Illustration of Photographs

Plate I. Fig. A. Funnel shaped sporophore of *Aurificaria indica* var. *indica*

Fig. B. Pore surface of *A. indica*

Fig. C. Basidiocarp of *Fomitopsis cupreorosea* attached to a fallen branch of *Terminalia arjuna* showing the upper surface

Fig. D. Pore surface of the *F. cupreorosea*

Fig. E. Sporophore of *Microporus affinis var. glabriceps*

Fig. F. Part of pore surface with stalk

Fig. G. Basidiospores of the *Phellinus pectinatus*

Fig. H. Basidiospores of the *P. hoehnelii*

Fig. I. Basidiospores of the *P. robustus*

Plate II Fig. A. Sporophore of *Ganoderma curtisii* showing upper surface

Fig. B. Lower surface of *G. curtisii*

Fig. C. T.S. of pore layer of *G. curtisii*

Fig. D. Pore layer with basidiospores of *G. curtisii*

Fig. E. Truncate basidiospores *G. curtisii*

Fig. F. Basidiocarp of *Microporus alboater* showing black upper surface

Fig. G. Pore surface of *M. alboater*

Fig. H. T. S. of tube layer *M. alboater*

Fig. I, J, K. Photo micrographs of Basidospores of *M. alboater* X 900

Fig. L. Part of sporophore of *Phellinus shaferi* showing tube surface

Fig. M. Upper surface of *P. shaferi*

Fig. N. Section of basidiocarp showing setae of *P. shaferi*

Fig. O. T. S. of tube layer of *P. shaferi*

Fig. P, Q. Basidiospores *P. shaferi* X 900

Plate III Fig A. RAPD banding patterns obtained by using OPO18 marker for wood rotting fungal samples 1 to11.

Fig B: Dendrogram of RAPD based on genetic similarity coefficient

Plate IV Fig A: AFLP banding patterns obtained by using P55, P63, P52 marker for different wood rotting fungal samples 1 to11.

Fig B: Dendrogram of AFLP based on genetic similarity coefficient

Plate V Fig. A. Ligninolytic activity of the a) Control b) *Schizophyllum commune*

c) *Flavodon flavus* d) *Lenzites eximia* e) RS17d

Fig. B. Cellulolytic activity of the a) *Lenzites eximia* b) *L. betulina* c) *L. sterioides* d) *Curvularia lunata* e) *Chaetomium globossum* f) *Fusarium pallidoroseum*

Plate VI Fig. A. Wood Block test showing the decay of a) *Terminalia bellerica, b)Tectona grandis, c) Adina cordifolia* by *Lenzites sterioides*

Fig. B. Teak wood blocks decayed by L.S.= *Lenzites sterioides* H.A= *Hexagonia apiaria* and C.V= *Coriolus versicolor*

Fig. C. *Adina* wood blocks was artificially inoculated with *Lenzites sterioides*

Fig. D. The wood blocks were covered with cheese cloth to retain moisture.

Plate VII Pattern of decay in teak wood infected with *L. sterioides*

Fig. A: Photomicrograph of normal wood showing the vessels, fiber cells, and xylem parenchyma.

Fig. B: T. S of vessel element showing degradation of secondary wall layers and complete decay of fiber cells.

Fig. C: Three adjacent vessel elements. The walls are partially completely degrade. Note the walls which have become kidney shaped.

Fig. D: T.S of fiber cell showing hyphae and centrifugal delignification.

Fig. E: The vessel wall showing chlamydospores with circular hyphae

Fig. F: T.S off vessel showing the bore holes in secondary layer

Fig. G: Completely degraded cell with many chlamydospores. The wall shows conical cavities.

Fig. H: Lumen of vessel element filled with circular fungal hyphae. Walls are discoloured and conical pointed cavities are seen in the wall.

Fig. I: L. S of multiseriate ray cell showing almost complete degradation of cells with only middle lamellae

Fig. J: The ray cell walls with conical holes due to the decay caused by *L. sterioides.*

Plate VIII Pattern of decay in teak wood infected with *C. versicolor*

Fig. A: Section showing degradation of Xylem vessel element and the wall associated fiber cells showing many circular bore holes

Fig. B: Fungal hyphae penetrating through medullary ray.

Fig. C: Canals bores through parenchyma cells. The walls are disfigured.

Fig. D: T. S of the vessel element showing delignification in the cell wall

Fig. E: Bore holes in the fiber cells and the degradation of the fiber cell.

Fig. F: L. S of the fiber cells which showed the complete degradation of the selected areas

Fig. G: Selective delignification of cell wall layers of vessels in both directions by *H. apiaria*

Fig. H: The removal of lignin taking place in the direction of the middle lamella in vessels where as the delignification in fiber cells is towards lumen.

Fig. I: Borehole in xylem parenchyma cell which are created by hyphal tips

Fig. J: Circular boreholes in cell walls of the vessels

Fig. K: In advance stages of decay the circular boreholes merge to form a big cavity.

Fig. L: L.S. showing the partial degradation of fiber cells which gives green colour with fast green.

Plate IX Pattern of decay in teak wood infected with *T. pini*

Fig. A: Advanced stage of infection where all cell wall layers of vessels degraded completely.

Fig. B: Selective removal of lignin along with complete decay of all cell wall layers of vessels and associated fiber cells.

Fig. C: Fiber cells looks like kidney shaped due to decay of middle lamella

Fig. D: The spreading of hyphae intracellularly in axial parenchyma cells and formation of circular boreholes.

Fig. E. L.S. of the fiber cells showing the complete degradation of cell wall layers

Fig. F. Selective decay of lignin towards lumen of ray cells, with advancement of decay processes cell wall layers are degraded.

Fig. G: T.S. of Normal *Adina* wood

Fig. H: Discoloured xylem vessel element wall. Hyphae penetrating across the xylem vessel element lumen. A single chlamydospore close to the partially / completely degraded wall of vessel element by *L. sterioides*.

Fig. I: Vessel element walls delignified. The two vessel elements are separated and lignified cracked wall lies pendent in the lumen.

Fig. J: Depletion of lignin in S1 layer of cell wall. Note the middle lamella is intact.

Fig. K: Ray parenchyma cells loosened due to degradation of middle lamella.

Fig. L: Hyphae showing chlamydospores within parenchyma cells.

Plate X. Pattern of decay in *Adina* wood infected with *C. Versicolor* and *H. apiaria*

Fig. A: T. S showing the decay of vessels, fiber cells and parenchyma cells in *Adina.*

Fig. B: The decay of the middle lamellae where all cells were separating.

Fig. C: Complete degradation of the fiber cell wall layers where only cellulose fibers are left.

Fig. D. Complete degradation of the ray cells

Fig. E: Biseriate ray parenchyma cells filled with polyphenolic contents. Note the middle lamella is degraded and loosening of the cells takes place.

Fig. F: Branching hyphae degrade the fiber cells.

Fig. G: Fiber cells completely degraded, Xylem vessels which are disfigured.

Fig. H: Fiber cell wall showing discolouration. The ray cells are separated from one another.

Fig. I: Chlamydospores cluster are seen in vessel. Hyphae penetrating out through circular bore hole

Plate XI Pattern of decay in Adina wood caused due to *T. pini*

Fig. A: Damage of vessels, fiber cells, axial parenchyma, and decay of middle lamella

Fig. B: Complete decay of the cell wall layers in vessels

Fig. C: Degradation of middle lamella, which leads to separation of fiber cells

Fig. D: The entry of hyphae through pits and occupying the whole lumen of the vessels

Fig. E. Circular boreholes and chlamydospores in fiber cells.

Fig. F. The accumulation of hyphe in lumen of ray cells where the selective delignification occurs in the direction of lumen.

Fig. G: Selective delignification of *Terminalia crenulata* wood cell walls in vessels and fiber cells due to *L. sterioides.*

Fig. H: Complete degradation of cell walls in vessels and fiber cells associated with it.

Fig. I: Complete and partial degradation of fiber cell walls with delignification occurring towards the lumen side

Fig. J: Conical shaped boreholes in cell walls of the vessels, which merge to forms big circular holes.

Fig. K: In advancement of decay processes the whole fiber cells were degraded completely.

Fig. L: Simultaneous decay of the ray cells in which lumps of hyphe present in the lumen.

Plate XII Pattern of decay in *T. crenulata* wood caused due to *C. versicolor*

Fig. A. T. S of normal *T. crenulata*

Fig. B: Selective removal of lignin in cell walls layers of vessels

Fig. C: Complete degradation of fiber cell wall layers

Fig. D: Selective removal of lignin in the direction of lumen of fiber cells.

Fig. E. L. S showing the partial decay of the fiber cells which stains with fast green.

Fig. F: The partial decay of wall layer in ray cells

Fig. G: Selective delignification of vessel cell walls where the middle lamella is decayed leaving the cellulose fibers by *H. apiaria.*

Fig. H: Complete degradation of cell wall layers in vessels along with the associated fiber cells also in advanced stage of decay

Fig. I. Degradation of the xylem parenchyma. Circular bore holes in parenchyma cells which merges to form big holes.

Fig. J. Selective delignification in fiber cells towards the lumen where all the layer were degraded completely in advancement of decay processes

Fig. K. The entry of fungal hyphae through pits in ray cells. The cells will separate from each other due to degradation of middle lamella.

Fig. L. L. S. showing the decay of fiber cells, The cell wall layers of fiber cells were degraded by selective removel of lignin leaving cellulose fibers.

Plate XIII Pattern of decay in *T. crenulata* wood infected with *T. pini*

Fig. A: Selective removal of lignin occurred towards the cell wall direction in vessels

Fig. B: In advanced stage of degradation processes all cell wall layers are decayed completely.

Fig. C: Fiber cells showing entry of hyphae through the pits along with removal of lignin in the direction of lumen

Fig. D: L.S. showing the fiber cell wall layers which were degraded completely.

Fig. E. L.S. showing the complete loss of fiber cells in advanced stages of degradation

Fig. F. The spreading of hyphae through intercellular spaces in axial parenchyma.

Fig. G. T.S. of normal wood of *T. arjuna*

Fig. H: Selective delignification and complete degradation of the vessels, fiber cells and parenchyma cells by *L. sterioides*

Fig. I: Cell wall layers in vessels were selectively delignified and leaving only cellulose fibers

Fig. J: Masses of hyphae are present in ray parenchyma cells

Fig. K: The complete degradation of the fiber cell walls where only cellulose fibers are left.

Fig. L: Conical shaped cavities formed due to the merging of small borehole

Plate XIV Pattern of decay in *T. arjuna* wood infected with *T. pini*

Fig. A. The entry of hyphe takes place through pits in vessels. The decay of lignin can be seen towards the cell wall direction leaving cellulose layer intact.

Fig. B. Xylem parenchyma cells field with masses of hyphae

Fig. C. The decay of the middle lamella in fiber cells

Fig. D. Selective removal of lignin in parenchyma cells, where the cellulose layer is intact.

Fig. E: The uniseriate ray cells field with masses of hyphae. The decay of cell wall layers in fiber cells.

Fig. F. L.S. showing the complete degradation of axial parenchyma cells.

Fig. G. Biocontrol of *Trametes pini* by methanolic extract of *Callistemon linearis*

a) control, b) 5% c) 10% d) 25%

Fig. H. Biocontrol of *T. pini* by aqueous extract of *C. linearis* a) control b) 5% c) 10% d) 25%

Plate XV Ultra – Structural Studies of Teak wood decayed by *L. sterioides* and *T. pini*

Fig. A: Vessel is filled with the fungal hyphae of *L. sterioides*

Fig. B: The fiber cells with decay of middle lamella.

Fig. C: The entry of hyphae into the xylem parenchyma is through pit and spreading travels intracellularly.

Fig. D: Tyloses in vessels formed by blocking of fungal hyphae. Selective delignification in centrifugal direction in which S3-S4 layers of vessels degraded leaving only cellulose fibers in *Trametes* decay

Fig. E. Decay of middle lamella in fiber cells and S2-S4 layers decayed in ray parenchyma cells at advanced stage of infection

Fig. F. Decay of middle lamella in fiber cells leads to the separation of cells

Plate XVI Ultra – Structural Studies of Teak wood decayed by *C. versicolor*

Fig. A: The vessels showing selective decay of wall layers

Fig. B: The degradation of middle lamella along with S1 layer of vessel

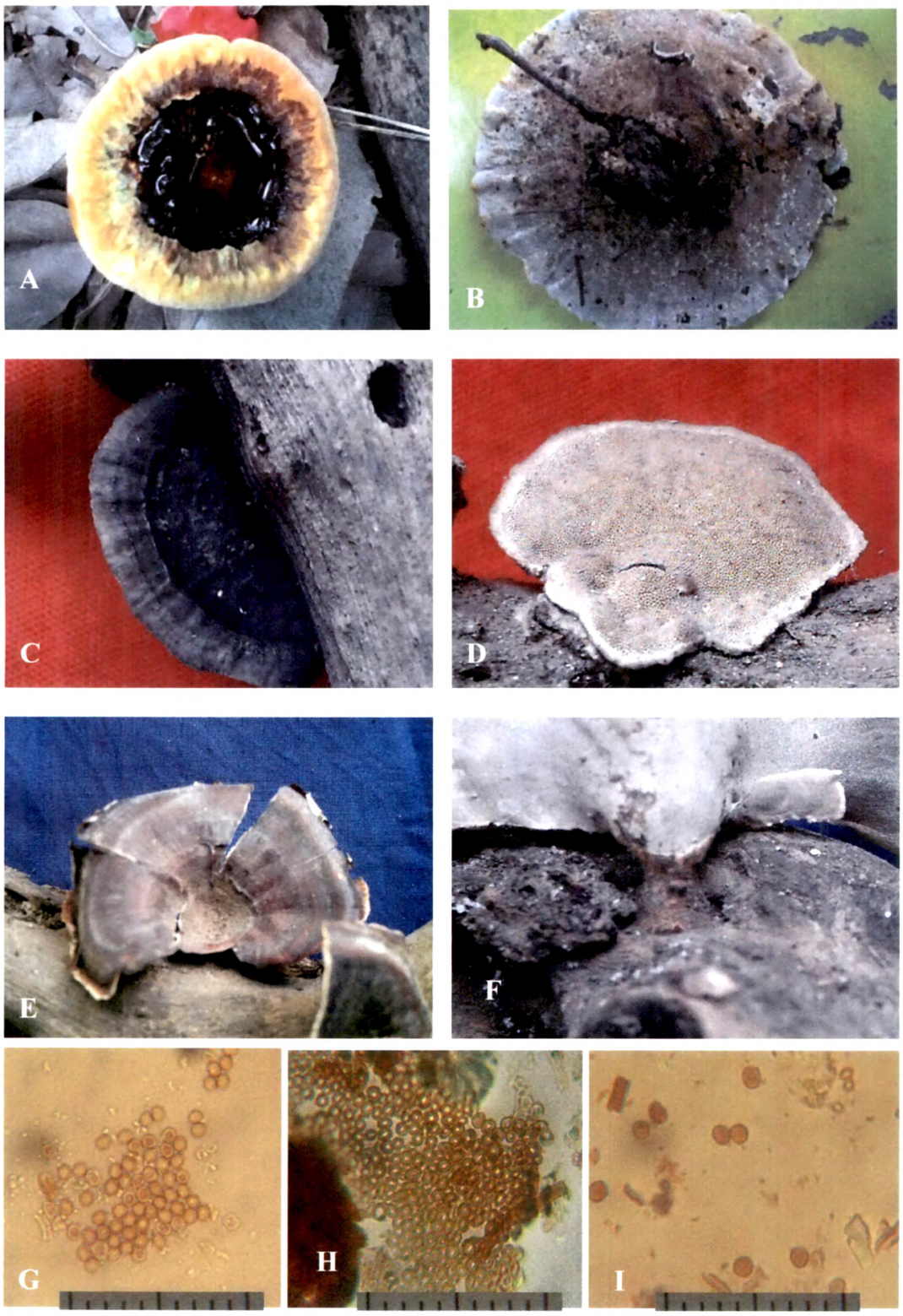
Fig. C. Fiber cells were separated due to the decay of middle lamella.

Fig. D: Completely degrade of the multyseriate ray cells take place.

Fig. E. L.S of wood showing lumen vessel is field with hyphae and decay of middle lamella in fiber cells

Fig. F. Magnified portion of ray cells complete degrade of cell walls, which contains only remnants of cell wall.

Plate I



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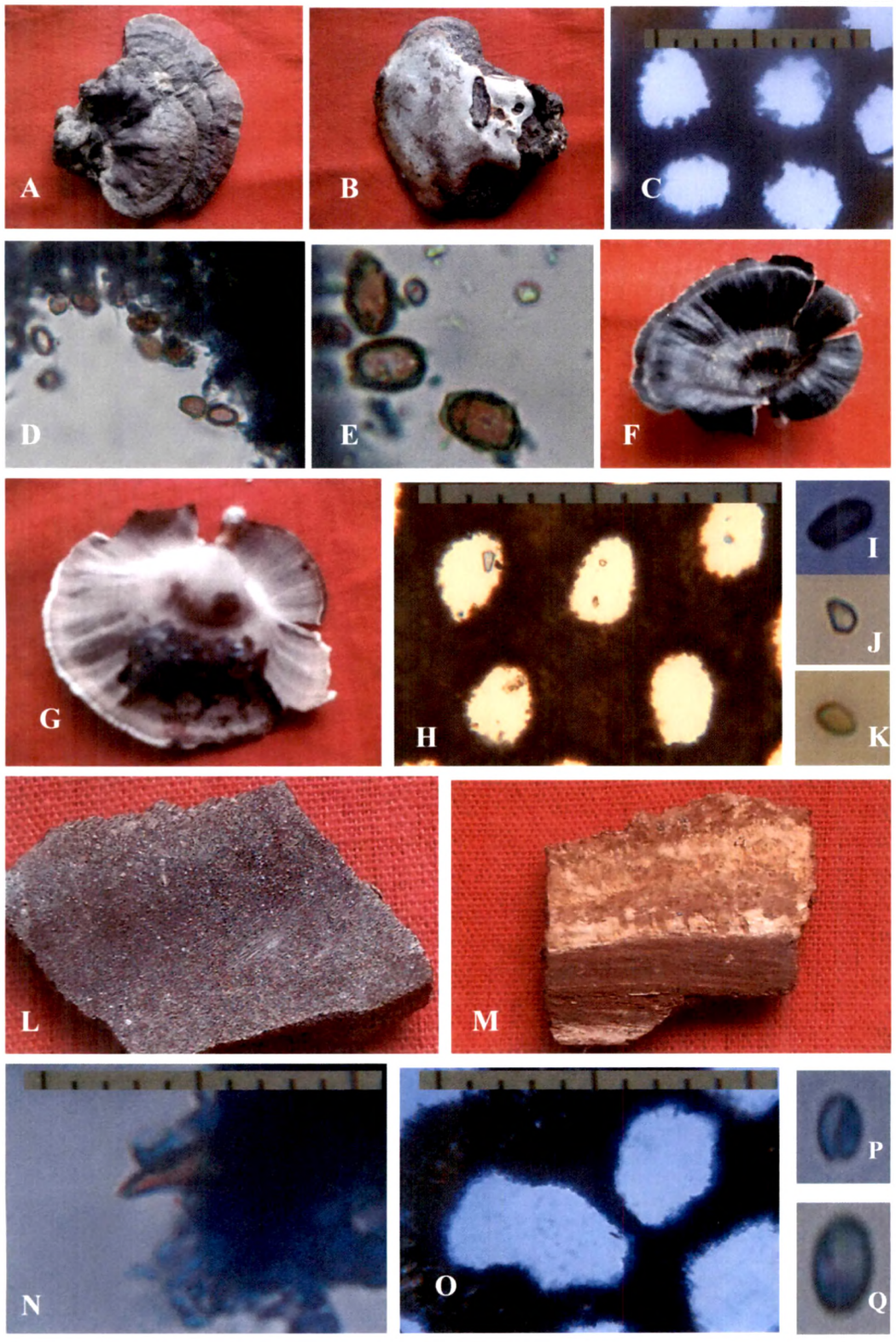

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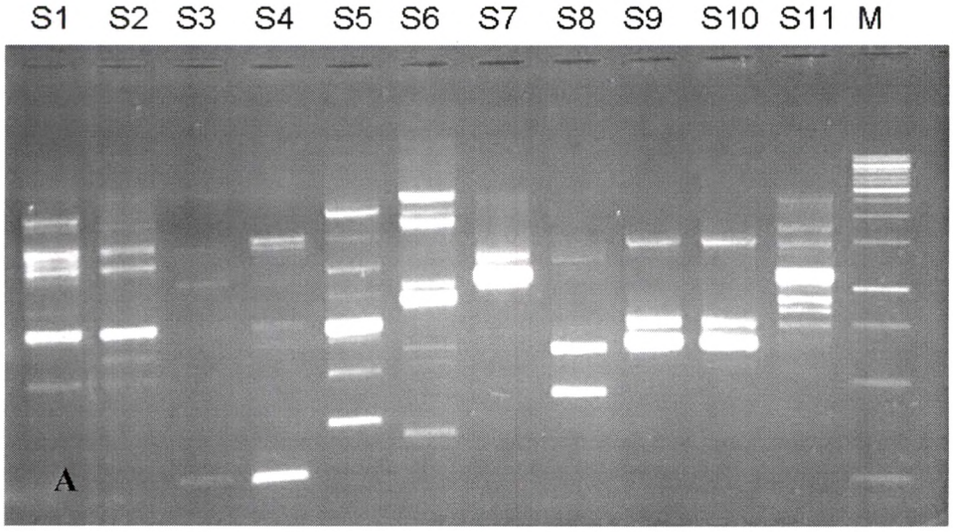
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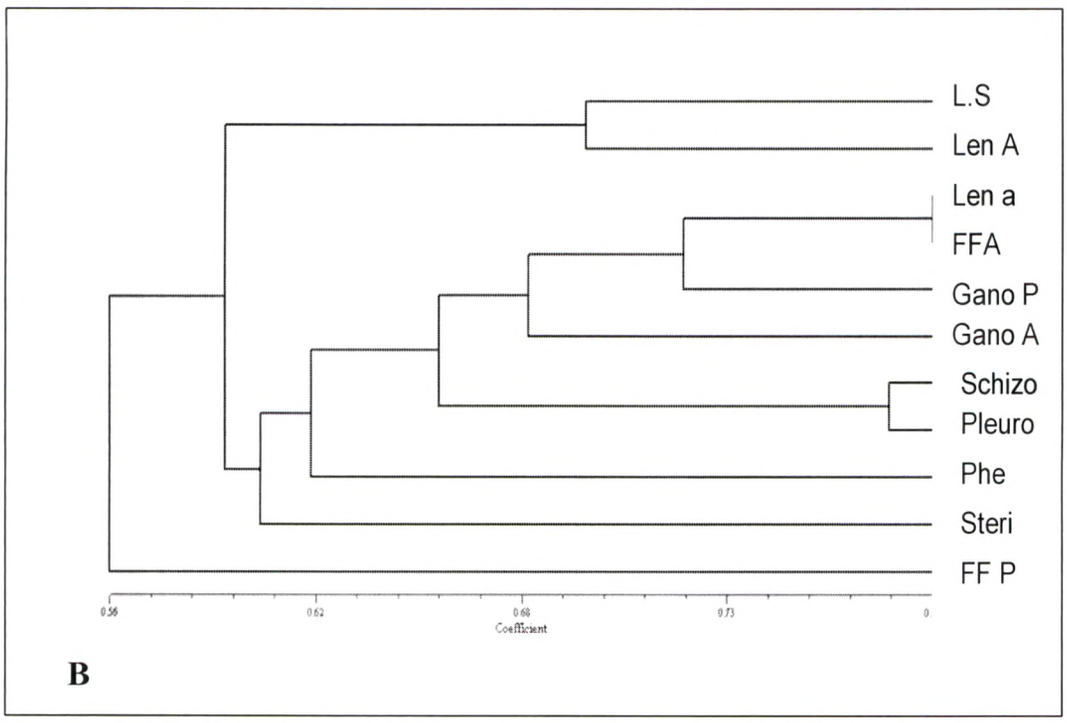
S4
S5
S6
S7
S8
S9
S10
S11
M
A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Coefficient
B

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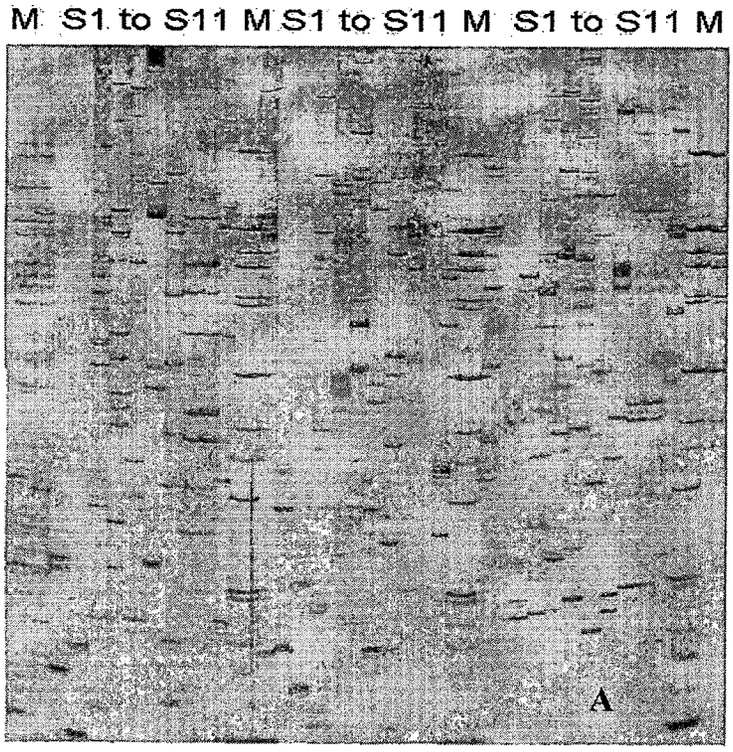
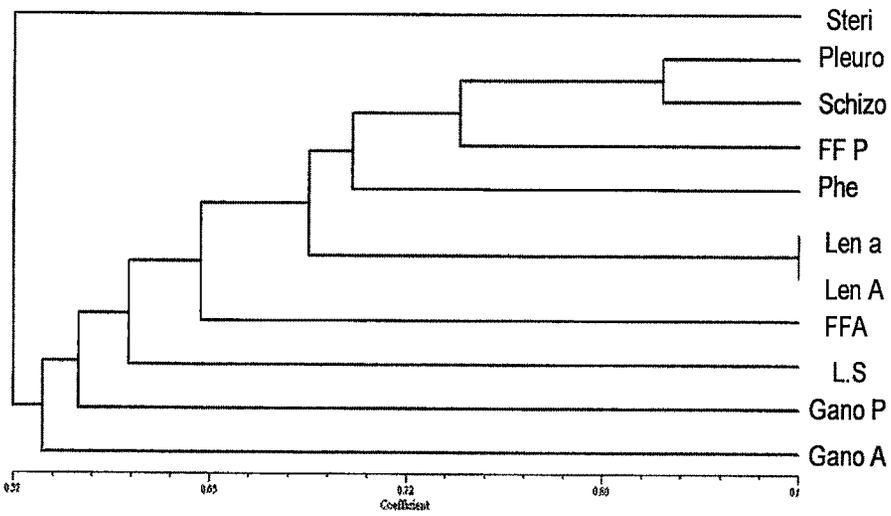
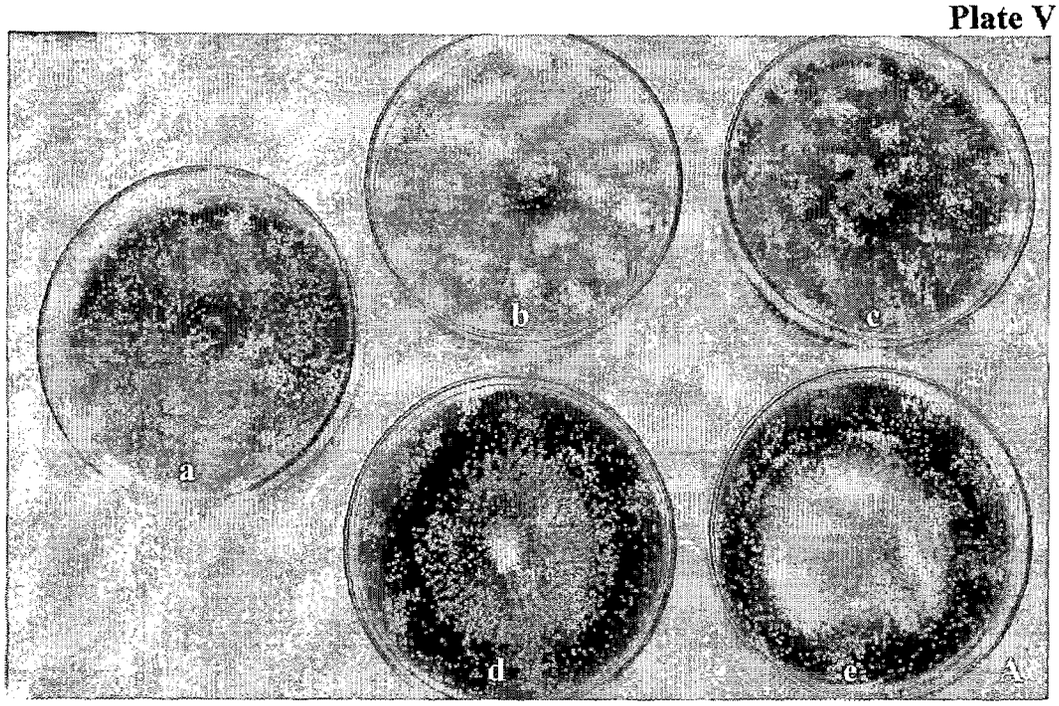


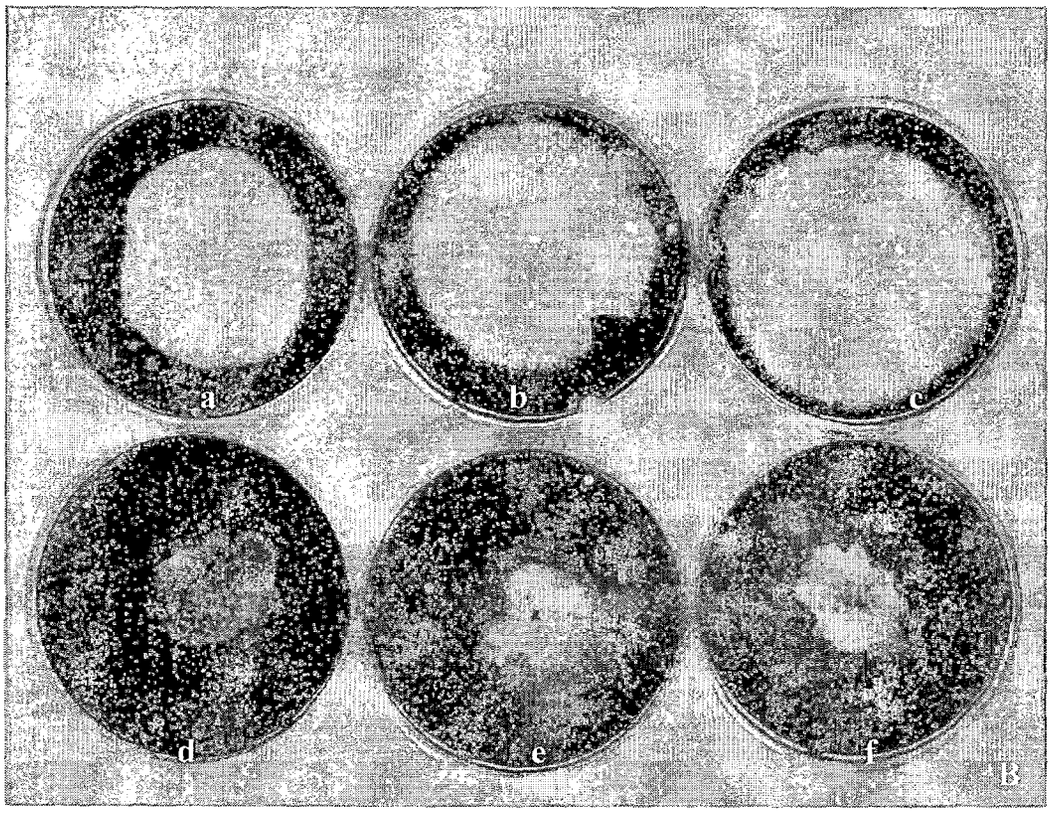


B

Plate XV

Plate V





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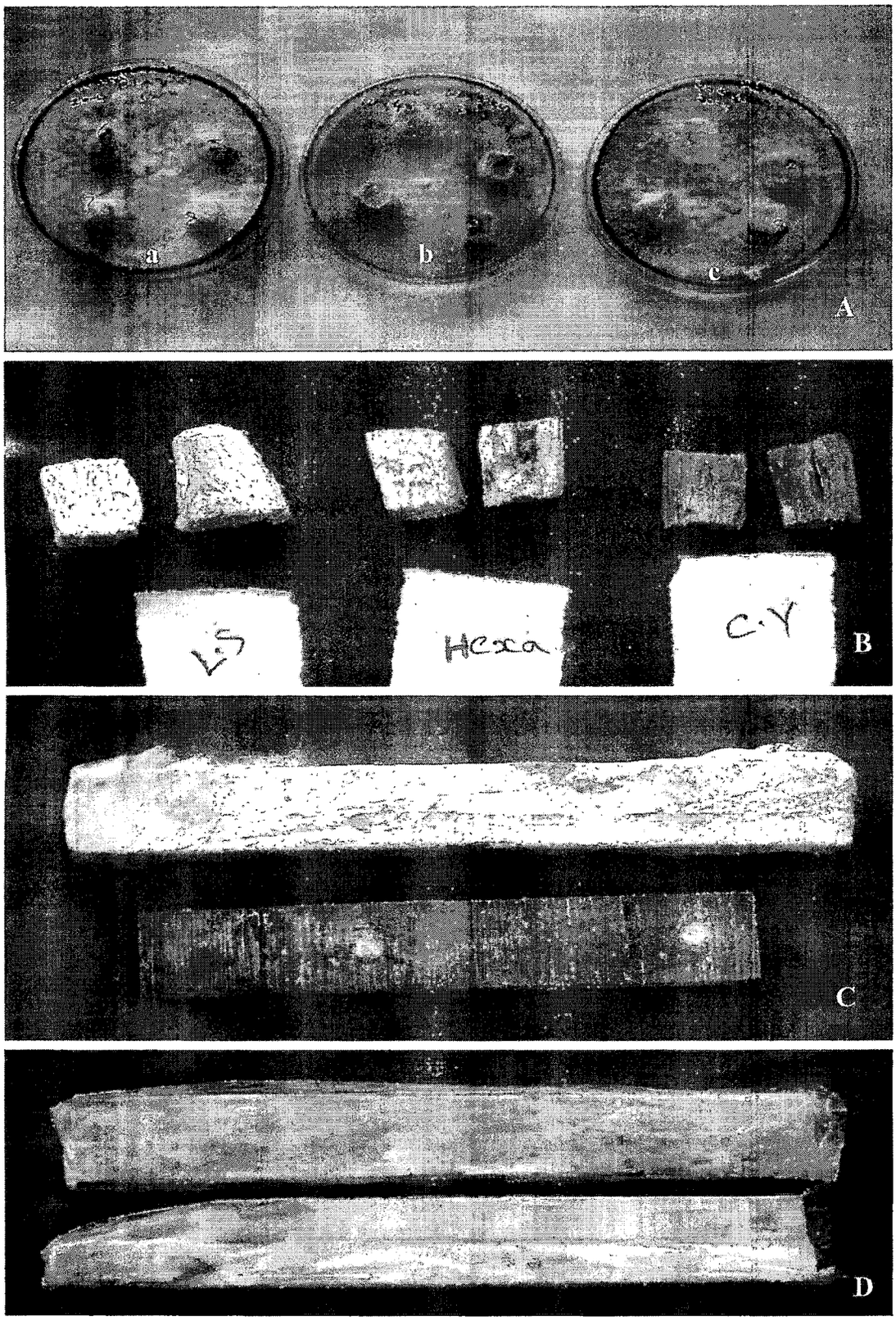

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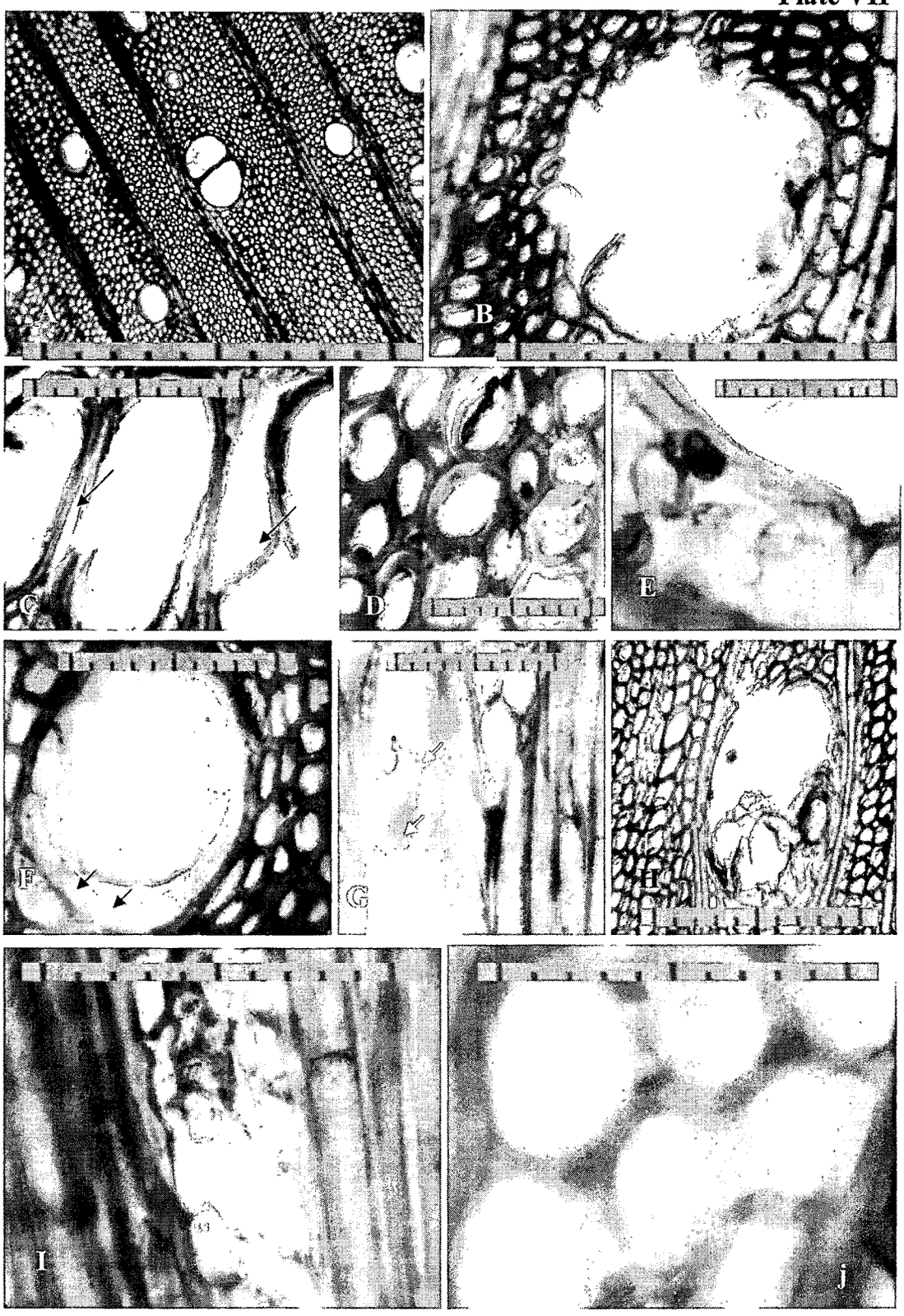

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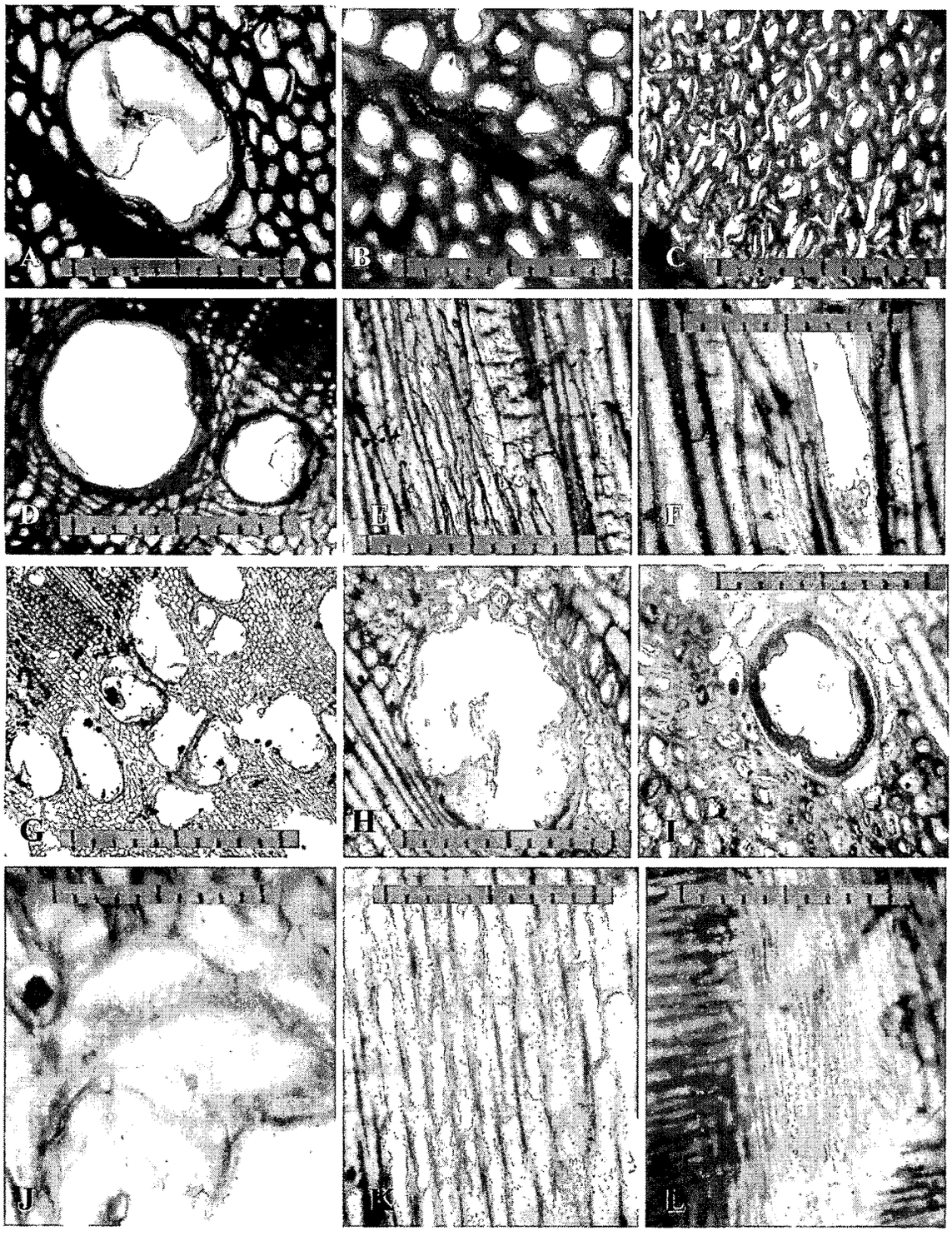

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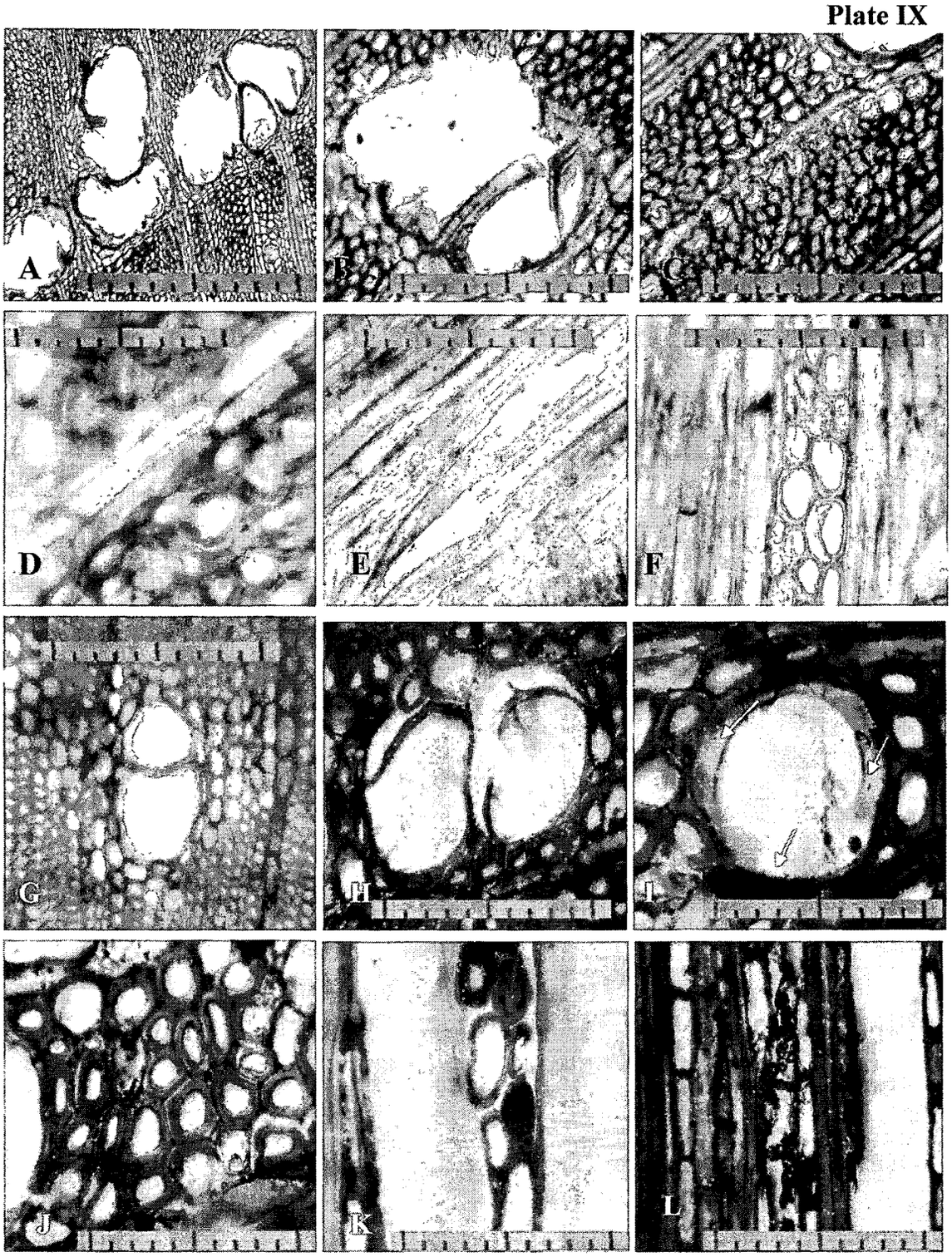

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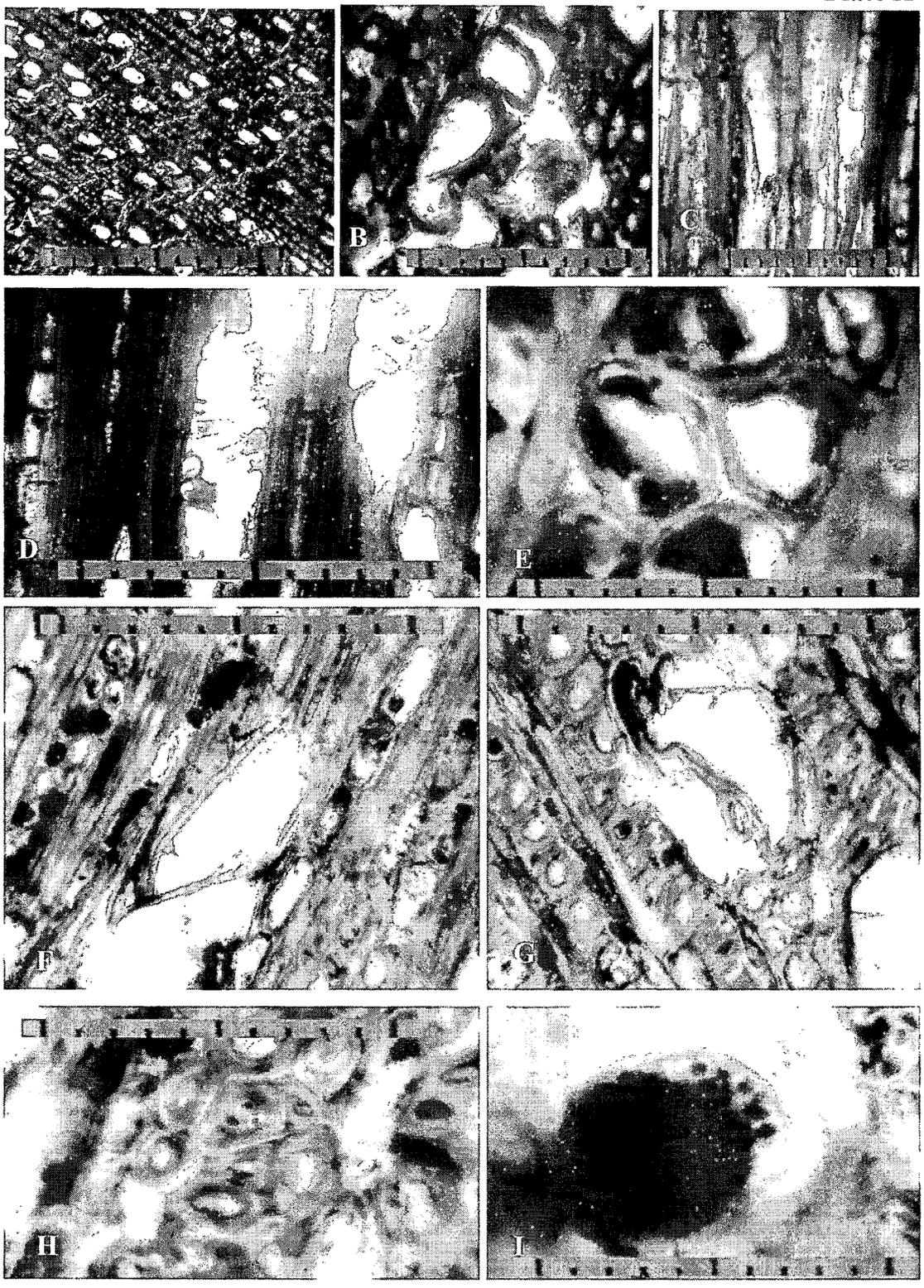

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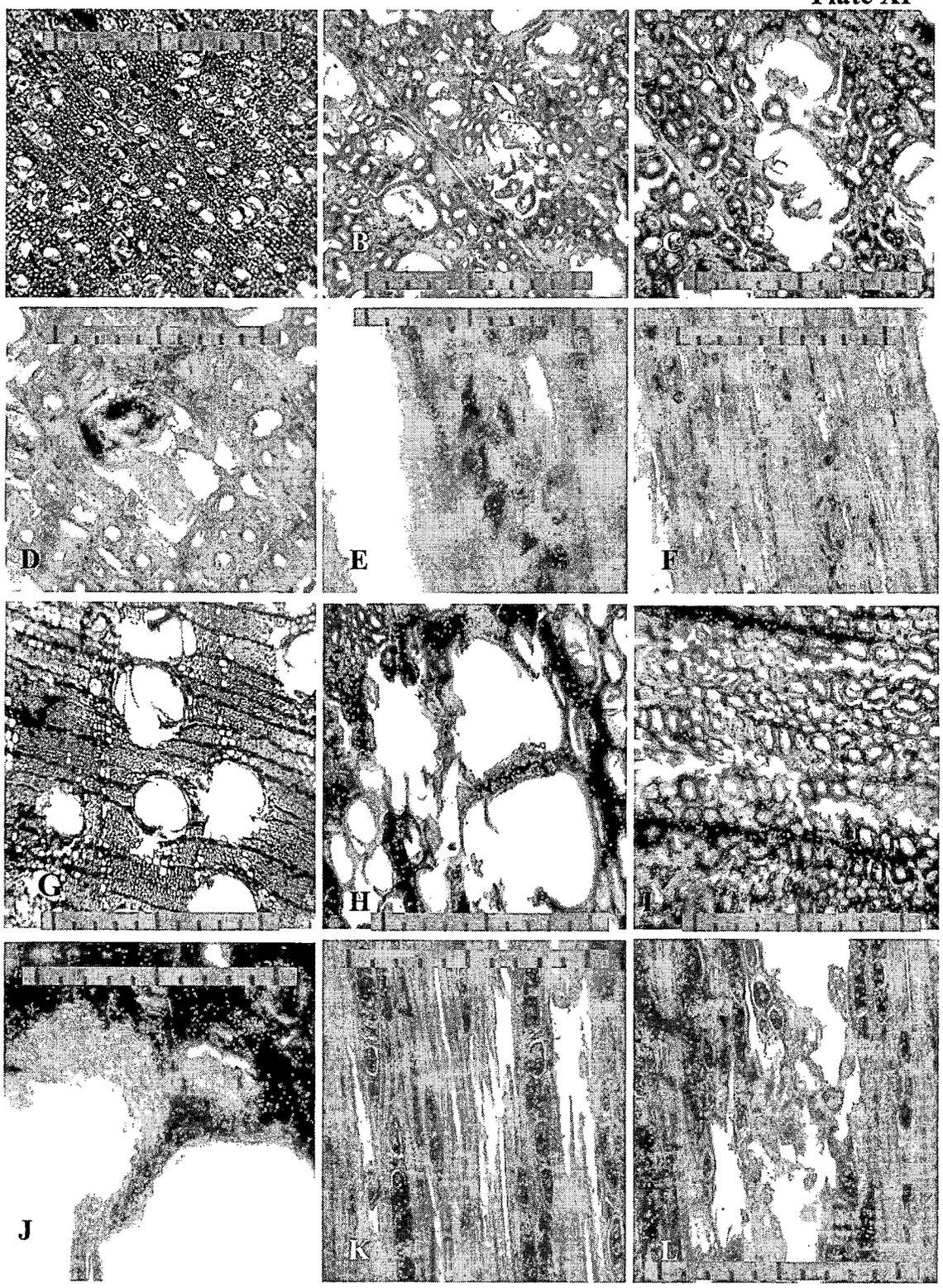

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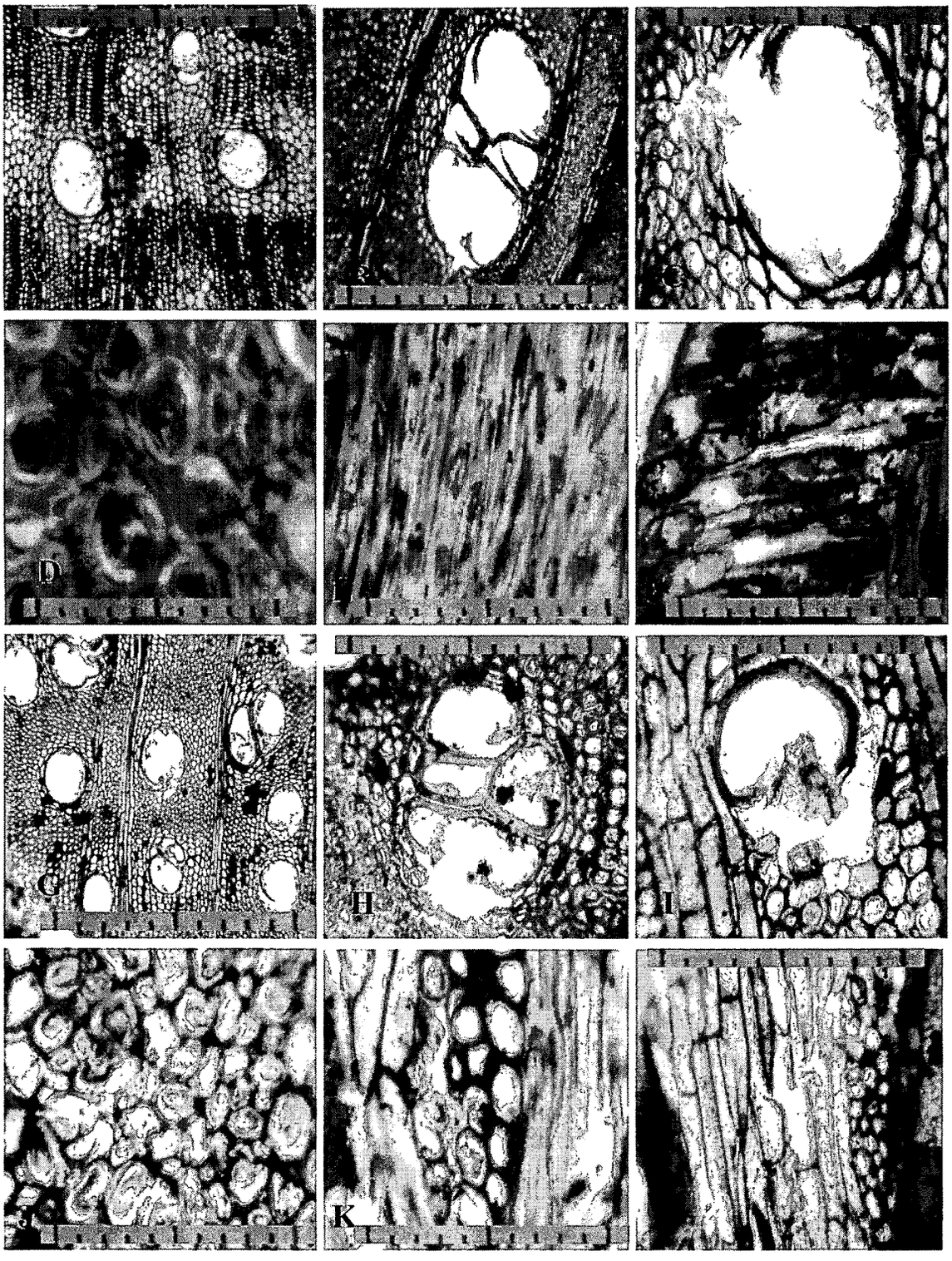

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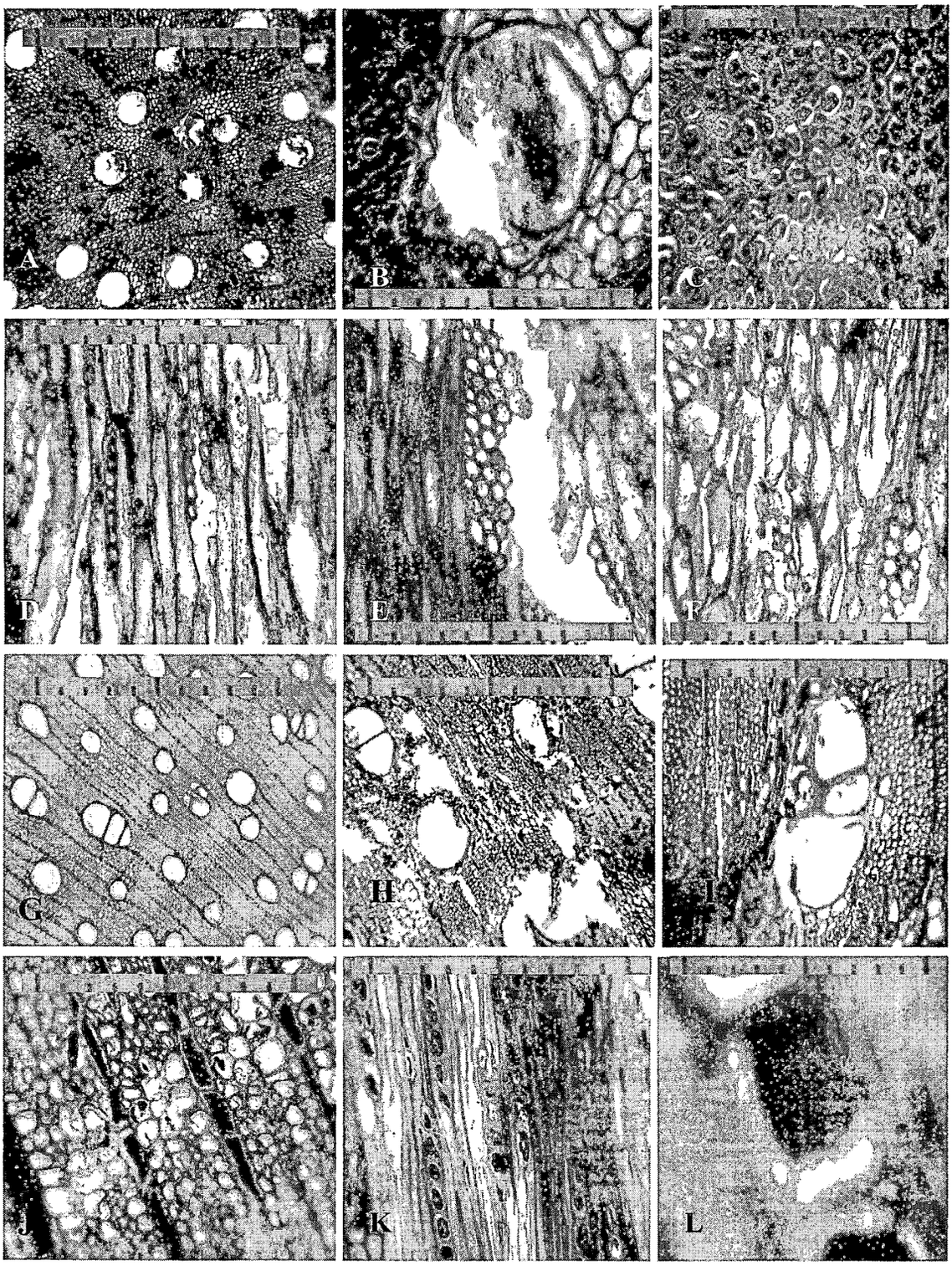

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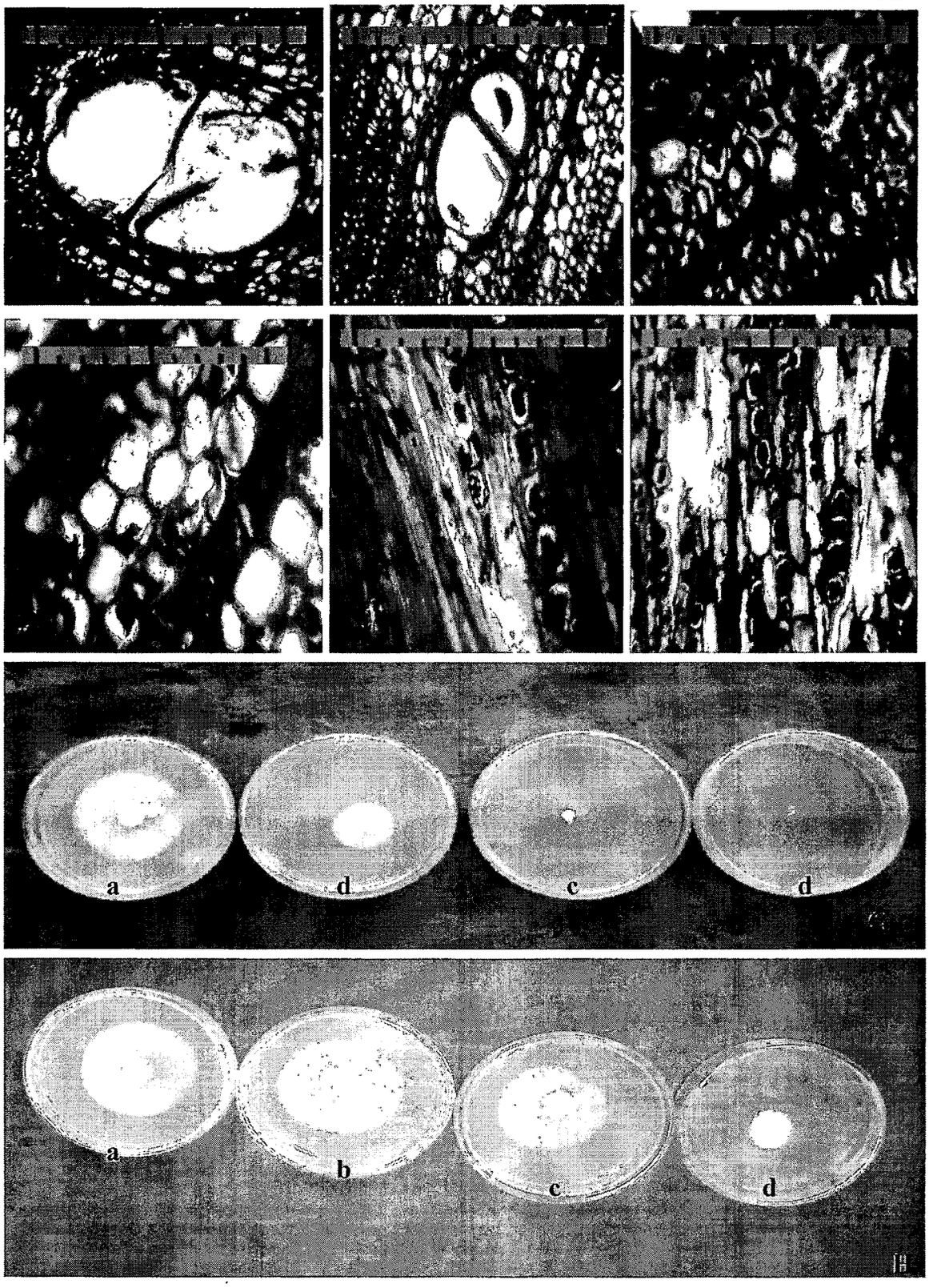

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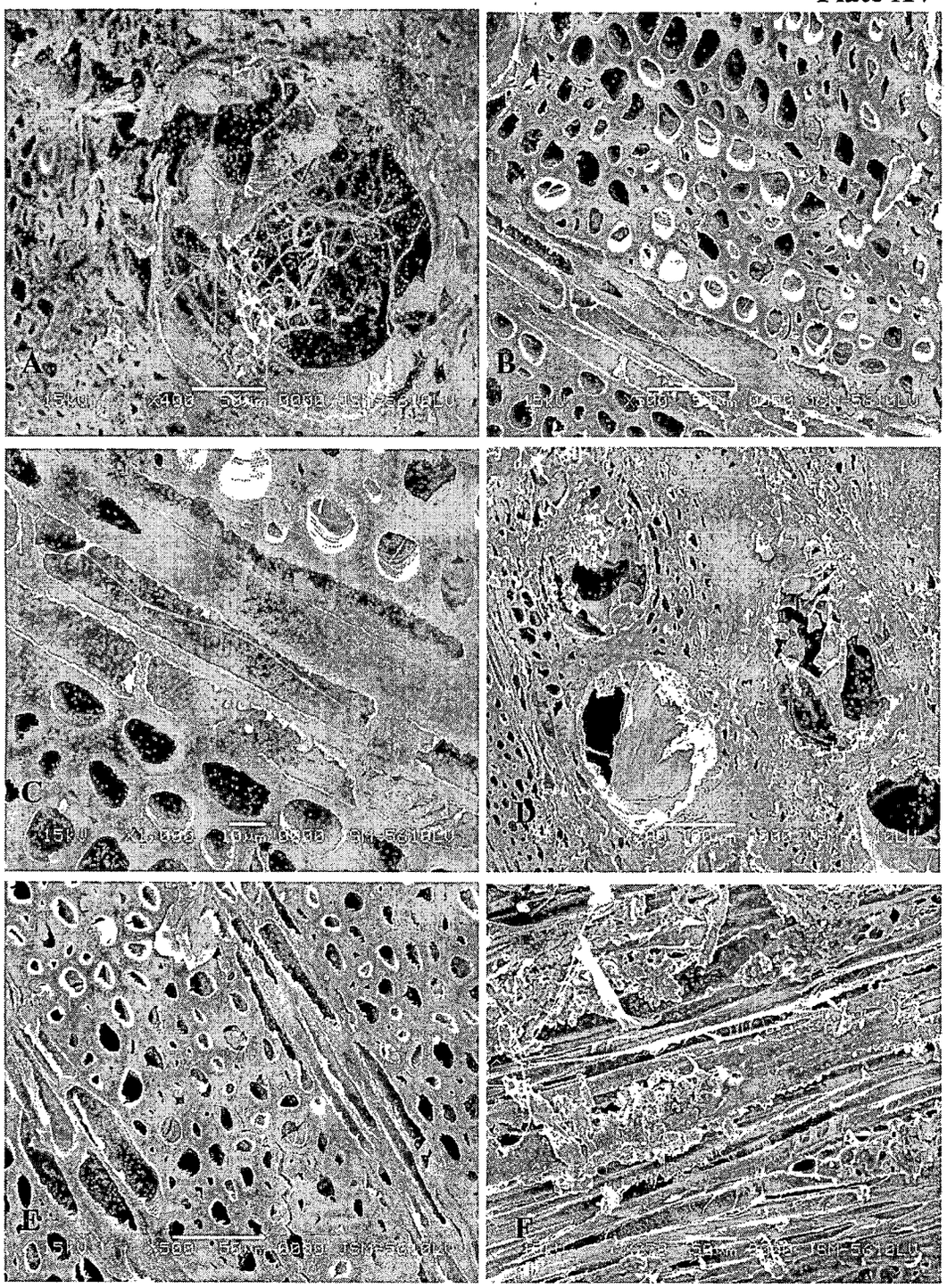
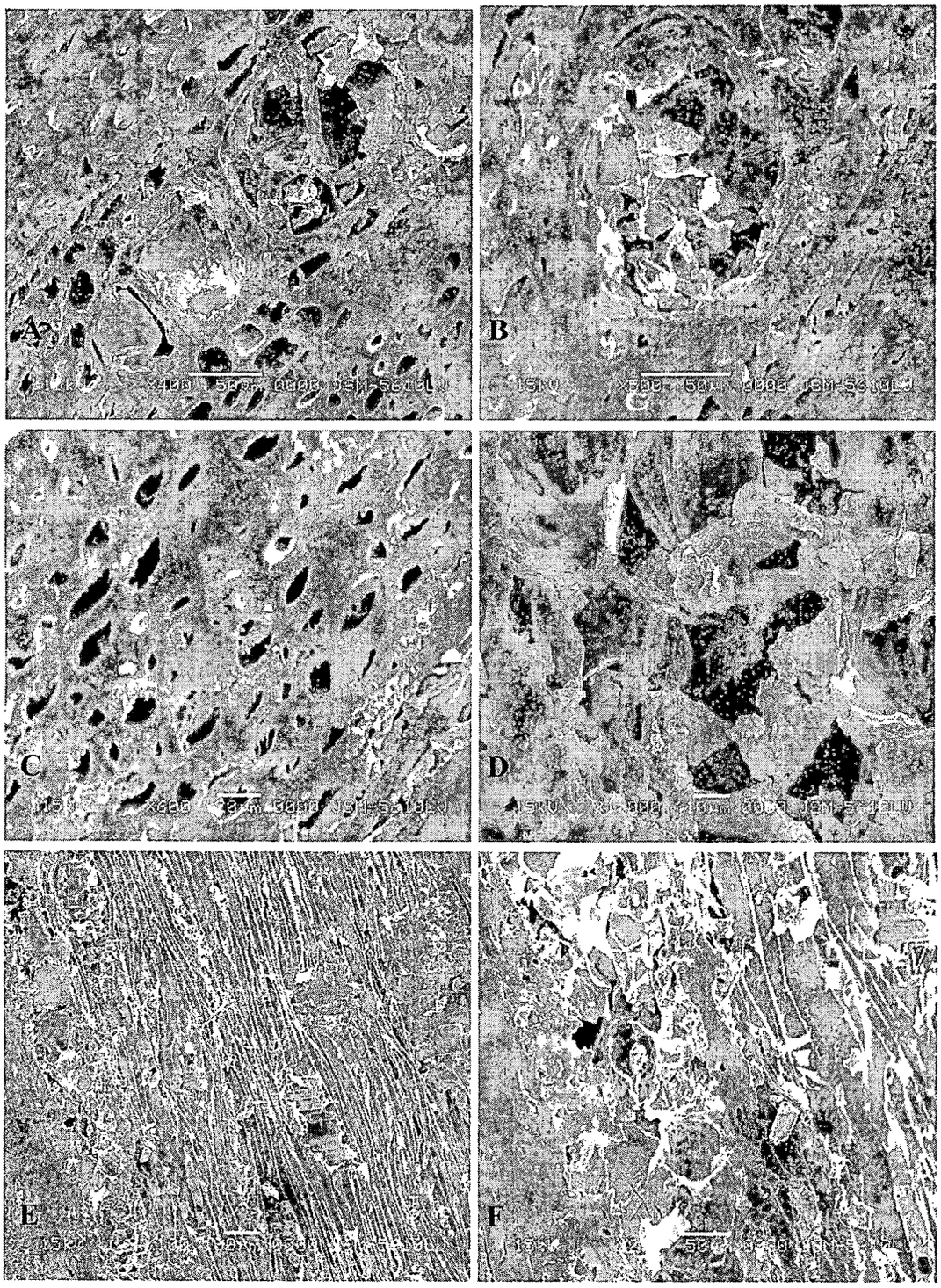


Degradation of Teak wood
(SEM Photographs)

Plate XVI



Degradation of Teak wood
(SEM Photographs)