
Pteropsida P

13.1 ***Toroisporis (Toroisporis) pessinensis*** Krutzsch 1962b
botanical affinity unknown P1
Pl. 5, fig. 8

13.2 ***Toroisporis (Toroisporis) teupitzensis*** Krutzsch 1962b
botanical affinity unknown P1
Pl. 5, fig. 9

MONOLETES

14. ***Echinosporis*** Krutzsch 1967
p.p. Polypodiaceae, p.p. Dryopteridaceae P

14.1 ***Echinosporis fotensis*** Nagy 1985
Dryopteridaceae, ? Cystopteris type P
Pl. 5, fig. 10

15. ***Laevigatosporites*** Ibrahim 1933
p.p. Polypodiaceae, p.p. Davalliaceae A

15.1 ***Laevigatosporites gracilis*** Wilson & Webster 1946
? Polypodiaceae A
Pl. 5, fig. 11

15.2 ***Laevigatosporites haardti*** (Potonié & Venitz 1934) Thomson & Pflug 1953
? Polypodiaceae A
Pl. 5, fig. 12

15.3 ***Laevigatosporites nutidus*** (Mamczar 1960) Krutzsch 1967
? Davalliaceae, ? Polypodiaceae A
Pl. 5, figs 13, 14

16. ***Verrucatosporites*** Pflug & Thomson 1953
? Polypodiaceae, p.p. Davalliaceae P

16.1 ***Verrucatosporites alienus*** (Potonié 1931d) Thomson & Pflug 1953
? Polypodiaceae P2
Pl. 5, figs 15a, b; 16

16.2 ***Verrucatosporites favus*** (Potonié 1931d) Thomson & Pflug 1953
? Polypodiaceae P2
Pl. 5, fig. 17

POLLENITES

INAPERTURATE

17. ***Cunninghamiapollenites*** Nagy 1969
Taxodiaceae, Cunninghamia type
17.1 ***Cunninghamiapollenites janinae*** Stuchlik & Konzalová 1990/1991 A1
Pl. 6, fig. 8, 9

18. ***Inaperturopollenites*** Pflug & Thomson 1953
p.p. Taxodiaceae, p.p. Taxaceae, p.p. Cupressaceae A
18.1 ***Inaperturopollenites concedipites*** (Wodehouse 1933) Krutzsch 1971
Taxodiaceae, Taxodium, Glyptostrobus type A1
Pl. 6, figs 1, 2
18.2 ***Inaperturopollenites dubius*** (Potonié & Venitz 1934) Thomson & Pflug 1953
p.p. Taxodiaceae, p.p. Cupressaceae A1
Pl. 6, fig. 3
18.3 ***Inaperturopollenites hiatus*** (Potonié 1931c) Thomson & Pflug 1953
p.p. Taxodiaceae, p.p. Cupressaceae A1
Pl. 6, figs 4, 5

19. ***Sequoiapollenites*** Thiergart 1937 ex Potonié 1958
Taxodiaceae, Sequoia type A
19.1 ***Sequoiapollenites*** sp. sp.
Sequoia, ? Cryptomeria types A1
Pl. 6, figs 10–12

20. ***Sciadopityspollenites*** Raatz 1937 ex Potonié 1958
Taxodiaceae, Sciadopitys type A
20.1 ***Sciadopityspollenites*** sp. sp.
Sciadopitys type A1
Pl. 6, figs 6, 7

21. ***Tsugaepollenites*** Potonié & Venitz 1934 ex Potonie 1958
Pinaceae, Tsuga type A
21.1 ***Tsugaepollenites maximus*** (Raatz 1937) Nagy 1985
Tsuga canadensis type (equatorial collar, without spines) A1
Pl. 6, fig. 16
21.2 ***Tsugaepollenites neogenicus*** (Krutzsch 1971) Planderová 1990
Tsuga type (collar absent or very small, spines present) A1
Pl. 6, fig. 15
21.3 ***Tsugaepollenites spectabilis*** (Doktorowicz-Hrebnicka 1954) Słodkowska 1994
Tsuga diversifolia type (collar and spine present) A1
Pl. 6, fig. 17; p. 13
21.4 ***Tsugaepollenites spinosus*** (Doktorowicz-Hrebnicka 1954) Słodkowska 1994
Tsuga diversifolia type (collar and spines present) A1
Pl. 6, fig. 13a, b; p. 13
21.5 ***Tsugaepollenites viridifluminipites*** (Wodehouse 1933) Potonié 1958
Tsuga canadensis type (without collar and spines) A1
Pl. 6, fig. 14

SACCATE

22. ***Abiespollenites*** Thiergart 1937 ex Potonié l958
Pinaceae, Abies type A
22.1 ***Abiespollenites latisaccatus*** (Trevisan 1967) Krutzsch 1971
Abies type A2
Pl. 7, fig. 1

23. ***Cedripites*** Wodehouse 1933
Pinaceae, Cedrus type A
23.1 ***Cedripites*** sp.
Cedrus type A1
Pl. 7, fig. 3

24. ***Keteleeriapollenites*** Nagy 1969
Pinaceae, Keteleeria type A
24.1 ***Keteleeriapollenites dubius*** (Chlonova 1960) Słodkowska 1994
Keteleeria type A1
Pl. 7, fig. 4; p. 14

25. ***Piceapollis*** Krutzsch 1971
Pinaceae, Picea type A
25.1 ***Piceapollis tobolicus*** (Panova 1966) Krutzsch 1971
Picea excelsa type A2
Pl. 7, fig. 2

26. ***Pinuspollenites*** Raatz 1937 ex Potonié 1958

Pinaceae, Pinus type A

26.1 ***Pinuspollenites alatus*** (Potonié 1931c) Planderová 1990
Pinus haploxylon type, p.p.Cathaya type A
Pl. 7, fig. 5

26.2 ***Pinuspollenites labdacus*** (Potonié 1931c) Raatz 1937 ex Potonié 1958
Pinus sylvestris type A1
Pl. 7, fig. 7

27. ***Podocarpidites*** Cookson 1947 ex Couper 1953
Podocarpaceae, Podocarpus type P

27.1 ***Podocarpidites libellus*** (Potonié 1931c) Krutzsch 1971
Podocarpus type P1
Pl. 7, fig. 6

POLYPLICATE

28. ***Ephedripites*** Bolchovitina 1953 ex Potonié 1958
Ephedraceae, Ephedra type A

28.1 ***Ephedripites (Distachyapites*** Krutzsch 1961b) sp.
Ephedra distachya type A
Pl. 8, fig. 1

28.2 ***Ephedripites (Ephedripites*** Bolchovitina 1953 ex Krutzsch 1961b) sp.
Ephedra type A

MONOPORATE

29. ***Aglaoreidiapollis*** (Erdtman) 1960 Grabowska 1994
botanical affinity unknown P

29.1 ***Aglaoreidiapollis cyclops*** (Erdtman 1960) Grabowska 1994
botanical affinity unknown P1
Pl. 8, fig. 7; p. 14

30. ***Cyperaceaepollis*** Krutzsch 1970a
Cyperaceae A

30.1 ***Cyperaceaepollis*** sp. sp.
Cyperaceae A
Pl. 8, figs 2, 3

31. ***Graminidites*** Cookson 1947 ex Potonié 1960
Poaceae (=Gramineae) A

31.1 ***Graminidites bambusoides*** Stuchlik 1994
Bambusa type P2
Pl. 8, figs 4, 5; p. 14

31.2 ***Graminidites*** sp.
Poaceae (= Gramineae) A
Pl. 8, fig. 6

32. ***Milfordiapollis*** (Erdtman 1960) Grabowska 1994
p.p. Restionaceae, p.p. Centrolepidaceae, p.p. Flagellariaceae P

32.1 ***Milfordiapollis hungaricus*** (Kedves 1965) Grabowska 1994
p.p. Restionaceae, p.p. Centrolepidaceae, p.p. Flagellariaceae P1
Pl. 8, fig. 11; p. 15

32.2 ***Milfordiapollis incertus*** (Pflug & Thomson 1953) Grabowska 1994
p.p. Restionaceae, p.p. Centrolepidaceae P1
Pl. 8, figs 8, 9; p. 15

32.3 ***Milfordiapollis minimus*** (Krutzsch 1970a) Grabowska 1994
p.p. Restionaceae, p.p. Centrolepidaceae, p.p. Flagellariaceae P1
Pl. 8, fig. 10a, b; p. 15

DIPORATE

33. ***Iteapollis*** Ziembińska-Tworzydło 1974
Iteaceae, Itea type P

33.1 ***Iteapollis angustiporatus*** (Schneider 1965) Ziembińska-Tworzydło 1974
Itea type P2
Pl. 8, figs 12–14

TRIPORATE

34. ***Betulaepollenites*** Potonié 1934 ex Potonié 1960
Betulaceae, Betula type A

34.1 ***Betulaepollenites betuloides*** (Pflug 1953b) Nagy 1969
Betula type A1
Pl. 8, fig. 15

35. ***Caryapollenites*** Raatz 1937 ex Potonié 1960
Juglandaceae, Carya type A

35.1 ***Caryapollenites simplex*** (Potonié 1931c) Raatz 1937
Carya type A1
Pl. 8, figs 16, 17

36. ***Corylopollis*** Ziembińska-Tworzydło 1994
Betulaceae, Corylus type A

36.1 ***Corylopollis coryloides*** (Pflug 1953b) Ziembińska-Tworzydło 1994

Corylus avellana type A2
Pl. 8, figs 18, 19; p. 16

37. ***Engelhardtioipollenites*** Potonié 1951a ex Potonié 1960
Juglandaceae, Engelhardtia type P
37.1 ***Engelhardtioipollenites punctatus*** (Potonié 1931a) Potonié 1951a ex Potonié 1960
Engelhardtia type P2
Pl. 8, fig. 20
37.2 ***Engelhardtioipollenites quietus*** (Potonié 1931d) Potonié 1951a, b
Engelhardtia type P1
Pl. 8, fig. 21

38. ***Myricipites*** Wodehouse 1933
Myricaceae A/P
38.1 ***Myricipites bituitus*** (Potonié 1931a) Nagy 1969
Myrica gale type A1
Pl. 8, figs 22, 23
38.2 ***Myricipites coryphaeus*** (Potonié 1931a) Potonié 1960
Myricaceae P2
Pl. 8, fig. 26
38.3 ***Myricipites microcoryphaeus*** (Potonié 1931a) Słodkowska 1994
Myricaceae P2
Pl. 8, figs 24, 25; p. 16
38.4 ***Myricipites myricoides*** (Kremp 1949) Nagy 1969
Myrica type P2
Pl. 8, figs 27, 28
38.5 ***Myricipites rurensis*** (Pflug & Thomson 1953) Nagy 1969
Myrica type P2
Pl. 8, fig. 29

39. ***Olaxipollis*** Krutzsch 1962a
Olacaceae P
39.1. ***Olaxipollis matthesi*** Krutzsch 1962a
Olacaceae P1
Pl. 9, fig. 1a, b

40. ***Ostryoipollenites*** Potonié 1951a ex Potonié 1960
Betulaceae, Ostrya type A
40.1 ***Ostryoipollenites rhenanus*** (Thomson 1950) Potonié 1951a ex Potonié 1960
Ostrya type A1
Pl. 9, fig. 2

41. ***Platycaryapollenites*** Nagy 1969
Juglandaceae, Platycarya type P
41.1 ***Platycaryapollenites miocaenicus*** Nagy 1969
Platycarya type P2
Pl. 9, figs 3; 4a, b

POLYPORATE

42. ***Alnipollenites*** Potonié 1931c ex Potonié 1960
Betulaceae, Alnus type A
42.1 ***Alnipollenites verus*** Potonié 1931a ex Potonié 1960
Alnus type A1
Pl. 9, figs 5–7

43. ***Carpinipites*** Srivastava 1966
Betulaceae, Carpinus type A
43.1 ***Carpinipites carpinoides*** (Pflug 1953b) Nagy 1985
Carpinus type A1
Pl. 9, figs 8, 9

44. ***Celtipollenites*** Nagy 1969
Ulmaceae, Celtis type A
44.1 ***Celtipollenites intrastructurus*** (Krutzsch & Vanhoorne 1977) Thiele-Pfeiffer 1980
Celtis type A1
Pl. 9, fig. 10
44.2 ***Celtipollenites verus*** (Raatz 1937) Ziembińska-Tworzydło 1994
Celtis type A1
Pl. 9, figs 11, 12; p. 16

45. ***Chenopodipollis*** Krutzsch 1966
Chenopodiaceae A
45.1 ***Chenopodipollis multiplex*** (Weyland & Pflug 1957) Krutzsch 1966
Chenopodiaceae A1
Pl. 9, fig. 14
45.2 ***Chenopodipollis neogenicus*** Nagy 1969
Chenopodiaceae A1
Pl. 9, fig. 15a, b
45.3 ***Chenopodipollis stellatus*** (Mamczar 1960) Krutzsch 1966
Chenopodiaceae A1
Pl. 9, fig. 13a, b

46. ***Haloragacidites*** Couper 1953
Haloragaceae P
46.1 ***Haloragacidites stephanoporatus*** (Stuchlik 1964) Stuchlik 1994
Haloragis type P2
Pl. 9, fig. 16; p. 17
46.2 ***Haloragacidites triporatus*** (Stuchlik 1964) Stuchlik 1994

Haloragis type P2
Pl. 9, fig. 17a, b; p. 17

47. ***Juglandipollis*** Kohlman-Adamska 1994
Juglandaceae, Juglans type A
47.1 ***Juglandipollis juglandoides*** Kohlman-Adamska 1994
Juglans type A1
Pl. 9, figs 18, 19; p. 18
47.2 ***Juglandipollis maculosus*** (Potonié 1931b) Kohlman - Adamska 1994
Juglans type A1
Pl. 9, figs 20, 21; p. 18

48. ***Liquidambarpollenites*** Raatz 1937 ex Potonié 1960
Altingiaceae, Liquidambar type A
48.1 ***Liquidambarpollenites stigmosus*** (Potonié 1931a) Raatz 1937 ex Potonié 1960
Liquidambar type A1
Pl. 9, figs 22, 23a–c

49. ***Pterocaryapollenites*** Thiergart 1937 ex Potonié 1960
Juglandaceae, Pterocarya type A
49.1 ***Pterocaryapollenites stellatus*** (Potonié 1931b) Thiergart 1937
Pterocarya type A1
Pl. 10, figs 1–3

50. ***Theligonumpollenites*** Thiele-Pfeiffer 1980
Theligonaceae, Theligonum type A
50.1 ***Theligonumpollenites baculatus*** (Stachurska, Sadowska, Dyjor 1973) Thiele-Pfeiffer 1980
Theligonum type A1
Pl. 10, figs 4–6

51. ***Ulmipollenites*** Wolff 1934 ex Potonié 1960
Ulmaceae, Ulmus type A
51.1 ***Ulmipollenites undulosus*** Wolff 1934
Ulmus laevis type A2
Pl. 10, fig. 7a, b

52. ***Zelkovaepollenites*** Nagy 1969
Ulmaceae, Zelkova type A
52.1 ***Zelkovaepollenites potoniei*** Nagy 1969
Zelkova type A1
Pl. 10, figs 8–10

MONOCOLPATE

53. ***Arecipites*** Wodehouse 1933
p.p. Arecaceae (= Palmae) P
53.1 ***Arecipites papillosus*** (Murriger & Pflug 1951) Krutzsch 1970a
p.p. Arecaceae (=Palmae), ?
Corypha type P2
Pl.10, fig. 11a–c
53.2 ***Arecipites pseudoconvexus*** Krutzsch 1970a
p.p. Arecaceae (= Palmae) P2
Pl. 10, fig 12a–c

54. ***Butomuspollenites*** Doktorowicz-Hrebnicka 1957 emend. Ziembińska-Tworzydło 1994
Butomaceae A
54.1 ***Butomuspollenites butomoides*** (Krutzsch 1970a) Ziembińska-Tworzydło 1994
Butomus type A2
Pl. 10, fig. 14a, b; p. 19
54.2 ***Butomuspollenites longicolpatus*** (Krutzsch 1970a) Ziembińska-Tworzydło 1994
Butomus type A2
Pl. 10, fig. 16a, b; p. 19
54.3 ***Butomuspollenites monocolpatus*** Doktorowicz-Hrebnicka 1957 emend. Ziembińska-Tworzydło 1994
Butomus type A2
Pl. 10, fig. 15a, b; p. 19

55. ***Liriodendroipollis*** Krutzsch 1970a
Magnoliaceae, Liriodendron type A
55.1 ***Liriodendroipollis semiverrucatus*** Krutzsch 1970a
Liriodendron type A1
Pl. 11, fig. 1
55.2 ***Liriodendroipollis verrucatus*** Krutzsch 1970a
Liriodendron type A1
Pl. 11, figs 2, 3

56. ***Magnolipollis*** Krutzsch 1970
Magnoliaceae, Magnolia type P
56.1 ***Magnolipollis neogenicus*** Krutzsch 1970
Magnolia type P1
Pl. 11, fig. 4, 5

57. ***Monocolpopollenites*** Pflug & Thomson 1953
p.p. Musaceae, p.p. Arecaceae (= Palmae) P
57.1 ***Monocolpopollenites tranquillus*** (Potonie 1934) Thomson & Pflug 1953
p.p. Musaceae, p.p. Arecaceae (= Palmae) P1
Pl. 10, fig. 13

DICOLPATE

58. ***Dicolpopollis*** Pflanzl 1956
p.p. Arecaceae (= Palmae) P
58.1 ***Dicolpopollis kockeli*** Pflanzl 1956
p.p. Arecaceae (= Palmae),
Calamus type P1
Pl. 10, fig. 17

TICOLPATE, TRICOLPORATE

59. ***Aceripollenites*** Nagy 1969
Aceraceae, Acer type A
59.1 ***Aceripollenites palmatoides*** Skawińska 1994
Acer palmatum type A1
Pl. 11, fig. 8a–c; p. 19
59.2 ***Aceripollenites striatus*** (Pflug 1959) Thiele-Pfeiffer 1980
Acer type A1
Pl. 11, fig. 9a, b

60. ***Aesculidites*** Elsik 1968
Hippocastanaceae, Aesculus type A1
60.1 ***Aesculidites hippocastaneoides*** Sadowska 1994
Aesculus hippocastanum type A1
Pl. 11, figs 6, 7; p. 20

61. ***Alangiopollis*** Krutzsch 1962
Alangiaceae, Alangium type P
61.1 ***Alangiopollis barghoornianum*** (Traverse 1955) Krutzsch 1962
Alangium type P1
Pl. 11, figs 12, 13

62. ***Araliaceoipollenites*** Potonié 1951a, b ex Potonié 1960
Araliaceae P
62.1 ***Araliaceoipollenites edmundi*** (Potonié 1931b) Potonié 1951a, b ex Potonié 1960
Aralia type P2
Pl. 12, figs 1a, b; 2a, b; 3a–c
62.2 ***Araliaceoipollenites euphorii*** (Potonié 1931a) Potonié 1951a, b ex Potonié 1960
Araliaceae P2
Pl. 12, figs 4a–c, 5
62.3 ***Araliaceoipollenites reticuloides*** Thiele-Pfeiffer 1980
Hedera type P2
Pl. 12, figs 6a, b; 7a, b;

63. ***Artemisiaepollenites*** Nagy 1969
Asteraceae (=Compositae), Artemisia type A
63.1 ***Artemisiaepollenites sellularis*** Nagy 1969
Artemisia type A1
Pl. 11, figs 10, 11

64. ***Caprifoliipites*** Wodehouse 1933
Caprifoliaceae A
64.1 ***Caprifoliipites sambucoides*** Nagy 1969
Sambucus ebulus type A1
Pl. 12, fig. 11a, b
64.2 ***Caprifoliipites viburnoides*** (Gruas-Cavagnetto 1978) Kohlman-Adamska 1994
Viburnum type A1
Pl. 12 figs 12a, b; 13; 14a, b; p. 20

65. ***Castaneoideaepollis*** Grabowska 1994
Fagaceae, Castaneoideae P
65.1 ***Castaneoideaepollis oviformis*** (Potonié 1934) Grabowska 1994
Castanea, Castanopsis, Passania, Lithocarpus types P2
Pl. 12, fig. 10; p. 21
65.2 ***Castaneoideaepollis pusillus*** (Potonié 1934) Grabowska 1994
Castanea, Castanopsis, Passania, Lithocarpus types P2
Pl. 12, figs 8, 9; p. 21

66. ***Cercidiphyllites*** Mtchedishvili 1961
Cercidiphyllaceae, Cercidiphyllum type A
66.1 ***Cercidiphyllites minimireticulatus*** (Trevisan 1967) Ziembińska-Tworzydło 1994
Cercidiphyllum type A1
Pl. 13, figs 1a, b; 2; p. 21

67. ***Clerodendrumpollenites*** Skawińska 1994
Verbenaceae, Clerodendrum type P
67.1 ***Clerodendrumpollenites microechinatus*** Skawińska 1994
Clerodendrum type P1
Pl. 12, fig. 15a–c; p. 21

68. ***Cornaceaepollis*** Stuchlik 1994
Cornaceae, Cornoideae, Mastixioideae P
68.1 ***Cornaceaepollis major*** (Stuchlik 1964) Stuchlik 1994
Cornaceae, Cornoideae P2
Pl. 13, fig. 11a–c; p. 22
68.2 ***Cornaceaepollis minor*** (Stuchlik 1964) 1994
Cornaceae, Cornoideae P2
Pl. 13, figs 12a, b; 13; p. 22
68.3 ***Cornaceaepollis satzveyensis*** (Pflug 1953) Ziembińska-Tworzydło 1994

Cornaceae, Mastixioideae P1
Pl. 13, figs 8–9; 10a. b; p. 22

69. ***Diospyrospollenites*** Skawińska 1994
Ebenaceae, Diospyros type P
69.1 ***Diospyrospollenites ovalis*** Skawińska 1994
Diospyros type P1
Pl. 13, figs 3a, b; 4; p. 23

70. ***Eucommioipollis*** Ziembińska-Tworzydło 1994
Eucommiaceae, Eucommia type A
70.1 ***Eucommioipollis eucommius*** (Plnderova 1990) Ziembińska-Tworzydło 1994
Eucommia type A1
Pl. 13, figs 5, 6; p. 23
70.2 ***Eucommioipollis parmularius*** (Potonié 1934) Ziembińska-Tworzydło 1994
Eucommia type A1
Pl. 13, fig. 7a, b; p. 24

71. ***Faguspollenites*** Raatz 1937 ex Potonié 1960
Fagaceae, Fagus type A
71.1 ***Faguspollenites verus*** Raatz 1937 ex Potonié 1960
Fagus type A2
Pl. 14, figs 1, 2

72. ***Fususpollenites*** Kedves 1978
botanical affinity unknown P
72.1 ***Fususpollenites fusus*** (Potonié 1931a) Kedves 1978
botanical affinity unknown P1
Pl. 14, figs 3, 4

73. ***Ilexpollenites*** Thiergart 1937 ex Potonié 1960
Aquifoliaceae, Ilex type P
73.1 ***Ilexpollenites iliacus*** (Potonié 1931d) Thiergart 1937 ex Potonié 1960
Ilex type P2
Pl. 14, figs 6; 7a. b
73.2 ***Ilexpollenites margaritatus*** (Potonié 1931a) Raatz 1937 ex Potonié 1960
Ilex type P2
Pl. 14, fig. 5a–d
73.2 ***Ilexpollenites propinquus*** (Potonié 1934) Potonié 1960
Ilex type P2
Pl. 14, fig. 8a, b

74. ***Lythraceaepollenites*** Thiele-Pfeiffer 1980
Lythraceae A
74.1 ***Lythraceaepollenites decodonensis*** Stuchlik 1994
Decodon type A1
Pl. 14, figs 9–11; p. 24

75. ***Nelumbopollenites*** Skawińska 1994
Nelumbonaceae, Nelumbo type P
75.1 ***Nelumbopollenites europaeus*** (Tarasevich 1983) Skawińska 1994
Nelumbo type P2
Pl. 14, fig. 12a, b; p. 25

76. ***Nyssapollenites*** Thiergart 1937 ex Potonié 1960
Nyssaceae, Nyssa type A
76.1 ***Nyssapollenites kruschi*** (Potonié 1931c) Nagy 1969
Nyssa type A1
Pl. 14, figs 15–17
76.2 ***Nyssapollenites*** sp. sp.
Nyssa type A1
Pl. 14, fig 13, 14

77. ***Oleoidearumpollenites*** Nagy 1969
Oleaceae A
77.1 ***Oleoidearumpollenites microreticulatus*** (Pflug & Thomson 1953) Ziembińska-Tworzydło 1994
Oleaceae A1
Pl. 14, fig 18a–c; p. 25
77.2 ***Oleoidearumpollenites*** sp. sp
Oleaceae: Fraxinus, Ligustrum, Syringa, Olea types A1
Pl. 14, fig. 19, 20

78. ***Platanipollis*** Grabowska 1994
Platanaceae, Platanus type P
78.1 ***Platanipollis ipelensis*** (Pacltová 1966) Grabowska 1994
Platanus type P1
Pl. 14, fig. 21a–c; p. 26

79. ***Quercoidites*** Potonié, Thomson & Thiergart 1950 emend. Słodkowska 1994
Fagaceae, Quercoideae A/P
79.1 ***Quercoidites asper*** (Pflug & Thomson 1953) Słodkowska 1994
Quercus robur type A1
Pl. 15, figs 1, 2; p. 26
79.2 ***Quercoidites granulatus*** (Nagy 1969) Słodkowska 1994
Quercus type A1
Pl. 15, figs 10–11; p. 26
79.3 ***Quercoidites henrici*** (Potonié 1931a) Potonié, Thomson, Thiergart 1950
Quercoideae P2

Pl. 15, figs 7–9

79.4 ***Quercoidites microhenrici*** (Potonié 1931b) Potonié, Thomson, Thiergart 1950
Quercoideae P2
Pl. 15, figs 5, 6

79.5 ***Quercoidites pudicus*** (Potonié 1934) Słodkowska 1994
Quercus type A1
Pl. 15, figs 3, 4; p. 26

79.6 ***Quercoidites*** sp. sp.
Quercus type A/ P
Pl. 15, figs 12–14

80. ***Rhuspollenites*** Thiele-Pfeiffer 1980
Anacardiaceae, Rhus type A

80.1 ***Rhuspollenites*** sp.
Rhus type A1
Pl. 14, fig. 22a, b

81. ***Salixipollenites*** Srivastava 1966
Salicaceae, Salix type A

81.1 ***Salixipollenites*** sp. sp.
Salix type A2
Pl. 15, figs 15–17; 18a – c

82. ***Spinulaepollis*** Krutzsch 1962a
p.p. Loranthaceae, p.p. Misodendraceae A

82.1 ***Spinulaepollis arceuthobioides*** Krutzsch 1962a
Loranthaceae, Arceuthobium type A1
Pl. 15, figs 19–22

83. ***Trapapollis*** Kohlman-Adamska 1994
Trapaceae, Trapa type A

83.1 ***Trapapollis erdtmanii*** (Nagy 1979) Kohlman-Adamska 1994
Trapa type A1
Pl. 15, figs 23a, b; 24; p. 27

83.2 ***Trapapollis illingensis*** (Klaus 1954) Kohlman-Adamska 1994
Trapa type A1
Pl. 15, fig. 25a, b; p. 27

84. ***Tricolporopollenites*** Pflug 1953b
botanical affinity variable A/P

84.1 ***Tricolporopollenites brühlensis*** (Thomson 1950) Grabowska 1994
p.p. Clethraceae, p.p. Cyrillaceae, p.p. ? Rosaceae P2
Pl. 16, figs 1a, b; 2–5; p. 27

84.2 ***Tricolporopollenites exactus*** (Potonié 1931b) Grabowska 1994
p.p. Clethraceae, Clethra type, p.p. Cyrillaceae P2
Pl. 16, figs 8–10; p. 28

84.3 ***Tricolporopollenites fallax*** (Potonié 1934) Krutzsch 1960
p.p. Fabaceae (=Leguminosae), p.p. Fagaceae, p.p. Combretaceae, p.p. Verbenaceae P2
Pl. 16, figs 11, 12

84.4 ***Tricolporopollenites indeterminatus*** (Romanowicz 1961) Ziembińska-Tworzydło 1974
Parrotia, Distylium types P2
Pl. 16, figs 18–20

84.5 ***Tricolporopollenites liblarensis*** (Thomson 1950) Grabowska 1994
p.p. Fabaceae (= Leguminosae), p.p. Fagaceae, p.p. Combretaceae, p.p. Verbenaceae P2
Pl. 16, figs 13, 14; p. 28

84.6 ***Tricolporopollenites marcodurensis*** Pflug & Thomson 1953
Vitaceae, ? Parthenocissus type P1
Pl. 16, figs 24a, b; 25a–c; 26

84.7 ***Tricolporopollenites megaexactus*** (Potonié 1931b) Thomson & Pflug 1953
p.p. Clethraceae, p.p. Cyrillaceae P2
Pl. 16, figs 6, 7

84.8 ***Tricolporopollenites photinioides*** Skawińska 1994
Rosaceae, Photinia, Sorbus types A1
Pl. 16, figs 27a, b; 28; p. 28

84.9 ***Tricolporopollenites pseudocingulum*** (Potonié 1931a) Thomson & Pflug 1953
? Anacardiaceae P2
Pl. 16, figs 31; 32a, b; 33; 34

84.10 ***Tricolporopollenites quisqualis*** (Potonié 1934) Krutzsch 1954
p.p. Leguminosae (=Fabaceae), p.p. Fagaceae, p.p. Combretaceae, p.p. Verbenaceae P2
Pl. 16, figs 15–17

84.11 ***Tricolporopollenites retiformis*** (Pflug & Thomson 1953) Krutzsch 1961
botanical affinity variability A1
Pl. 16, figs 29a, b; 30a, b

84.12 ***Tricolporopollenites staresedloensis*** Krutzsch & Pacltová 1969
Parrotia, Distylium types P2
Pl. 16, figs 21; 22; 23a, b

84.13 ***Tricolporopollenites wackersdorfensis*** Thiele-Pfeiffer 1980
? Verbenaceae P2
Pl. 16, fig. 35

POLYCOLPATE, POLYCOLPORATE

85. ***Meliapollis*** Sah & Kar 1970
Meliaceae P
85.1 ***Meliapollis*** sp. sp.
Meliaceae P1
Pl. 17, figs 1a, b; 2

86. ***Sapotaceoidaepollenites*** Potonié, Thomson, Thiergart 1950 ex Potonié 1960
Sapotaceae P1
86.1 ***Sapotaceoidaepollenites oblongus*** (Pflug & Thomson 1953) Grabowska 1994
Sapotaceae P1
Pl. 17, fig. 5; p. 29
86.2 ***Sapotaceoidaepollenites*** sp. sp.
Sapotaceae P1
Pl. 7, figs 3, 4

87. ***Skimmiapollenites*** Skawińska 1994
Rutaceae, Skimmia type P
87.1 ***Skimmiapollenites reticulatus*** Skawińska 1994
Skimmia type P2
Pl. 17, figs 6a–c; 7a–b; p. 29

SYNCOLPATE

88. ***Gothanipollis*** Krutzsch 1959
p.p. Loranthaceae, p.p. Santalaceae P1
88.1 ***Gothanipollis gothani*** Krutzsch 1959
p.p. Loranthaceae, p.p. Santalaceae P1
Pl. 17, fig. 8

89. ***Intratriporopollenites*** Pflug & Thomson 1953 emend. Mai 1961
p.p. Tiliaceae, p.p. Bombacaceae A
89.1 ***Intratriporopollenites cordataeformis*** (Wolff 1934) Mai 1961
Tilia cordata type A2
Pl. 17, figs 16, 17
89.2 ***Intratriporopollenites insculptus*** Mai 1961
Tiliaceae, Brownlowioideae; Tilia type A1
Pl. 17, figs 18a, b; 19
89.3 ***Intratriporopollenites instructus*** (Potonié 1931d) Thomson & Pflug 1953
Tiliaceae, Brownlowioideae; Tilia type A2
Pl. 17, figs 20, 21
89.4 ***Intratriporopollenites*** sp.
Tiliaceae, Brownlowioideae; Tilia type A
Pl. 17, fig. 22a, b

90. ***Myrtaceidites*** Cookson & Pike 1954
Myrtaceae P
90.1 ***Myrtaceidites myrtiformis*** Simoncsics 1964
Myrtus type P1
Pl. 17 fig. 9

91. ***Reevesiapollis*** Krutzsch 1970c
Sterculiaceae P
91.1 ***Reevesiapollis triangulus*** (Mamczar 1960) Krutzsch 1970c
Sterculiaceae, Reevesia type P2
Pl. 17, figs 10–13

92. ***Slowakipollis*** Krutzsch 1962a
p.p. Elaeagnaceae A
92.1 ***Slowakipollis eleagnoides*** Krutzsch 1962a
Elaeagnus, Hippophaë types A
Pl. 17, figs 14, 15

93. ***Symplocoipollenites*** Potonié 1951a. b ex Potonié 1960 emend. Słodkowska 1994
Symplocaceae P
93.1 ***Symplocoipollenites latiporis*** (Pflug & Thomson 1953) Słodkowska 1994
Symplocos type P2
Pl. 18, figs 1a, b; 2; p. 30
93.2 ***Symplocoipollenites maturus*** (Doktorowicz-Hrebnicka 1960) Ziembińska-Tworzydło 1994
Symplocaceae P2
Pl. 18, figs 3, 4; p. 30
93.3 ***Symplocoipollenites orbis*** (Pflug & Thomson 1953) Słodkowska 1994
Symplocos type P1
Pl. 18, figs 5, 6; p. 30
93.4 ***Symplocoipollenites rotundus*** (Potonié 1931a) Potonié 1951a, b ex Potonié 1960
Symplocaceae P2
Pl. 18, figs 7, 8
93.5 ***Symplocoipollenites vestibulum*** (Potonié 1931a) Potonié 1960
Symplocos type P2
Pl. 18, figs 9a, b; 10–12

TETRADE

94. ***Ericipites*** Wodehouse 1933
Ericaceae A
94.1 ***Ericipites callidus*** (Potonié 1931a) Krutzsch 1970d
Calluna type A
Pl. 18, figs 13; 14

94.2 ***Ericipites ericius*** (Potonié 1931a) Potonié 1960
Erica type — A
Pl. 18, figs 15–17

94.3 ***Ericipites roboreus*** (Potonié 1931a) Krutzsch 1970d
Rhododendron, Arbutus unedo types — A
Pl. 18, figs 18–20

95. ***Manikinipollis*** Krutzsch 1970d
p.p. Asclepiadaceae, Periplocoideae — P

95.1 ***Manikinipollis tetradoides*** Krutzsch 1970d
p.p. Asclepiadaceae, Periplocoideae — P2
Pl. 18, fig. 23

96. ***Pseudotyphoipollis*** Krutzsch 1970d
Apocynaceae, Apocynum type, ? Gentianaceae — P

96.1 ***Pseudotyphoipollis punctiporatus*** Krutzsch 1970d
Apocynaceae, Apocynum type, ? Gentianaceae — P2
Pl. 18, figs 21–22

BOTANICAL RANK OF SELECTED MORPHOLOGICAL TAXONS OF POLLEN AND SPORES FROM THE NEOGENE OF CENTRAL EUROPE AND THEIR ATTACHMENT TO GEOFLORISTIC ELEMENT GROUPS

Taxon	Geofloristic element	Plate	Figure	Page
Subdivisio: BRYOPHYTINA				
Classis: BRYOPSIDA				
Ordo: SPHAGNALES				
Familia: Sphagnaceae				
Sphagnum type				
Stereisporites stereoides (Potonié & Venitz 1934) Thomson & Pflug 1953.	A1	1	6	
Subdivisio: LYCOPHYTINA				
Classis: LYCOPSIDA				
Ordo: LYCOPODIALES				
Familia: Lycopodiaceae				
Lycopodium clavatum type				
Lycopodiaceaesporis (*Retitriletes* ex Krutzsch 1963) *lusaticus* (Krutzsch 1963) Ziembińska-Tworzydło 1994	A1	3	11; 12	12
Lycopodiaceaesporis (*Retitriletes* ex Krutzsch 1963) *pseudoclavatus* (Krutzsch 1963) Ważyńska 1994	A1	3	8a, b	11
Lycopodiella caroliniana (= Lycopodium carolinianum) type				
Lycopodiaceaesporis (*Hamulatisporis* ex Krutzsch 1959) *helenensis* (Krutzsch 1963) Ważyńska 1994	P2	4	1	11
Lycopodiaceaesporis (*Hamulatisporis* ex Krutzsch 1959) *rarus* (Doktorowicz-Hrebnicka 1960) Ważyńska 1994	P2/A	4	2; 3	11
Lycopodiella cernua (= Lycopodium cernuum) type				
Lycopodiaceaesporis (*Camarozonosporites* ex Krutzsch 1963) *decorus* (Wolff 1934) Ważyńska 1994	P1	3	7a, b	11
Lycopodiaceaesporis (*Camarozonosporites* ex Krutzsch 1963) *heskemensis* (Pflanzl 1955) Ważyńska 1994	P1	3	9; 10	11
Huperzia selago (= Lycopodium selago) type				
Selagosporis selagoides Krutzsch 1963	A1	5	6	
Classis: SALAGINELLOPSIDA				
Ordo: SELAGINELLALES				
Familia: Selaginellaceae				
? Selaginella sibirica type				
Lusatisporis perinatus Krutzsch 1963	A	3	6	
Lusatisporis punctatus Krutzsch 1963	A	3	5	
Selaginella type				
Selaginellisporis (*Echinatisporis* Krutzsch 1963) *echinoides* (Krutzsch & Pacltová 1963) Ważyńska 1994	P2/A1	5	4	13
Selaginellisporis (*Echinatisporis* Krutzsch 1963b) *longechinus* (Krutzsch 1959) Ważyńska 1994	P1	5	3	13
Selaginellisporis (*Echinatisporis* Krutzsch 1963) *miocenicus* (Krutzsch & Sontag 1963) Ważyńska 1994	P2/A1	5	5a, b	12
Subdivisio: PTEROPHYTINA				
Classis: PTEROPSIDA				
Ordo: OSMUNDALES				
Familia: Osmundaceae				
Osmunda type				
Osmundacidites primarius (Wolff 1934) Nagy 1985	A1	4	7	
Osmundacidites primarius major (Raatz 1937) Ziembińska-Tworzydło 1994	A1	4	11a, b	12
Osmunda banksiaefolia type				
Osmundacidites primarius crassiprimarius (Krutzsch 1967) Nagy 1985	A1	4	9	

Taxon	Geofloristic element	Plate	Figure	Page
Osmunda bromeliana type				
Osmundacidites primarius oligocaenicus (Krutzsch 1967) Nagy 1985	A1	4	12	
Osmunda vachelii type				
Osmundacidites primarius primarius (Krutzsch 1967) Nagy 1985	A1	4	8	
Osmunda regalis type				
Osmundacidites quintus (Pflug & Thomson 1953) Nagy 1985	A1	4	12	
Osmunda claytoniania type				
Osmundacidites nanus (Wolff 1934) Nagy 1985	A1	4	6a, b	
Ordo: FILICALES				
Familia: Gleicheniaceae				
Gleicheniaceae				
Neogenisporis neogenicus Krutzsch 1962	P2	4	4; 5	
Familia: Schizaeaceae				
? Lygodium type				
Corrugatisporites asolidus (Krutzsch 1959) Nagy 1985	P2	1	7	
Corrugatisporites corruvallatus (Krutzsch 1967) Nagy 1985	P2	1	6	
Corrugatisporites tekeresensis Nagy 1985	P2	1	8	
Radialisporis radiatus (Krutzsch 1959) Krutzsch 1967	P2	5	1; 2	
Leiotriletes adriennis (Potonié & Gelletich 1933) Krutzsch 1959	P	2	6	
Leiotriletes adriennis pseudomaximus (Pflug & Thomson 1953) Krutzsch 1959	P	2	5	
Leiotriletes apheles (Hunger 1952) Krutzsch 1959	P	3	2	
Leiotriletes maxoides maxoides Krutzsch 1962	P	2	7	
Leiotriletes maxoides maximus (Pflug 1953) Krutzsch 1962	P	2	4	
Leiotriletes neddenioides Krutzsch 1962	P	3	1	
Familia: Schizaeaceae, Cyatheaceae				
Schizaeaceae-Cyatheaceae				
Leiotriletes sp.	P	2	3	
Leiotriletes maxoides Krutzsch 1962	P	2	2	
Familia: Schizaeaceae, Dicksoniaceae				
Schizaeaceae-Dicksoniaceae				
Cingulisporis marxheimensis (Mürriger & Pflug 1952) Ważyńska 1994	P1	1	3a, b; 4a, b	9
Familia: Pteridaceae				
Cryptogramma type				
Cryptogrammasporis magnoides (Krutzsch 1963) Skawińska 1994	A1	2	1a–c	10
Familia: Pteridaceae, Polypodiaceae				
Pteris type, ? **Polypodiaceae**				
Cingulisporis corrutoratus (Nagy 1985) Ważyńska 1994	P1	1	5a–c	9
Cingulisporis gracillimus (Nagy 1969) Ważyńska 1994	P1	1	1a, b; 2	9
Familia: Cyatheaceae				
Cyatheaceae				
Leiotriletes wolffi Krutzsch 1962	P	3	3; 4	
Familia: Polypodiaceae, Davalliaceae				
? **Polypodiaceae**				
Laevigatosporites gracilis Wilson & Webster 1946	A	5	11	
Laevigatosporites haardti (Potonié & Venitz 1934) Thomson & Pflug 1953	A	5	12	
Verrucatosporites alienus (Potonié 1931) Thomson & Pflug 1953	P2	5	15a, b	
Verrucatosporites favus (Potonié 1931) Thomson & Pflug 1953	P2	5	17	
Familia: ? Davalliaceae ? Polypodiaceae				

Taxon	Geofloristic element	Plate	Figure	Page
Davalliaceae-Polypodiaceae				
Laevigatosporites nutidus (Mamczar 1960) Krutzsch 1967	A	5	13; 14	
Familia: Dryopteridaceae				
? **Cystopteris** type				
Echinosporis fotensis Nagy 1985	P	5	10	
BOTANICAL AFFINITY UNKNOWN				
Toroisporis (Toroisporis) pessinensis Krutzsch 1962	P1	5	8	
Toroisporis (Toroisporis) teupitzensis Krutzsch 1962	P1	5	9	
Subdivisio: CYCADOPHYTINA				
Classis: GNETOPSIDA				
Ordo: EPHEDRALES				
Familia: Ephedraceae				
Ephedra distachya type				
Ephedripites (Distachyapites) tertiarius Krutzsch 1970	A	8	1	
Subdivisio: PINOPHYTINA (= Coniferopsida)				
Classis: PINOPSIDA (= Coniferales)				
Ordo: PINALES				
Familia: Taxodiaceae, Cupressaceae				
Taxodiaceae-Cupressaceae				
Inaperturopollenites dubius (Potonié & Venitz 1934) Thomson & Pflug 1953	A1	6	3	
Inaperturopollenites hiatus (Potonié 1931) Thomson & Pflug 1953	A1	6	4; 5	
Familia: Taxodiaceae				
Cunninghamia type				
Cunninghamiapollenites janinae Stuchlik & Konzalová 1991	A1	6	8; 9	
Taxodium, Glyptostrobus type				
Inaperturopollenites concedipites (Wodehouse 1933) Krutzsch 1971	A1	6	1; 2	
Sciadopitys type				
Sciadopityspollenites quintus Krutzsch 1971	A1	6	6	
Sciadopityspollenites tuberculatus (Zaklinskaja 1957) Krutzsch 1971	A1	6	7	
Sequoia, ? Cryptomeria types				
Sequoiapollenites sp. sp.	A1	6	10–12	
Familia: Pinaceae				
Abies type				
Abiespollenites latisaccatus (Trevisan 1967) Krutzsch 1971	A2	7	1	
Cedrus type				
Cedripites miocaenicus Krutzsch 1971	A1	7	3	
Keteleeria type				
Keteleeriapollenites dubius (Chlonova 1960) Słodkowska 1994	A1	7	4	14
Picea excelsa type				
Piceapollis tobolicus (Panova 1966) Krutzsch 1971	A2	7	2	
Pinus sylvestris type				
Pinuspollenites labdacus (Potonié 1931) Raatz 1937 ex Potonie 1958	A1	7	7	
Pinus haploxylon type, p.p. **Cathaya** type				
Pinuspollenites alatus (Potonié 1931) Planderová 1990	A	7	5	
Tsuga type				
Tsugaepollenites neogenicus (Krutzsch 1971) Planderová 1990	A1	6	15	
Tsugaepollenites spectabilis (Doktorowicz-Hrebnicka 1954) Słodkowska 1994	A1	6	17	13
Tsuga canadensis type				
Tsugaepollenites maximus (Raatz 1937) Nagy 1985	A1	6	16	
Tsugaepollenites viridifluminipites (Wodehouse 1933) Potonié 1958	A1	6	14	
Tsuga diversifolia type				

Taxon	Geofloristic element	Plate	Figure	Page
Tsugaepollenites spinosus (Doktorowicz-Hrebnicka 1954) Słodkowska 1994	A1	6	13	13
Familia: Podocarpaceae				
Podocarpus type				
Podocarpidites libellus (Potonié 1931) Krutzsch 1971	P1	7	5	
Subdivisio: MAGNOLIOPHYTINA (= Angiospermae)				
Classis: MAGNOLIOPSIDA (= Dicotyledones)				
Ordo: MAGNOLIALES				
Familia: Magnoliaceae				
Liriodendron type				
Liriodendroipollis verrucatus Krutzsch 1970	A1	11	2; 3	
Liriodendroipollis semiverrucatus Krutzsch 1970	A1	11	1	
Magnolia type				
Magnolipollis neogenicus Krutzsch 1970	P1	11	4; 5	
Ordo: NELUMBONALES				
Familia: Nelumbonaceae				
Nelumbo type				
Nelumbopollenites europaeus (Tarasevich 1983) Skawińska 1994	P2	14	12a–d	25
Ordo: CARYOPHYLLALES (= Centrospermae)				
Familia: Chenopodiaceae				
Chenopodiaceae				
Chenopodipollis multiplex (Weyland & Pflug 1957) Krutzsch 1966	A1	9	14	
Chenopodipollis neogenicus Nagy 1969	A1	9	15a, b	
Chenopodipollis stellatus (Mamczar 1960) Krutzsch 1966	A1	9	13a, b	
Ordo: CERCIDIPHYLLALES				
Familia: Cercidiphyllaceae				
Cercidiphyllum type				
Cercidiphyllites minimireticulatus (Trevisan 1967) Ziembińska-Tworzydło 1994	A1	13	1a, b; 2	21
Ordo: EUCOMMIALES				
Familia: Eucommiaceae				
Eucommia type				
Eucommioipollis eucommius (Planderová 1990) Ziembińska-Tworzydło 1994	A1	13	5; 6	23
Eucommioipollis parmularius (Potonié 1934) Ziembińska-Tworzydło 1994	A1	13	7a, b	24
Ordo: HAMAMELIDALES				
Familia: Altingiaceae				
Liquidambar type				
Liquidambarpollenites stigmosus (Potonié 1931) Raatz 1937 ex Potonié 1960	A1	9	22; 23a–c	
Familia: Hamamelidaceae				
Parrotia, Distylium types				
Tricolporopollenites staresedloensis Krutzsch & Pacltová 1969	P2	16	21; 22; 23a, b	
Tricolporopollenites indeterminatus (Romanowicz 1961) Ziembińska-Tworzydło 1974	P2	16	18; 19	
Familia: Platanaceae				
Platanus type				
Platanipollis ipelensis (Pacltová 1966) Grabowska 1994	P1	14	21a–c	26

Taxon	Geofloristic element	Plate	Figure	Page
Ordo: FAGALES				
Familia: Fagaceae				
Castaneoideae				
Castaneoideaepollis pusillus (Potonié 1934) Grabowska 1994	P2	12	8; 9	21
Castaneoideaepollis oviformis (Potonié 1934) Grabowska 1994	P2	12	10	
Fagoideae				
Fagus type				
Faguspollenites verus Raatz 1937 ex Potonié 1960	A2	14	1; 2	
Quercoideae				
Quercoidites henrici (Potonié 1931) Potonié, Thomson, Thiergart 1950	P2	15	7–9	
Quercoidites microhenrici (Potonié 1931) Potonié, Thomson, Thiergart 1950	P2	15	5; 6	
Quercoidites sp., sp.	A/P	15	12–14	
Quercus type				
Quercoidites granulatus (Nagy 1969) Słodkowska 1994	A1	15	10; 11	26
Quercoidites pudicus (Potonié 1934) Słodkowska 1994	A1	15	3; 4	26
Quercus robur type				
Quercoidites asper (Pflug & Thomson 1953) Słodkowska 1994	A1	15	1; 2	26
Ordo: BETULALES				
Familia: Betulaceae				
Alnus type				
Alnipollenites verus Potonié 1931 ex Potonié 1960	A1	9	5–7	
Betula type				
Betulaepollenites betuloides (Pflug 1953) Nagy 1969	A1	9	15	
Carpinus type		9	8; 9	
Carpinipites carpinoides (Pflug 1953) Nagy 1985	A1			
Corylus avellana type				
Corylopollis coryloides (Pflug 1953) Ziembińska-Tworzydło 1994	A2	8	18; 19	16
Ostrya type				
Ostryoipollenites rhenanus (Thomson 1950) Potonié 1951 ex Potonié 1960	A1	9	2	
Ordo: MYRICALES				
Familia: Myricaceae				
Myricaceae				
Myricipites coryphaeus (Potonié 1931) Potonié 1960	P2	8	26	
Myricipites microcoryphaeus (Potonié 1931) Słodkowska 1994	P2	8	24; 25	16
Myrica type				
Myricipites myricoides (Kremp 1949) Nagy 1969	P2	8	27; 28	
Myricipites rurensis (Pflug & Thomson 1953) Nagy 1969	P2	8	29	
Myrica gale type				
Myricipites bituitus (Potonié 1931) Nagy 1969	P2	8	22; 23	
Ordo: JUGLANDALES				
Familia: Juglandaceae				
Carya type				
Caryapollenites simplex (Potonié 1931) Raatz 1937	A1	8	16; 17	
Engelhardtia type				
Engelhardtioipollenites punctatus (Potonié 1931) Potonié 1951 ex Potonié 1960	P2	8	20	
Engelhardtioipollenites quietus (Potonié 1931) Potonié 1951	P1	8	21	
Juglans type				
Juglandipollis juglandoides Kohlman-Adamska 1994	A1	9	18; 19	18
Juglandipollis maculosus (Potonié 1931) Kohlman-Adamska 1994	A1	9	20; 21	18
Platycarya type				
Platycaryapollenites miocaenicus Nagy 1969	P2	9	3; 4a, b	

Taxon	Geofloristic element	Plate	Figure	Page
Pterocarya type				
Pterocaryapollenites stellatus (Potonié 1931) Thiergart 1937	A1	10	1–3	
Ordo: THEALES				
Familia: Symplocaceae				
Symplocaceae				
Symplocoipollenites maturus (Doktorowicz-Hrebnicka 1960) Ziembińska-Tworzydło 1994	P2	18	3; 4	30
Symplocoipollenites rotundus (Potonié 1931) Potonié 1951 ex Potonié 1960	P2	18	7; 8	
Symplocoipollenites orbis (Pflug & Thomson 1953) Słodkowska 1994	P1	18	5; 6	30
Symplocos type				
Symplocoipollenites latiporis (Pflug & Thomson 1953) Słodkowska 1994	P2	18	1a, b; 2	30
Symplocoipollenites vestibulum (Potonié 1931) Potonié 1960	P2	18	9a, b; 10–12	
Ordo: ERICALES				
Familia: Ericacaeae				
Calluna type				
Ericipites callidus (Potonié 1931) Krutzsch 1970	A	18	13; 14	
Erica type				
Ericipites ericius (Potonié 1931) Potonié 1960	A	18	15–17	
Rhododendron, Arbutus unedo types				
Ericipites roboreus (Potonié 1931) Krutzsch 1970	A	18	18–20	
Familia: Clethraceae, Cyrillaceae				
Clethraceae-Cyrillaceae				
Tricolporopollenites exactus (Potonié 1931) Grabowska 1994	P2	16	8–10	28
Tricolporopollenites megaexactus (Potonié 1931) Thomson & Pflug 1953	P2	16	6; 7	
Familia: Cyrillaceae, Clethraceae, ? Rosaceae				
Cyrillaceae-Clethraceae-Rosaceae				
Tricolporopollenites brühlensis (Thomson 1950) Grabowska 1994	P2	16	1a, b; 2–5	27
Ordo: EBENALES				
Familia: Ebenaceae				
Diospyros type				
Diospyrospollenites ovalis Skawińska 1994	P1	13	3a, b; 4	23
Ordo: SAPOTALES				
Familia: Sapotaceae				
Sapotaceae				
Sapotaceoidaepollenites oblongus (Pflug & Thomson 1953) Grabowska 1994	P1	17	5	29
Sapotaceoideaepollenites sapotoides (Pflug & Thomson 1953) Potonié 1960	P1	17	3	
Sapotaceoidaepollenites sp.	P1	17	4	
Ordo: SALICALES				
Familia: Salicaceae				
Salix type				
Salixipollenites sp. sp.	A2	15	15–17; 18a–c	
Ordo: MALVALES				
Familia: Tiliaceae, Bombacaceae				
Tilia cordata type				
Intratriporopollenites cordataeformis (Wolff 1934) Mai 1961	A2	17	16; 17	
Brownlowioideae				
Intratriporopollenites insculptus Mai 1961	A1	17	18a, b; 19	

Taxon	Geofloristic element	Plate	Figure	Page
Intratriporopollenites instructus (Potonié 1931) Thomson & Pflug 1953	A2	17	20; 21	
Intratriporopollenites sp.	A	17	22a, b	
Familia: Sterculiaceae				
Reevesia type				
Reevesiapollis triangulus (Mamczar 1960) Krutzsch 1970	P2	17	10–13	
Ordo: URTICALES				
Familia: Ulmaceae				
Celtis type				
Celtipollenites intrastructurus (Krutzsch & Vanhoorne 1977) Thiele-Pfeiffer 1980	A1	9	10	
Celtipollenites verus (Raatz 1937) Ziembińska-Tworzydło 1994	A1	9	11; 12	16
Ulmus laevis type				
Ulmipollenites undulosus Wolff 1934	A2	10	7a, b	
Zelkova type				
Zelkovaepollenites potoniei Nagy 1969	A1	10	8–10	
Ordo: SAXIFRAGALES				
Familia: Iteaceae				
Itea type				
Iteapollis angustiporatus (Schneider 1965) Ziembińska-Tworzydło 1974	P2	8	12–14	
Ordo: ROSALES				
Familia: Rosaceae				
Photinia, Sorbus types				
Tricolporopollenites photinioides Skawińska 1994	A1	16	27a, b; 28	28
Ordo: MYRTALES				
Familia: Lythraceae				
Decodon type				
Lythraceaepollenites decodonensis Stuchlik 1994	A1	14	9–11	24
Familia: Myrtaceae				
Myrtus type				
Myrtaceidites myrtiformis Simoncsics 1964	P1	17	9	
Familia: Trapaceae				
Trapa type				
Trapapollis erdtmanii (Nagy 1979) Kohlman-Adamska 1994	A1	15	23a, b; 24	27
Trapapollis illingensis (Klaus 1954) Kohlman-Adamska	A1	15	25a, b	27
Ordo: HALORAGALES				
Familia: Haloragaceae (= Halorrhagidaceae)				
Haloragis type				
Haloragacidites triporatus (Stuchlik 1964) Stuchlik 1994	P2	9	17a, b	17
Haloragacidites stephanoporatus (Stuchlik 1964) Stuchlik 1994	P2	9	16	17
Ordo: FABALES (= Leguminosae)				
Familia: Leguminosae, Fagaceae, Combretaceae, Verbenaceae				
Leguminosae-Fagaceae-Combretaceae-Verbenaceae				
Tricolporopollenites fallax (Potonié 1934) Krutzsch 1960	P2	16	11; 12	
Tricolporopollenites liblarensis (Thomson 1950) Grabowska 1994	P2	16	13; 14	28
Tricolporopollenites quisqualis (Potonié 1934) Krutzsch 1954	P2	16	15–17	
Ordo: SAPINDALES (= Acerales)				
Familia: Aceraeae				

Taxon	Geofloristic element	Plate	Figure	Page
Acer type				
Aceripollenites striatus (Pflug 1959) Thiele-Pfeiffer 1980	A1	11	9a, b	
Acer palmatum type				
Aceripollenites palmatoides Skawińska 1994	A1	11	8a–c	19
Familia: Hippocastanaceae				
Aesculus hippocastanum type				
Aesculidites hippocastaneoides Sadowska 1994	A1	11	6; 7	20
Ordo: RUTALES				
Familia: Rutaceae				
Skimmia type				
Skimmiapollenites reticulatus Skawińska 1994	P2	17	6a–c; 7a, b	29
Familia: Meliaceae				
Meliaceae				
Meliapollis sp.	P1	17	1a, b; 2	
Familia: Anacardiaceae				
Rhus type				
Rhuspollenites sp.	A1	14	22a, b	
? Anacardiaceae				
Tricolporopollenites pseudocingulum (Potonié 1931) Thomson & Pflug 1953	P2	16	31; 32a, b; 33; 34	
Ordo: CELASTRALES				
Familia: Aquifoliaceae				
Ilex type				
Ilexpollenites iliacus (Potonié 1931) Thiergart 1937 ex Potonié 1960	P2	14	6; 7a, b	
Ilexpollenites margaritatus (Potonié 1931) Raatz 1937 ex Potonié 1960	P2	14	5a–d	
Ilexpollenites propinquus (Potonié 1934) Potonié 1960	P2	14	8a, b	
Ordo: SANTANALES				
Familia: Olacaceae				
Olacaceae				
Olaxipollis matthesi Krutzsch 1962	P1	9	1a, b	
Familia: Loranthaceae, Santalaceae				
Loranthaceae, Arceuthobium type				
Spinulaepollis arceuthobioides Krutzsch 1962	A1	15	19–22	
p.p. **Loranthaceae**, p.p. **Santalaceae**				
Gothanipollis gothani Krutzsch 1959	P1	17	8	
Ordo: VITALES				
Familia: Vitaceae				
? Vitaceae, ? Parthenocissus type				
Tricolporopollenites marcodurensis Pflug & Thomson 1953	P1	16	24a, b; 25a, b	
Ordo: ELAEAGNALES				
Familia: Elaeagnaceae				
Elaeagnus, Hippophaë types				
Slovakipollis eleagnoides Krutzsch 1962	A	17	14; 15	
Ordo: CORNALES				
Familia: Nyssaceae				
Nyssa type				
Nyssapollenites kruschi (Potonié 1931) Nagy 1969	A1	14	13; 15–17	
Nyssapollenites peudocruciatus (Potonié 1931) Thiergart 1937	A1	14	14	

Taxon	Geofloristic element	Plate	Figure	Page
Familia: Cornaceae				
Cornoideae, Mastixioideae				
Cornaceaepollis major (Stuchlik 1964) Stuchlik 1994	P2	13	11a–c	22
Cornaceaepollis minor (Stuchlik 1964) 1994	P2	13	12a, b; 13	22
Cornaceaepollis satzveyensis (Pflug 1953) Ziembińska-Tworzydło 1994	P	13	8; 9; 10a, b	22
Familia: Alangiaceae				
Alangium type				
Alangiopollis barghoornianum (Traverse 1955) Krutzsch 1962	P1	11	12; 13	
Ordo: APIALES (= Araliales)				
Familia: Araliaceae				
Araliaceae				
Araliaceoipollenites euphorii (Potonié 1931) Potonié 1951 ex Potonié 1960	P2	12	4a–c; 5	
Aralia type				
Araliaceoipollenites edmundi (Potonié 1931) Potonié 1951 ex Potonié 1960	P2	12	1a, b; 2a, b; 3a–c	
Hedera type				
Araliaceoipollenites reticuloides Thiele-Pfeiffer 1980	P2	12	6a, b; 7a, b	
Ordo: DIPSACALES				
Familia: Caprifoliaceae				
Sambucus ebulus type				
Caprifoliipites sambucoides Nagy 1969	A1	12	11a, b	
Viburnum type				
Caprifoliipites viburnoides (Gruas-Cavagnetto 1978) Kohlman-Adamska 1994	A1	12	12a, b; 13; 14a, b	20
Ordo: GENTIANALES				
Familia: Theligonaceae				
Theligonum type				
Theligonumpollenites baculatus (Stachurska, Sadowska, Dyjor 1973) Thiele-Pfeiffer 1980	A1	10	4–6	
Familia: Apocynaceae, Gentianaceae				
Apocynaceae, Apocynum type, ? **Gentianaceae**				
Pseudotyphoipollis punctiporatus Krutzsch 1970	P2	18	21; 22	
Familia: Asclepiadaceae				
p.p. **Asclepiadaceae**, **Periplocoideae**				
Manikinipollis tetradoides Krutzsch 1970	P2	18	23	
Ordo: OLEALES				
Familia: Oleaceae				
Oleaceae				
Oleoidearumpollenites microreticulatus (Pflug & Thomson 1953) Ziembińska-Tworzydło 1994	A1	14	18a–c	25
Fraxinus, **Ligustrum**, **Syringa**, **Olea** types				
Oleoidearumpollenites sp. sp.	A1	14	19; 20	
Ordo: LAMIALES				
Familia: Verbenaceae				
Clerodendrum type				
Clerodendrumpollenites microechinatus Skawińska 1994	P1	12	15a–c	21
? Verbenaceae				
Tricolporopollenites wackersdorfensis Thiele-Pfeiffer 1980	P2	16	35	
Ordo: ASTERALES				
Familia: Asteraceae (= Compositae)				

Taxon	Geofloristic element	Plate	Figure	Page
Artemisia type				
Artemisiaepollenites sellularis Nagy 1969	A1	11	10; 11	
MAGNOLIOPSIDA INCERTE SEDIS				
botanical affinity unknown				
Fususpollenites fusus (Potonie 1931) Kedves 1978	P1	14	3; 4	
botanical affinity variable				
Tricolporopollenites retiformis (Pflug & Thomson 1953) Krutzsch 1961	A1	16	29a, b; 30a, b	
Classis: LILIOPSIDA (= Monocotyledones)				
Ordo: BUTOMALES				
Familia: Butomaceae				
Butomus type				
Butomuspollenites butomoides (Krutzsch 1970) Ziembińska-Tworzydło 1994	A2	10	14a, b	19
Butomuspollenites longicolpatus (Krutzsch 1970) Ziembińska-Tworzydło 1994	A2	10	16a, b	19
Butomuspollenites monocolpatus Doktorowicz-Hrebnicka 1957 emend. Ziembińska-Tworzydło 1994	A2	10	15a, b	19
Ordo: CYPERALES				
Familia: Cyperaceae				
Cyperaceae				
Cyperaceaepollis piriformis Thiele-Pfeiffer 1980	A2	8	2	
Cyperaceaepollis neogenicus Krutzsch 1970	A	8	3	
Ordo: RESTIONALES				
Familia: Restionaceae, Centrolepidaceae, Flagellariaceae				
Restionaceae-Centrolepidaceae				
Milfordiapollis incertus (Pflug & Thomson 1953) Grabowska 1994	P1	8	8; 9	15
Restionaceae-Centrolepidaceae-Flagellariaceae				
Milfordiapollis minimus (Krutzsch 1970) Grabowska 1994	P1	8	10a, b	15
Milfordiapollis hungaricus (Kedves 1965) Grabowska 1994	P1	8	11	15
Ordo: POALES				
Familia: Poaceae (= Gramineae)				
Poaceae				
Graminidites sp. sp.	A	8	6	
Bambusa type				
Graminidites bambusoides Stuchlik 1994	P2	8	4; 5	14
Ordo: ARECALES (= Palmae)				
Familia: Arecaceae (= Palmae)				
Arecaceae				
Arecipites pseudoconvexus Krutzsch 1970	P2	10	12a–c	
? Corypha type				
Arecipites papillosus (Mürriger & Pflug 1951) Krutzsch 1970	P2	10	11a–c	
Calamus type				
Dicolpopollis kockeli Pflanzl 1956	P1	10	17	
Familia: Arecaceae, Musaceae				
Arecaceae-Musaceae				
Monocolpopollenites tranquillus (Potonié 1934) Thomson & Pflug 1953	P1	10	13	
LILIOPSIDA INCERTE SEDIS				
botanical affinity unknown				
Aglaoreidiapollis cyclops (Erdtman 1960) Grabowska 1994	P1	8	7	14

REFERENCES

BOLCHOVITINA N. G. 1953. Sporowo-pyl'tsevaya kharakteristika melovykh otlozheny centralnykh oblasteys SSSR (Spore pollen characteristic of the Cretaceous deposits in Central Part of the USSR) (in Russian). Trudy Inst. Geol. Nauk., 61 (145): 184.

CHANDA S. 1966. On the pollen morphology of the Centrolepidaceae, Restionaceae and Flagellariaceae, with special reference to taxonomy. Grana Palynol., 6 (3): 355–415.

CHLONOVA A. F. 1960. Vidovoy sostav pyl'tsy i spor v otlozhenyakh verkhnevo mela Chlymo-Yeniseyskoy vpadiny (Artenbestand bei Pollen und Sporen der oberkretazischen Ablagerungen des Tschalimo-Jenisei Beckens) (in Russian) Trudy Inst. Geol. Geof. Sibir. odd. AN SSSR, 3: 1–104.

COOKSON I. C. 1947. Plant microfossils from the lignites of Kerguelen Archipelago. B.A.N.Z. Antarctic Res. Exp., 1929–1931. Reports, Ser. A., 2: 127–142.

— & PIKE K. M. 1954. Some Dicotyledonous pollen types from Cainozoic deposits in the Australian region. Austral. J. Bot., 2 (2): 197–219.

COUPER P. A. 1953. Upper Mesozoic and Cainozoic spores and pollen grains from New Zealand. New Zealand Survey Paleont. Bull., 22: 1–77.

DOKTOROWICZ-HREBNICKA J. 1954. Analiza pyłkowa węgla brunatnego z okolic Żar na Śląsku (summary: Pollen analysis of brown coal from the region of Żary (Lower Silesia)). Biul. Inst. Geol., 71: 42–92.

— 1957. Wzorcowe spektra pyłkowe plioceńskich osadów węglonośnych (summary: Index pollen spectra of Pliocene coal-bearing sediments). Pr. Inst. Geol., 15: 87–165.

— 1960. Paralelizacja pokładów węgla brunatnego województwa bydgoskiego i poznańskiego (summary: Correlation of brown coal seams from the provinces of Poznań and Bydgoszcz). Biul. Inst. Geol., 157: 42–92.

— 1961. Paleobotaniczne podstawy paralelizacji pokładów węgla ze złoża Rogóźno pod Łodzią (summary: Palaeobotanical bases for the correlation of brown coal seams from Rogóźno deposits near Łódź). I, II, Biul. Inst. Geol., 158: 113–303.

— 1964. Palynologiczna charakterystyka najmłodszych pokładów węgla brunatnego złoża Rogóźno. (summary: A palynological characteristic of the youngest brown coal seams in the Rogóźno coalfield). Biul. Inst. Geol., 183: 7–77.

ELSIK W. C. 1968. Palynology of Paleocene Rockdale Lignite Milam Country, Texas. I. Pollen et Spores, 5 (2): 263–314.

ERDTMAN G. 1960. On three new genera from the Lower Headon Beds, Brekshire. Bot. Notis., 13: 46–48.

GRUAS-CAVAGNETTO C. 1978. Etude palynologique de l'Eocéne du Basin Anglo – Parisien. Mem. Soc. Géol. France, N. S., 131: 1–64.

HAMMEN V. D. T. 1956. A palynological systematic nomenclature. Boletin Geol., 4: 63–101.

HOLUB J. 1983. Validation of generic names in Lycopodiaceae with a description a new genus *Pseudolycopodiella*. Folia Geobot. Phytotax., 18: 439–442.

HUNGER R. 1952. Mikrobotanisch-stratigraphische Untersuchungen der Braunkohlen der südlichen Oberlausitz und die Pollenanalyse als Mittel zur Deutung der Flözgenese. Freiberger Forschhf., R.C., 8: 5–38.

IBRAHIM A. 1933. Sporenformen des Aegirhorizonts des Ruhrreviers. Diss. Th., Berlin, Würtzburg.

INTERNATIONAL CODE OF BOTANICAL NOMENCLATURE 1988. Greuter W. (ed.). Koeltz Sci. Books, Königstein.

INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE 1961. 1963. Instytut Zoologiczny Polskiej Akademii Nauk. PAN, Wrocław.

JAHN A., ŁAŃCUCKA-ŚRODONIOWA M. & SADOWSKA A. 1984. Stanowisko utworów plioceńskich w kotlinie Kłodzkiej na Dolnym Śląsku (summary: The sites of Pliocene deposits in the Kłodzko Basin, Central Sudetes). Geol. Sudet., 18 (2): 7–43.

JANSONIUS J. & HILLS L. V. 1976–1992 . Genera file of fossil Spores. Spec. publ. Dept. Geol. Univ. Calgary. Canada.

KEDVES M. 1965. A new Restionaceae pollen type from the Hungarian Lower Tertiary layers. Adv. Front. Plant Sc., 13: 49–54.

— 1974, 1978. Paleogene fossil sporomorphs of the Bakony Moutains. II, III. Akadémiai Kiado, Budapest.

KLAUS W. 1954. Bau und Form von *Sporotrapoidites illingensis* n. gen. et sp. sporomorpharum. Bot. Notis., 2: 114–131.

KOHLMAN-ADAMSKA A. 1993. Pollen analysis of the Neogene deposits from the Wyrzysk region, northwestern Poland. Acta Palaeobot., 33 (1): 91–298.

KREMP G. 1949. Pollenanalitische Untersuchungen des miozänen Braunkohlenlagers von Konin an der Warthe. Palaeontogr. B., 90 (1–3): 53–93

KRUTZSCH W. 1954. Bemerkungen zur Benennung und Klassifikation fossiler (insbesondere tertiären) Pollen and Sporen. Z. Geologie, 3 (3): 258–331.

— 1959. Mikropaläontologische (sporenpaläontologische) Untersuchungen in der Braunkohle des Geiseltales. Z. Geologie, Beih., 21–22: 1–425.

— 1961a. Beitrag zur Sporenpaläontologie der präoberoligozänen kontinentalen und marinen Tertiärablagerungen Brandenburgs. Ber. Geol. Gesel., 7 (4): 29–343.

— 1961b. Über Funde von “ephedroiden” Pollen im deutschen Tertiär. Z. Geologie, 10 (32): 15–53.

— 1962a. Stratigraphisch bzw. botanisch wichtige neue Sporen und Pollenformen aus deutschen Tertiär. Geologie, 11 (3): 265–308.

KRUTZSCH W. 1962–1971. Atlas der mittel- und jungtertiären dispersen Sporen- und Pollen- sowie der Mikroplanktonformen des nördlichen

Mitteleuropas 1962 I; 1963a II; 1963b III; Berlin; 1967 IV-V. Jena; 1970a VII. Jena; 1971 VI. Jena.

KRUTZSCH W. 1966. Zur Kenntnis des präquartären periporaten Pollenformen. Geologie, Beih., 55: 16–71.

— 1969. Über einige stratigraphisch wichtige neue Longaxoner - Pollen aus dem mitteleuropäischen Alttertiär. Geologie, 18: 472–487.

— 1970b. Die stratigraphisch verwertbaren Sporen- und Pollenformen des mitteleuropäischen Alttertiärs. Geol. Jahrb. (1967), 3: 309–379.

— 1970c. *Reevesia*, ein neues Pollengenus der Sterculiaceen aus dem mitteleuropäischen Tertiär. Feddes Repert. 81 (6–8): 371–384.

— 1970d. Zur Kennntnis fossiler disperser Tetradenpollen. Paläont. Abh. B. Paläobot., 3 (34): 399–433.

—, PCHALEK J. & SPIEGLER D., 1960. Tieferes Paläozän (? Montien) in Westbrandenburg. Proceed. 21 IGC Kopenhagen, 4: 135–143.

— & VANHOORNE R. 1977. Die Pollenflora von Epinois und Loksbergen in Belgien. Palaeontogr. B., 163 (1–4): 1–110.

KUPRIANOVA L. A. & TARASEVICH V. P. 1983. Morfologia pyl'tsy sowremennykh i iskopayemnykh vidov roda *Nelumbo* (Nelumbonaceae) (Pollen morphology of recent and fossil species of the genus *Nelumbo* (Nelumbonaceae)) (in Russian). Botan. Zhurn., 68 (2): 137–146.

LAAD P. G. 1977. Pollen morphology of some members of the Restionaceae and related families, with notes on fossil regard. Grana, 16 (1): 1–14.

LUBOMIROVA K. A. & TIMOSHKINA N. A. 1973. Novye vidy drevnykh rasteny i bezpozvonochnykh SSSR (New genera of ancient plants and invertebrates of the USSR) (in Russian). Trudy Vsesoy. Neft. Issled. Geol. Inst., 318: 12–18.

MAMCZAR J. 1960. Wzorcowy profil środkowego miocenu Polski Środkowej (summary: Standard section of the Middle Miocene for Central Poland). Biul. Inst. Geol., 157: 13–68.

MAI D. H. 1961. Über eine Tiliaceen-Blüte und tilioiden Pollen aus dem deutschen Tertiär. Geologie, Beih., 32: 54–93

MENKE B. 1976. Pliozäne und ältestquartäre Sporen- und Pollen flora von Schleswig – Holstein. Geol. Jahrb. A., 32: 1–197.

MEYER B. L. 1956. Makrofloristische Untersuchungen in jungtertiären Braunkohlen im östlichen Bayern. Geol. Bavar., 21: 100–128.

MÜRRIGER F. & PFLANZL G. 1955. Pollenanalitische Datierungen einiger hessischer Braunkohlen. Notizbl. Hess. L.- Amt Bodenforsch., 83: 71–89.

— & PFLUG H. 1951. Über die Alterstellung der Braunkohle von Berghasungen, Bezirk Kassel, auf Grund pollenanalitischer Untersuchungen und Vergleich mit anderen Braunkohlenvorkommen. Notizbl. Hess. L.-Amt Bodenforsch., 6 (2): 87–97.

— & — 1952. Über eine palynologische Untersuchung des Braunkohlenlagers der Grube Emma bei Marxheim (Untermaingebiet). Notizbl. Hess. L.-Amt Bodenforsch., 6 (3): 56–66.

NAGY E. 1963. Spores et Pollen nouveaux d'une coupe de la Briqueterie d'Eger (Hongarie). Pollen et Spores, 5 (2): 397–412.

— 1969. Palynological elaborations of the miocene layers of the Mecsek Mountains. Ann. Inst. Geol. Hung., 52 (2): 237–650.

— 1979. New tropical elements from the Hungarian Neogene. Grana, 18 (3): 183–188.

— 1985. Sporomorphs of the Neogene in Hungary. Geol. Hung. ser. Paleont., 47: 1–470.

NAUMOVA S. N. 1937. Spores and pollen of the coals of the USSR. 17 Inter. Geol. Congress. Abstr. Papers, Moskwa – Leningrad.

NICHOLS D. J., AMES H. T. & TRAVERSE A. 1973. On *Arecipites* Wodehouse, *Monocolpopollenites* Thomson et Pflug and the species "*Monocolpopollenites tranquillus*". Taxon., 22 (2/3): 241–256.

OSZAST J. 1960. Analiza pyłkowa iłów tortońskich ze Starych Gliwic (summary: Pollen analysis of Tortonian Clays from Stare Gliwice in Upper Silesia, Poland.) Monogr. Bot., 9 (1): 1–48.

ÖLLGAARD B. 1987. A revised classification of the Lycopodiaceae s. lat. Opera Bot., 2: 153–178.

PACLTOVÁ B. 1966. Vysledky mikropaleontologickych studii chatakwitanského souvrstvi na Slovensku (summary: The results of micropalaeobotanical studies of the Chattian – Aquitanian complex in Slovakia.) Rozpr., CSAV, 76 (13): 1–68.

— 1982. Some pollen of recent and fossil species of the genus *Platanus* L. Acta Univ. Carol., Geologica, 4: 367–391.

PANOVA L. A. 1966. Spory i pyl'tsa iz neogenowykh otlozheny (Spores and pollen from Neogene deposits) (in Russian). Paleopalinologia III, Trudy WSEGEI NS, (141): 228–257.

PANT D. E. 1954. Suggestions for the classification and nomenclature of fossil spores and pollen grains. Bot. Rev., 20: 33–60.

PFLANZL 1956. Das Alter der Braunkohlen des Meissners der Flöze 2. und 3. des Hirschberg und eines benachtbaren Kohlenlagers bei Landenbach. Notizbl. Hess L.-Amt Bodenforsch, 84: 237–244.

PFLUG H. 1953a. Zur Entstehung und Entwicklung des angiospermiden Pollens in der Erdgeschichte. Palaeontogr. B, 95 (4–6): 60–171.

— 1959. Beiträge zur Klimageschichte Islands. VIII. Sporenbild aus Island und ihre stratigraphische Deutung. Neues Jhb. Geol. u. Paläont., 107 (2): 141–172.

PIERCE R. L. 1961. Lower Upper Cretaceous plant microfossils from Minnesota. Bull. geol. Surv. Univ. Minn., 42: 1–81.

PLANDEROVÁ E. 1990. Miocene microflora of Slovak Central Paratethys and its biostratigraphical significance. Dionyz Stur Inst. Geol. Bratislava.

—, ZIEMBIŃSKA-TWORZYDŁO M., GRABOWSKA I., KOHLMAN-ADAMSKA A., KONZALOVÁ M.,

NAGY E., PANTIĆ N., RYŁOWA T., SADOWSKA A., SŁODKOWSKA B., STUCHLIK L., SYABRYAJ S., WAŻYŃSKA H. & ZDRAŻILKOVA N. 1993. On paleofloristic and paleoclimatic changes during the Neogene of Eastern and Central Europe on the basis of palynological research. In: Paleofloristic and paleoclimatic changes during Cretaceous and Tertiary. Proc. Intern. Symp., Dionyz Stur Inst. Geol., 119–129.

POTONIÉ R. 1931a. Zur Mikroskopie der Braunkohlen tertiäre Blütenstaubformen. I. Braunkohle, 30 (26): 325–333.

— 1931b. Pollenformen der miozänen Braunkohle. II. Sitzungber. naturforsch. Fr., 31 (1–3): 24–27.

— 1931c. Pollenformen aus tertiären Braunkohlen. III. Jahrb. Preuss. Geol. LA., 52: 1–7.

— 1931d. Zur Mikroskopie der Braunkohle. Tertiäre Sporen- und Blütenstaubformen. IV. Braunkohle. 30 (27): 554–556.

— 1934. Zur Mikrobotanik der eozänen Humodils der Geiseltals. Inst. Paläobot. Petr. Brennst., 4: 25–125.

— 1951a. Revision stratigraphisch wichtiger Sporomorphen des mitteleuropäischen Tertiärs. Palaeontogr. B, 91 (5–6): 131–151.

— 1951b. Pollen- und Sporenformen als Leitfossilien des Tertiärs. Mikroskopie, 6 (9/10): 272–283.

— 1956–1970. Synopsis der Gattungen der Spore dispersae. Beih. Geol. Jahr. 1956, I – 23: 1–103; 1958, II – 31: 1–114; 1960, III – 39: 1–189; 1966, IV – 72: 1–244; 1970 V – 87: 1–222.

— & GELLETICH J. 1933. Über die Pteridophytensporen einer eozäner Braunkohle aus Dorog in Ungarn. Sitzber. Ges. Naturf. Fr. Berlin, Jg. 1932: 317–528.

— & KREMP G. 1954. Die Gattungen der paläozoischen Spore dispersae und ihre Stratigraphie. – Geol. Jb., 69: 111–194.

—, THOMSON P. W. & THIERGART F. 1950. Zur Nomenklatur und Klassifikation der neogenen Sporomorphae (Pollen und Sporen). Geolog. Jahrb., 65: 35–70.

— & VENITZ H. 1934. Zur Mikrobotanik des miozänen Humodils der niederrheinischen Bucht., Arb. Inst. Paläobot. Petrogr. Brenn., 5: 5–53.

RAATZ G. V. 1937. Mikrobotanisch stratigraphische Untersuchungen der Braunkohle des Muskauer Bogens. Abh. Preuss. Geol. L.- A. N. F., 183: 3–48.

ROMANOWICZ I. 1961. Analiza sporowo-pyłkowa osadów trzeciorzędowych z okolic Bolesławca i Zebrzydowej (summary: Spore and pollen analysis of Tertiary sediments from the vicinity of Bolesławiec and Zebrzydowa). Biul. Inst. Geol., 158: 325–393.

SAMOILOVICH S. R. & MTCHEDISHVILI N. 1961. Pyl'tsa i spory Zapadnoy Sibiryi. Jura – paleocen. (Pollen et spores of western Siberia. Jurassic-Paleocene) (in Russian) Trudy Vnigri, 177: 1–352.

SCHNEIDER W. 1965. Zur faziellen Entwicklung im "Oberbegleiter des Lausitzer Unterflözes" im Tagebau Spreetal. Freiberger Forschhf. C, 189: 203–214.

SHATILOVA I. I. & MTCHEDISHVILI N. 1980. Palinologicheskye kompleksy chandinskikh otlozheny Zapadnoy Gruzii i ikh stratigraficheskoe znacheniye (summary: Palynological complex of the Tschaudian deposits of western Georgia and their geochronological significance). Akad. Nauk Gruz. SSR. 5–96. Tbilisi.

SIMONCSICS P. 1964. Einige neue Sporen aus dem Salgotarjaner Kohlengebiet in Ungarn. Fortschr. Reinld. u. Westf., 12: 97–104.

SIMPSON J. B. 1961. The Tertiary pollen flora of Mull and Ardnamurchan. Trans. Royal. Soc. Edin., 64 (16): 421–468.

SKAWIŃSKA K. 1985. Some new and rare pollen grains from Neogene deposits at Ostrzeszów (South-west Poland). Acta Paleobot., 25 (1–2): 107–118.

— 1989. Analiza palinologiczna neogeńskich osadów z Ostrzeszowa. (Palynological analysis of Neogene deposits from Ostrzeszów) Rozpr. dokt. Arch. IB PAN Kraków.

SRIVASTAVA S. K. 1966. Upper Creteceous microflora Maastrichtian from Scollard, Alberta, Canada. Pollen & Spores, 8 (3): 497–552.

SONTAG E. 1966. Mikrobotanische (palynologische) Untersuchungen an 2. Niederlausitzer Flözhorizont. Z. Geologie. Beih., 54: 1–141.

STACHURSKA A., SADOWSKA A. & DYJOR S. 1973. The Neogene flora at Sośnica near Wrocław in the light of geological and palynological investigations. Acta Palaeobot., 14 (3): 147–178.

STOVER L. E., ELSIK W. C. & FAIRHILD W. W. 1966. New genera and species of Early Tertiary palynomorphs from the Gulf Coast. Paleont. Contr. Univ. Kansas, 5: 1–11.

STUCHLIK L. 1964. Pollen analysis of the Miocene deposits at Rypin. Acta Paleobot., 5 (2): 1–113.

— & KONZALOVÁ M. 1990–1991. *Cunninghamia* R. Br. in the pollen spectra of central Europe. Acta Bot. Hungar., 36 (1–4): 113–133.

SZWEYKOWSKA A. & SZWEYKOWSKI J. 1993. Botanika. (Botany) (in Polish), PWN, Warszawa.

TAKHTAJAN A. 1987. Sistiema magnoliofitov (Systema Magnoliophytorum) (in Russian). Nauka., Leningrad.

TARASEVICH V. F. 1980. O nakhodke pyl'tsy *Parrotia* C. A. Mey, *Diospyros* L., i *Staphylea* L. v miocenovykh otlozheniyakh rovniny Oka – Don (On the finding of pollen of *Parrotia* C. A. Mey, *Diospyrops* L. and *Staphylea* L. in the Miocene deposits of Oka – Don plain) (in Russian). Botan. Zhurn, 65 (3): 379–383.

THIELE-PFEIFFER H. 1980. Die miozäne Mikroflora aus dem Braunkohlentagebau Oder bei Wackersdorf/Oberpfalz. Palaeontogr., B, 174 (4–6): 95–224.

THIERGART F. 1937. Die Pollenanalyse der Niederlausitzer Braunkohle besonders im Profil der Grube Marga bei Senftenberg. Jahr. Preuss. Geol. L. A., 58: 282–351.

— 1951. Pollenfloren aus der tertiären Braunkohlen vom Niederrhein Geol. Jahrb. (1949), 65: 81–105.

THOMSON P. W. & PFLUG H. 1953. Pollen und Sporen des mitteleuropäischen Tertiärs. Palaeontogr. B., 94 (1–4): 1–138.

TRAVERSE A. 1955. Pollen analysis of the Brandon lignits of Vermont. Bur. Min. Rept. Investig. 5151 US Dep.: 1–107.

TREVISAN L. 1967. Pollini fossili de Miocene superiore nei tripoli del Gabbro (Toscana). Palaeontogr. Italica, 62: 1–73.

TRYON A. F. & LUGARDON B. 1991. Spores of the Pteridophyta. Surface, wall structure, and diversity based on electron microscope studies. Springer-Verlag, New York, Berlin, Heidelberg, London, Paris, Tokyo, Hong Kong, Barcelona.

WEYLAND H. & PFLUG H. D. 1957. Die Pflanzenreste der pliozänen Braunkohle von Ptolomais in Nordgriechenland I. Palaeontogr. B, 102: 96–109.

WILSON L. R. & WEBSTER R. M. 1946. Plant microfossils from a Fort Union Coal of Montana. Amer. Jour. Bot., 33: 271–278.

WODEHOUSE R. P. 1933. Tertiary pollen II. The oil shales the Eocene Green River Formation. Bull Torrey Bot. Club, 60: 479–524.

WOLFF H. 1934. Mikrofossilien des pliozänen Humodils der Grube Freigericht bei Dettingen a. Main und Vergleich mit älteren Schichten des Tertiärs sowie posttertiären Ablagerungen. Arb. Inst. Paläobot. Petrogr. Brennstof., 5: 55–76.

WU ZUO-JU & YU JIN-FENG 1981. Late Paleocene spores and pollen grains from the uppermost part of Nougshan group in Nanxiong Basin, Guangdong. Acta Palaeontol. Sinica, 20 (5): 441–448.

ZIEMBIŃSKA-TWORZYDŁO M. 1974. Palynological characteristics of the Neogene of Western Poland. Acta Palaeontol. Pol., 19 (3): 309–432.

ZITTER P. & KERI C. 1989. Untersuchungen am Pollenkörner der Gattung *Nelumbo* aus einer ober-miozänen Fundstelle des Burgenlands (Österreich). Ann. Naturhist. Mus. Wien., 90: 111–118. Wien.

PLATES

Plate 1

× 1000

Cingulisporis gracillimus (Nagy) Ważyńska p. 9

1. a – proximal face, b – distal face; Paratethys, Hungary, Eger Windféle, Egerian (ex Nagy 1985, pl. 29, figs 6, 7)
2. Distal face, SEM Paratethys, Hungary, Zengovarkony, Karpatian (ex Nagy 1985, pl. 29, fig. 11)

Cingulisporis marxheimensis (Mürriger & Pflug) Ważyńska p. 9

3. a – distal face, b – proximal face; Polish Lowland, Tarnówka, Lower Oligocene
4. a, b – two optical sections of proximal face; Sudetes, Turów Basin, Lower Miocene

Cingulisporis corrutoratus (Nagy) Ważyńska p. 9

5. a – proximal face, b, c – distal face; Polish Lowland, Nowa Wieś, Lower Oligocene

Corrugatisporites corruvalatus (Krutzsch) Nagy

6. Paratethys, Hungary, Szilvasvarad, Ottnangian (ex Nagy, 1985, pl. 21, fig. 14)

Corrugatisporites asolidus (Krutzsch) Nagy

7. Paratethys, Hungary, Püspökhatvan, Eggenburgian (ex Nagy 1985, pl. 21, fig. 11)

Corrugatisporites tekeresensis Nagy

8. Paratethys, Hungary, Tekeres, Ottnangian (ex Nagy, 1985, pl. 24, fig. 12)

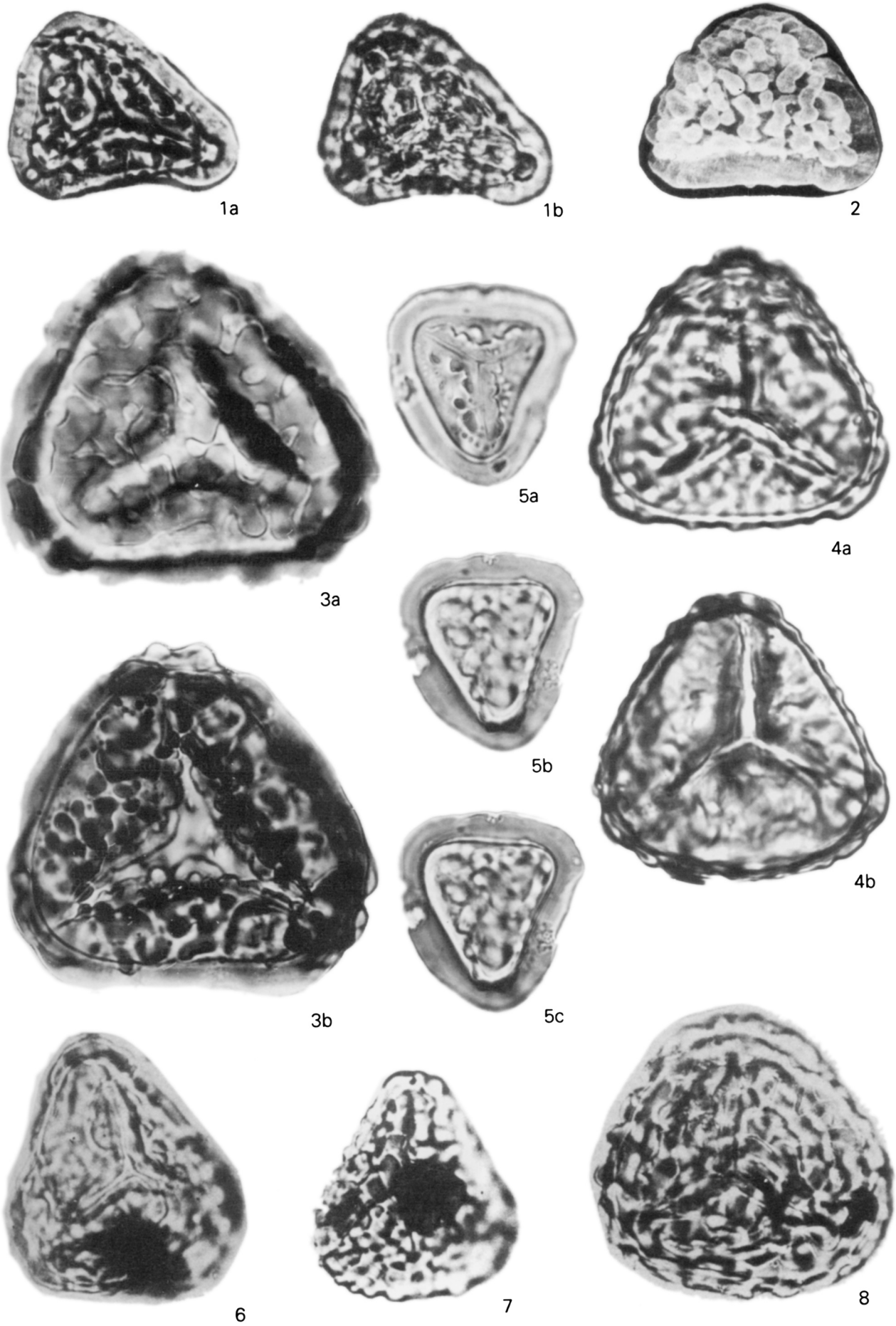

1a
1b
2
3a
5a
4a
5b
4b
3b
5c
6
7
8

Plate 2

× 1000

Cryptogrammasporis magnoides (Krutzsch) Skawińska p. 10

1. a, b – proximal face, c – distal face; Polish Lowland, Ostrzeszów, Middle Miocene

Leiotriletes maxoides Krutzsch

2. Polish Lowland, Chłapowo, Lower Miocene

Leiotriletes sp.

3. Sudetes, Turów Basin, Lower Miocene

Leiotriletes maxoides maximus (Pflug) Krutzsch

4. Polish Lowland, Czerna, Maria II, Middle Miocene

Leiotriletes adriennis pseudomaximus (Pflug & Thomson) Krutzsch

5. Paratethys, Slovakia, Lower Miocene (ex Planderová 1990, tabl. 7, fig. 1); × 1500

Leiotriletes adriennis (Potonié & Gelletich) Krutzsch

6. Polish Lowland, Ustronie, Upper Oligocene

Leiotriletes maxoides maxoides Krutzsch

7. Polish Lowland, Tarnówka, Lower Oligocene

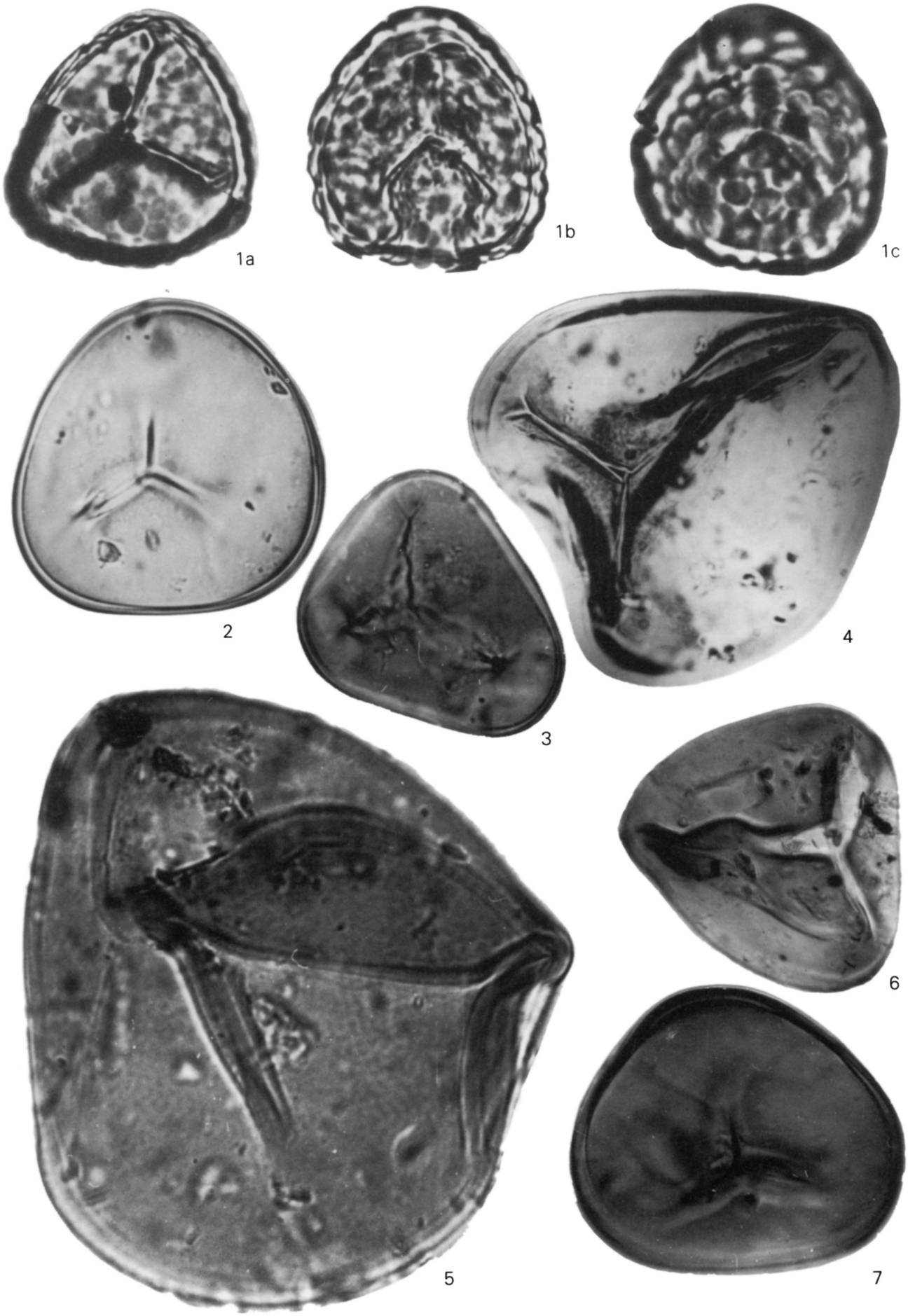

1a
1b
1c
2
3
4
5
6
7

Plate 3

× 1000

Leiotriletes neddenioides Krutzsch

1. Polish Lowland, Kaławsk, Lower Miocene

Leiotriletes apheles (Hunger) Krutzsch

2. Paratethys, Hungary, Lak, Sarmatian (ex Nagy 1985. Pl. 14. Fig. 24)

Leiotriletes wolffi Krutzsch

3. Sudetic Foredeep, Osina Wielka, Middle Miocene
4. Polish Lowland, Liszkowo, Lower Miocene

Lusatisporis punctatus Krutzsch

5. Polish Lowland, Rypin, Lower Miocene

Lusatisporis perinatus Krutzsch

6. Paratethys, Hungary, Alsovadasz, Ottnangian (ex Nagy 1985, Pl. 7. Fig. 12.)

Lycopodiaceaesporis (Camarozonosporites) decorus (Wolff) Ważyńska p. 11

7. a – proximal face, b – distal face; Polish Lowland, Iława, Lower Oligocene

Lycopodiaceaesporis (Retitriletes) pseudoclavatus (Krutzsch) Ważyńska p. 11

8. a – proximal face, b – distal face; Polish Lowland, Kosztowo, Middle Miocene

Lycopodiaceaesporis (Camarozonosporites) heskemensis (Pflanzl) Ważyńska p. 11

9. Distal face, Polish Lowland, Mosina, Lower Oligocene
10. Proximal face, Polish Lowland, Gorzów Wielkopolski, Lower Oligocene

Lycopodiaceaesporis (Retitriletes) lusaticus (Krutzsch) Ziembińska-Tworzydło p. 12

11. a – proximal face, b – distal face; Polish Lowland, Gierlachowo, Lower Miocene
12. a – reticulum, b – proximal face, c – distal face; Polish Lowland, Tarnówka, Lower Oligocene

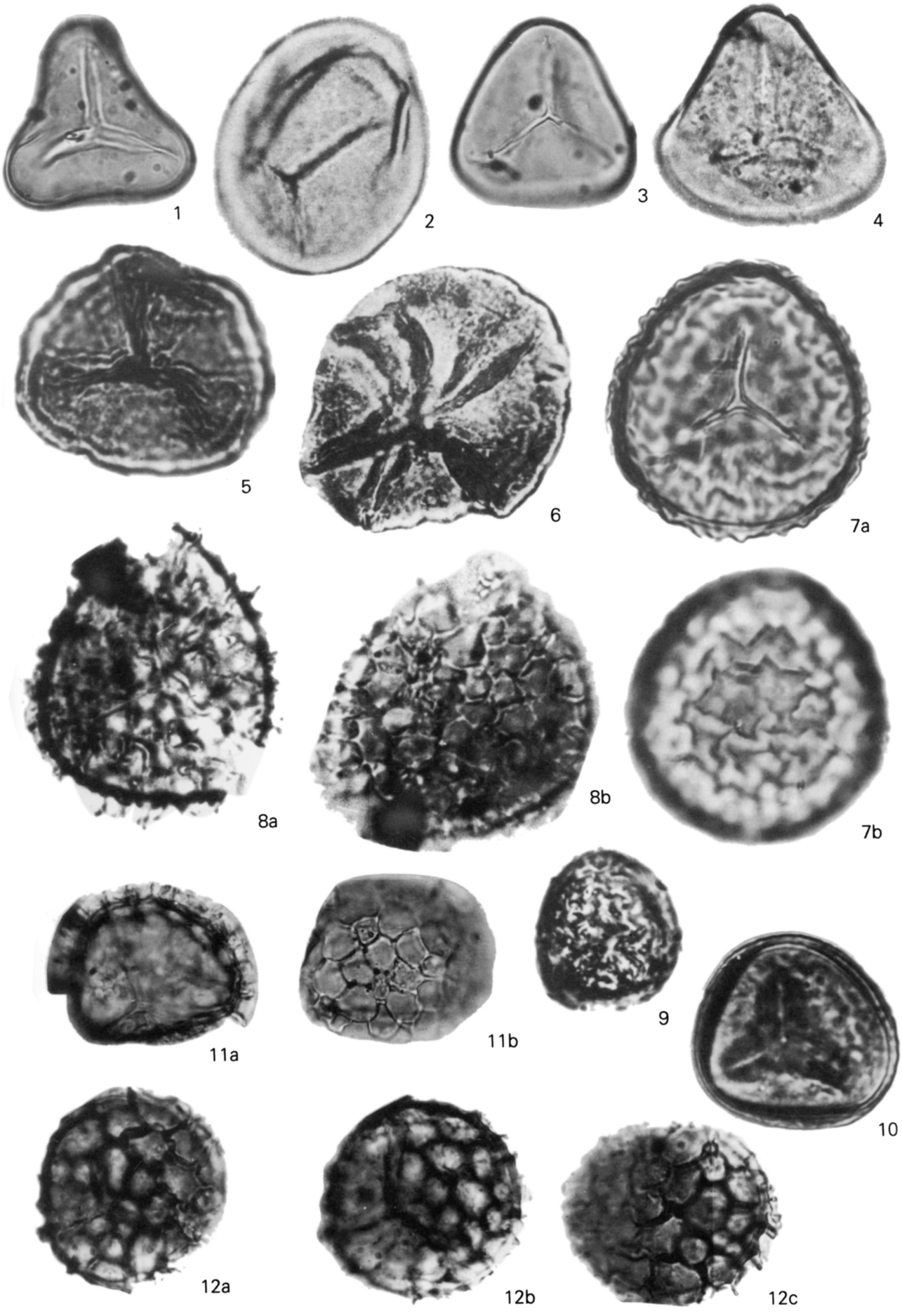

1
2
3
4
5
6
7a
8a
8b
7b
11a
11b
9
10
12a
12b
12c

Plate 4

× 1000

Lycopodiaceaesporis (Hamulatisporis ex Krutzsch 1959)

helenensis (Krutzsch) Ważyńska p. 11

1. Polish Lowland, Rypin, Lower Oligocene

Lycopodiaceaesporis (Hamulatisporis ex Krutzsch 1959)

rarus (Doktorowicz-Hrebnicka) Ważyńska p. 11

2. Holotype, Polish Lowland, Gajówka, Józefina (ex Doktorowicz-Hrebnicka, 1960, pl. 16, fig. 16) Middle Miocene
3. Polish Lowland, Tarnówka, Lower Oligocene

Neogenisporis neogenicus Krutzsch

4. Polish Lowland, Karolewo-Dąbki, Middle Miocene
5. Polish Lowland, Chłapowo, Lower Miocene

Osmundacidites nanus (Wolff) Nagy

6. a – sculpture, b – proximal face; Polish Lowland, Piaski-Bełchatów, Middle Miocene

Osmundacidites primarius (Wolff) Nagy

7. Polish Lowland, Wirczyn, Middle Miocene

Osmundacidites primarius primarius (Wolff) Nagy

8. Polish Lowland, Karolewo-Dąbki, Middle Miocene

Osmundacidites primarius crassiprimarius (Krutzsch) Nagy

9. Polish Lowland, Karolewo-Dąbki, Middle Miocene.

Osmundacidites quintus (Pflug & Thomson) Nagy

10. Polish Lowland, Oczkowice, Middle Miocene

Osmundacidites primarius major (Raatz) Ziembińska-Tworzydło p. 12

11. a – distal face, b – proximal face; Polish Lowland, Babina, Middle Miocene. (ex Krutzsch 1967 Pl. 10, Figs. 1, 2.)

Osmundacidites primarius oligocaenicus (Krutzsch) Nagy

12. Polish Lowland, Oczkowice, Middle Miocene

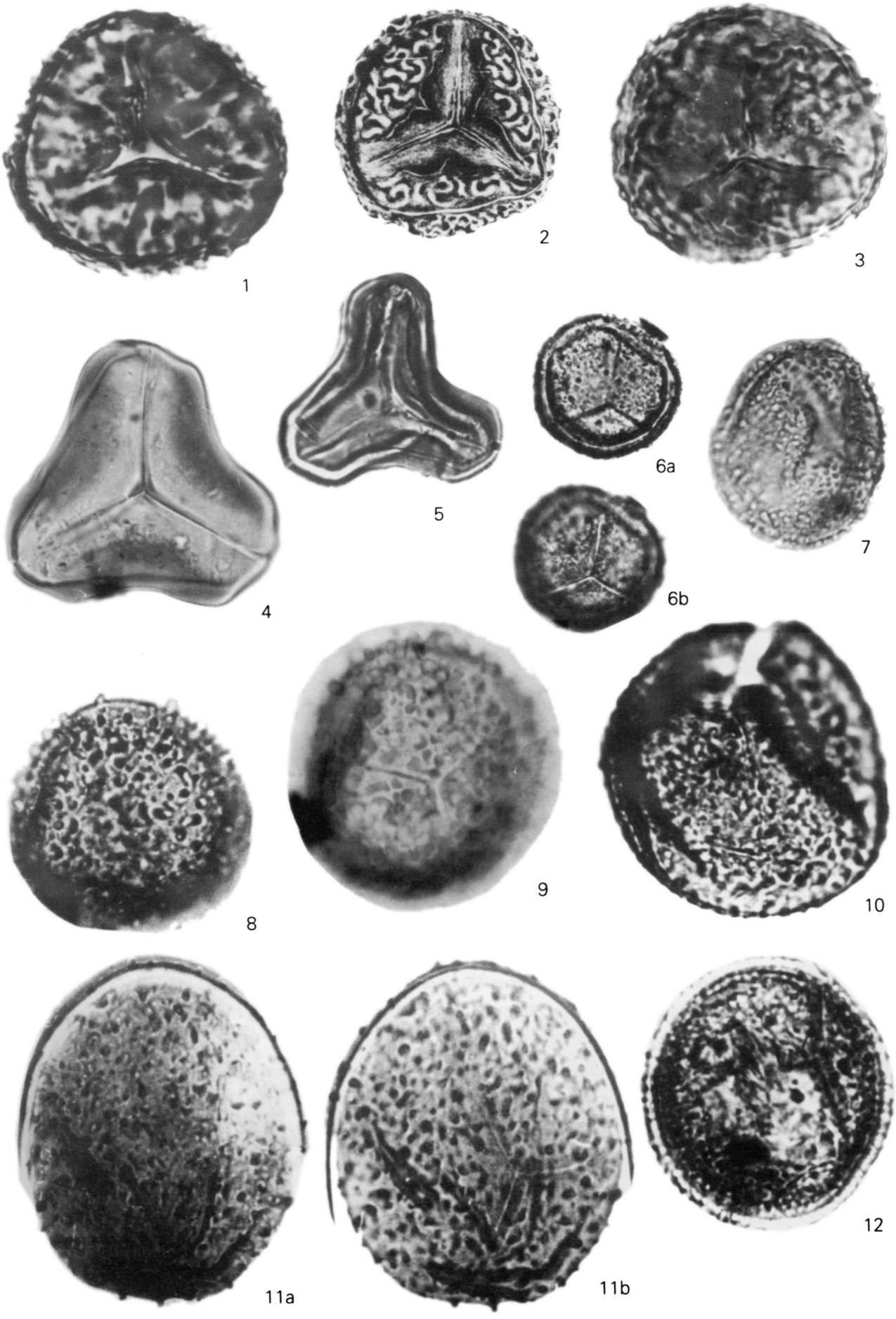

1
2
3
4
5
6a
6b
7
8
9
10
11a
11b
12

Plate 5

× 1000

Radialisporis radiatus (Krutzsch) Krutzsch

1. Proximal face; Polish Lowland, Karolewo-Dąbki, Middle Miocene
2. Distal face; Polish Lowland, Bulin, Lower Miocene

Selaginellisporis (Echinatisporis) longechinus (Krutzsch) Ważyńska p. 13

3. Sudetes, Turów Basin, Lower Miocene

Selaginellisporis (Echinatisporis) miocenicus (Krutzsch & Sontag) Ważyńska p. 12

4. Polish Lowland, Wyszonowice, Middle Miocene

Selaginellisporis (Echinatisporis) echinoides (Krutzsch & Pacltová) Ważyńska p. 13

5. a – proximal face, b – distal face; Paratethys, Hungary, Tangelic, Lower Badenian (ex Nagy 1985, Pl. 8. figs. 14, 15)

Selagosporis selagoides Krutzsch

6. Polish Lowland, Rypin, Middle Miocene

Stereisporis stereoides (Potonié & Venitz) Thomson & Pflug

7. Polish Lowland, Chłapowo, Lower Miocene

Toroisporis (Toroisporis) pessinensis Krutzsch

8. Sudetes, Turów Basin, Czerwona Woda, Lower Miocene

Toroisporis (Toroisporis) teupitzensis Krutzsch

9. Polish Lowland, Tymowa, Lower Miocene

Echinosporis fotensis Nagy

10. Paratethys, Hungary, Fot, Egerian (ex Nagy 1985, Pl. 8. fig. 16)

Laevigatosporites gracilis Wilson & Webster

11. Polish Lowland, Ustronie, Lower Miocene

Laevigatosporites haardti (Potonie & Venitz) Thomson & Pflug

12. Polish Lowland, Gołębin Stary, Lower Miocene

Laevigatosporites nutidus (Mamczar) Krutzsch

13. Holotype, Polish Lowland, Konin (ex Mamczar, 1960, pl. 1, fig. 9), Middle Miocene
14. Polish Lowland, Chłapowo, Lower Miocene

Verrucatosporites alienus (Potonie) Thomson & Pflug

15. a – sculpture, b – proximal face; Sudetic Foredeep, Osina Wielka, Middle Miocene
16. Sudetic Foredeep, Osina Wielka, Middle Miocene

Verrucatosporites favus (Potonie) Thomson & Pflug

17. Polish Lowland, Mosina, Lower Oligocene

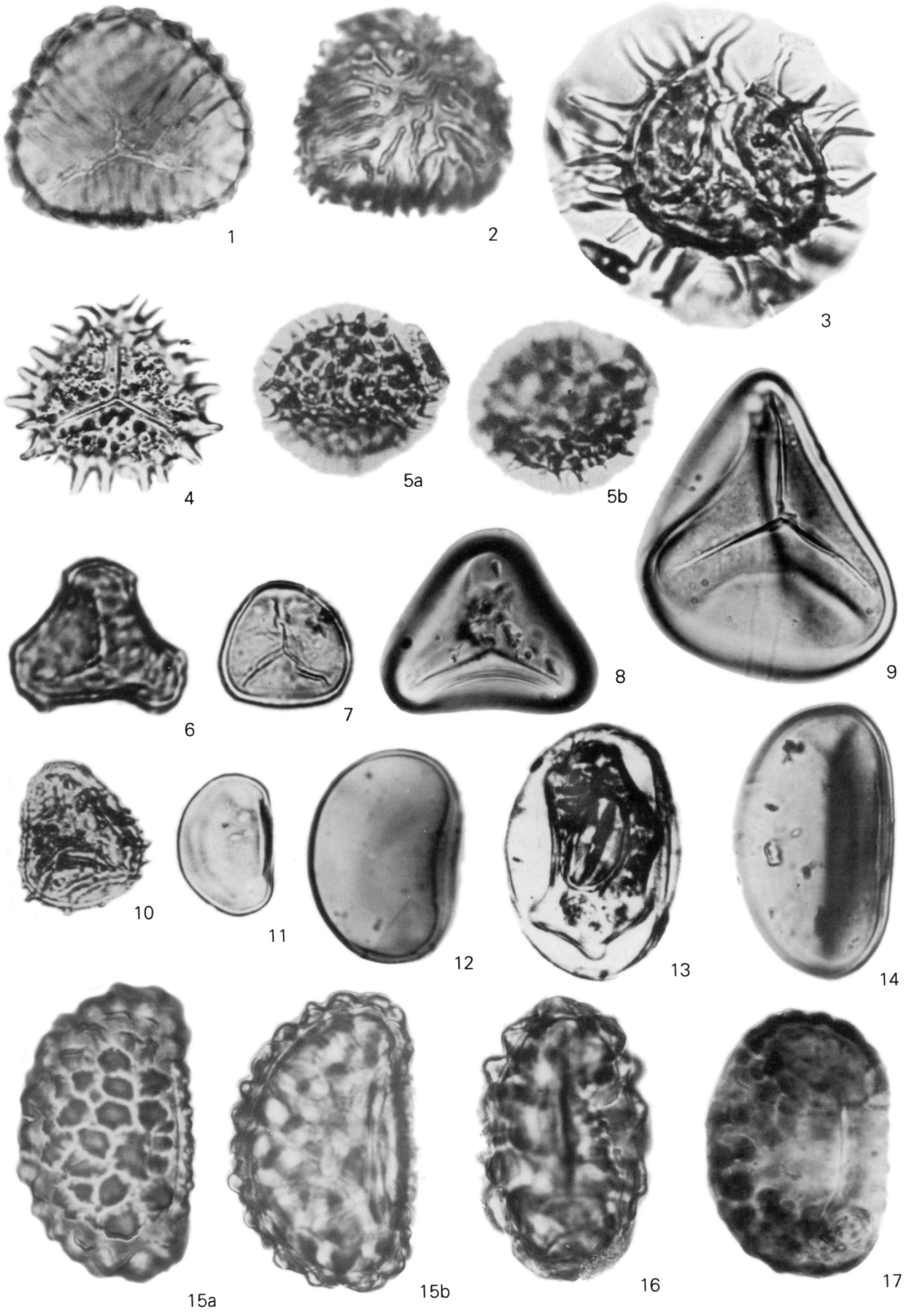

1
2
3
4
5a
5b
6
7
8
9
10
11
12
13
14
15a
15b
16
17

Plate 6

× 1000

Inaperturopollenites concedipites (Wodehouse) Krutzsch

1, 2. Sudetic Foredeep, Jawor, Lower Miocene

Inaperturopollenites dubius (Potonié & Venitz) Thomson

3. Polish Lowland, Ręszów, Middle Miocene

Inaperturopollenites hiatus (Potonie) Thomson & Pflug

4. Sudetic Foredeep, Biskupin, Middle Miocene

5. Polish Lowland, Rypin, Middle Miocene

Sciadopityspollenites quintus Krutzsch

6. Polish Lowland, Ustronie, Middle Miocene

Sciadopityspollenites tuberculatus (Zaklinskaja) Krutzsch

7. Polish Lowland, Gierlachowo, Middle Miocene

Cunninghamiaepollenites janinae Stuchlik & Konzalová

8. Polish Lowland, Rypin, Middle Miocene

9. Polish Lowland, Bełchatów, Lower Miocene

Sequoiapollenites sp. sp.

10. Sudetic Foredeep, Kaławsk, Middle Miocene

11, 12. Polish Lowland, Chłapowo, Lower Miocene

Tsugaepollenites spinosus (Doktorowicz-Hrebnicka) Słodkowska p. 13

13. a – sculpture, b – × 2000 part of velum; Polish Lowland, Ustronie, Middle Miocene

Tsugaepollenites viridifluminipites (Wodehouse) Potonié

14. Paratethys, Slovakia, Miocene (ex Planderová 1990, Pl. 49. Fig. 3.)

Tsugaepollenites neogenicus (Krutzsch) Planderová

15. Polish Lowland, Ustronie, Lower Miocene

Tsugaepollenites maximus (Raatz) Nagy

16. Polish Lowland, Tarnówka, Lower Miocene

Tsugaepollenites spectabilis (Doktorowicz-Hrebnicka) Słodkowska p. 13

17. Polish Lowland, Oczkowice, Middle Miocene

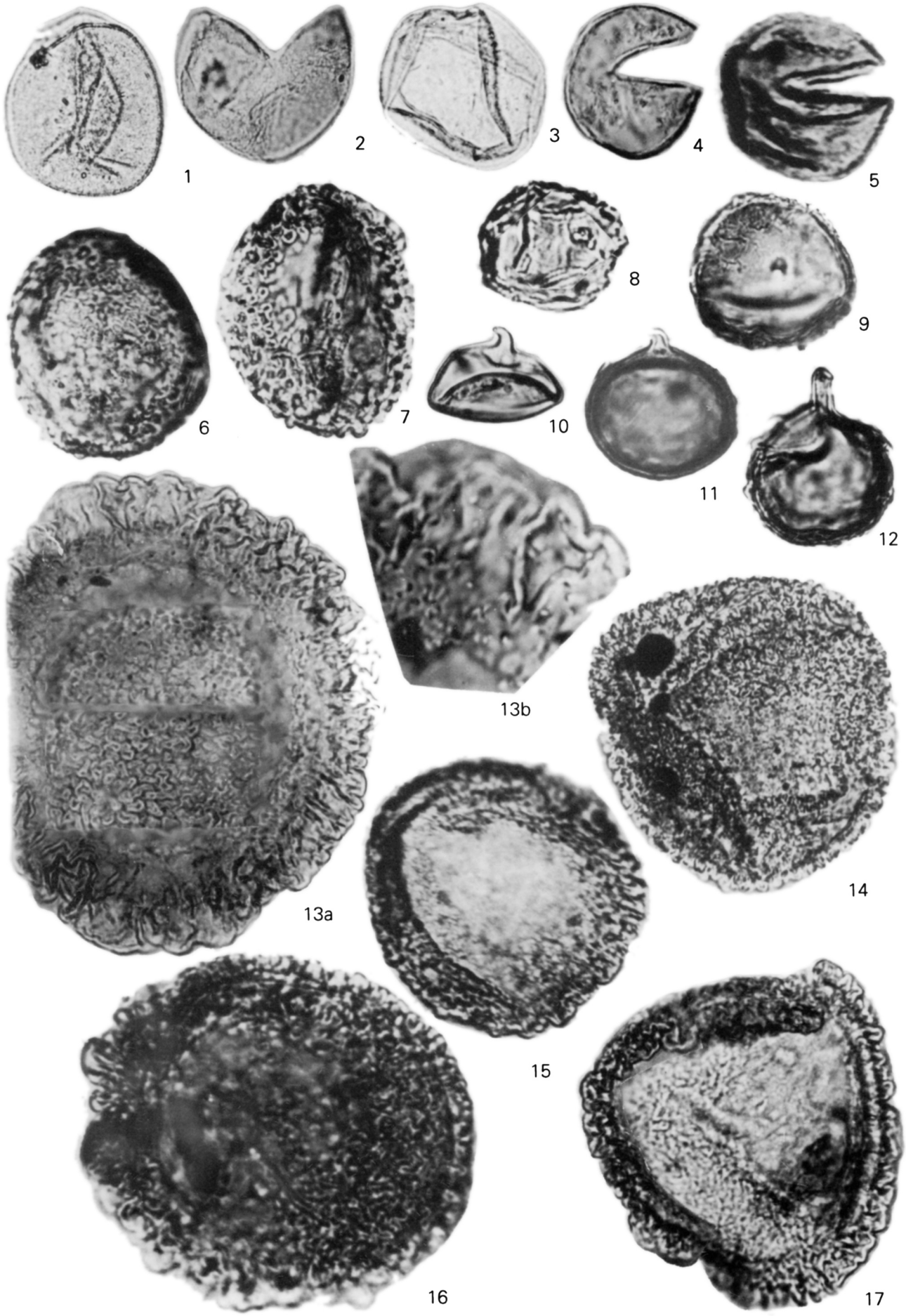

1
2
3
4
5
6
7
8
9
10
11
12
13a
13b
14
15
16
17

Plate 7

Abiespollenites latisaccatus (Trevisan) Krutzsch

1. Polish Lowland, Ustronie, Lower Miocene; × 750

Piceapollis tobolicus (Panova) Krutzsch

2. Polish Lowland, Tarnówka, Lower Oligocene; × 750

Cedripites miocaenicus Krutzsch

3. Polish Lowland, Gierlachowo, Lower Miocene; × 750

Keteleeriapollenites dubius (Chlonova) Słodkowska p. 14

4. Polish Lowland, Niedźwiedzice, Lower Miocene; × 750

Pinuspollenites alatus (Potonié) Planderová

5. Polish Lowland, Chłapowo, Lower Miocene; × 1000

Podocarpidites libellus (Potonié) Krutzsch

6. Polish Lowland, Oczkowice, Middle iocene; × 1000

Pinuspollenites labdacus (Potonié) Raatz

7. Polish Lowland, Chłapowo, Lower Miocene; × 1000

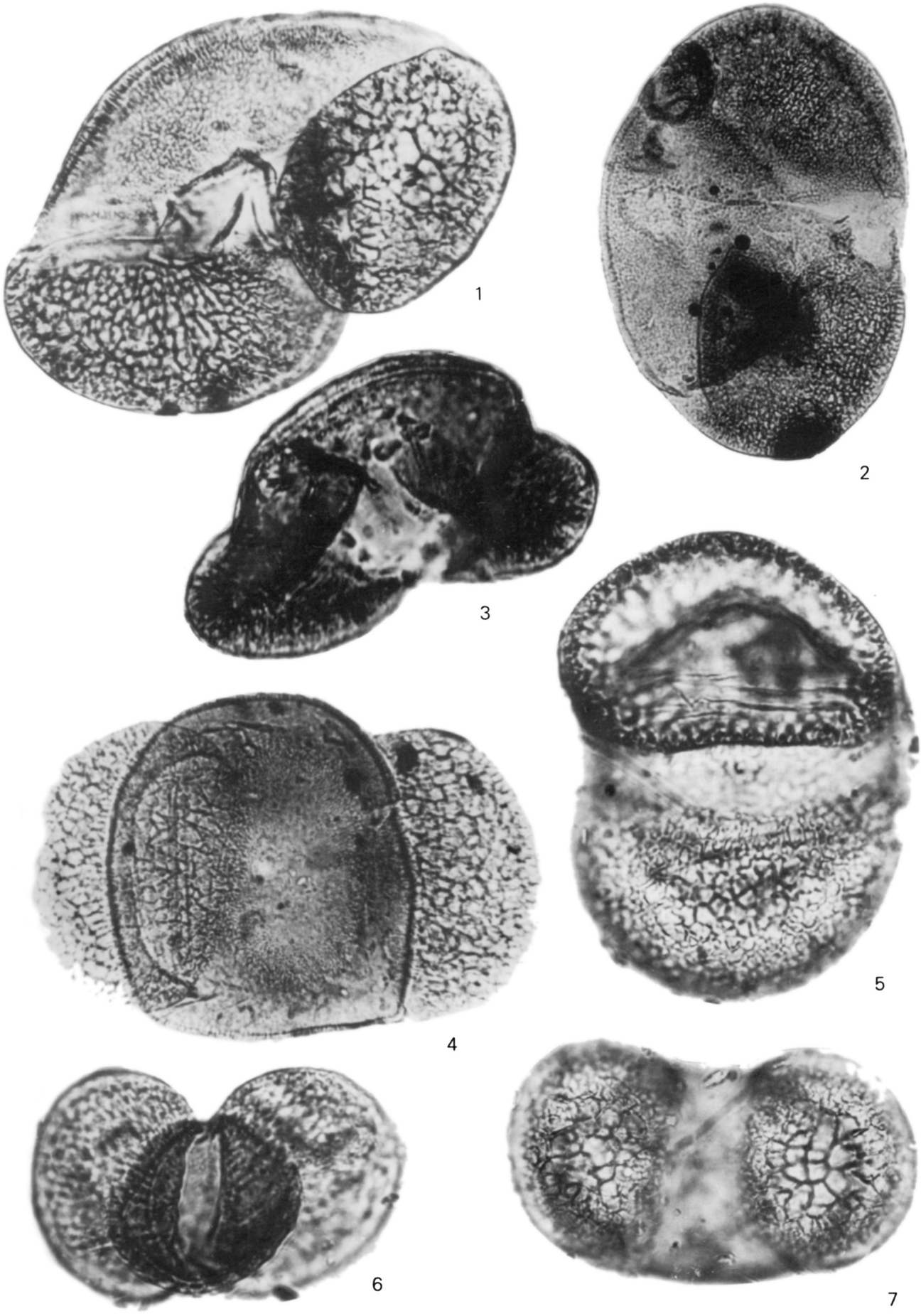

1
2
3
4
5
6
7

Plate 8

× 1000

Ephedripites (Distachyapites) tertiarius Krutzsch

1. Polish Lowland, Karolewo-Dąbki, Middle Miocene

Cyperaceaepollis piriformis Thiele-Pfeiffer

2. Polish Lowland, Karolewo-Dąbki, Middle Miocene.

Cyperaceaepollis neogenicus Krutzsch

3. Polish Lowland, Chłapowo, Lower Miocene

Graminidites bambusoides Stuchlik p. 14

4. Polish Lowland, Rypin, Middle Miocene
5. Holotype, Polish Lowland, Rypin, Middle Miocene

Graminidites sp.

6. Polish Lowland, Chłapowo, Lower Miocene

Aglaoreidiapollis cyclops (Erdtman) Grabowska p. 14

7. Polish Lowland, Iława, Lower Oligocene

Milfordiapollis incertus (Pflug & Thomson) Grabowska p. 15

8. Polish Lowland, Ulnowo, Lower Oligocene
9. Polish Lowland, Chłapowo, Lower Miocene

Milfordiapollis minimus (Krutzsch) Grabowska p. 15

10. a – distal face, b – proximal face; Polish Lowland, Tarnówka, Lower Oligocene

Milfordiapollis hungaricus (Kedves) Grabowska p. 15

11. Polish Lowland, Bukwałd, Upper Eocene

Iteapollis angustiporatus (Schneider) Ziembińska-Tworzydło

12. Polish Lowland, Rypin, Middle Miocene
13. Polish Lowland, Gołębin Stary, Middle Miocene
14. Polish Lowland, Konin, Midlle Miocene

Betulaepollenites betuloides (Pflug) Nagy

15. Polish Lowland, Oczkowice, Lower Miocene

Caryapollenites simplex (Potonié) Raatz

16. Polish Lowland, Ustronie, Middle Miocene
17. Polish Lowland, Ręszów, Lower Miocene

Corylopollis coryloides (Pflug) Ziembińska-Tworzydło p. 16

18. Sudetes, Turów Basin, Lower Miocene
19. Polish Lowland, Konin, Middle Miocene

Engelhardtioidites punctatus (Potonié) Potonié

20. Polish Lowland, Chłapowo, Lower Miocene

Engelhardtioidites quietus (Potonié) Potonié

21. Polish Lowland, Kosztowo, Lower Miocene

Myricipites bituitus (Potonié) Nagy

22. Polish Lowland, Karolewo-Dąbki, Middle Miocene
23. Sudetes, Turów Basin, Lower Miocene

Myricipites microcoryphaeus (Potonié) Słodkowska p. 16

24. Sudetic Foredeep, Szyszkowa Góra, Middle Miocene
25. Polish Lowland, Kosztowo, Lower Miocene

Myricipites coryphaeus (Potonié) Potonié

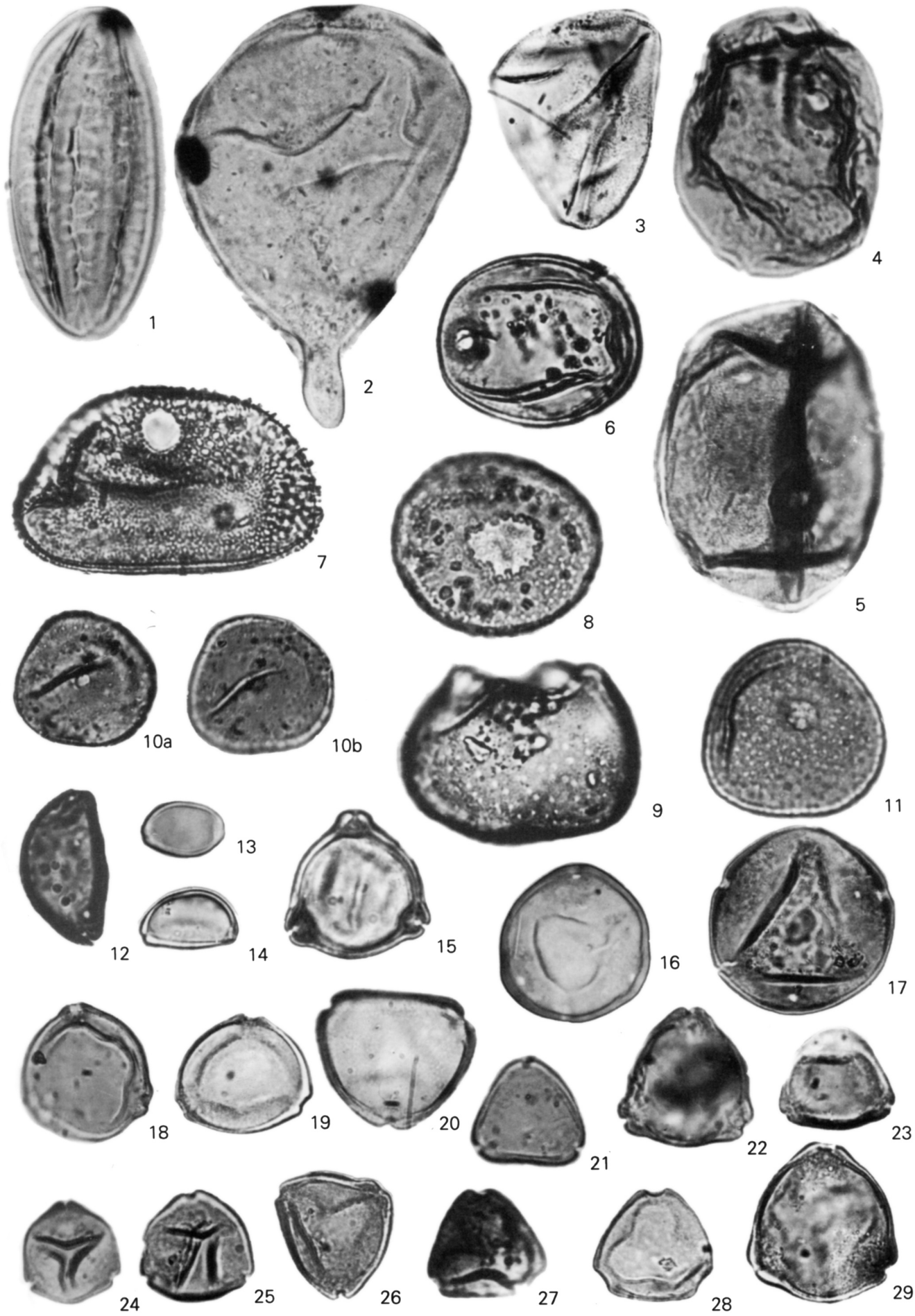
26. Polish Lowland, Ręszów, Lower Miocene

Myricipites myricoides (Kremp) Nagy

27, 28. Polish Lowland, Konin, Middle Miocene

Myricipites rurensis (Pflug & Thomson) Nagy

29. Polish Lowland, Ręszów, Lower Miocene



M. Ziembińska-Tworzydło et al.
Acta Palaeobot. Suppl. 1

Plate 9

× 1000

Olaxipollis matthesi Krutzsch

1. a, b – two optical sections; Polish Lowland, Lubanice, Middle Miocene

Ostryoipollenites rhenanus (Thomson) Potonié

2. Polish Lowland, Karolewo Dąbki, Middle Miocene

Platycaryapollenites miocaenicus Nagy

3. Polish Lowland, Chłapowo, Lower Miocene
4. a, b – two optical sections; Polish Lowland, Tarnówka, Lower Oligocene

Alnipollenites verus Potonié

5. Polish Lowland, Dębionek, Middle Miocene
6, 7. Polish Lowland, Chłapowo, Lower Miocene

Carpinipites carpinoides (Pflug) Nagy

8. Sudetes, Turów Basin, Lower Miocene
9. Polish Lowland, Konin, Middle Miocene

Celtipollenites intrastructurus (Krutzsch & Vanhoorne) Thiele-Pfeiffer

10. Polish Lowland, Liszkowo, Middle Miocene

Celtipollenites verus (Raatz) Ziembińska-Tworzydło p. 16

11. Polish Lowland, Oczkowice, Middle Miocene
12. Sudetic Foredeep, Osina Wielka, Middle Miocene

Chenopodipollis stellatus (Mamczar) Krutzsch

13. a, b – two optical sections; Polish Lowland, Konin, Middle Miocene; × 750

Chenopodipollis multiplex (Weyland & Pflug) Krutzsch

14. Paratethys, Slovakia, Upper Sarmatian

Chenopodipollis neogenicus Nagy

15. a, b – two optical sections; Polish Lowland, Kosztowo, Lower Miocene

Haloragacidites stephanoporatus (Stuchlik) Stuchlik p. 17

16. Polish Lowland, Rypin, Middle Miocene

Haloragacidites triporatus (Stuchlik) Stuchlik p. 17

17. a, b – two optical sections; Polish Lowland, Rypin, Middle Miocene

Juglandipollis juglandoides Kohlman-Adamska p. 18

18. Polish Lowland, Sośnica, Upper Miocene
19. Holotype, Polish Lowland, Kosztowo, Lower Miocene

Juglandipollis maculosus (Potonié) Kohlman-Adamska p. 18

20. Polish Lowland, Tarnówka, Lower Oligocene
21. Polish Lowland, Kosztowo, Lower Miocene

Liquidambarpollenites stigmosus (Potonié) Raatz

22. Polish Lowland, Oczkowice, Middle Miocene
23. a–c – three optical sections; Polish Lowland, Chłapowo, Lower Miocene

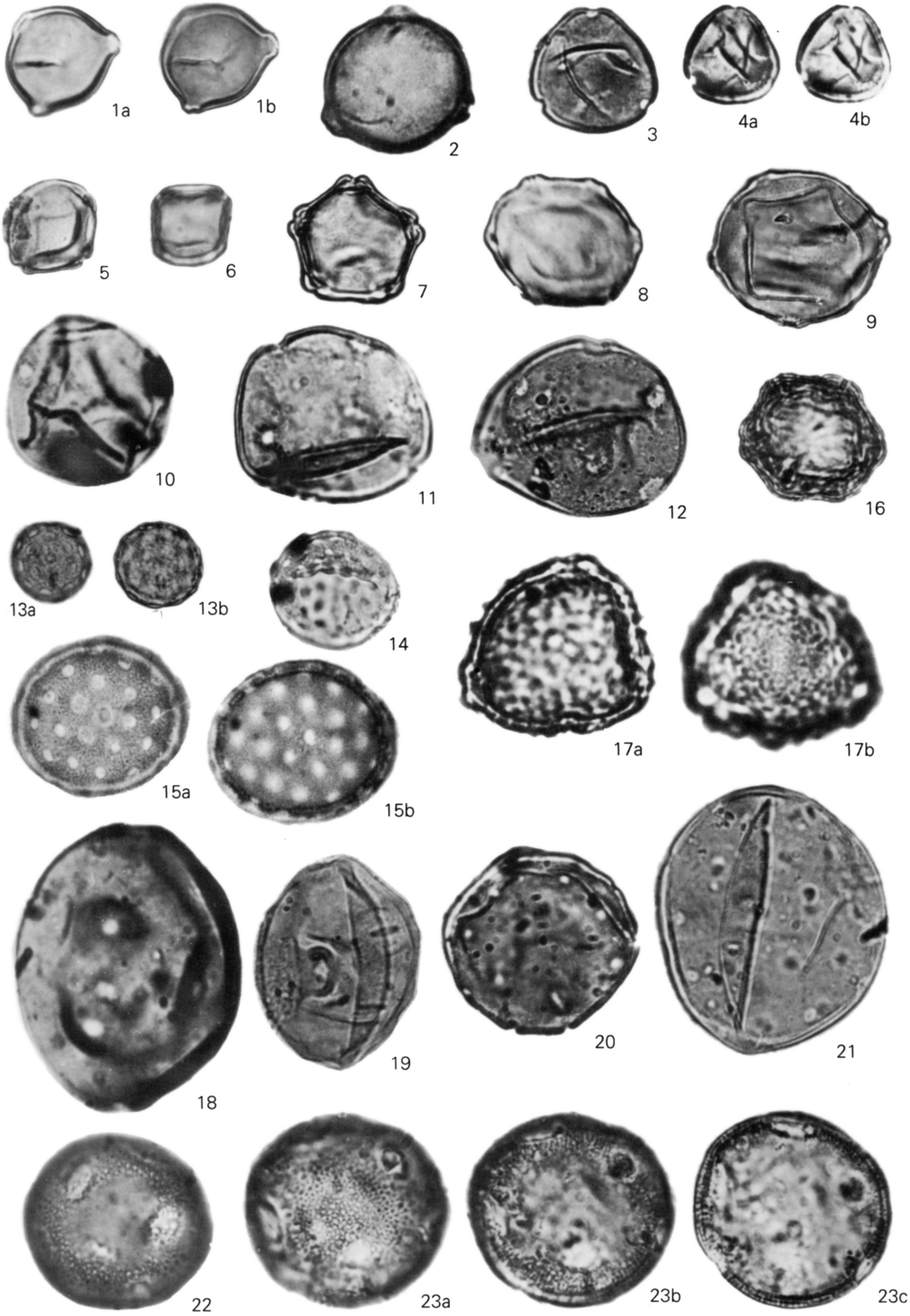

1a
1b
2
3
4a
4b
5
6
7
8
9
10
11
12
16
13a
13b
14
15a
15b
17a
17b
18
19
20
21
22
23a
23b
23c

Plate 10

× 1000

Pterocaryapollenites stellatus (Potonié) Thiergart

1. Polish Lowland, Ulnowo, Middle Miocene
2. Polish Lowland, Oczkowice, Middle Miocene
3. Polish Lowland, Konin, Middle Miocene

Theligonumpollenites baculatus(Stachurska, Sadowska & Dyjor) Thiele-Pfeiffer

4–6. Polish Lowland, Sośnica, Upper Miocene

Ulmipollenites undulosus Wolff

7. a, b – two optical sections; Polish Lowland, Karolewo-Dąbki, Middle Miocene

Zelkovaepollenites potoniei Nagy

8. Polish Lowland, Oczkowice, Middle Miocene
9. Polish Lowland, Liszkowo, Middle Miocene
10. Polish Lowland, Chłapowo, Lower Miocene

Arecipites papillosus (Müriger & Pflug) Krutzsch

11. a–c – three optical sections; Polish Lowland, Tarnówka, Lower Oligocene

Arecipites pseudoconvexus Krutzsch

12. a–c – three optical sections; Polish Lowland, Gołębin Stary, Middle Miocene

Monocolpopollenites tranquillus (Potonié) Thomson & Pflug

13. Polish Lowland, Szczecin Upper Eocene

Butomuspollenites butomoides (Krutzsch) Ziembińska-Tworzydło p. 19

14. a – distal face, b – proximal face; Polish Lowland, Bartąg, Upper Miocene

Butomuspollenites monocolpatus Doktorowicz-Hrebnicka emend. Ziembińska-Tworzydło p. 19

15. a – distal face, b – proximal face; Polish Lowland, Bartąg, Upper Miocene

Butomuspollenites longicolpatus (Krutzsch) Ziembińska-Tworzydło p. 19

16. a – distal face, b – proximal face; Polish Lowland, Nowa Wieś, Middle Miocene

Dicolpopollis kockeli Pflanzl

17. Polar view; Polish Lowland, Nowa Kuźnia, Middle Miocene

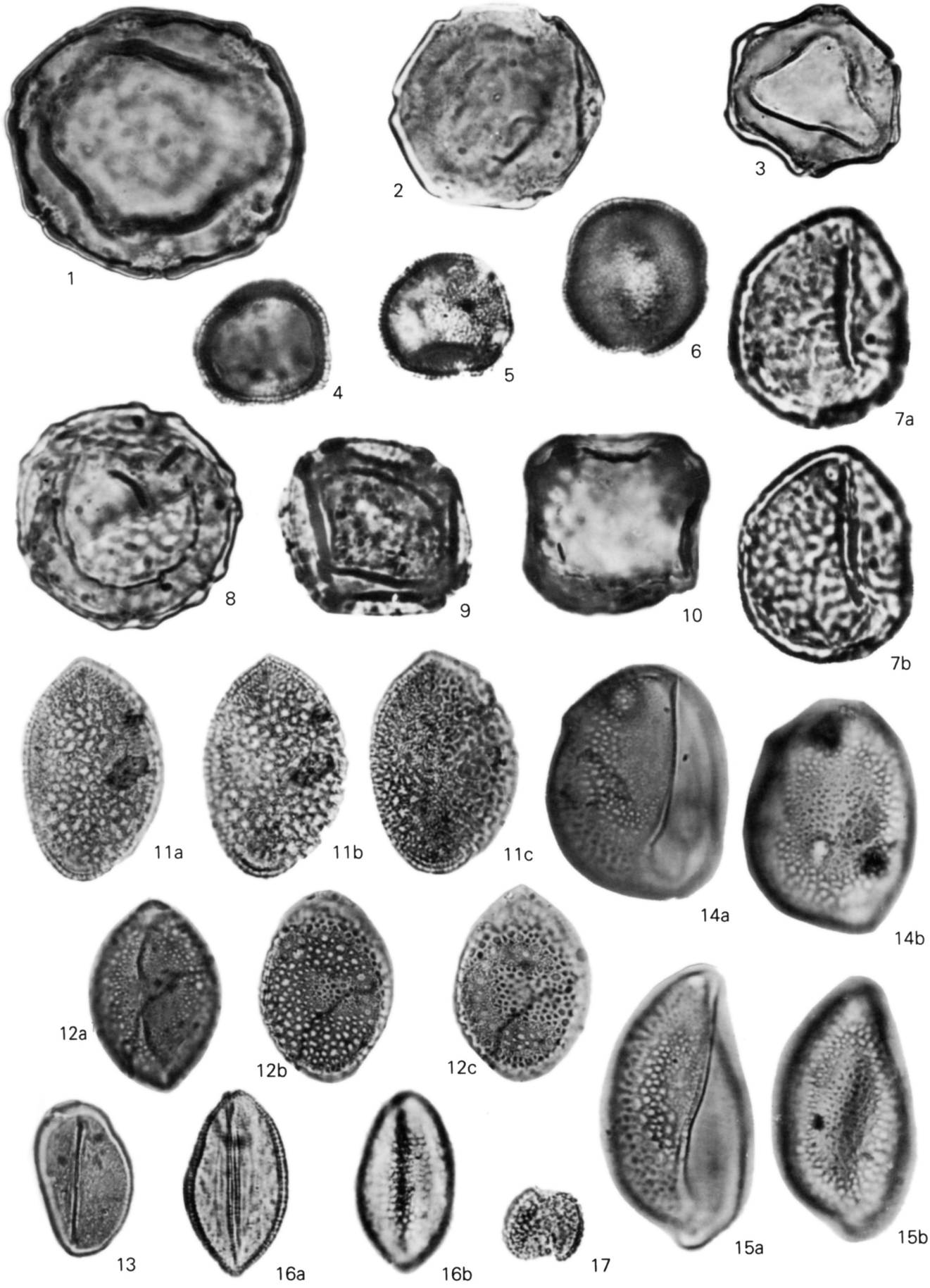

1
2
3
4
5
6
7a
7b
8
9
10
11a
11b
11c
12a
12b
12c
13
14a
14b
15a
15b
16a
16b
17

Plate 11

× 1000

Liriodendroipollis semiverrucatus Krutzsch

1. Polish Lowland, Karolewo-Dąbki, Middle Miocene

Liriodendroipollis verrucatus Krutzsch

2. Polish Lowland, Kosztowo, Middle Miocene
3. Polish Lowland, Wirczyn, Lower Miocene

Magnolipollis neogenicus neogenicus Krutzsch

4. Polish Lowland, Oczkowice, Middle Miocene

Magnolipollis neogenicus minor Krutzsch

5. Polish Lowland, Nowa Wieś, Middle Miocene

Aesculidites hippocastaneoides Sadowska p. 20

6, 7. Sudetes, Kłodzko, Pliocene

Aceripollenites palmatoides Skawińska p. 19

8. a – c – holotype, three optical sections; Polish Lowland, Ostrzeszów, Middle Miocene

Aceripollenites striatus (Pflug) Thiele-Pfeiffer

9. a, b – two optical sections; Polish Lowland, Karolewo-Dąbki, Middle Miocene

Artemisiaepollenites sellularis Nagy

10. Polish Lowland, Liszkowo, Lower Miocene
11. Polish Lowland, Oczkowice, Middle Miocene

Alangiopollis barghoornianum (Traverse) Krutzsch

12, 13. Sudetic Foredeep, Niedaszów, Lower Miocene


1
2
3
4
5
6
7
8a
8b
8c
9a
9b
10
11
12
13

Plate 12

× 1000

Araliaceoipollenites edmundi (Potonié) Potonié

1. a, b – two optical sections; Polish Lowland, Ustronie, Middle Miocene
2. a, b – two optical sections; Polish Lowland, Konin, Middle Miocene
3. a–c – three optical sections; Polish Lowland, Ręszów, Middle Miocene

Araliaceoipollenites euphorii (Potonié) Potonié

4. a–c – three optical sections; Polish Lowland, Tymowa, Lower Miocene
5. Sudetes, Turów Basin, Lower Miocene

Araliaceoipollenites reticuloides Thiele-Pfeiffer

6. a, b – two optical sections; Polish Lowland, Ręszów, Middle Miocene
7. a, b – two optical sections; Polish Lowland, Ostrzeszów, Middle Miocene

Castaneoideaepollis pusillus (Potonié) Grabowska p. 21

8. Polish Lowland, Oczkowice, Middle Miocene
9. Polish Lowland, Tymowa, Lower Miocene.

Castaneoideaepollis oviformis (Potonié) Grabowska p. 21

10. Polish Lowland, Oczkowice, Middle Miocene

Caprifoliipites sambucoides Nagy

11. a, b – two optical sections; Polish Lowland, Gierlachowo, Middle Miocene

Caprifoliipites viburnoides (Gruas-Cavagnetto) Kohlman-Adamska p. 20

12. a, b – two optical sections;, Polish Lowland, Liszkowo, Middle Miocene
13. Polish Lowland, Konin, Middle Miocene
14. a, b – two optical sections; Polish Lowland, Liszkowo, Lower Miocene

Clerodendrumpollenites microechinatus Skawińska p. 21

15. a–c – holotype, three optical sections; Polish Lowland, Ostrzeszów, Middle Miocene

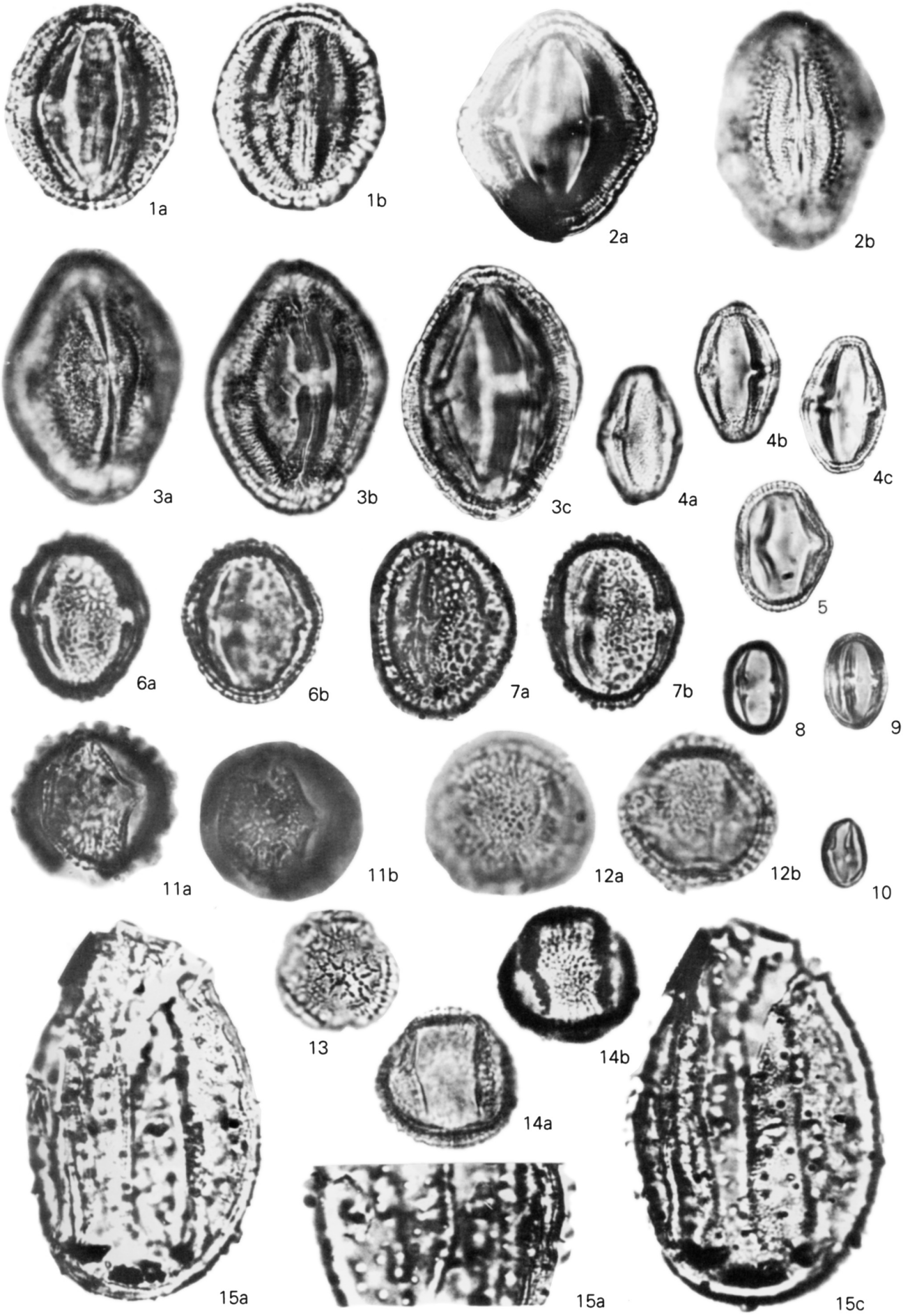

1a
1b
2a
2b
3a
3b
3c
4a
4b
4c
5
6a
6b
7a
7b
8
9
10
11a
11b
12a
12b
13
14a
14b
15a
15a
15c

Plate 13

× 1000

Cercidiphyllites minimireticulatus (Trevisan) Ziembińska-Tworzydło p. 21

1. a, b – two optical sections, equatorial view; Polish Lowland, Ostrzeszów, Middle Miocene
2. Polar view; Polish Lowland Ostrzeszów, Middle Miocene

Diospyrospollenites ovalis Skawińska p. 23

3. a, b – two optical sections; Polish Lowland, Ostrzeszów, Middle Miocene
4. Polish Lowland, Ostrzeszów, Middle Miocene

Eucommioipollis eucommius (Planderová) Ziembińska-Tworzydło p. 23

5. Polish Lowland, Karolewo-Dąbki, Middle Miocene
6. Paratethys, Slovakia, Lower Sarmatian

Eucommioipollis parmularius (Potonié) Ziembińska-Tworzydło p. 24

7. a, b – two optical sections; Polish Lowland, Bełchatów, Middle Miocene

Cornaceaepollis satzveyensis (Pflug) Ziembińska-Tworzydło p. 22

8. Polish Lowland, Ustronie, Lower Miocene
9. Polish Lowland, Krosinko, Middle Miocene
10. a, b – two optical sections; Polish Lowland, Kaławsk, Lower Miocene

Cornaceaepollis major (Stuchlik) Stuchlik p. 22

11. a–c – three optical sections; Polish Lowland, Rypin, Lower Oligocene

Cornaceaepollis minor (Stuchlik) Stuchlik p. 22

12. a, b – two optical sections; Polish Lowland, Rypin, Lower Oligocene
13. Polish Lowland, Rypin, Lower Oligocene

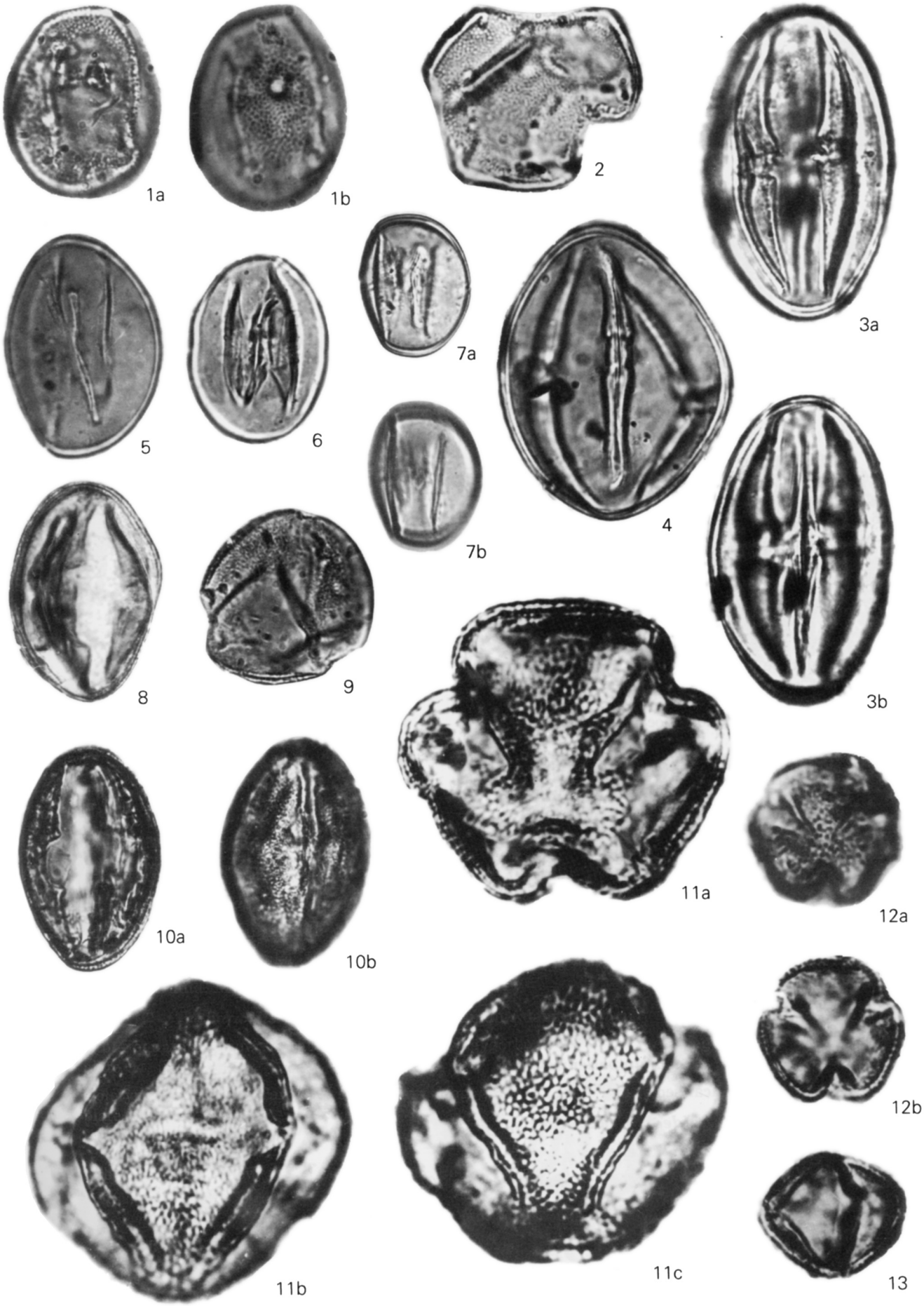

1a
1b
2
3a
5
6
7a
4
7b
3b
8
9
11a
12a
10a
10b
11b
11c
12b
13

Plate 14

× 1000

Faguspollenites verus Raatz

1, 2. Polish Lowland, Karolewo-Dąbki, Middle Miocene

Fususpollenites fusus (Potonié) Kedves

3. Polish Lowland, Tymowa, Upper Oligocene

4. Polish Lowland, Mosina, Lower Oligocene

Ilexpollenites margaritatus (Potonié) Raatz

5. a – d – four optical sections; Polish Lowland, Oczkowice, Middle Miocene

Ilexpollenites iliacus (Potonié) Thiergart

6. Polish Lowland, Oczkowice, Middle Miocene

7. a, b – two optical sections; Polish Lowland, Chłapowo, Lower Miocene

Ilexpollenites propinquus (Potonié) Potonié

8. a, b – two optical sections; Polish Lowland, Konin, Middle Miocene

Lythraceaepollenites decodonensis Stuchlik p. 24

9. Holotype, Polish Lowland, Rypin, Middle Miocene

10. Polish Lowland, Rypin, Middle Miocene

11. Sudetes, Kłodzko, Pliocene

Nelumbopollenites europaeus (Tarasevich) Skawińska p. 25

12. a, b – holotype, two optical sections, c, d – part of surface; Polish Lowland, Ostrzeszów, Middle Miocene

Nyssapollenites kruschi (Potonié) Nagy ***rodderensis*** (Thiergart) Thomson & Pflug

13. Polish Lowland, Karolewo-Dąbki, Middle Miocene

Nyssapollenites pseudocruciatus (Potonié) Thiergart

14. Polish Lowland, Oczkowice, Middle Miocene

Nyssapollenites kruschi (Potonié) Nagy

15. Polish Lowland, Karolewo-Dąbki, Middle Miocene

16. Polish Lowland, Oczkowice, Middle Miocene

17. Polish Lowland, Krosinko, Middle Miocene

Oleoidearumpollenites microreticulatus (Pflug & Thomson) Ziembińska-Tworzydło p. 25

18. a–c – three optical sections; Polish Lowland, Konin, Middle Miocene

Oleoidearumpollenites sp.

19, 20. Sudetes, Kłodzko, Pliocene

Platanipollis ipelensis (Pacltová) Grabowska p. 26

21. a–c – three optical sections; Polish Lowland, Bulin, Upper Oligocene

Rhuspollenites sp.

22. a, b – two optical sections Polish Lowland, Rypin, Middle Miocene

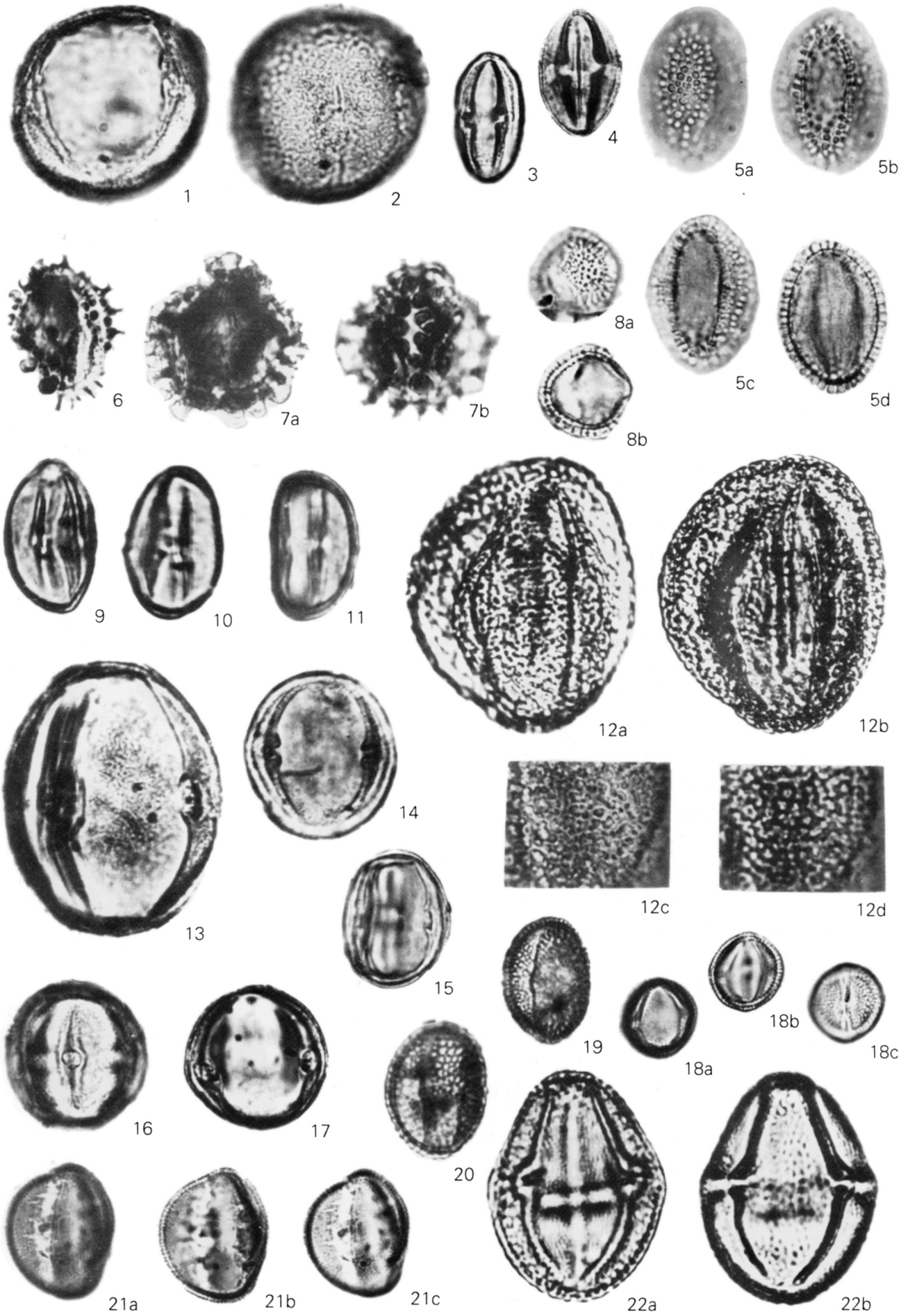

1
2
3
4
5a
5b
6
7a
7b
8a
8b
5c
5d
9
10
11
12a
12b
13
14
12c
12d
15
19
18b
18c
18a
16
17
20
21a
21b
21c
22a
22b

Plate 15

× 1000

Quercoidites asper (Pflug & Thomson) Słodkowska p. 26

1. Polish Lowland, Rypin, Middle Miocene
2. Polish Lowland, Karolewo-Dąbki, Middle Miocene

Quercoidites pudicus (Potonié) Słodkowska p. 26

3. Polish Lowland, Karolewo-Dąbki, Middle Miocene
4. Polish Lowland, Chłapowo, Lower Miocene

Quercoidites microhenrici (Potonié) Potonié, Thomson & Thiergart

5, 6. Polish Lowland, Ręszów, Middle Miocene

Quercoidites henrici (Potonié) Potonié, Thomson & Thiergart

7. Polish Lowland, Konin, Middle Miocene
8, 9. Polish Lowland, Ręszów, Middle Miocene

Quercoidites granulatus (Nagy) Słodkowska p. 26

10. Polish Lowland, Karolewo-Dąbki, Middle Miocene
11. Polish Lowland, Ręszów, Middle Miocene

Quercoidites sp.

12. Polish Lowland, Karolewo-Dąbki, Middle Miocene
13. Polish Lowland, Bełchatów, Middle Miocene
14. Polar view; Sudetes, Kłodzko, Pliocene

Salixipollenites sp.

15–17. Sudetes, Kłodzko, Pliocene
18. a–c – three optical sections; Polish Lowland, Ustronie, Middle Miocene

Spinulaepollis arceuthobioides Krutzsch

19, 20. Polish Lowland, Rypin, Middle Miocene
21. Polish Lowland, Tarnówka, Lower Oligocene
22. Polish Lowland, Miechów, Middle Miocene

Trapapollis erdtmani (Nagy) Kohlman-Adamska p. 27

23. a, b – equatorial view; Paratethys, Hungary, Nagygörbo 1, Karpatian (ex Nagy 1985, plate 94, figs 3, 4)
24. Holotype, polar view; Paratethys, Hungary, Nagygörbo 1, Karpatian (ex Nagy 1985, plate 93, fig. 18)

Trapapollis illingensis (Klaus) Kohlman-Adamska p. 27

25. a, b – equatorial view, two optical sections; Polish Lowland, Gierlachowo, Middle Miocene

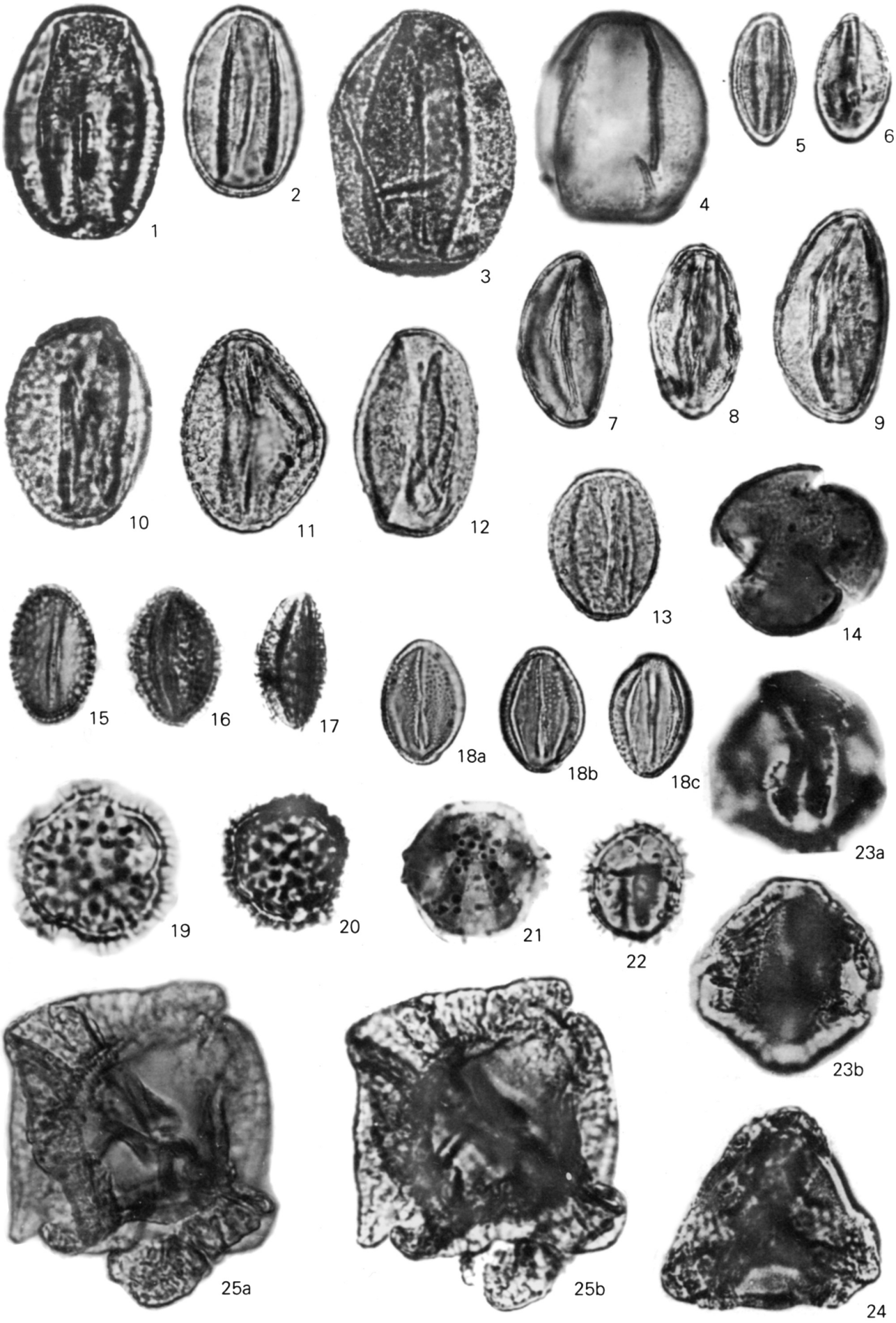

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18a
18b
18c
19
20
21
22
23a
23b
24
25a
25b

Plate 16

× 1000

Tricolporopollenites brühlensis (Thomson) Grabowska p. 27

1. a, b – two optical sections; Polish Lowland, Konin, Middle Miocene
2. Polish Lowland, Liszkowo, Lower Miocene
3. Polar view; Polish Lowland, Rogóźno, Middle Miocene
4. Polish Lowland, Chłapowo, Lower Miocene
5. Polish Lowland, Kosztowo, Lower Miocene

Tricolporopollenites megaexactus (Potonié) Thomson & Pflug

6. Polish Lowland, Chłapowo, Lower Miocene
7. Sudetes, Cieplice, Upper Miocene

Tricolporopollenites exactus (Potonié) Grabowska p. 28

8. Polish Lowland, Oczkowice, Middle Miocene
9. Polish Lowland, Ustronie, Middle Miocene
10. Polar view; Polish Lowland, Karolewo-Dąbki, Middle Miocene

Tricolporopollenites fallax (Potonié) Krutzsch

11, 12. Polish Lowland, Tymowa, Lower Miocene

Tricolporopollenites liblarensis (Thomson) Grabowska p. 28

13. Polish Lowland, Tymowa, Lower Miocene
14. Polish Lowland, Ręszów, Middle Miocene

Tricolporopollenites quisqualis (Potonié) Krutzsch

15. Polish Lowland, Oczkowice, Middle Miocene
16. Polish Lowland, Chłapowo, Lower Miocene
17. Polish Lowland, Ręszów, Middle Miocene

Tricolporopollenites indeterminatus (Romanowicz) Ziembińska-Tworzydło

18. Polar view; Sudetes, Kłodzko, Pliocene
19. Equatorial view; Sudetes, Kłodzko, Pliocene
20. Holotype; Polish Lowland, Kruszyn (ex Romanowicz 1961, pl. 21, fig. 275), Lower Miocene

Tricolporopollenites staresedloensis Krutzsch & Pacltová

21. Polish Lowland, Bulin, Lower Miocene
22. Polish Lowland, Oczkowice, Middle Miocene
23. a, b – two optical sections; Polish Lowland, Mosina, Lower Oligocene

Tricolporopollenites marcodurensis Pflug & Thomson

24. a, b – two optical sections; Polish Lowland, Tuplice, Middle Miocene
25. a–c – three optical sections; Polish Lowland, Nowa Wieś, Lower Miocene
26. Polish Lowland, Oczkowice, Middle Miocene

Tricolporopollenites photinioides Skawińska p. 28

27. a, b – holotype, two optical sections; Polish Lowland, Ostrzeszów, Middle Miocene
28. Polish Lowland, Ostrzeszów, Middle Miocene

Tricolporopollenites retiformis (Pflug & Thomson) Krutzsch

29. a, b – two optical sections; Sudetic Foredeep, Czerna, Middle Miocene
30. a–c – three optical sections; Polish Lowland, Ręszów, Middle Miocene

Tricolporopollenites pseudocingulum (Potonié) Thomson & Plug

31. Polish Lowland, Konin, Middle Miocene; × 750
32. a, b – two optical sections; Polish Lowland, Ręszów, Middle Miocene
33. Polish Lowland, Oczkowice, Middle Miocene
34. Polish Lowland, Chłapowo, Lower Miocene

Tricolporopollenites wackesrdorfensis Thiele-Pfeiffer

35. Paratethys, Slovakia, Lower Sarmatian (ex Planderová 1990, pl. 80, fig. 13)

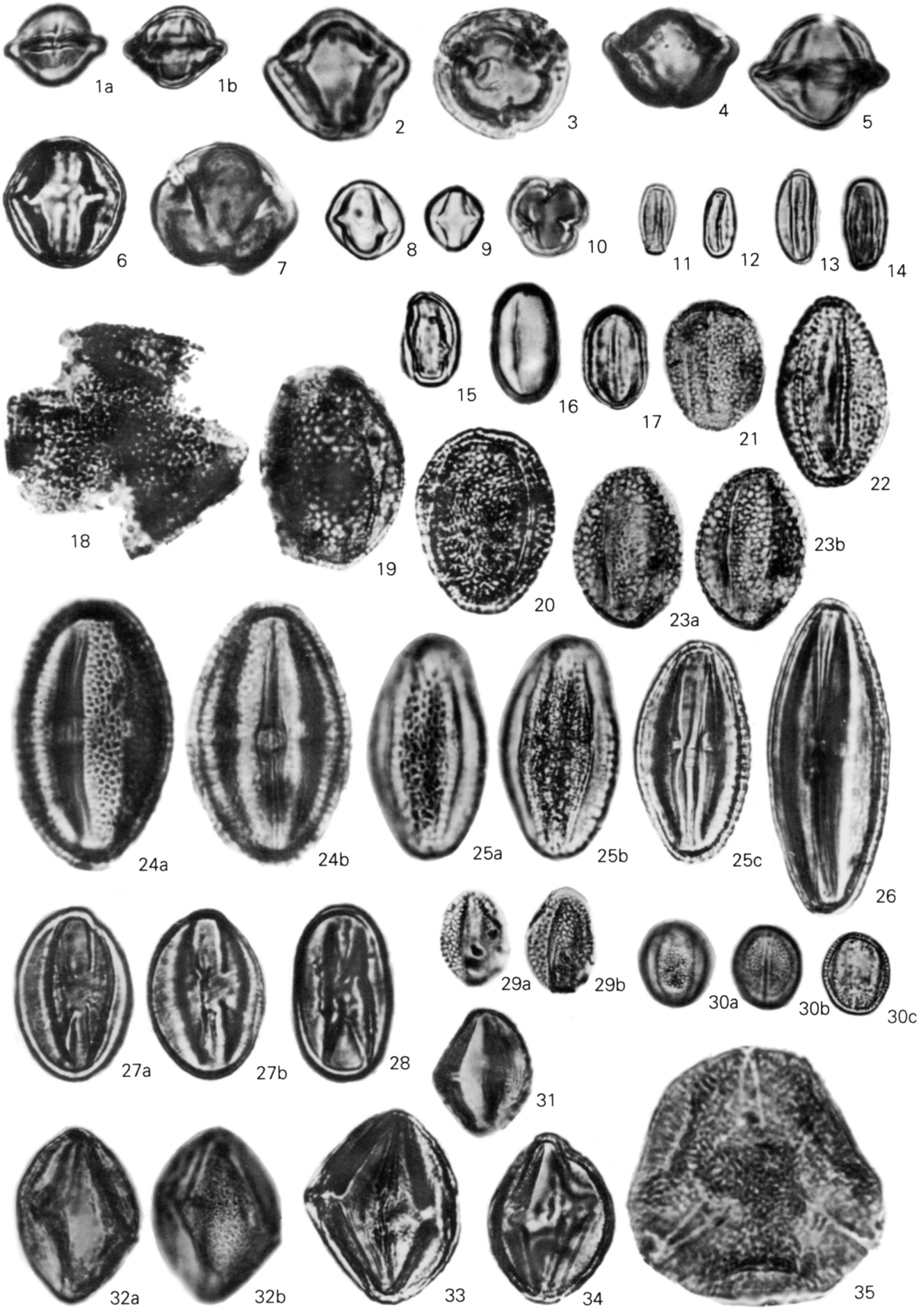

1a
1b
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
21
22
18
19
20
23b
23a
24a
24b
25a
25b
25c
26
29a
29b
30a
30b
30c
27a
27b
28
31
32a
32b
33
34
35

Plate 17

× 1000

Meliapollis sp.

1. a, b – two optical sections; Polish Lowland, Karolewo-Dąbki, Middle Miocene
2. Polish Lowland, Rypin, Middle Miocene

Sapotaceoidaepollenites sapotoides (Pflug & Thomson) Potonié

3. Polish Lowland, Gierlachowo, Lower Miocene

Sapotaceoidaepollenites sp.

4. Polish Lowland, Ręszów, Lower Miocene

Sapotaceoidaepollenites oblongus (Pflug & Thomson) Grabowska p. 29

5. Polish Lowland, Ulnowo, Lower Oligocene

Skimmiapollenites reticulatus Skawińska p. 29

6. a–c three optical sections of equatorial view, holotype; Polish Lowland, Ostrzeszów, Middle Miocene
7. a, b – two optical sections of polar view; Polish Lowland, Ostrzeszów, Middle Miocene

Gothanipollis gothani Krutzsch

8. Sudetes, Turów Basin, Lower Miocene

Myrtaceidites myrtiformis Simoncsis

9. Polish Lowland, Rypin, Lower Miocene; × 900

Reevesiapollis triangulus (Mamczar) Krutzsch

10. Holotype; Polish Lowland, Konin, (ex Mamczar 1960, pl. 14, fig. 202) Middle Miocene; × 750
11. Polish Lowland, Oczkowice, Middle Miocene
12. Polish Lowland, Bełchatów, Middle Miocene
13. Sudetic Foredeep, Kalinowice, Middle Miocene

Slovakipollis eleagnoides Krutzsch

14. Polar view; Polish Lowland, Rypin, Lower Miocene
15. Equatorial view; Polish Lowland, Rypin, Lower Miocene

Intratriporopollenites cordataeformis (Wolff) Mai

16, 17. Sudetic Foredeep, Osina Wielka, Middle Miocene

Intratriporopollenites insculptus Mai

18. a, b – two optical sections; Polish Lowland, Gierlachowo, Middle Miocene
19. Polish Lowland, Wirczyn, Lower Miocene

Intratriporopollenites instructus (Potonié) Thomson & Pflug

20. Polish Lowland, Liszkowo, Middle Miocene
21. Polish Lowland, Oczkowice, Middle Miocene

Intratriporopollenites sp.

22. a, b – two optical sections; Polish Lowland, Karolewo-Dąbki, Middle Miocene

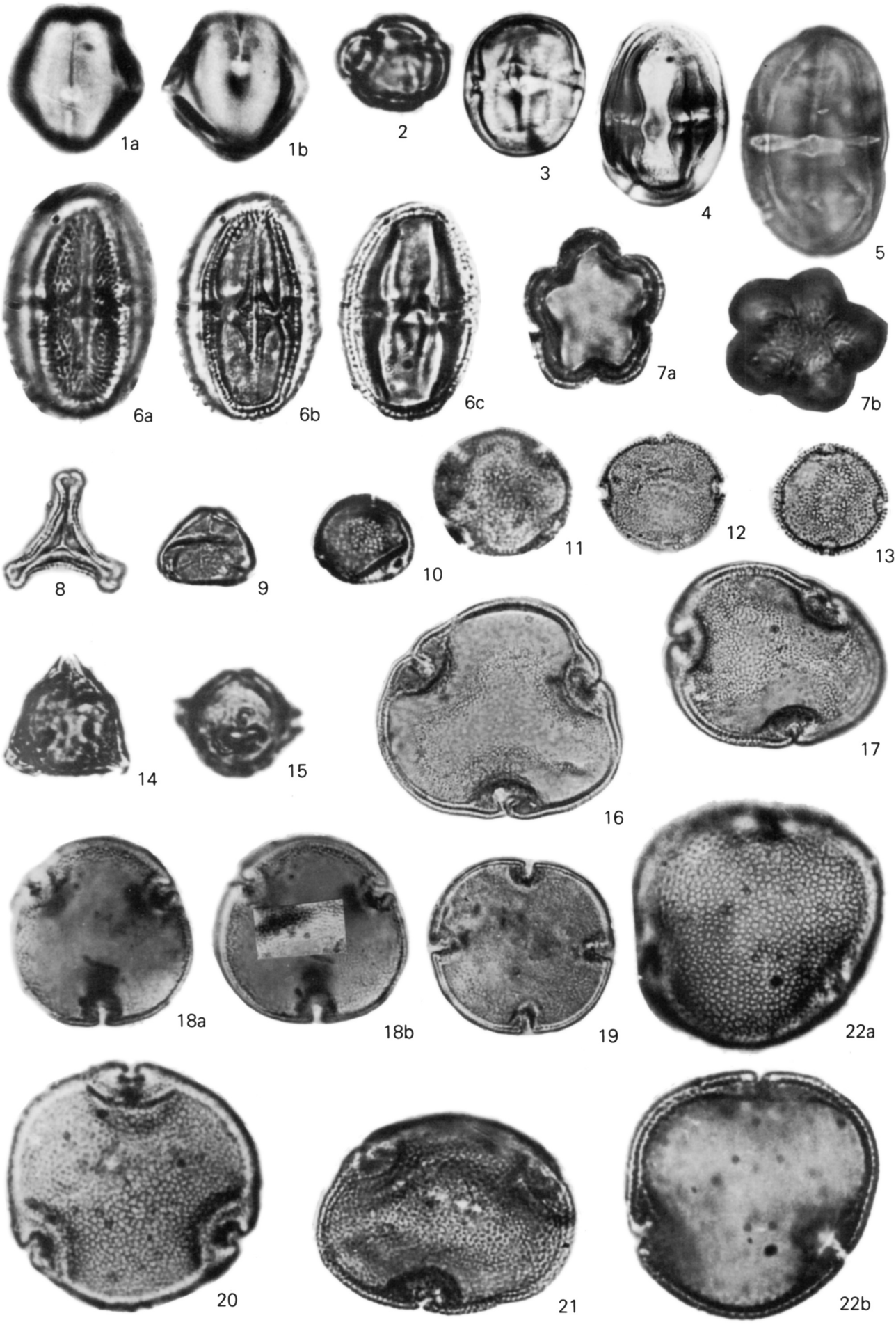

1a
1b
2
3
4
5
6a
6b
6c
7a
7b
8
9
10
11
12
13
14
15
16
17
18a
18b
19
22a
20
21
22b

Plate 18

× 1000

Symplocoipollenites latiporis (Pflug & Thomson) Słodkowska p. 30

1. a, b – two optical sections; Polish Lowland, Nowa Wieś, Middle Miocene
2. Polish Lowland, Oczkowice, Middle Miocene

Symplocoipollenites maturus (Doktorowicz-Hrebnicka) Ziembińska-Tworzydło p. 30

3. Holotype; Polish Lowland, Jeziórko, (ex Doktorowicz-Hrebnicka 1960, pl. 4, fig. 227) Middle Miocene
4. Polish Lowland, Niedźwiedzice, Middle Miocene

Symplocoipollenites orbis (Pflug & Thomson) Słodkowska p. 30

5, 6. Polish Lowland, Goleniów, Upper Paleocene

Symplocoipollenites rotundus (Potonié) Potonié

7. Polish Lowland, Mosina, Lower Oligocene
8. Sudetes, Turów Basin, Lower Miocene

Symplocoipollenites vestibulum (Potonié) Potonié

9. a, b – two optical sections; Polish Lowland, Ręszów, Lower Miocene
10. Polish Lowland, Gierlachowo, Middle Miocene
11. Polish Lowland, Ustronie, Middle Miocene
12. Carpathian Foredeep, Nowa Kuźnia, Middle Miocene

Ericipites callidus (Potonié) Krutzsch

13, 14. Polish Lowland, Ustronie, Middle Miocene

Ericipites ericius (Potonié) Potonié

15. Polish Lowland, Wirczyn, Middle Miocene
16. Polish Lowland, Karolewo-Dąbki, Middle Miocene
17. Sudetes, Kłodzko, Pliocene

Ericipites roboreus (Potonié) Krutzsch

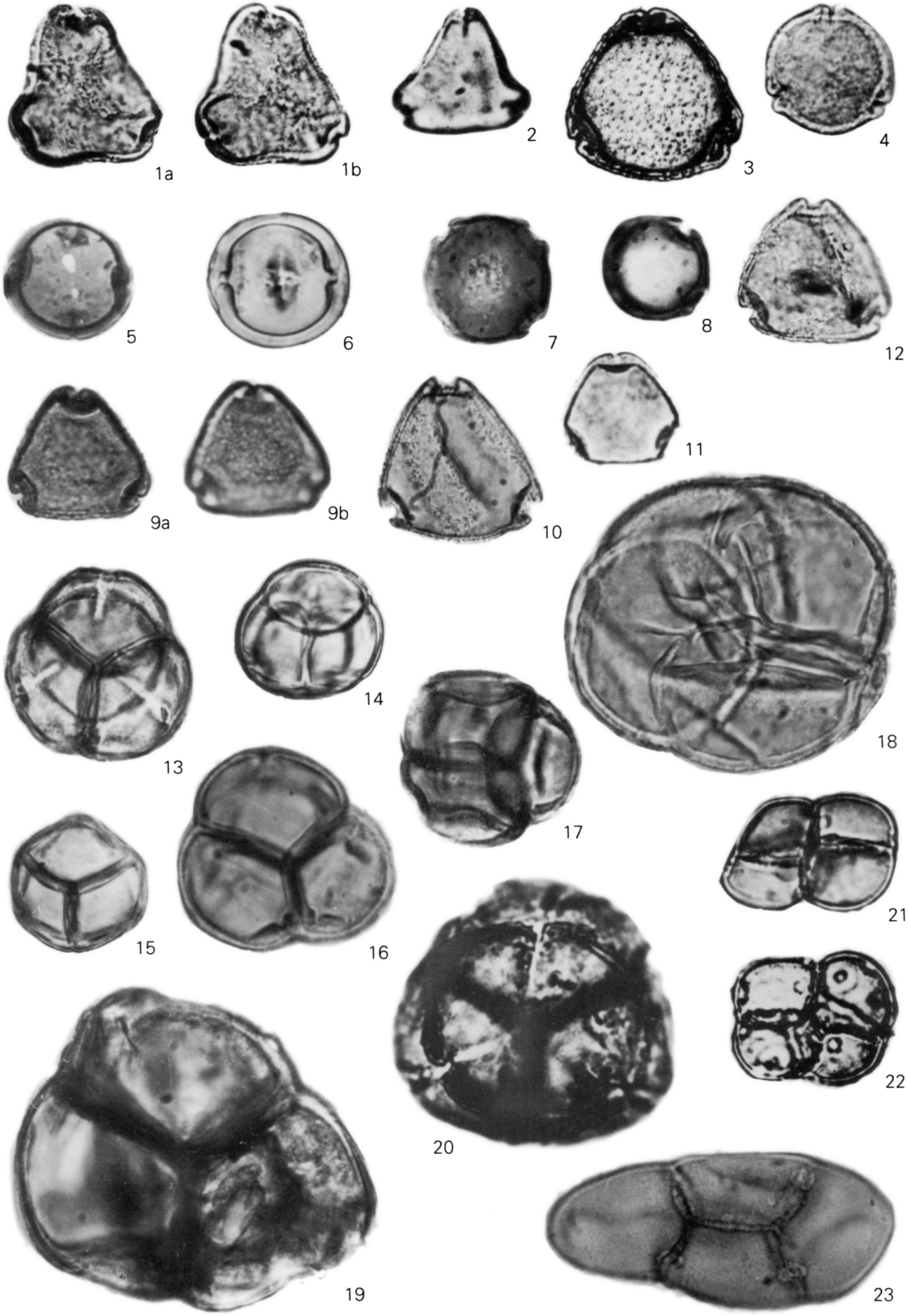
18. Polish Lowland, Karolewo-Dąbki, Middle Miocene
19. Polish Lowland, Karolewo-Dąbki, Middle Miocene
20. Polish Lowland, Rypin, Middle Miocene

Pseudotyphoipollis punctiporatus Krutzsch

21. Polish Lowland, Ostrzeszów, Middle Miocene
22. Polish Lowland, Rypin, Middle Miocene

Manikinipollis tetradoides Krutzsch

23. Polish Lowland, Karolewo-Dąbki, Middle Miocene


1a
1b
2
3
4
5
6
7
8
12
9a
9b
10
11
13
14
18
17
15
16
21
22
20
19
23