

PLATES

Plate I

Phytoplankton assemblage — Middle Paleocene (Selandian)

- Phot. 1. *Isabalidinium ? viborgense* Heilman-Clausen, 1985; Komorza 1/KB borehole, depth 213.17 m
- Phots. 2–4. *Isabalidinium ? viborgense* Heilman-Clausen, 1985; Łosiny 2/KB borehole, depth 192.62 m
- Phots. 5, 6. *Spinidinium clavum* Harland, 1973; Komorza 1/KB borehole, 5 — depth 212.77 m, 6 — depth 208.77 m
- Phots. 7, 10. *Spinidinium densispinatum* Stanley, 1965; Komorza 1/KB borehole, depth 213.17 m
- Phots. 8, 9, 11. *Phthanoperidinium cernulatum* (De Coninck, 1975) Lentin & Williams, 1976; Komorza 1/KB borehole, 8, 9 — depth 208.77 m, 11 — depth 212.77 m
- Phots. 12, 13. *Alterbidinium circulum* (Heilman-Clausen, 1985) Lentin & Williams, 1989; Komorza 1/KB borehole, 12 — depth 212.77 m, 13 — depth 203.21 m
- Phot. 14. *Spinidinium echinoideum* (Cookson & Eisenach, 1960) Lentin & Williams, 1976; Komorza 1/KB borehole, depth 212.77 m
- Phot. 15. *Cerodinium speciosum* (Alberti, 1959) Lentin & Williams, 1987; Komorza 1/KB borehole, depth 214.67 m
- Phot. 16. *Cerodinium medcalfii* (Stover, 1974) Lentin & Williams, 1987; Łosiny 2/KB borehole, depth 192.62 m
- Phot. 17. *Cerodinium diebelii* (Alberti, 1959) Lentin & Williams, 1987; Komorza 1/KB borehole, depth 212.77 m
- Plates I–XX a, b, c — this same specimen, low or high focus

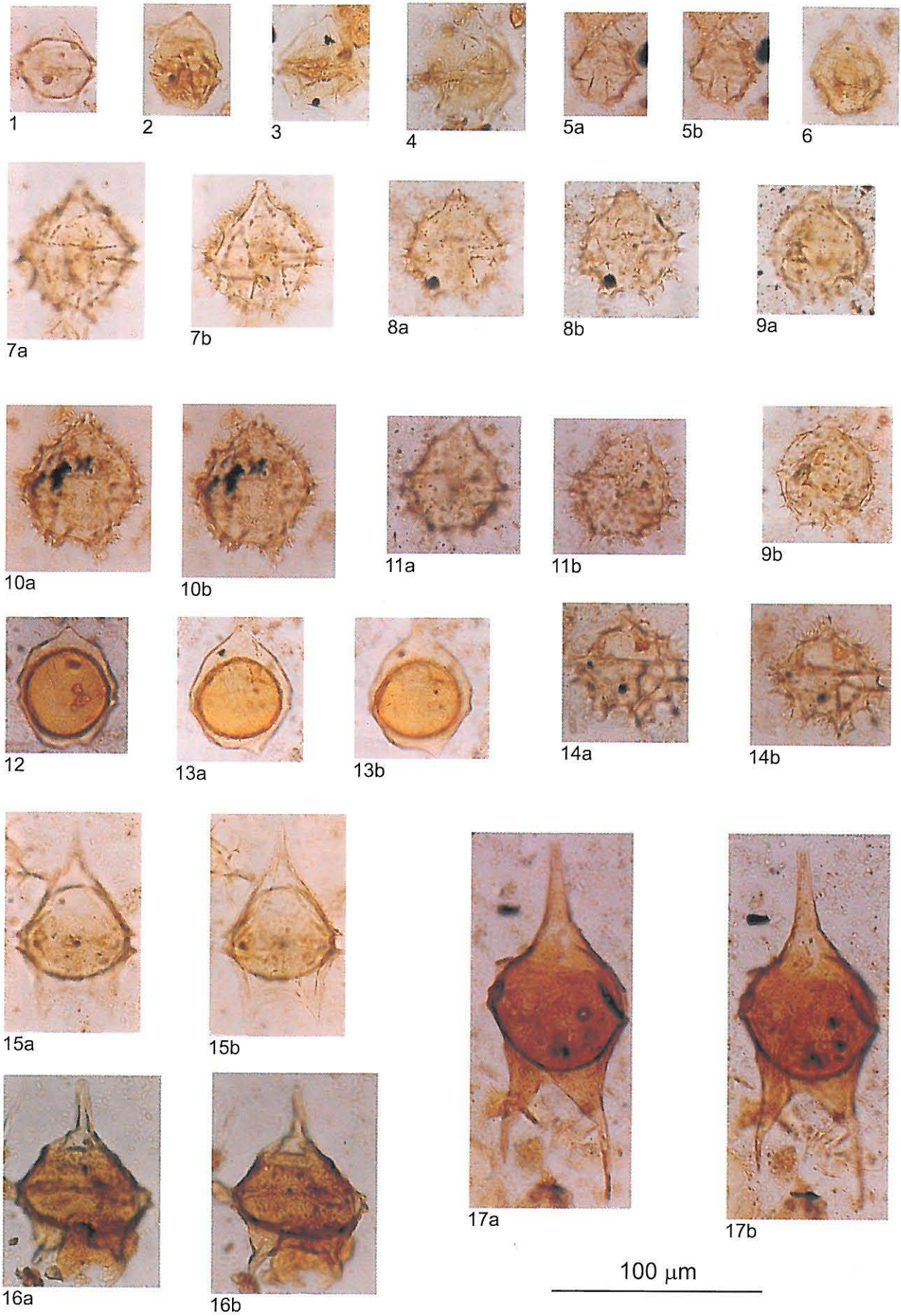


Plate II

Phytoplankton assemblage — Middle Paleocene (Selandian)

- Phot. 1. *Cerodinium speciosum* (Alberti, 1959) Lentin & Williams, 1987; Komorza 1/KB borehole, depth 212.77 m
- Phot. 2. *Cerodinium striatum* (Drugg, 1967) Lentin & Williams, 1987; Komorza 1/KB borehole, depth 203.21 m
- Phot. 3–6, 7. *Palaeoperidinium pyrophorum* (Ehrenberg, 1838) Sarjeant, 1967; Komorza 1/KB borehole, 3–6 — depth 212.77 m, 7 — depth 213.77 m
- Phot. 8, 9. *Palaeocystodinium golzowense* Alberti, 1961; Komorza 1/KB, 8 — depth 212.77 m, 9 — depth 203.21 m
- Phot. 10. *Palaeocystodinium lidiae* (Górka, 1963) Davey, 1969; Łosiny 2/KB borehole, depth 192.62 m
- Phot. 11, 12. *Apteodinium* sp., Komorza 1/KB borehole, depth 213.17 m
- Phot. 13. *Thalassiphora pelagica* (Eisenack, 1954) Eisenack & Gocht, 1960; Komorza 1/KB borehole, depth 213.17 m

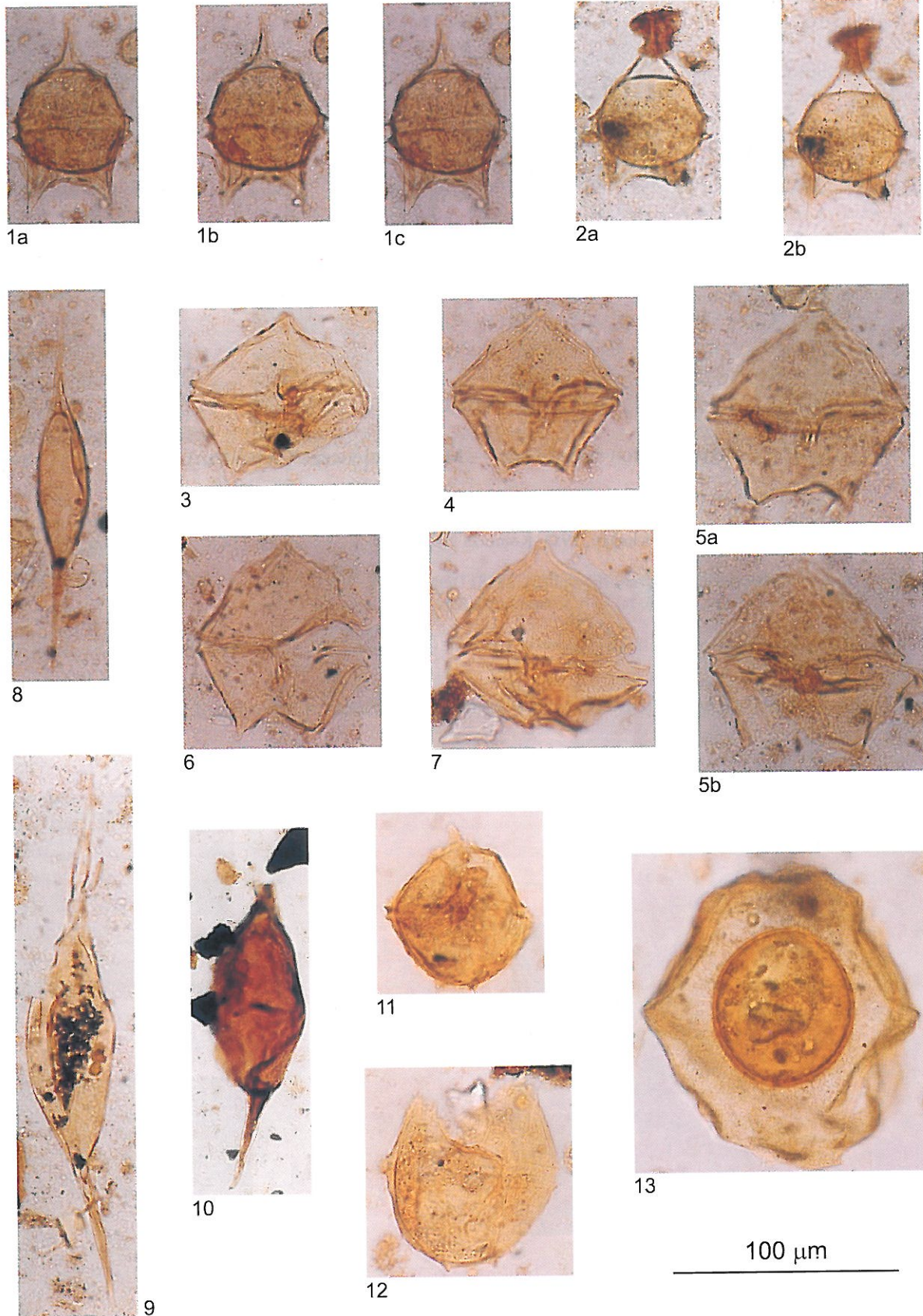


Plate III

Phytoplankton assemblage — Middle Paleocene (Selandian)

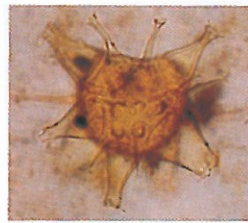
- Phot. 1. *Diphyes colligerum* (Deflandre & Cookson, 1955) Cookson, 1965; Komorza 1/KB borehole, depth 213.17 m
- Photos. 2, 3. *Hystrichokolpoma cinctum* Klumpp, 1953; Komorza 1/KB borehole, 2 — depth 214.67 m, 3 — depth 212.77 m
- Photos. 4–6. *Hystrichosphaeridium tubiferum* (Ehrenberg, 1838) Defandré, 1937; 4 — Komorza 1/KB, depth 212.77 m, 5 — Łosiny 2/KB borehole, depth 192.62 m, 6 — Komorza 1/KB borehole, depth 213.77 m
- Photos. 7, 8. *Glaphyrocysta ordinata* (Williams & Downie, 1966) Stover & Evitt, 1978; Komorza 1/KB borehole, 7 — depth 203.21 m, 8 — depth 208.77 m
- Phot. 9. *Cordosphaeridium fibrospinosum* Davey & Williams, 1966; Komorza 1/KB borehole, depth 212.77 m



1



2



3a



3b



4a



4b



5a



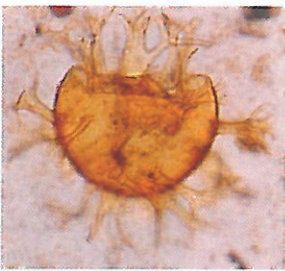
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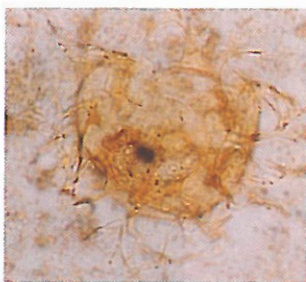
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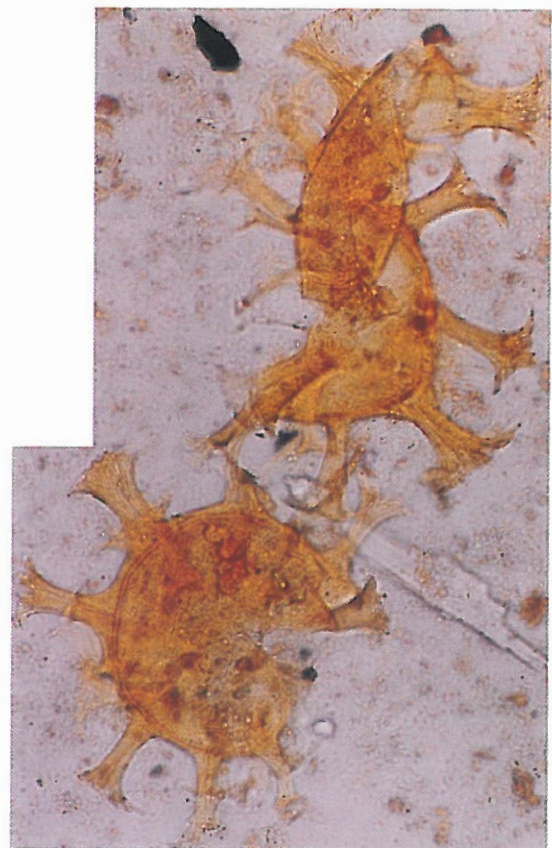
6b



7



8



9

100 μ m

Plate IV

Phytoplankton assemblage — Middle Paleocene (Selandian)

- Phots. 1, 2. *Impagidinium* sp., Komorza 1/KB borehole, 1 — depth 208.77 m, 2 — depth 214.67 m
- Phots. 3, 4. *Membranosphaera* sp., 3 — Łosiny 2/KB borehole, depth 192.62 m; 4 — Komorza 1/KB borehole, depth 213.17 m
- Phots. 5, 6. *Microdinium* cf. *ornatum* Cookson & Eisenack, 1960; 5 — Komorza 1/KB borehole, depth 213.17 m; 6 — Łosiny 2/KB borehole, depth 192.62 m
- Phots. 7, 8. *Fibradinium annetorpense* Morgenroth, 1968; 7 — Łosiny 2/KB borehole, depth 192.62 m; 8 — Komorza 1/KB borehole, depth 203.21 m
- Phots. 9, 10. *Spiniferites ramosus* (Ehrenberg, 1838) Mantell, 1854; Komorza 1/KB borehole, 9 — depth 202.21 m, 10 — depth 214.67 m
- Phots. 11–13. *Glaphyrocysta semitecta* (Bujak, 1980) Lentin & Williams, 1987; Łosiny 2/KB borehole, depth 192.62 m
- Phot. 14. *Spiniferites cornutus* (Gerlach, 1961) Sarjeant, 1970; Komorza 1/KB borehole, depth 212.77 m

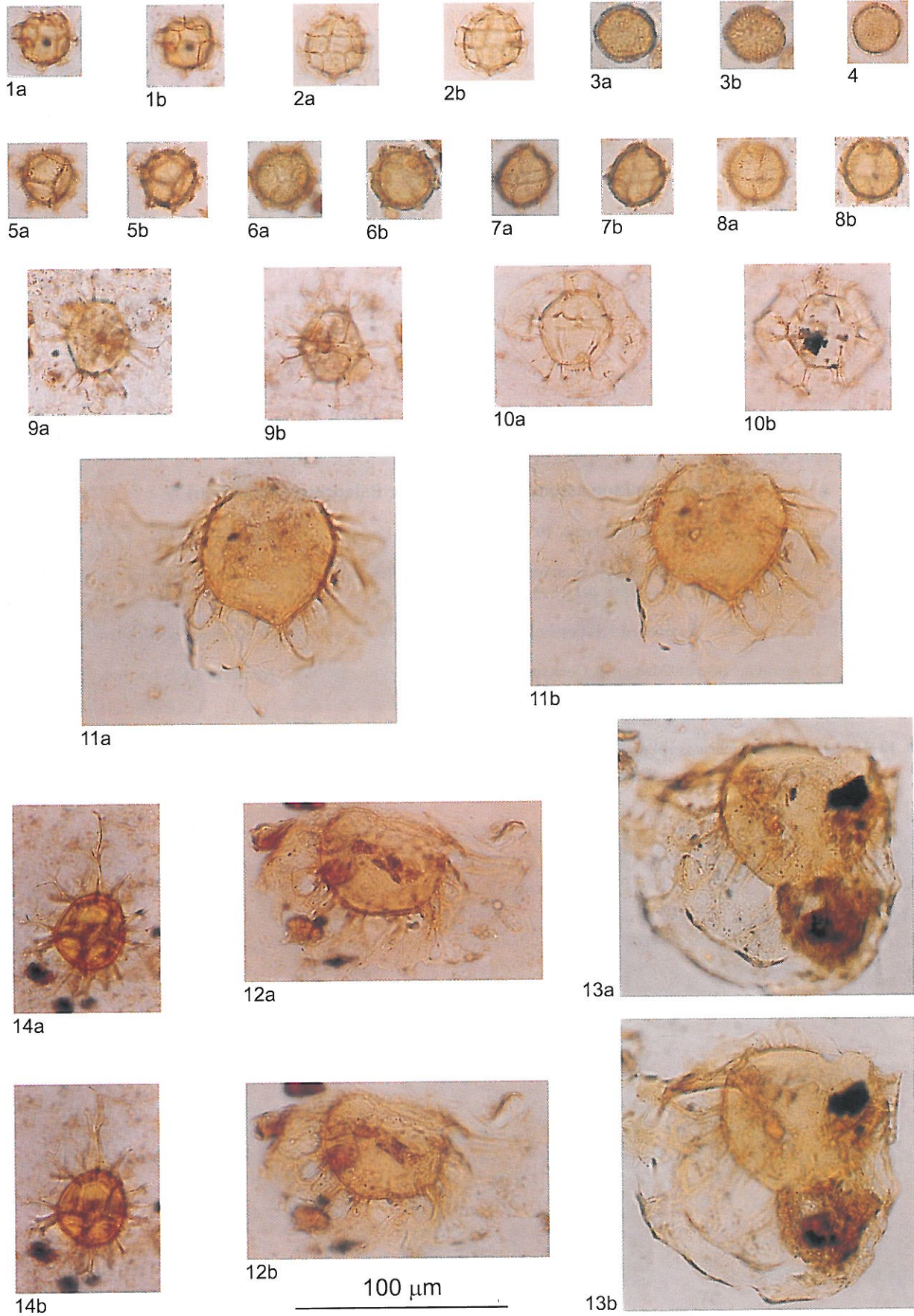


Plate V

Phytoplankton assemblage — Middle Paleocene (Selandian)

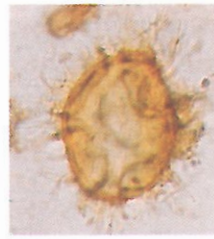
- Phot. 1. *Spiniferites pseudofurcatus* (Klumpp, 1953) Sarjeant, 1970; Łosiny 2/KB borehole, depth 192.62 m
- Phot. 2–7. *Areoligera senonensis* Lejeune-Carpentier, 1938; Komorza 1/KB borehole: 2, 3 — depth 214.67 m, 4 — depth 213.17 m, 5 — depth 212.77 m, 6 — depth 203.21 m, 7 — depth 208.77 m
- Phot. 8, 9. *Fromea* sp., 8 — Komorza 1/KB borehole, depth 203.21 m, 9 — Łosiny 2/KB borehole, depth 192.62 m
- Phot. 10. *Caligodinium aceras* (Manum & Cookson, 1964) Lentin & Williams, 1973; Komorza 1/KB borehole, depth 213.17 m
- Phot. 11. *Veryhachium* sp., Komorza 1/KB borehole, depth 208.77 m
- Phot. 12–14. *Palambages morulosa* Wetzell, 1961; 12, 14 — Łosiny 2/KB borehole, depth 192.62 m; 13 — Komorza 1/KB borehole, depth 212.77 m



1a



1b



2a



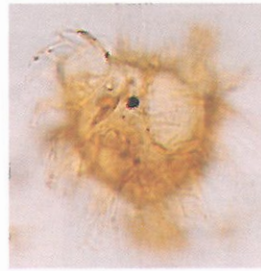
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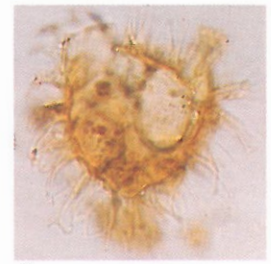
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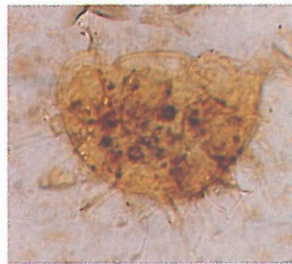
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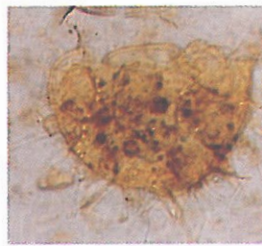
4a



4b



5a



5b



8



9



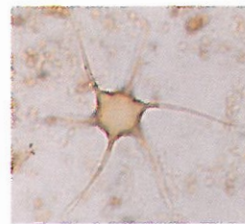
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10a



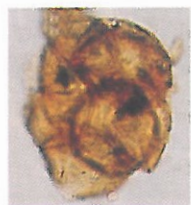
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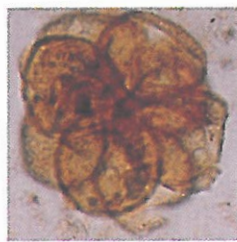
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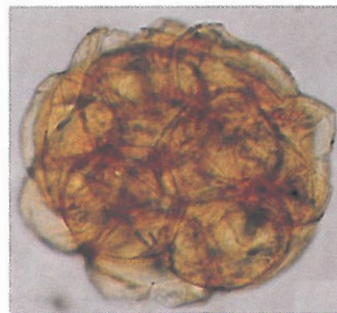
7a



12



13



14



7b

100 μ m

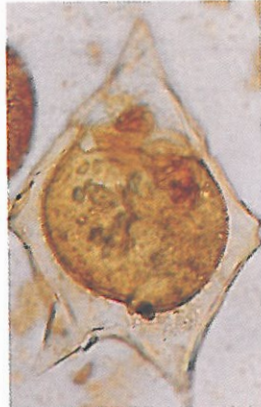
Plate VI

Phytoplankton assemblage — Lower Oligocene (Rupelian)

- Phots. 1, 2. *Deflandrea phosphoritica* Eisenack, 1938; 1 — Łosiny 2/KB borehole, depth 165.67 m, 2 — Komorza 1/KB borehole, depth 167.23 m
- Phot. 3. *Rhombodinium freienwaldense* (Gocht, 1955) Grabowska, 1996; Łosiny 2/KB borehole, depth 161.17
- Phot. 4. *Rhombodinium pustulosum* Châteauneuf, 1980; Komorza 1/KB borehole, depth 167.23 m



1a



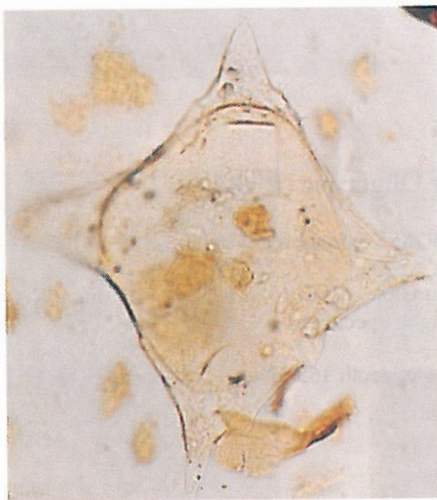
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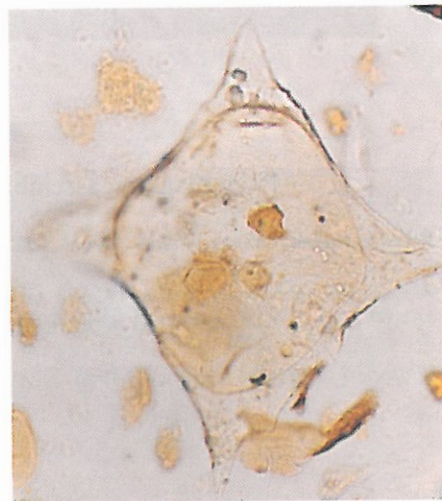
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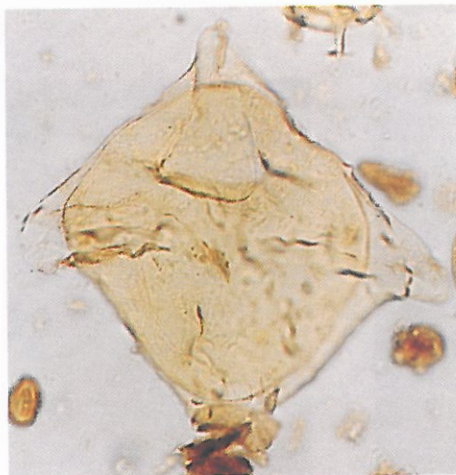
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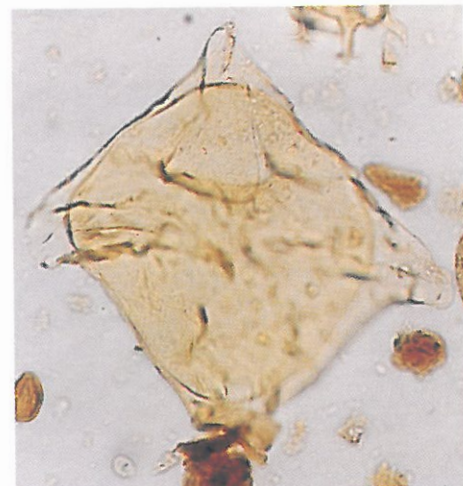
3a



3b



4a



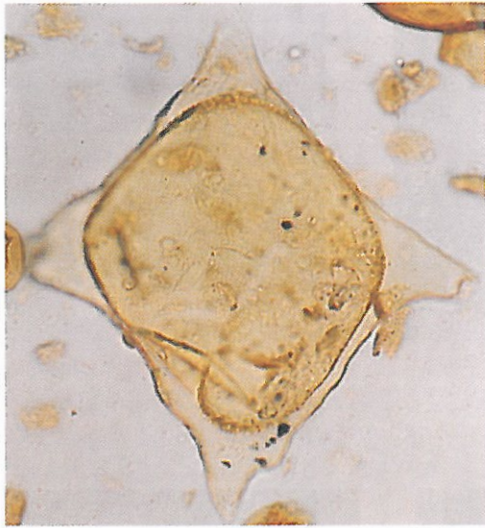
4b

100 μ m

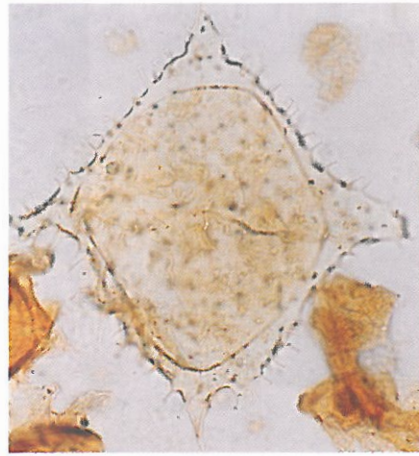
Plate VII

Phytoplankton assemblage — Lower Oligocene (Rupelian)

- Phot. 1. *Rhombodinium freienwaldense* (Gocht, 1955) Grabowska, 1996; Komorza 1/KB borehole, depth 167.23 m
- Phot. 2–4. *Wetzeliella symmetrica* Weiler, 1956; 2 — Komorza 1/KB borehole, depth 167.23 m, 3 — Łosiny 2/KB borehole, depth 161.17 m, 4 — Komorza 1/KB borehole, depth 165.57 m (right specimen)
- Phot. 4. *Wetzeliella articulata* Eisenack, 1938; Komorza 1/KB borehole, depth 165.57 m (left specimen)

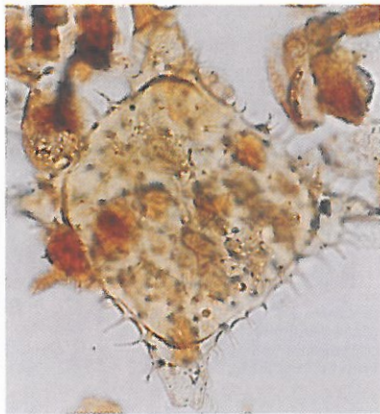


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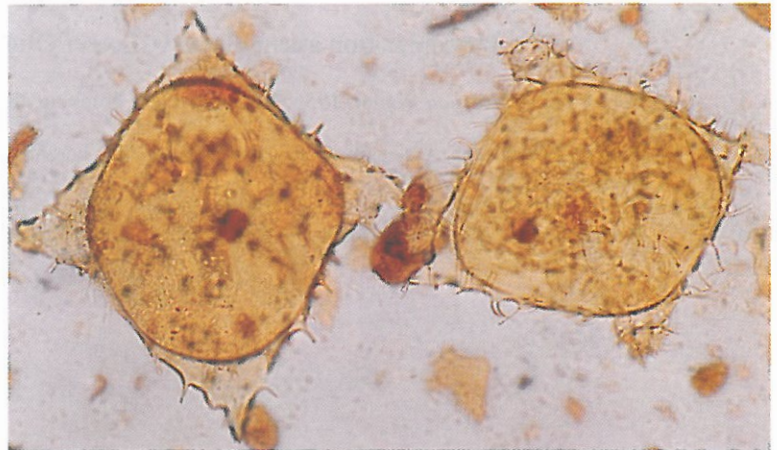


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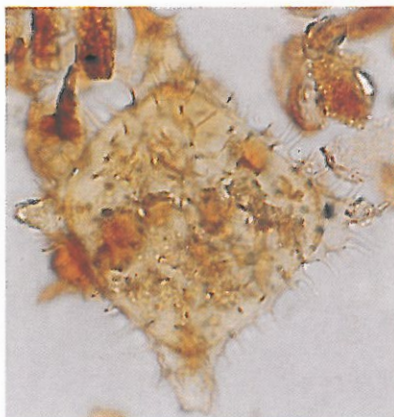
100 μm



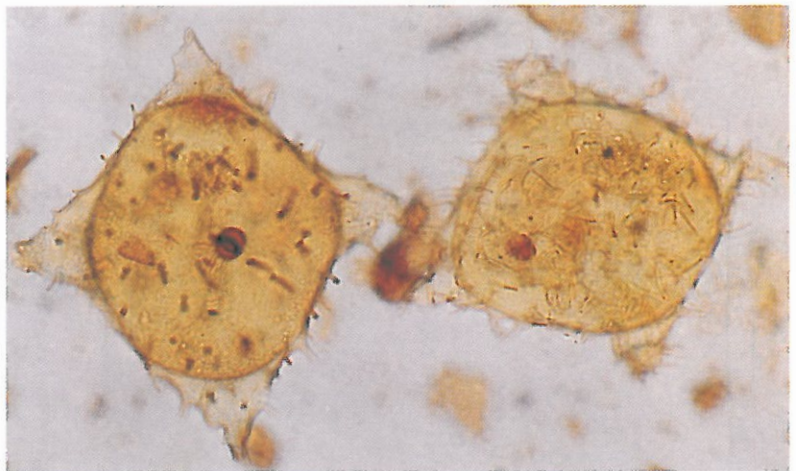
3a



4a



3b

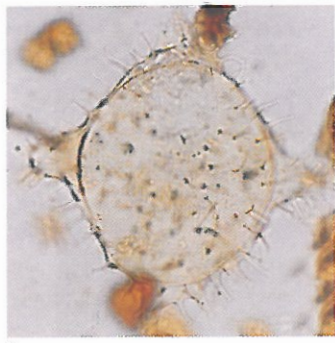


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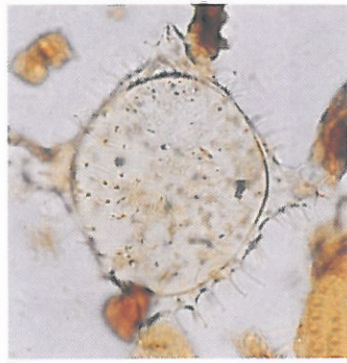
Plate VIII

Phytoplankton assemblage — Lower Oligocene (Rupelian)

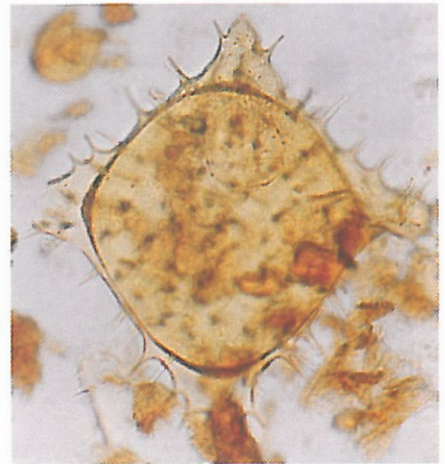
- Phot. 1. *Wetziella symmetrica* Weiler, 1956; Komorza 1/KB borehole, depth 167.23 m
- Phot. 2, 3. *Wetziella articulata* Eisenack, 1938; 2 — Łosiny 2/KB borehole, depth 161.17 m, 3 — Komorza 1/KB borehole, depth 167.23 m
- Phot. 4. *Wetziella meckelfeldensis* Gocht, 1969; Komorza 1/KB borehole, depth 167.23 m



1a



1b



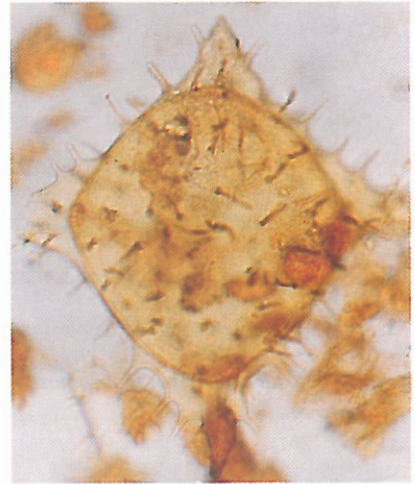
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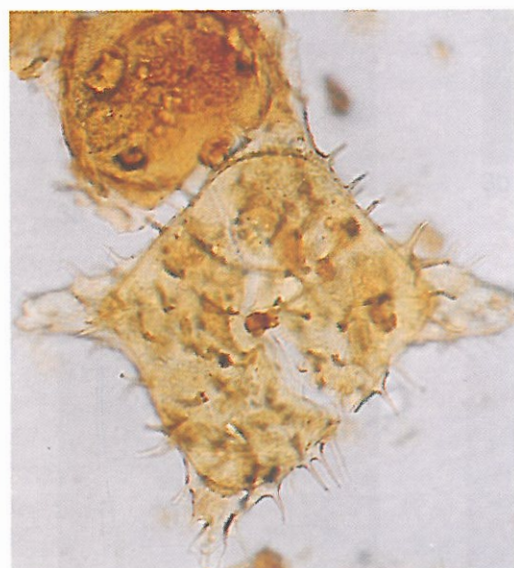
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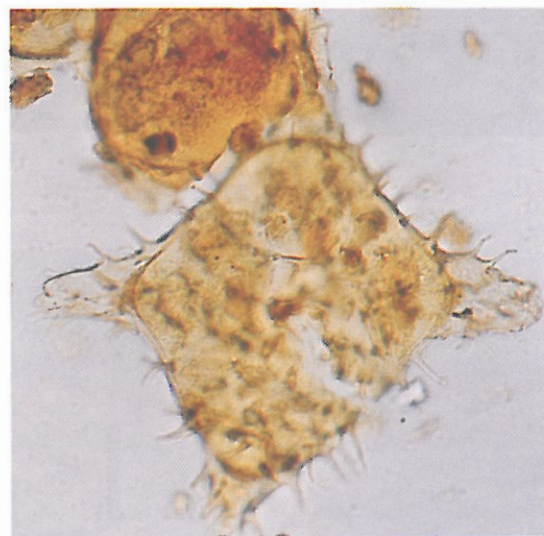
3b



2b



4a



4b

100 μ m

Plate IX

Phytoplankton assemblage — Lower Oligocene (Rupelian)

- Phot. 1. *Wetziella meckelfeldensis* Gocht, 1969; Komorza 1/KB borehole, depth 165.67 m
- Phot. 2. *Wetziella articulata* Eisenack, 1938; Komorza 1/KB borehole, depth 165.67 m
- Phot. 3. *Homotryblum tenuispinosum* Davey & Williams, 1966; Łosiny 2/KB borehole, depth 161.17 m
- Photos. 4, 5. *Chiropteridium lobospinosum* (Gocht, 1956) Gocht, 1960; Komorza 1/KB borehole, depth 167.23 m



1a

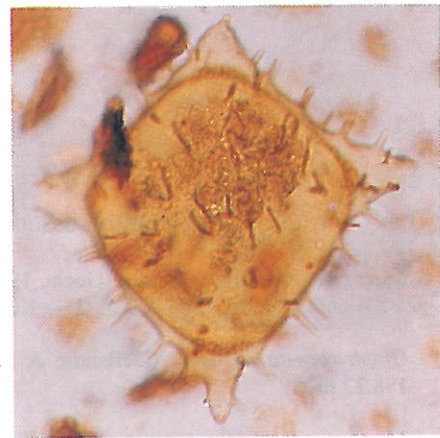


1b



2a

100 μ m



2b



3a



3b



4a



5a



5b

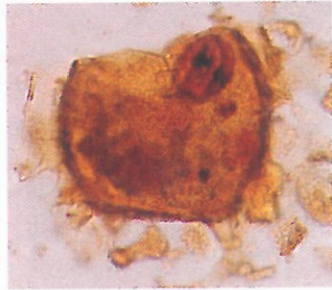


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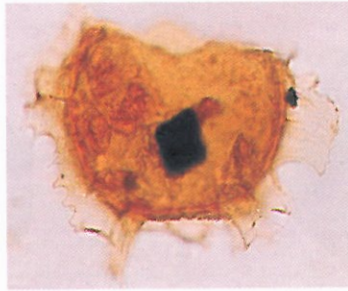
Plate X

Phytoplankton assemblage — Lower Oligocene (Rupelian)

- Phots. 1–3. *Chiropteridium lobospinosum* (Gocht, 1956) Gocht, 1960; 1 — Łosiny 2/KB borehole, depth 161.17 m, 2 — Komorza 1/KB borehole, depth 167.23 m, 3 — Komorza 1/KB borehole, depth 161,17 m
- Phot. 4. *Glaphyrocysta pastielsii* (Deflandre & Cookson, 1955) Lentin & Williams, 1987; Komorza 1/KB borehole, depth 198.22 m
- Phots. 5, 6. *Membranophoridium aspinatum* Gerlach, 1961; 5 — Łosiny 2/KB borehole, depth 176.32 m, 6 — Komorza 1/KB borehole, depth 198.22 m



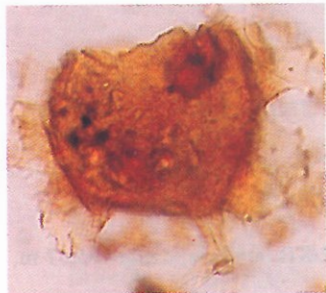
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2a



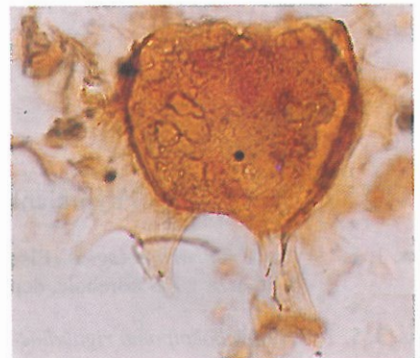
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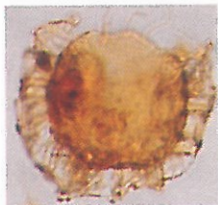
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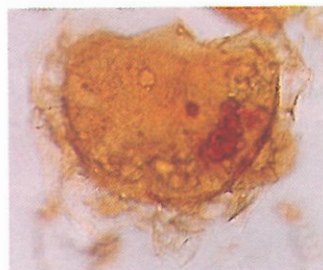
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3b



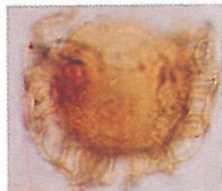
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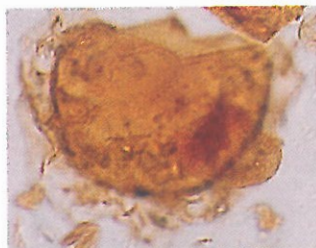
5a



6a



4b



5b



6b

100 μ m

Plate XI

Phytoplankton assemblage — Lower Oligocene (Rupelian)

- Phots. 1, 2. *Thalassiphora pelagica* (Eisenack, 1954) Eisenack & Gocht, 1960; 1 — Łosiny 2/KB borehole, depth 165.57 m, 2 — Komorza 1/KB borehole, depth 167.23 m
- Phots. 3, 5. *Hystrichokolpoma rigaudiae* Deflandre & Cookson, 1955; Komorza 1/KB borehole, depth 167.23 m
- Phot. 4. *Hystrichokolpoma cinctum* Klumpp, 1953; Łosiny 2/KB borehole, depth 165.57 m
- Phot. 6. *Crassosphaera* sp.; Komorza 1/KB borehole, depth 167.23 m
- Phot. 7. *Pediastrum* sp.; Łosiny 2/KB borehole, depth 176.32 m
- Phot. 8. *Botryococcus* sp.; Komorza 1/KB borehole, depth 167.23 m
- Phot. 9. *Leiosphaeridia* sp.; Łosiny 2/KB borehole, depth 161.17 m

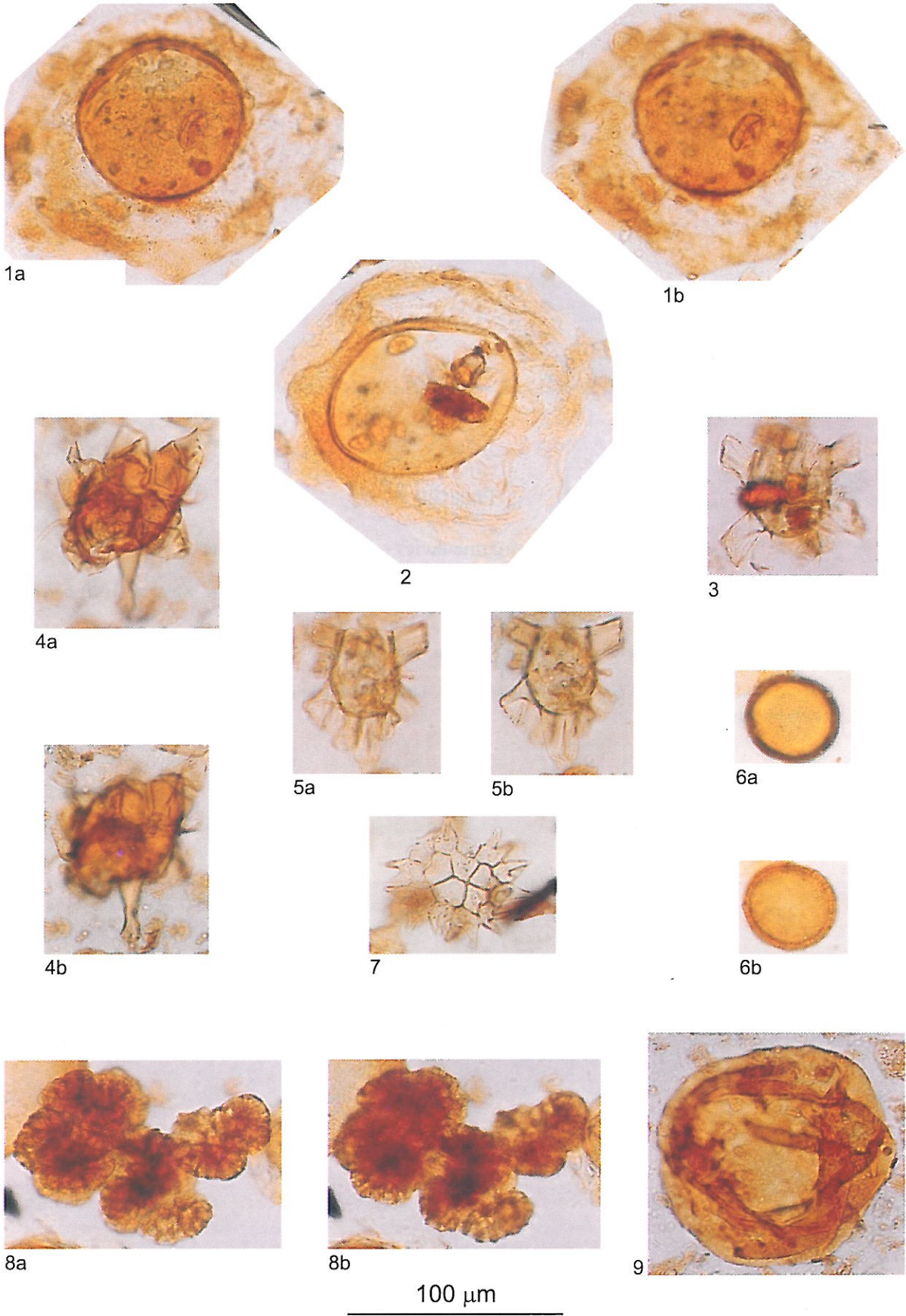
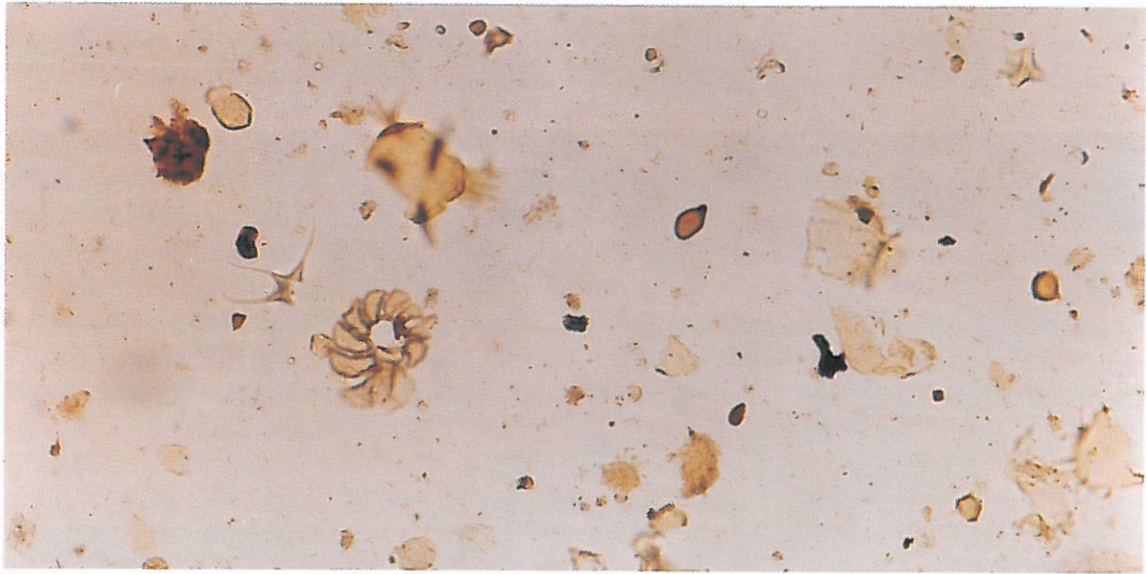


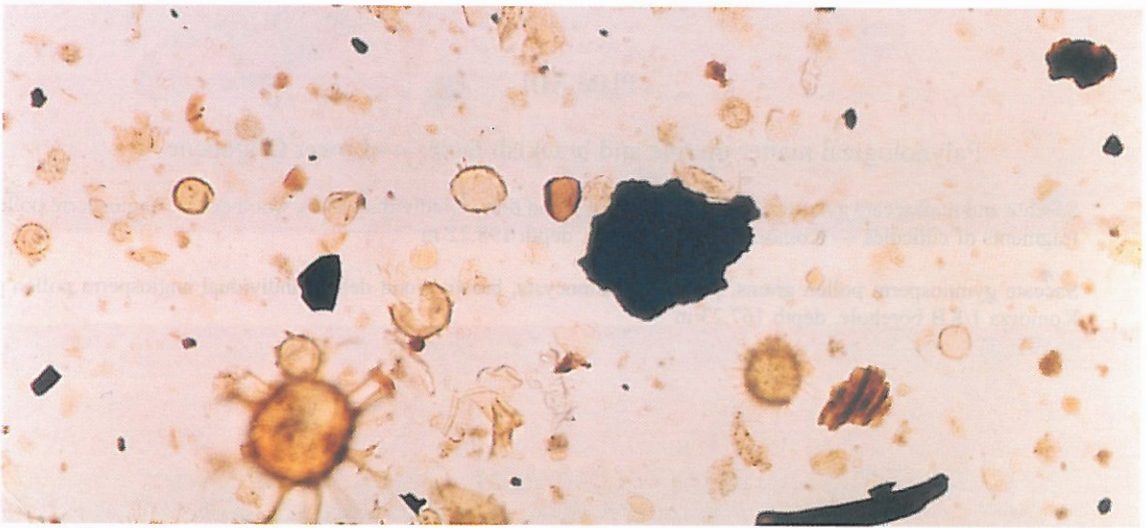
Plate XII

Palynological matter marine facies — Middle Paleocene

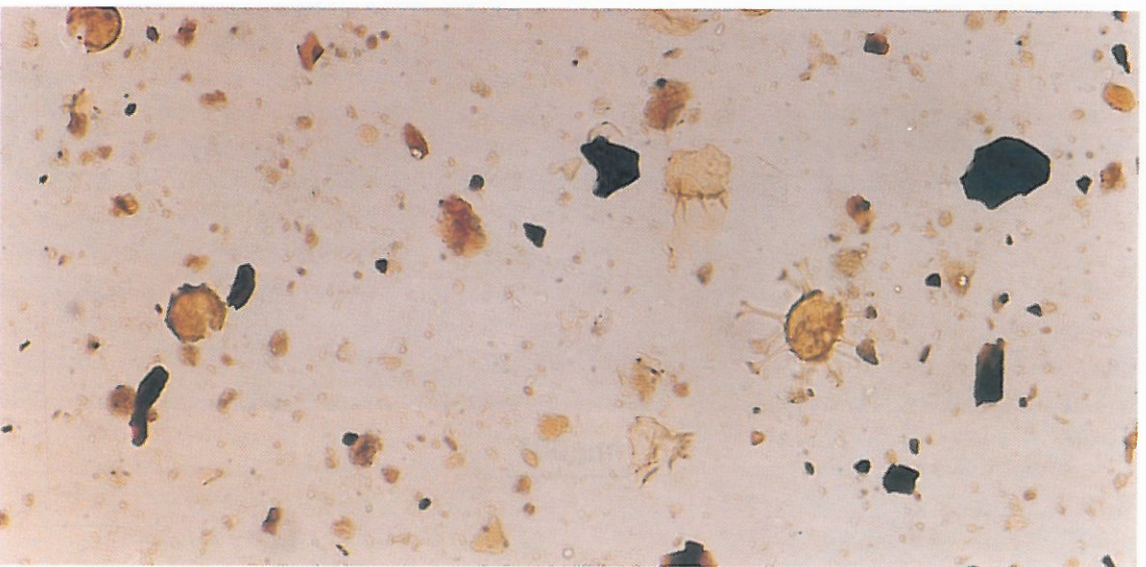
- Phot 1. Foraminiferal lining, particles of Acritarcha, particles of dinocysts, sporomorphs — Komorza 1/KB borehole, depth 213.17 m
- Phot 2. Black and brown wood debris, gonyaulacoid dinocysts, sporomorphs — Komorza 1/KB borehole, depth 213.17 m
- Phot. 3. Fragments of gonyaulacoid and peridinioid dinocysts, black wood debris, amorphous organic matter — Łosiny 2/KB borehole, depth 192.62 m



1



2



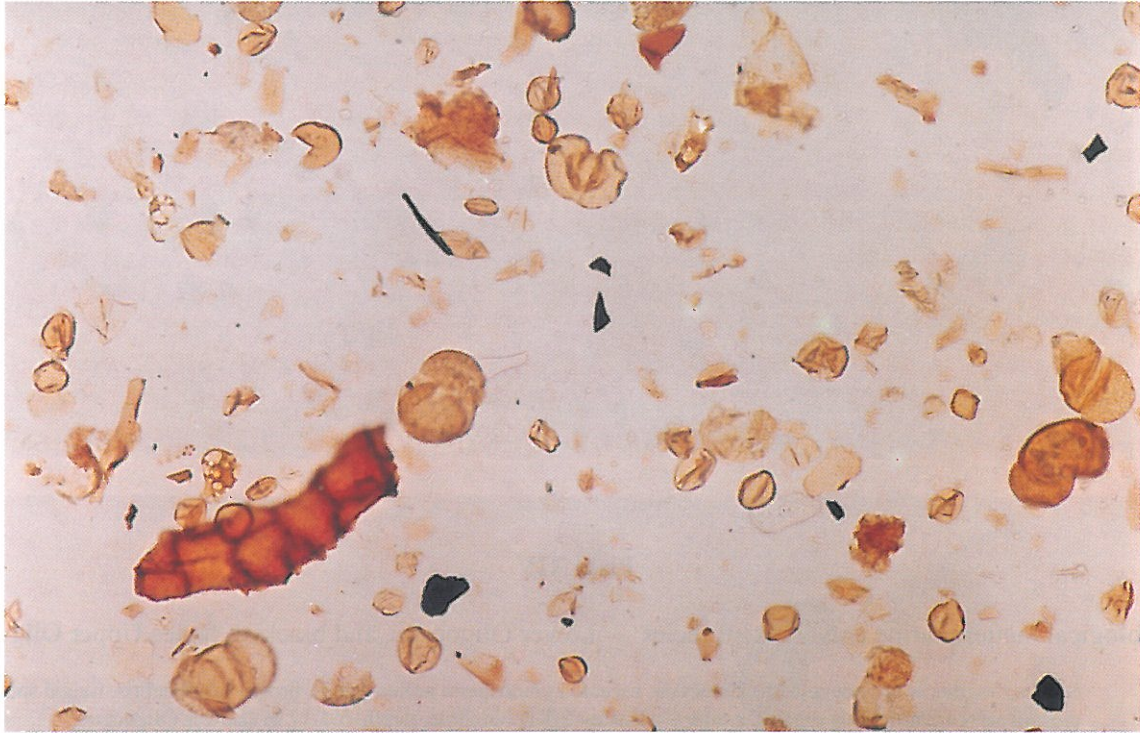
3

100 μm

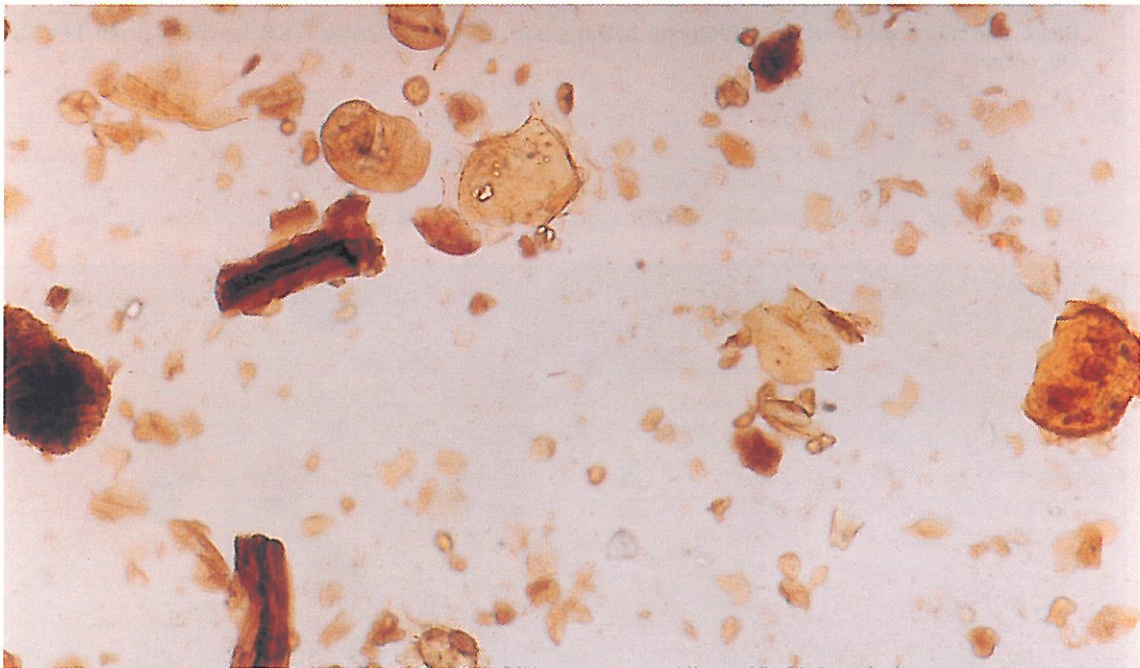
Plate XIII

Palynological matter marine and brackish facies — Lower Oligocene

- Phot. 1. Saccate and nonsaccate gymnosperm pollen, brown wood debris, individual black wood debris, angiosperm pollen grains, fragments of cuticules — Komorza 1/KB borehole, depth 198.22 m
- Phot. 2. Saccate gymnosperm pollen grains, peridinioid dinocysts, brown wood debris, individual angiosperm pollen grains — Komorza 1/KB borehole, depth 167.23 m



1



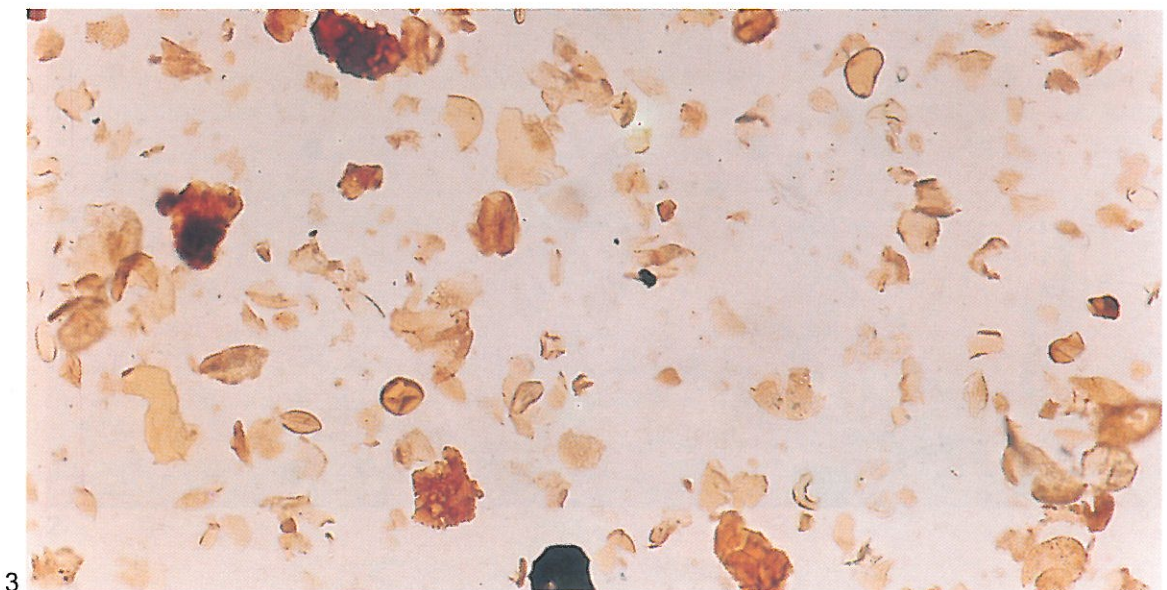
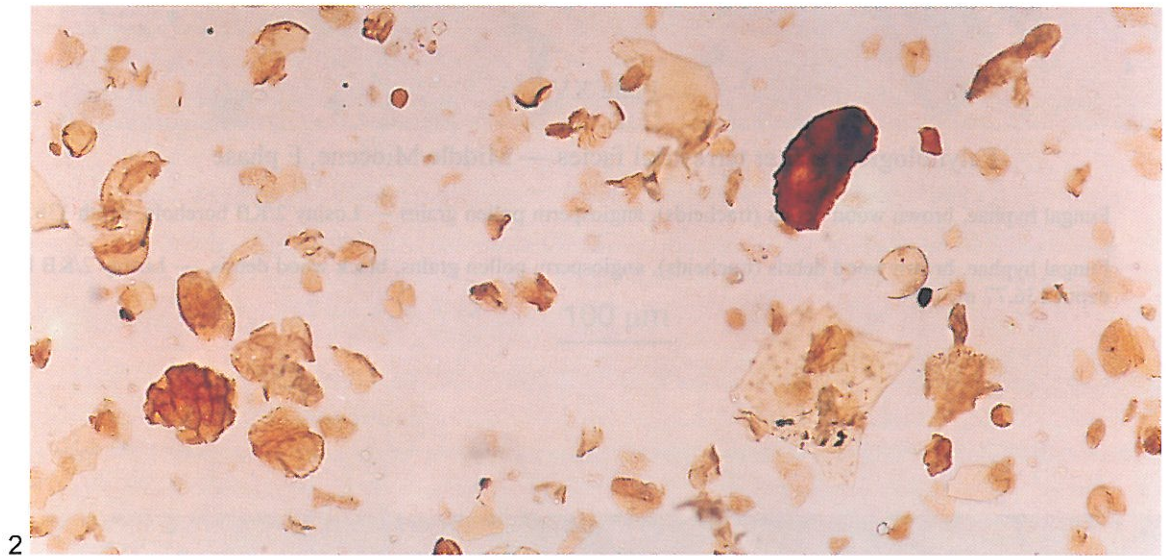
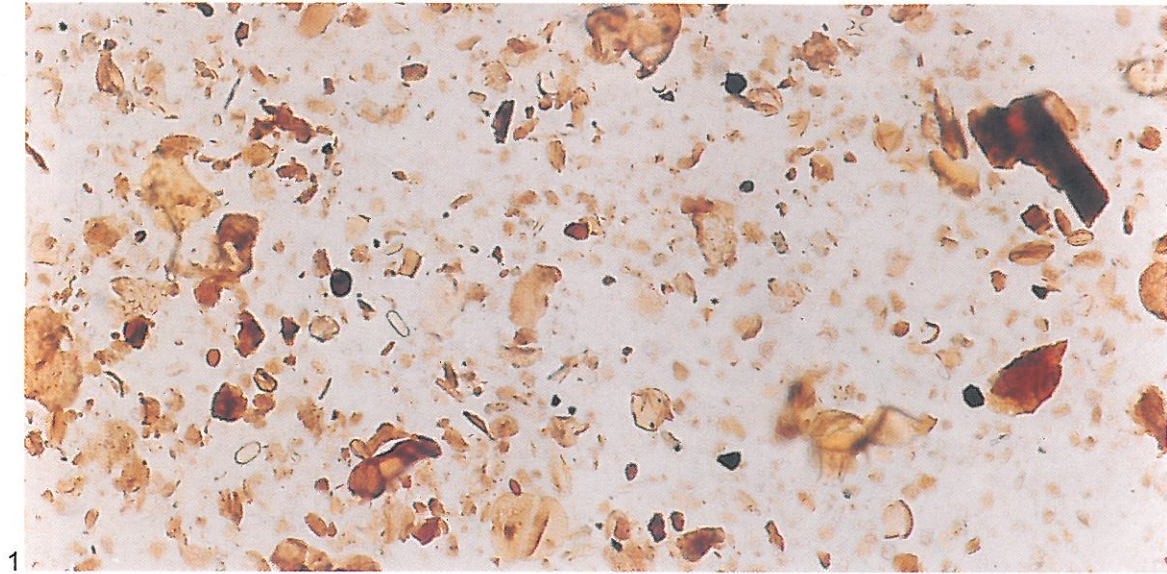
2

100 μm

Plate XIV

Palynological matter marine and brackish facies — Lower Oligocene, and brackish facies Upper Oligocene

- Phot. 1. Spores, fragments of gonyaulacoid dinocysts, saccate gymnosperm pollen grains, brown wood debris, fungal spores, particles dispersed amorphous organic matter — Łosiny 2/KB borehole, depth 161.17 m (Lower Oligocene)
- Phot. 2. Fragments of peridinioid dinocysts, brown wood debris, saccate gymnosperm pollen grains, angiosperm pollen grains — Łosiny 2/KB borehole, depth 144.12 m (Upper Oligocene)
- Phot. 3. Black and brown wood debris, angiosperm pollen grains, spores — Łosiny 2/KB borehole, depth 144.12 m (Upper Oligocene)

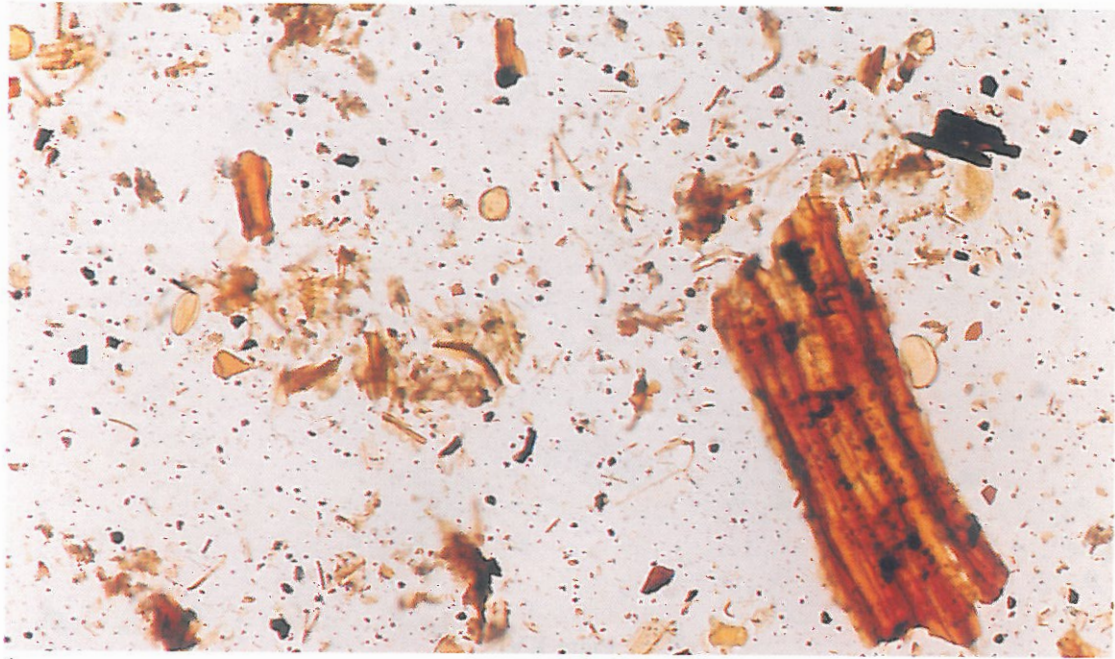


100 μ m

Plate XV

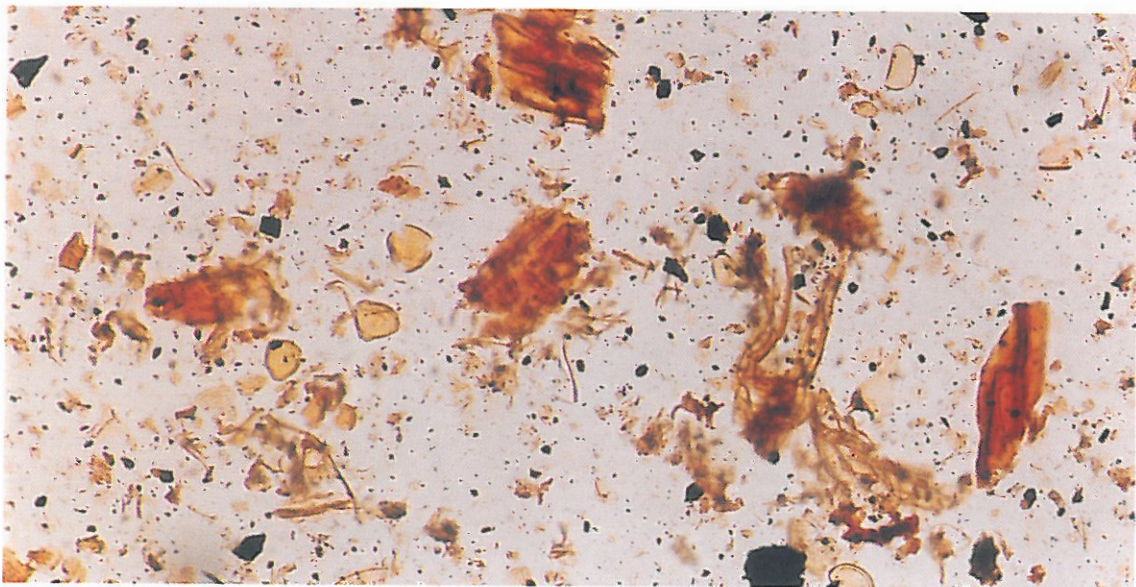
Palynological matter terrestrial facies — Middle Miocene, F phase

- Phot. 1. Fungal hyphae, brown wood debris (tracheids), angiosperm pollen grains — Łosiny 2/KB borehole, depth 136.77 m
- Phot. 2. Fungal hyphae, brown wood debris (tracheids), angiosperm pollen grains, black wood debris, — Łosiny 2/KB borehole, depth 136.77 m



1

100 μm

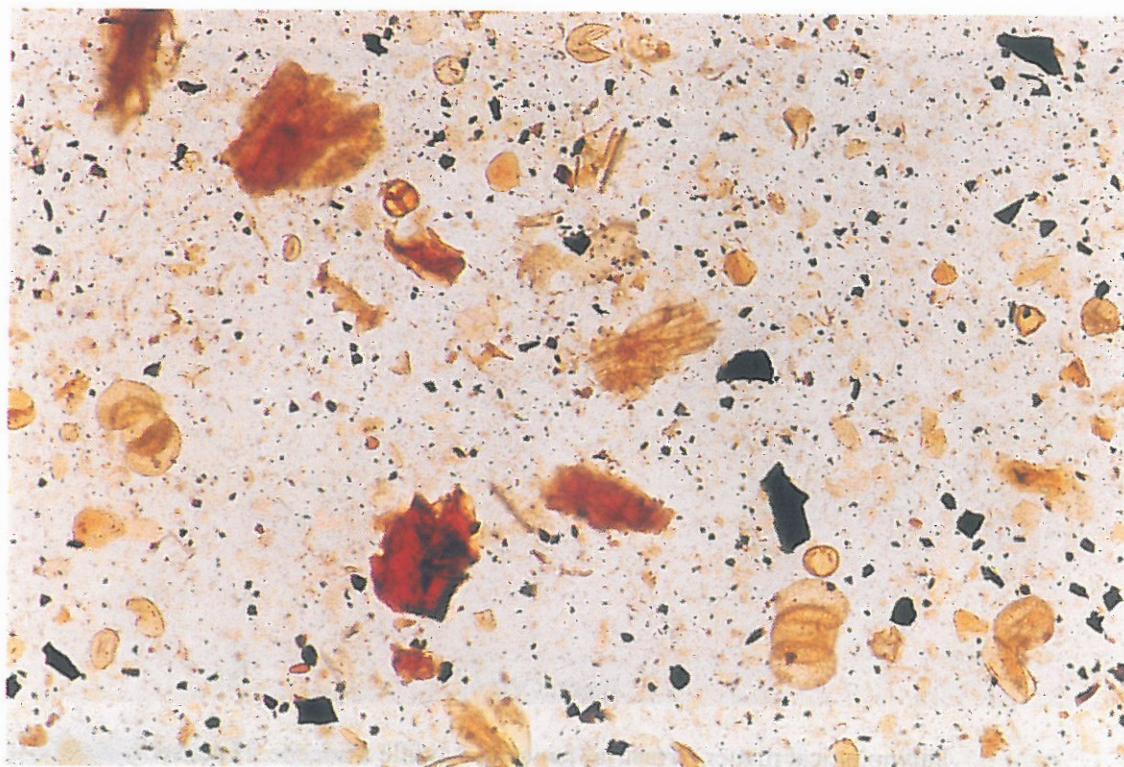


2

Plate XVI

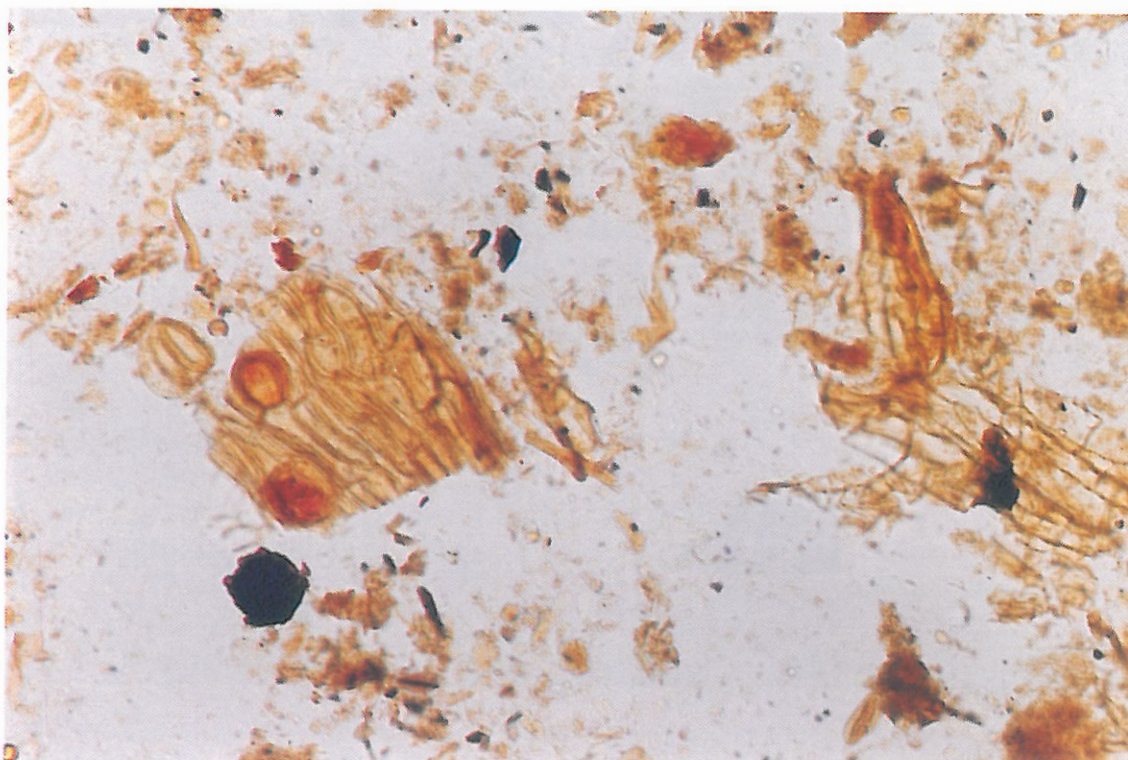
Palynological matter terrestrial facies — Middle Miocene, G phase

- Phot. 1. Brown and black wood debris, gymnosperm pollen grains (saccate and nonsaccate), angiosperm pollen grains — Łosiny 2/KB borehole, depth 125.52 m
- Phot. 2. Cuticles and stomata, black wood debris, gymnosperm pollen grains (saccate), amorphous organic matter — Łosiny 2/KB borehole, depth 123.21 m



1

100 μm

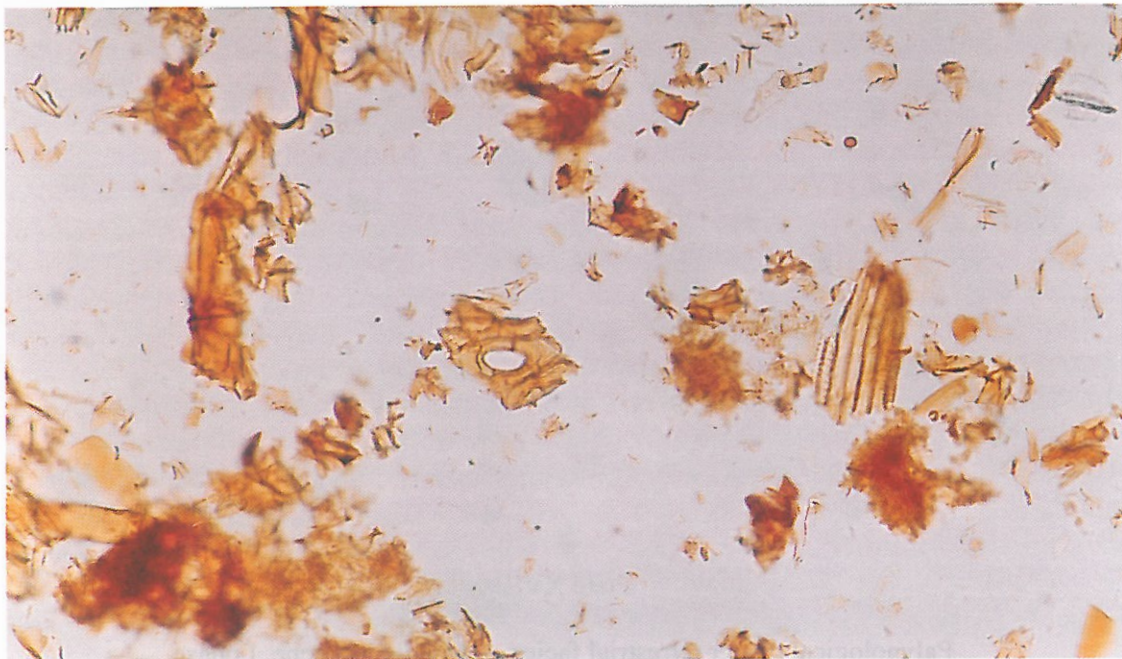


2

Plate XVII

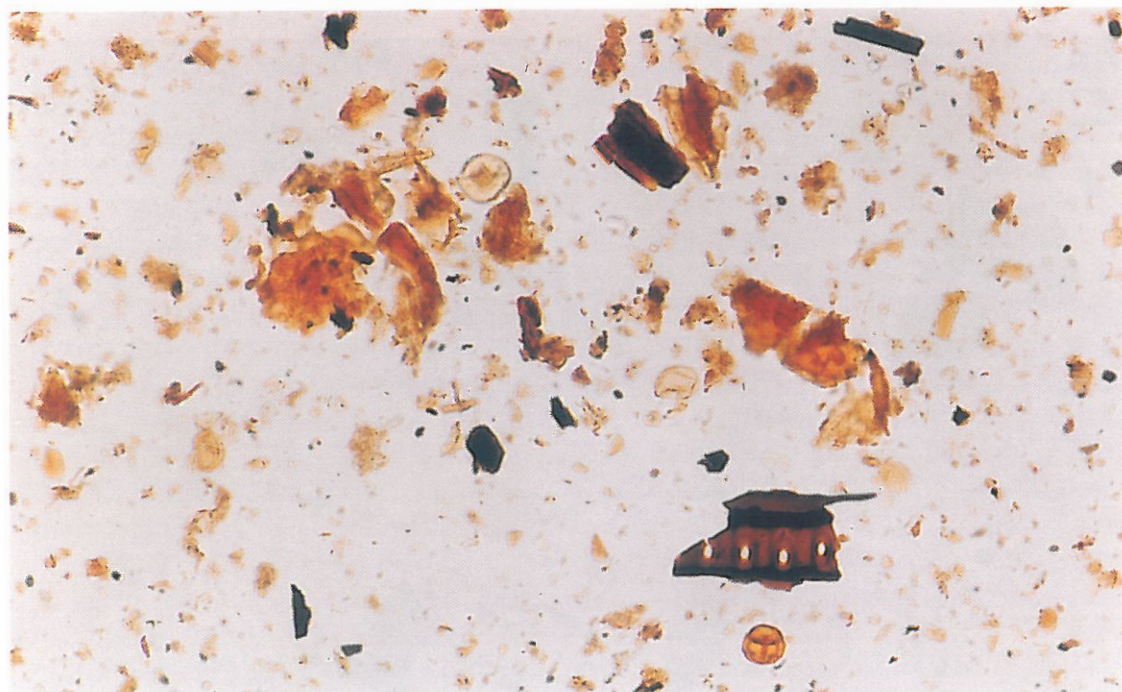
Palynological matter terrestrial facies — Middle Miocene, H phase

- Phot. 1. Cuticles and stomata, brown wood debris, amorphous organic matter — Komorza 1/KB borehole, depth 142.65 m
- Phot. 2. Brown wood debris (tracheids), angiosperm pollen grains, black wood debris — Komorza 1/KB borehole, depth 131.92 m



1

100 μm

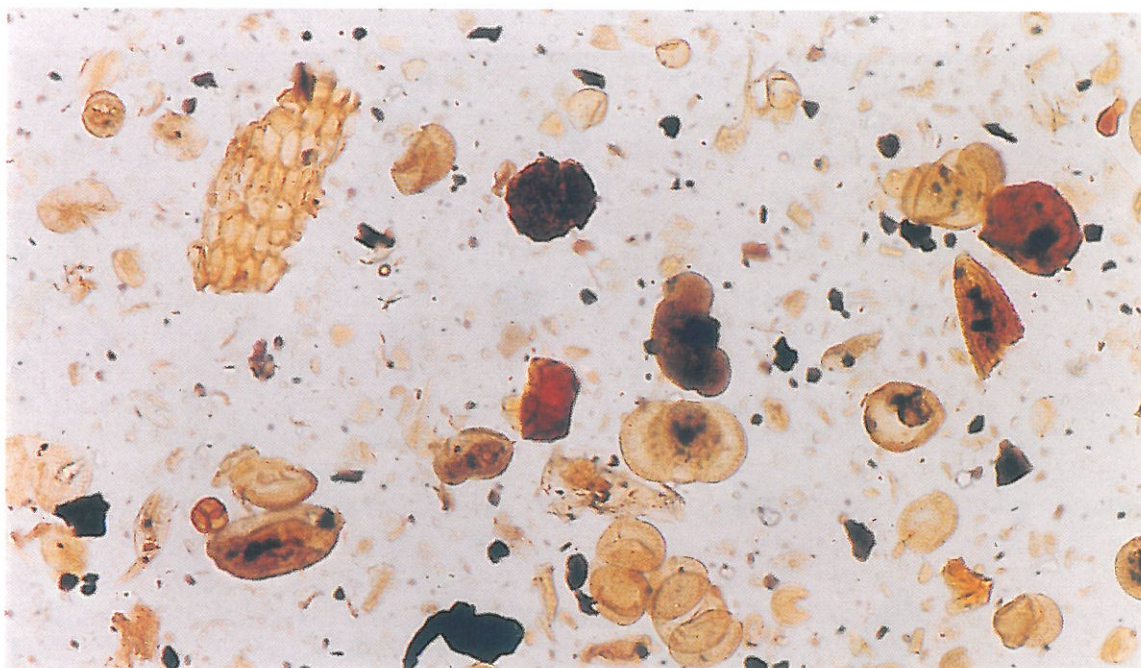


2

Plate XVIII

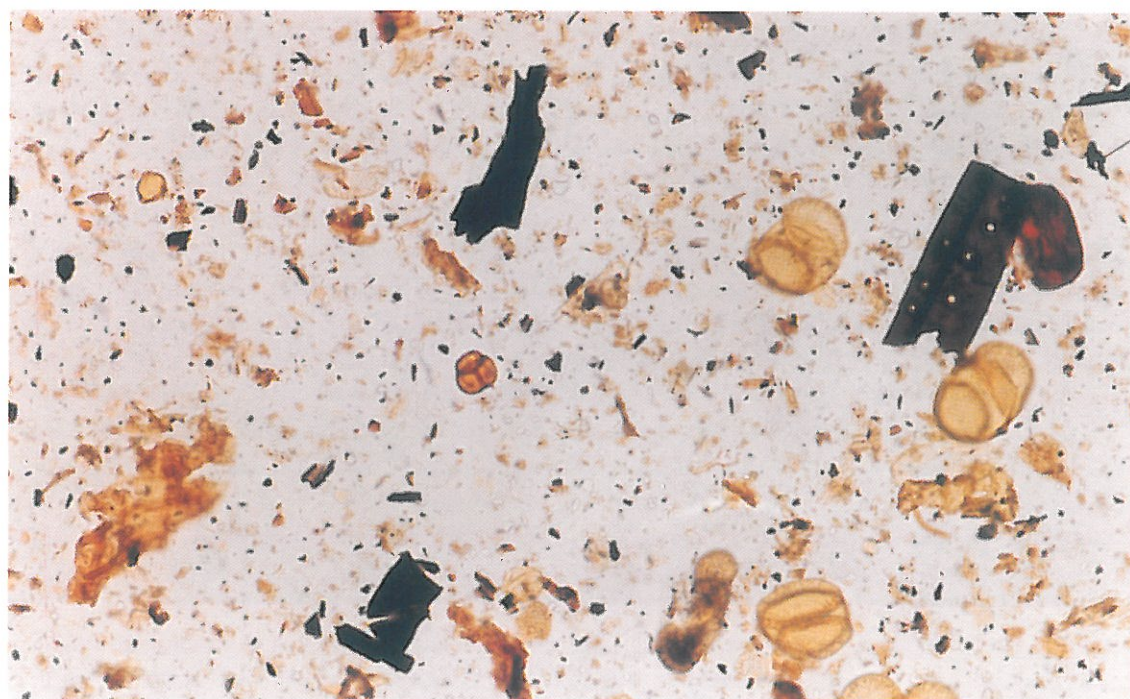
Palynological matter terrestrial facies — Middle Miocene, I phase

- Phot. 1. Gymnosperm pollen grains (saccate), cuticules, brown and black wood debris, angiosperm pollen grains, amorphous organic matter — Komorza 1/KB borehole, depth 117.67 m
- Phot. 2. Gymnosperm pollen grains (saccate), brown and black wood debris (tracheids), angiosperm pollen grains — Komorza 1/KB borehole, depth 130.52 m



1

100 μm

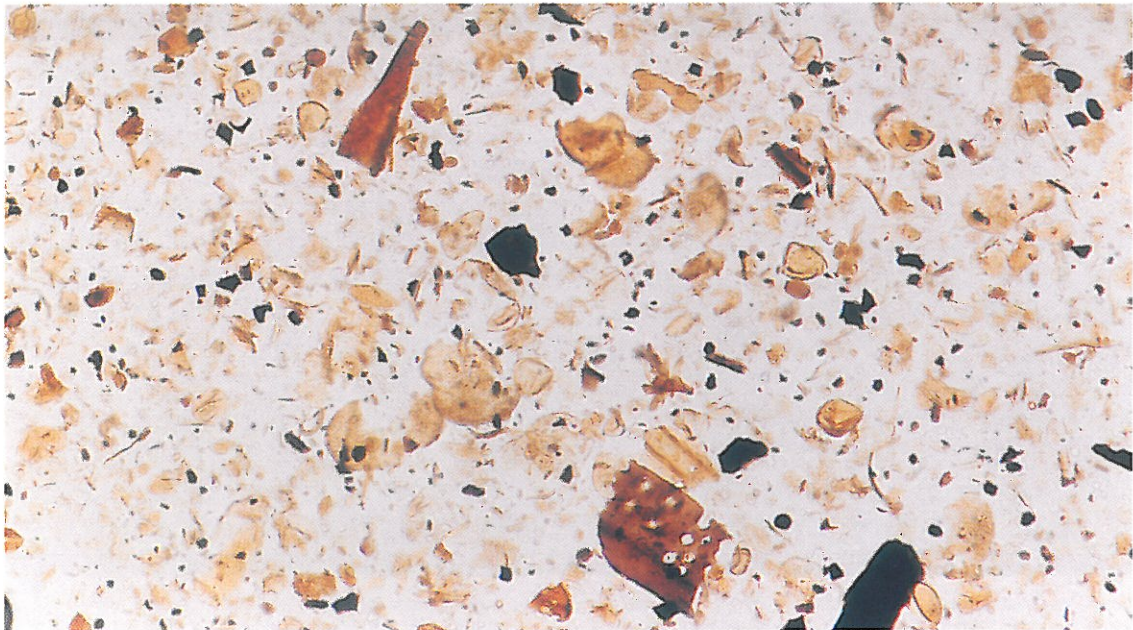


2

Plate XIX

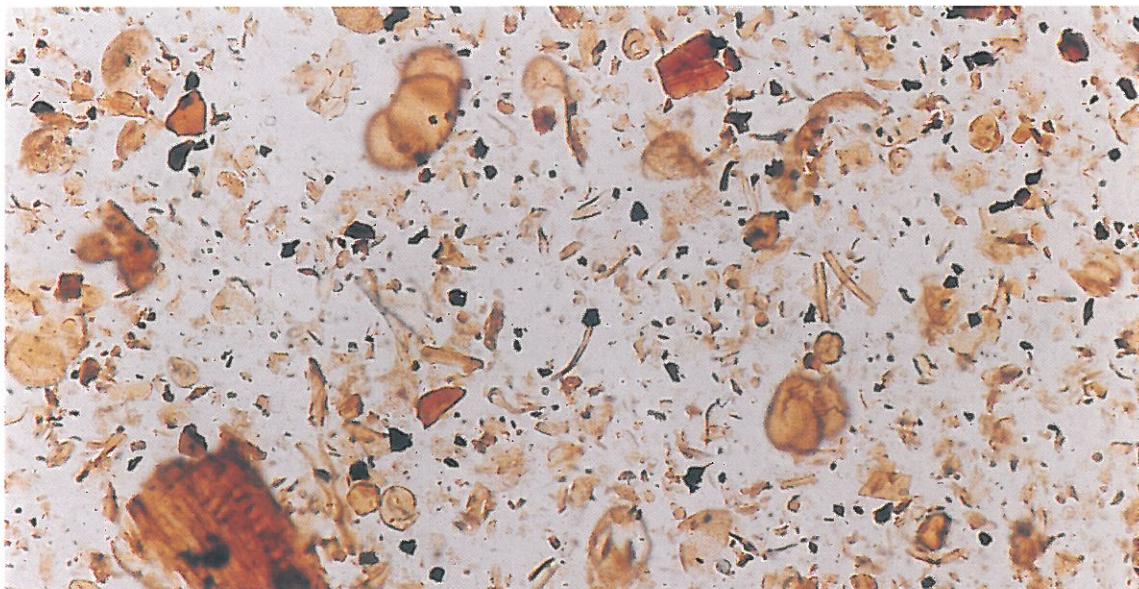
Palynological matter terrestrial facies — Middle Miocene, J phase

- Phot. 1. Brown wood debris (tracheids), black wood debris, amorphous organic matter. Gymnosperm pollen grains (saccate), angiosperm pollen grains — Komorza 1/KB borehole, depth 109.67 m
- Phot. 2. Brown wood debris (tracheids), black wood debris, amorphous organic matter. Gymnosperm pollen grains (saccate), angiosperm pollen grains, fungal hyphe — Komorza 1/KB borehole, depth 109.67 m



1

100 μm

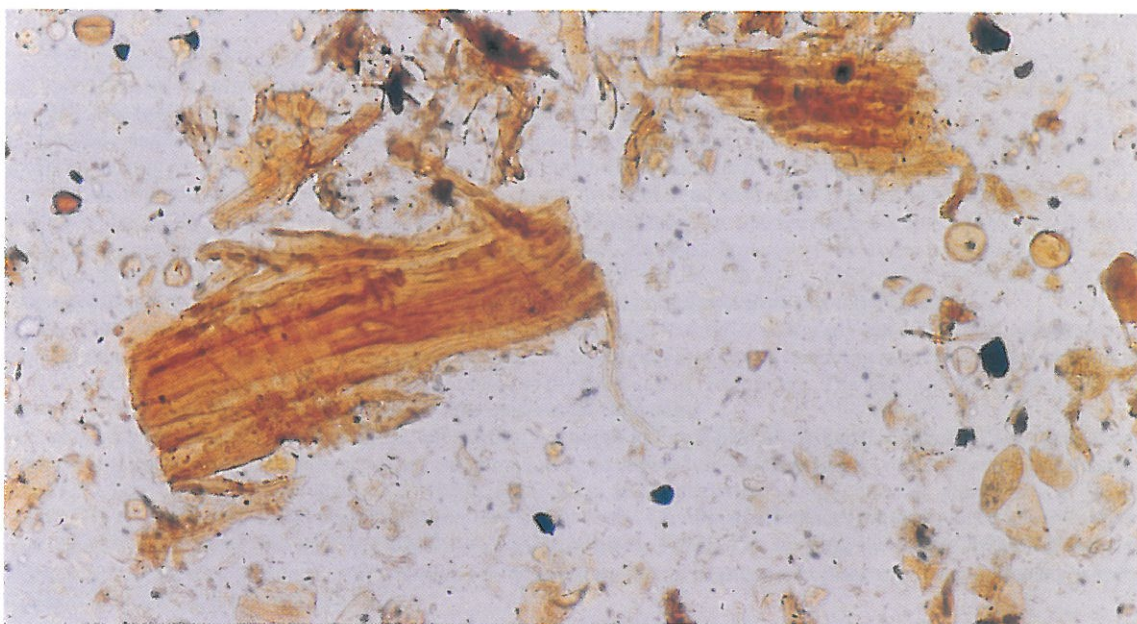


2

Plate XX

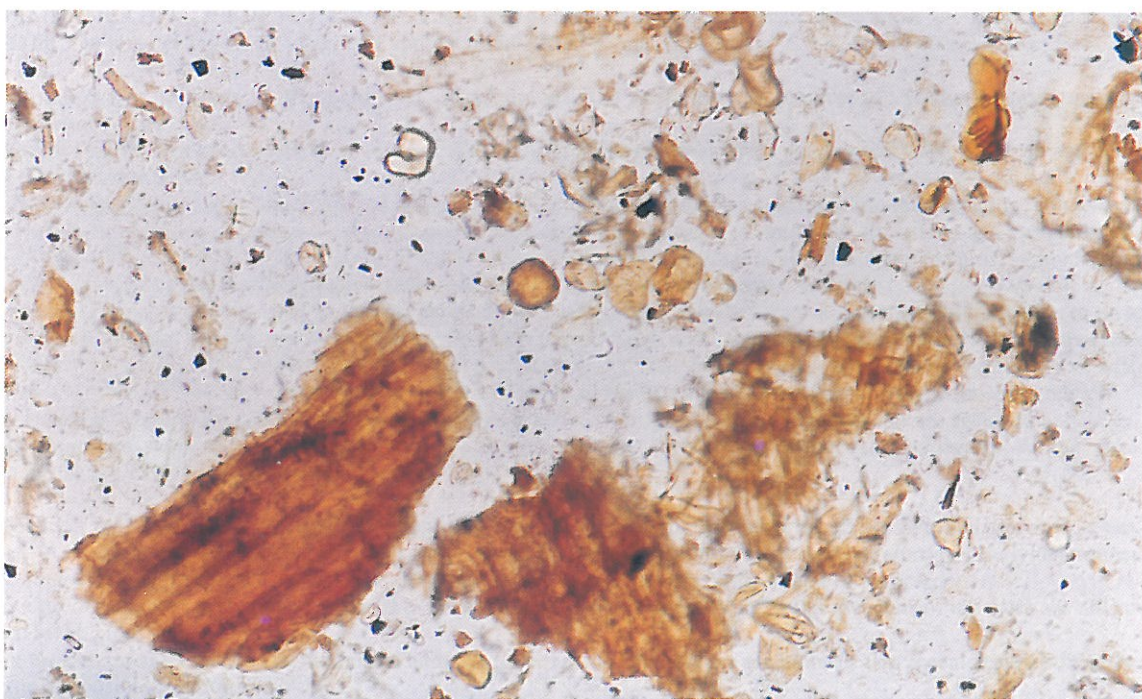
Palynological matter terrestrial facies — Middle Miocene, K phase

Photos. 1, 2. Cuticles, brown wood debris, angiosperm pollen grain (saccate) — Komorza 1/KB borehole, depth 86.67 m



1

100 μm



2