Fig. 1.1 A-F.

1.1A. Mature stigma in Catharanthus roseus showing a dumb-bell shaped appearance with a viscuous exudate bathing the surface. Note the glistening nature.

1.1B. Transverse section of a mature stigma showing elongated papillae cells arranged in a radiating pattern. X, 250.

1.1C. Longitudinal section of a mature stigma. Note the longer papillae cells at the base of the stigma (arrow). X, 625.

1.1D. Papillae cells showing a distinct cuticular lining, following staining with Auromine O at stage III. X, 625.

1.1E. Longidudinal section of the stigma at stage III showing long and short papillae. Note the secretory material on the surface. The short papillae show dense cytoplasm. X, 250.

1.1F. Longitudinal section of the stigma showing loosely arranged cells on the periphery. Note the pollen-tube traversing the intercellular spaces. X, 625.

Fig. A.

A_1 - Anther lobe showing single hypodermal layer of archesporial tissue. x,100

A_2 - Archesporial tissue divided into a primary parietal layer and primary sporogenous layer. x,100

A_3 - Anther lobe showing primary parietal cell dividing to form secondary parietal cell. x,100

A_4 - Sporogenous cell divide repeatedly to form a mass of sporogenous cells. x,100

A_5 - Anther lobe showing a single mass of spore mother cells with a distinct tapetal layer. x,100

A_6 - Mature anther lobe showing epidermal layer, endothecial layer, tapetum and fully formed pollen grains. x,100

A_7 - Tetrasporangiate anther. x,50

A_8 - Anther lobe showing fully formed endothecium with distinct fibrillar thickenings. x,100

ai - archesporial initial; en - endothecium;

pr - primary parietal; ps - secondary parietal;

sp - sporogenous cell; t - tapetum.

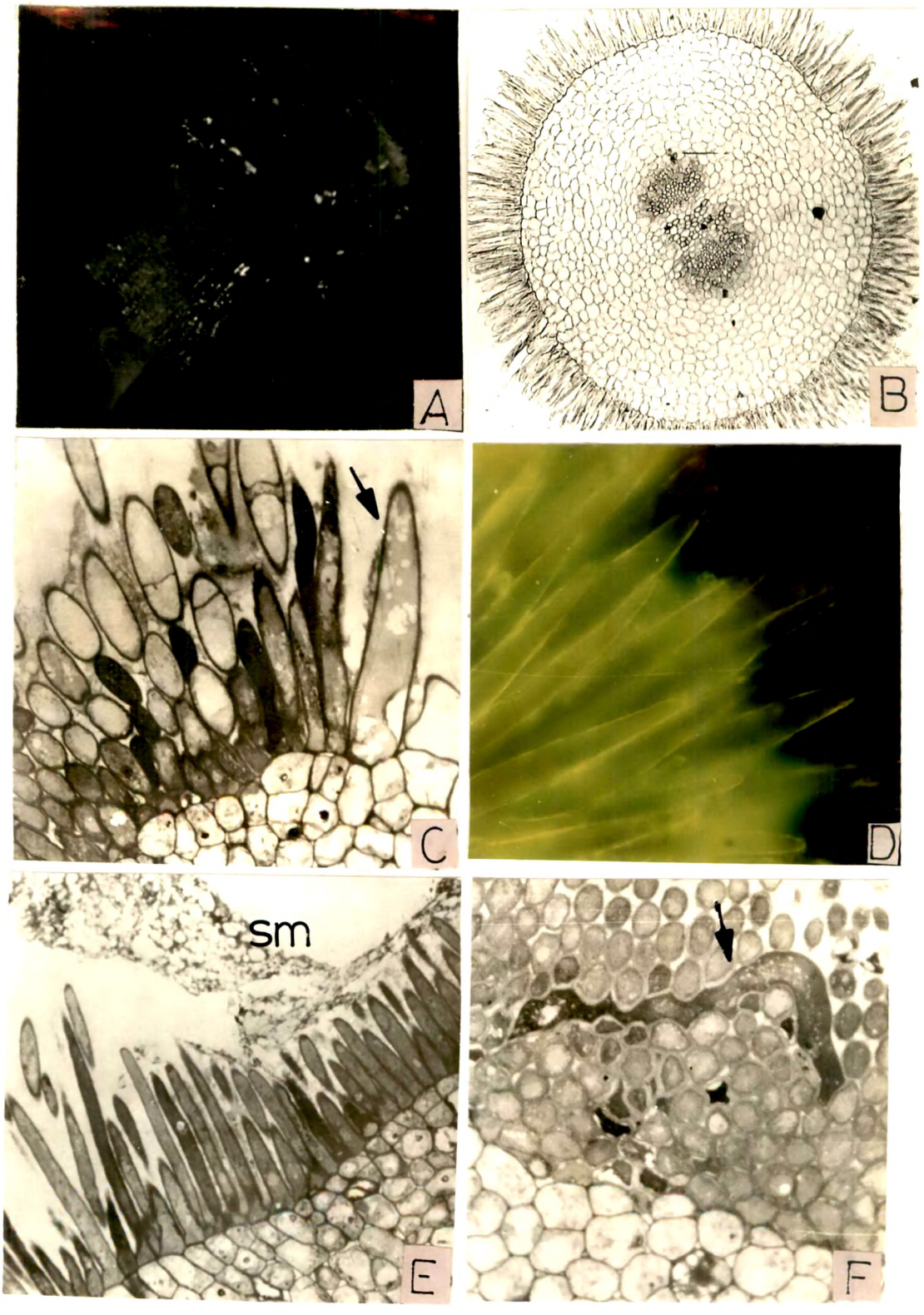

Fig - 1·1

Fig. 1.2 A-F.

1.2 A. Longitudinal section of the stigma showing the lower portion of stigma head. Note the basal portion extending down forming a flap like structure. The cells are highly vacuolated and elongated (arrow). X, 625.

1.2B. Transverse section of the base of the stigma head. Note the loosely arranged cells having pollen tubes in the intercellular space (arrows). X, 938.

1.2C. Transverse section of the style showing three vascular bundles distributed in the ground tissue. The transmitting tissue is loosely arranged. Arrows indicate the flap like structure encircling the tip of the style. X, 250.

1.2D. Stigma at stage I containing homogenous mass of cells. The papillae cells look like tiny protuberances in the early stage. X, 938.

1.2E. Fully formed papillae cell at the middle of the stigma head by stage II. Note the secretory material on the surface. X, 625.

1.2F. Longitudinal section of the stigma depicting senescing papillae of the lateral side of the stigma head at stage V. X, 625.

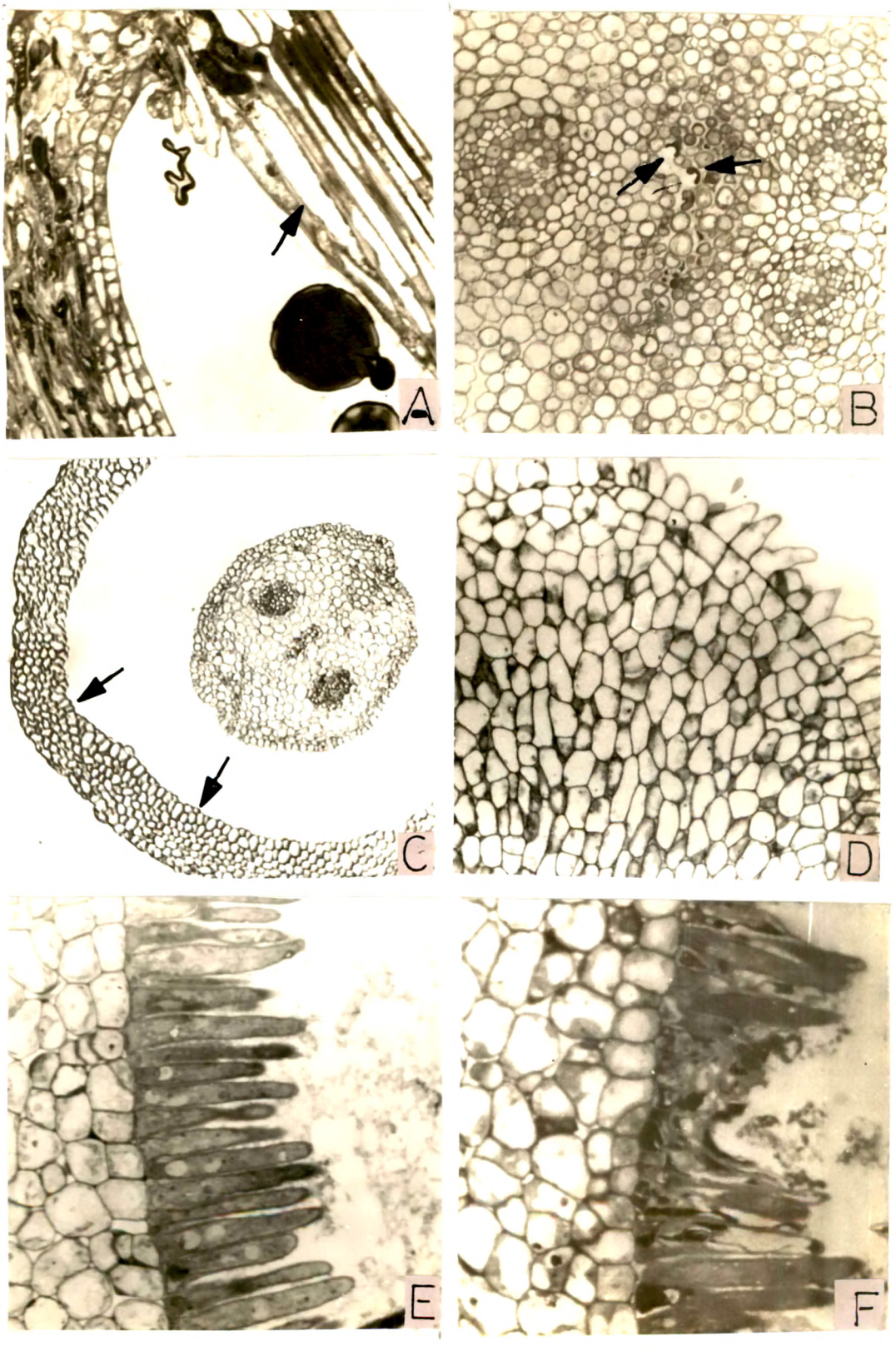

Fig 1·2

Fig. 1.3 A-D.

1.3A. Long papillae cell in C. roseus showing highly vacuolated cytoplasm. Note the abundance of plasmodesmatal connections in the common wall between the papillae and basal cells (arrows). Vesicles contain multilamellate structures. X, 24,000.

1.3B. Cytoplasm of the long papillae showing abundant smooth and rough ER, plastids, mitochondria and dictyosomes. Note the high vacuolation. Vacuoles contain fibrillar material. X, 3000.

1.3C. The cell wall of the long papillae. Showing dispersed microfibrillar texture with osmiophilic material amidst the microfibrils. X, 16000.

1.3D. A magnified view revealing the vesicles and secretory material with in the wall. X, 2400.

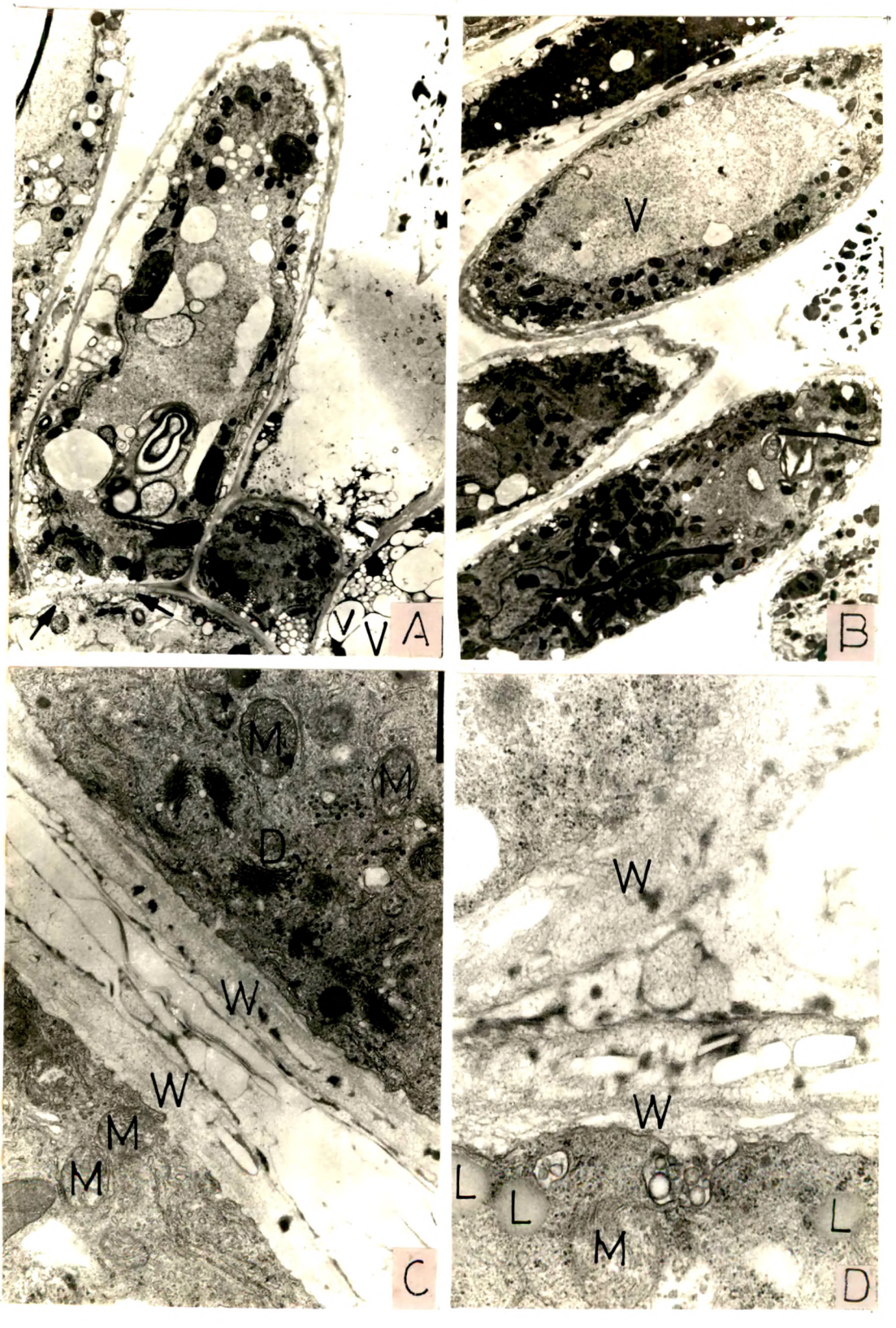

Fig 1·3

Fig. 1.4 A & B.

1.4A. Shows plasmodesmatal connection in the common wall between long papillae and the basal cells (arrows). Note profuse accumulation of vesicles near the wall and the multilamellate structure in the papillae cells. X, 22,500.

1.4B. Papillae cells showing vesicular structure in the intercellular spaces. Plastids show close association with ER and have small dark globules in their matrix. X, 4,500.

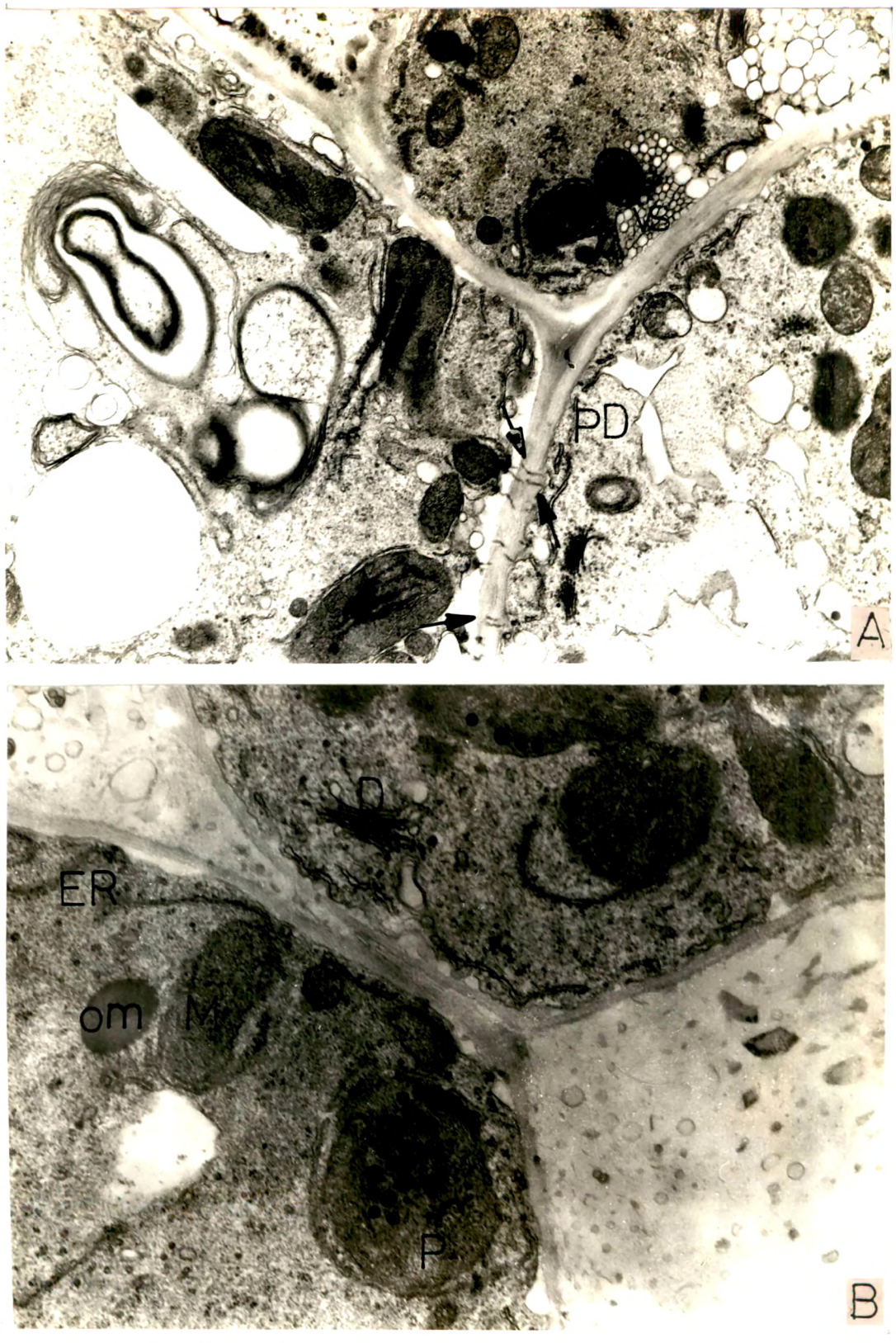

Fig 1·4

Fig. 1.5 A-D.

1.5 A. Cytoplasm of the long papillae cell. Showing mitochondria with tubular cristae and profuse ER. X, 6000.

1.5B. Plastids showing poor internal membrane system and few osmiophilic globules. Note the active dictyosome and mitochondria. X, 3000.

1.5C. Mitochondria showing well developed cristae and association with osmiophilic droplets. Note the undulations of the plasmamembrane and the dispersed cell wall microfibrils. X, 3000.

1.5D. Plastids showing small osmiophilic droplets as well as prolamellar bodies. X, 2000.

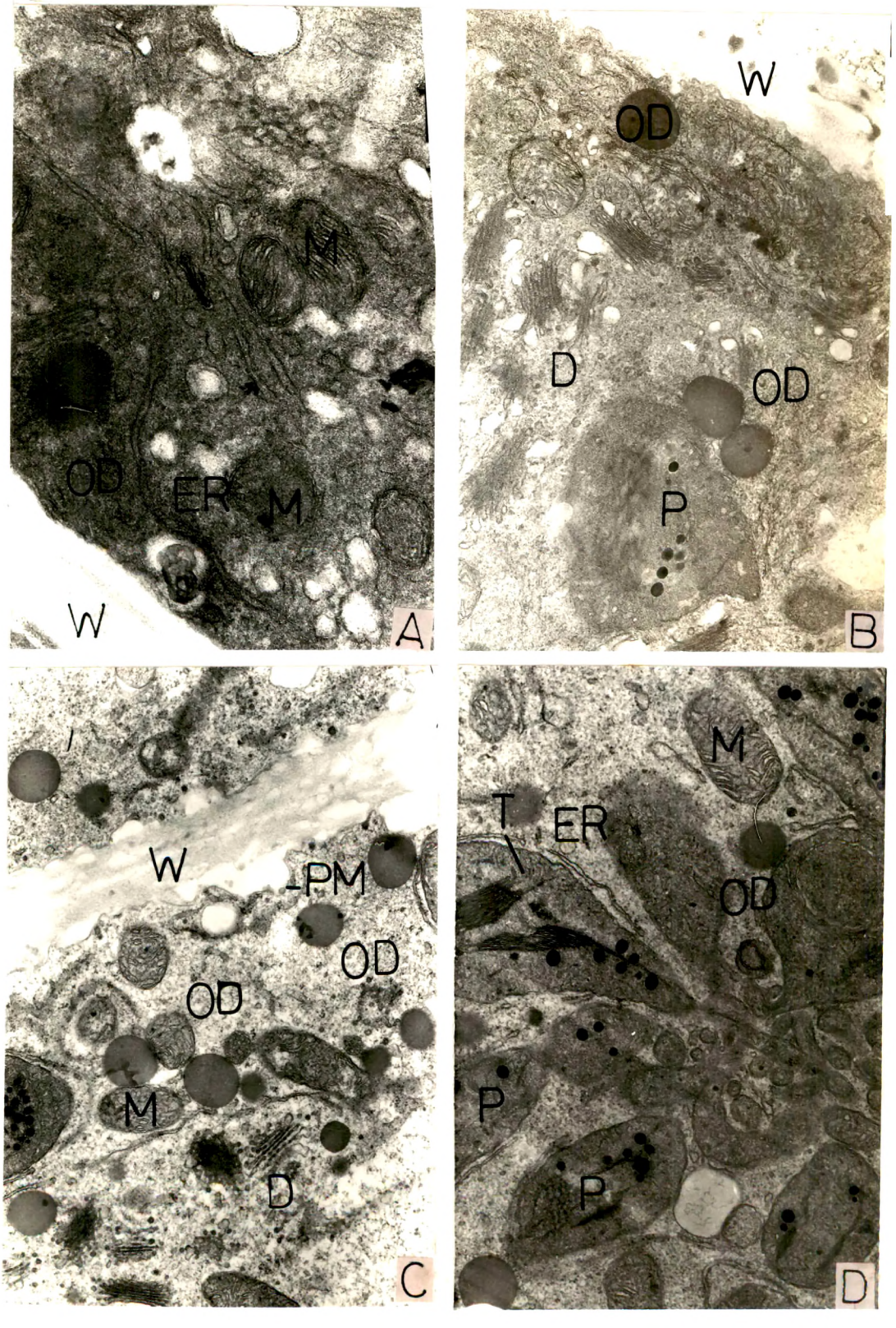

Fig 1·5

Fig. 1.6 A-C.

1.6 A, B. Mitochondria in close association with osmiophilic droplets. A - X, 4000; B - X, 4000.

1.6 C. The ER cisternae, both smooth and rough are seen aligned along the wall of the papillae. X, 4500.

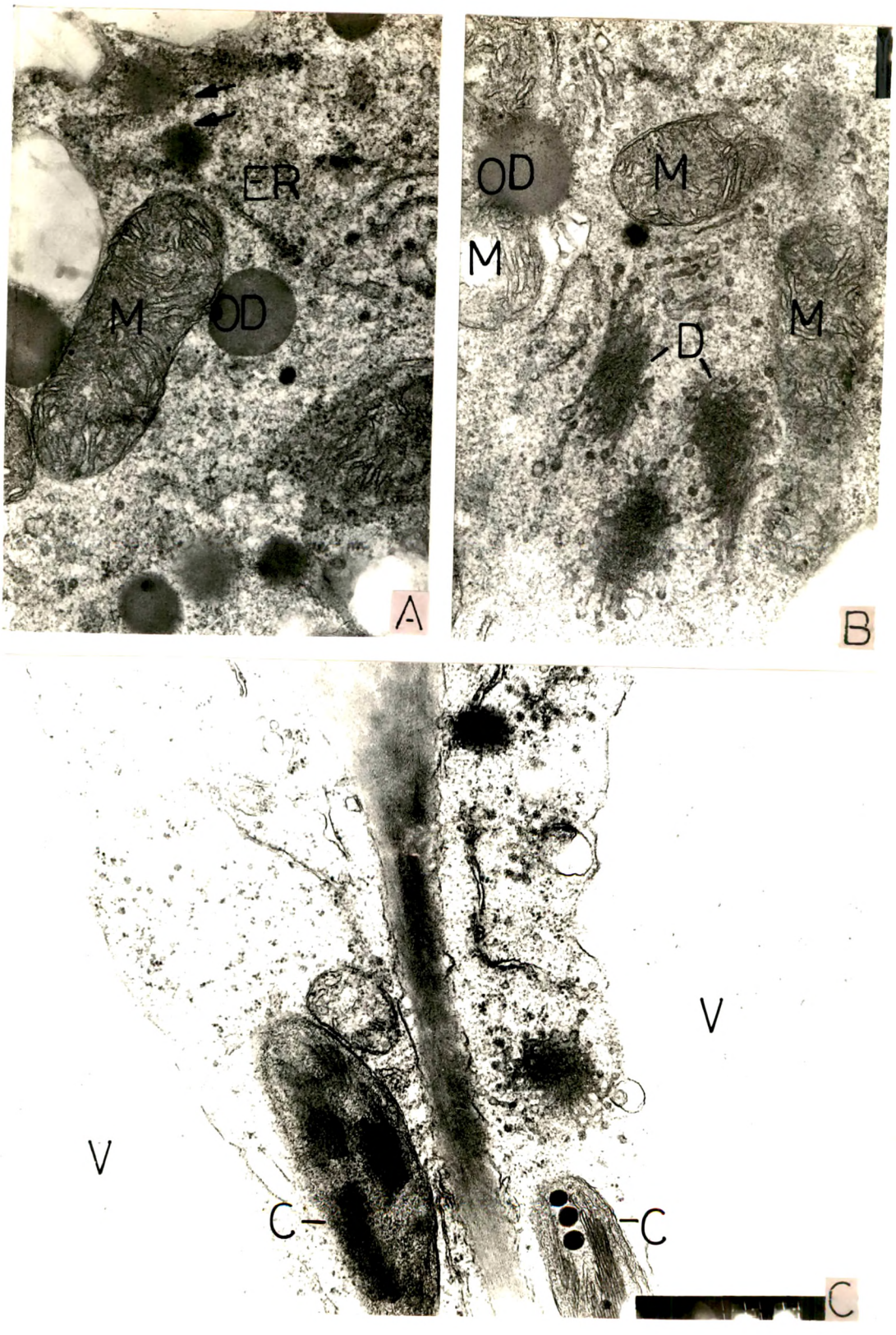

Fig 1·6

Fig. 1.7 A-D.

1.7 A. The cytoplasm of the short papillae showing dense appearance. X, 3000.

1.7 B. The intercellular spaces between the papillae filled with secretory material at the secretory stage. X, 3000.

1.7 C. Cytoplasm of the short papillae show abundance of polysomes, ER, free ribosomes, dictyosomes and mitochondria. X, 16,000.

1.7 D. Spherical and oval shaped mitochondria with profuse cristae and dictyosomes in the cytoplasm of small papillae. Note the osmiophilic droplets. X, 16,000.

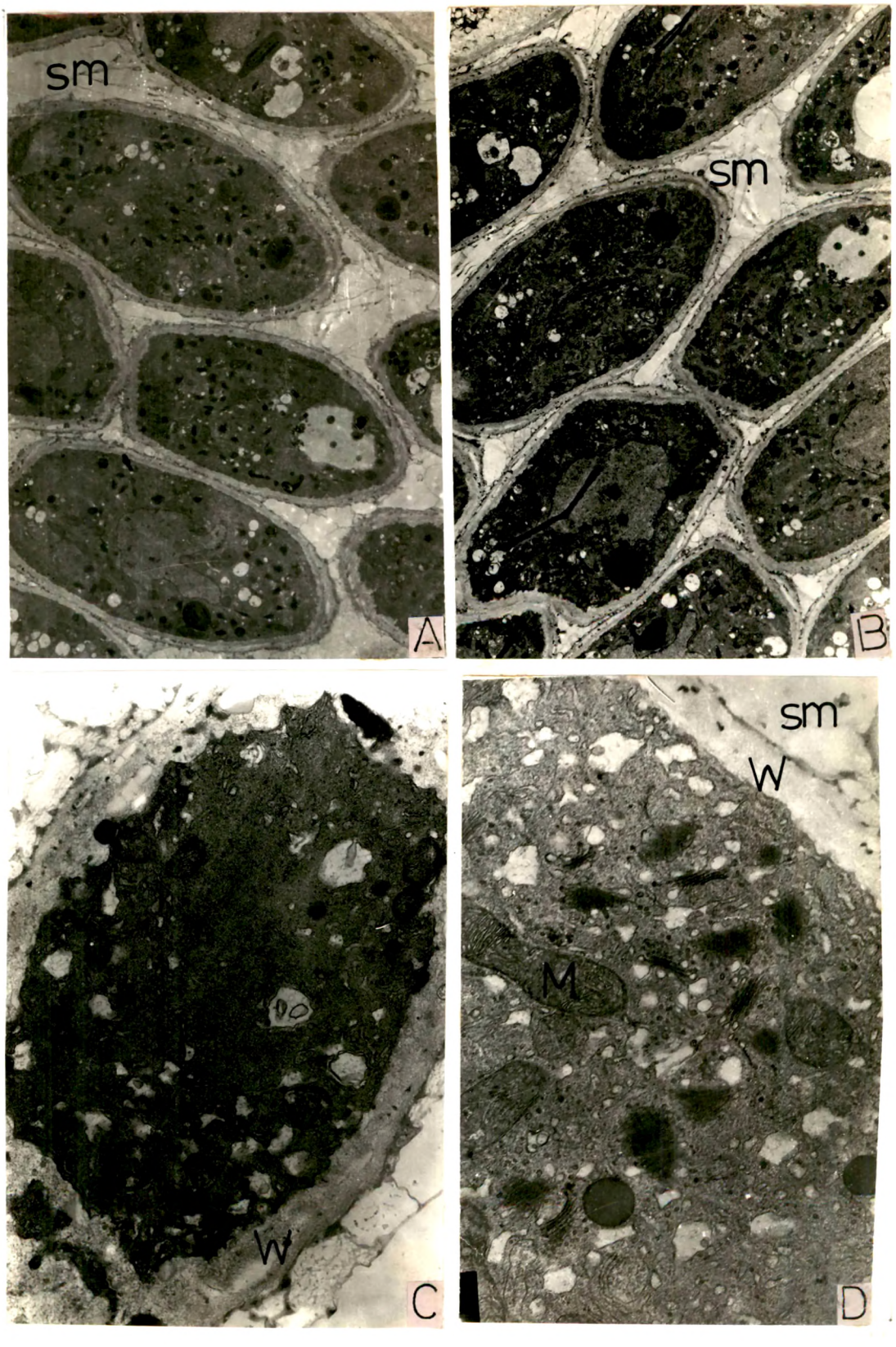

Fig 1·7

Fig. 1.8 A-B

1.8 A. The short papillae cells in late secretory stages showing highly vacuolated cytoplasm.
A - X, 8000.

1.8 B. The cell wall of the short papillae depicting a highly microfibrillar nature. Note the secretory material accumulated in the intercellular space along with the vesicular structures (arrows).
X, 12,000.

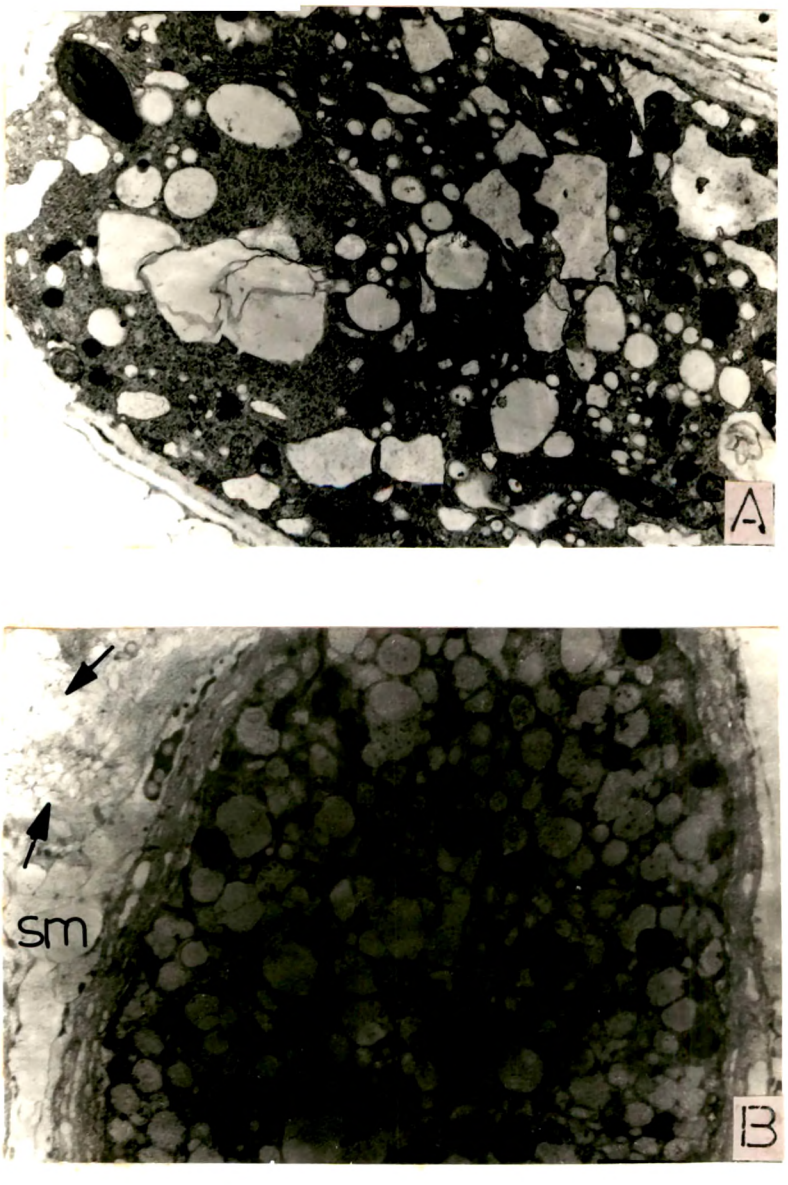

Fig 1·8

Fig. 1.9 A-C.

1.9 A. The vacuole in the cytoplasm of the short papillae showing fibrillar deposits. Note the large osmiophilic droplets in it. X, 4000.

1.9 B. Osmiophilic droplets in the cytoplasm showing close association with ER cisternae. Note the ER aligned along radial and tangential walls (arrows). X, 2000.

1.9 C. The vesicles in short papillae cell cytoplasm aggregate together to form multivesicular body near the active dictyosome. The ER cisternae sometimes fuse with the plasmalemma invagination (see arrows). Note the secretory material within the wall. X, 4000.

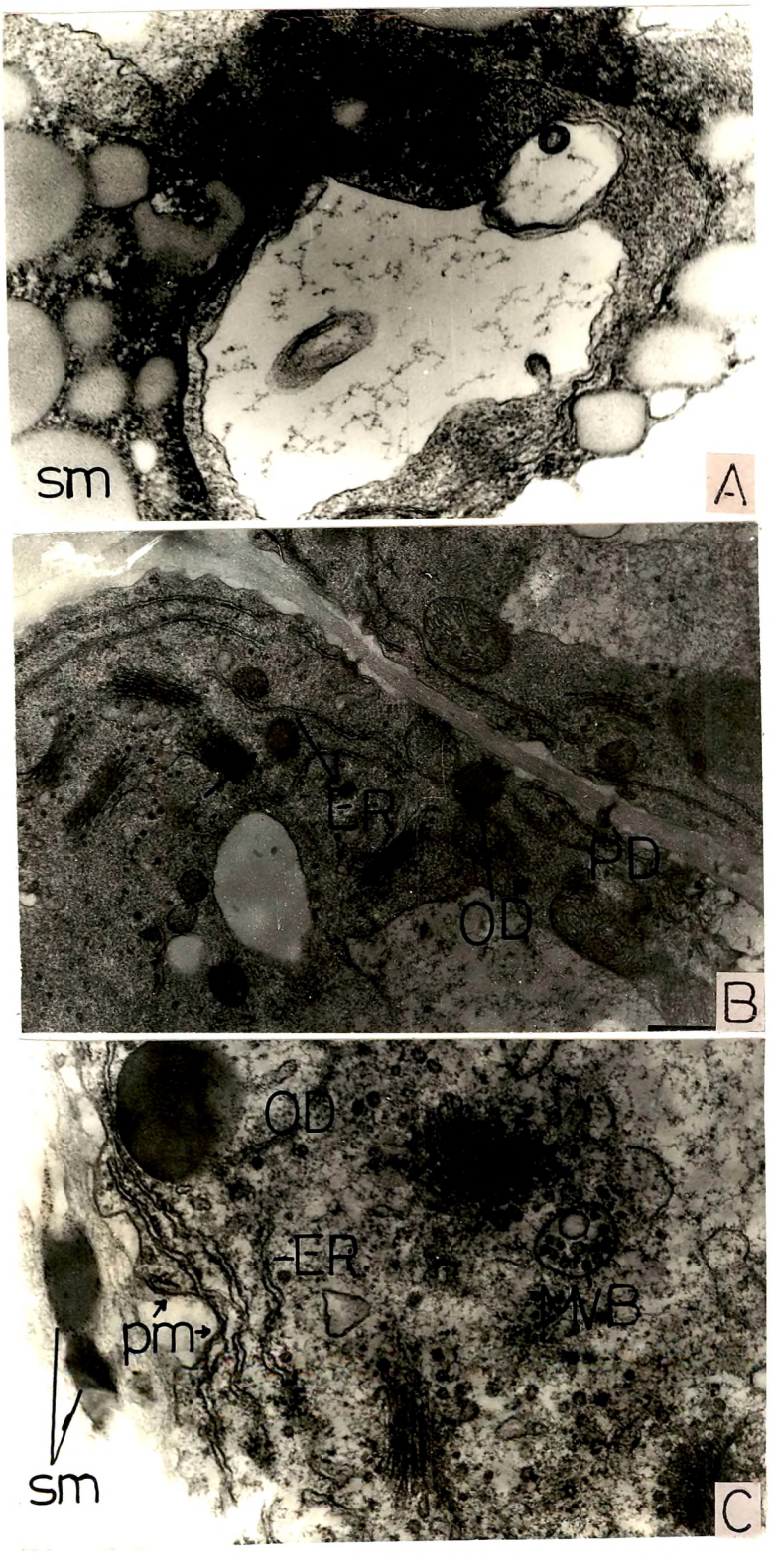

Fig 1·9

Fig. 1.10 A-D.

1.10 A. The dictyosomes producing small dense vesicles at stage II. Note the osmiophilic material associated with the mitochondria. X, 3000.

1.10 B. The mitochondria distributed in the cytoplasm in the late stage showing sparse cristae. Note also the abundance of smooth ER and vesicles. X, 2000.

1.10 C. Stage IV showing plasmalemma undulations with material in them resulting wall membrane apparatus (arrows). X, 2000.

1.10 D. The cell wall showing deposition of osmiophilic material at stage IV. Note the ER associated with the plasmalemma. X, 4000.

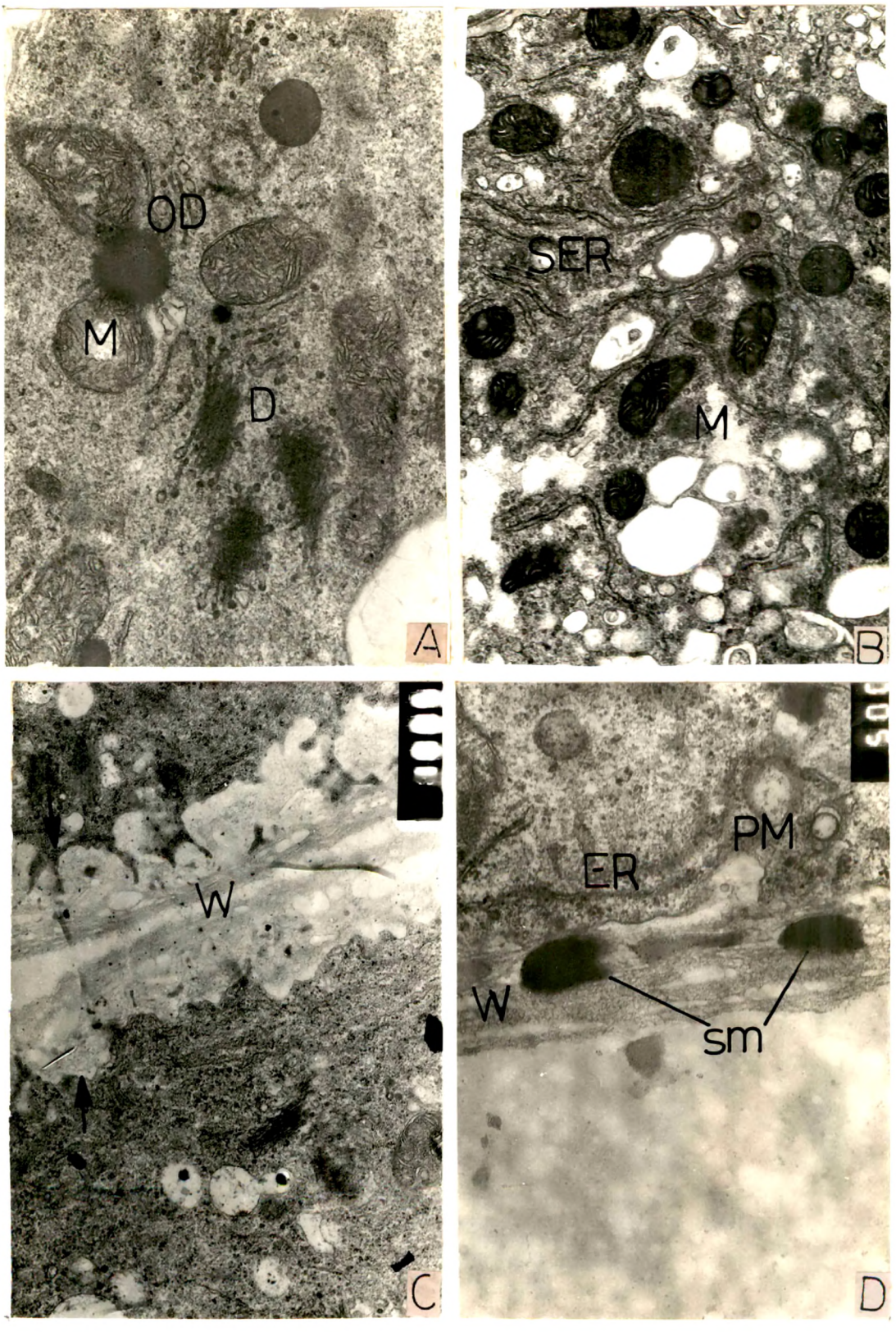

Fig 1·10

Fig. 1.11 A-D.

1.11 A. The short papillae cell wall showing highly dispersed microfibrillar texture at the early stage. The plasmalemma undulations are also evident (arrows). X, 3000.

1.11 B. In stage IV and V the cytoplasm shows large translucent vesicles. The mitochondria are aligned near the wall. X, 3000.

1.11 C. Nucleus with uniformly dispersed chromatin. X, 16,000.

1.11 D. Cytoplasm showing small dense vesicles aggregated to form multivesicular bodies. X, 3000.

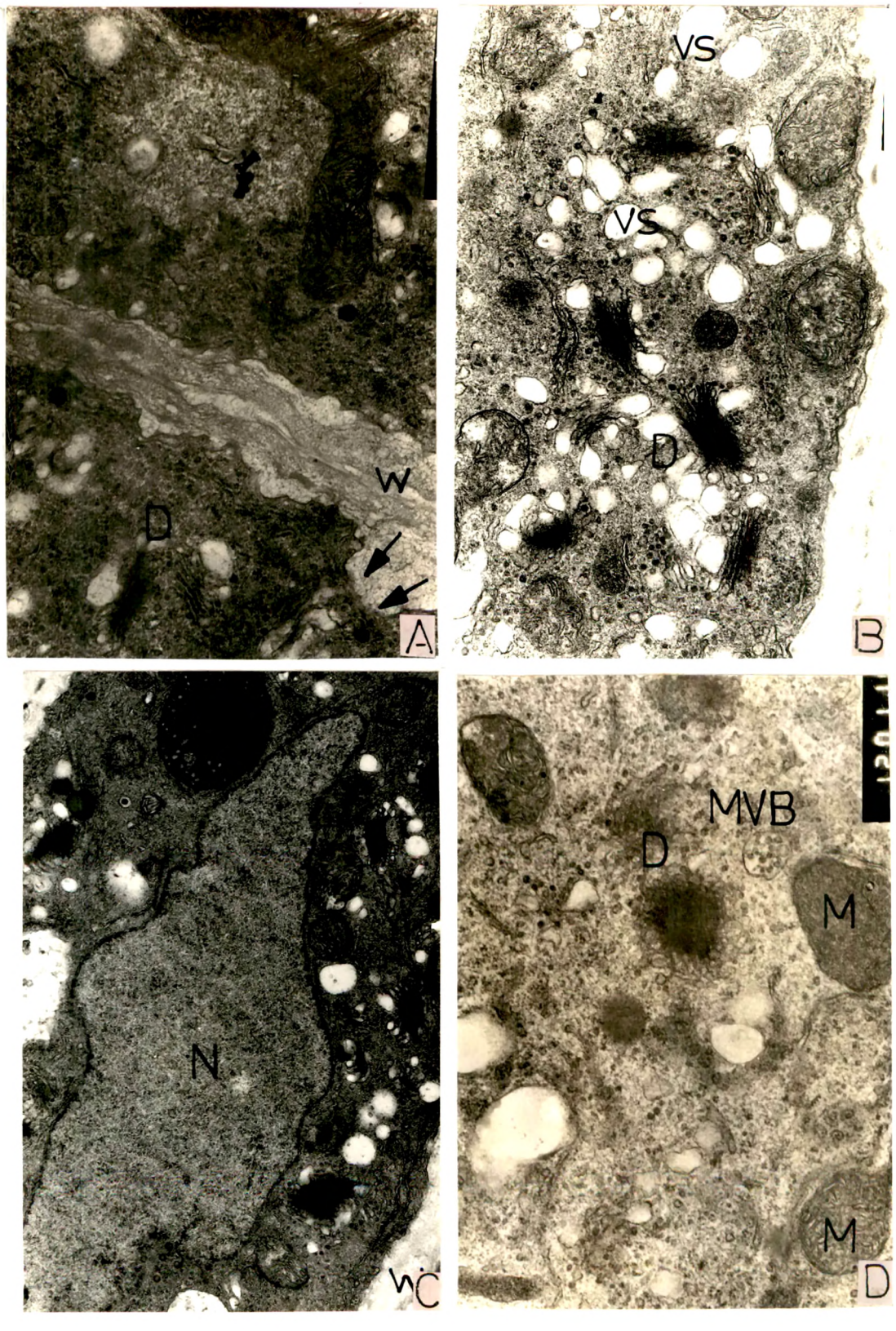

Fig 1·11

Fig. 1.12 A-D.

1.12 A. The cytoplasm of the papillae cell at the late secretory stage showing many densley packed dictyosomes. Note the vesicles inside the wall material retained (arrows). X, 12,000.

1.12 B. Shows cell wall materials inside the plasmalemma depicting typical invaginations (arrows). X, 16,000.

1.12 C. Dispersed microfibrills of the wall showing vesiculate structures and osmiophilic material. X, 12,000.

1.12 D. Phenolic material inside vacuoles. X,3000.

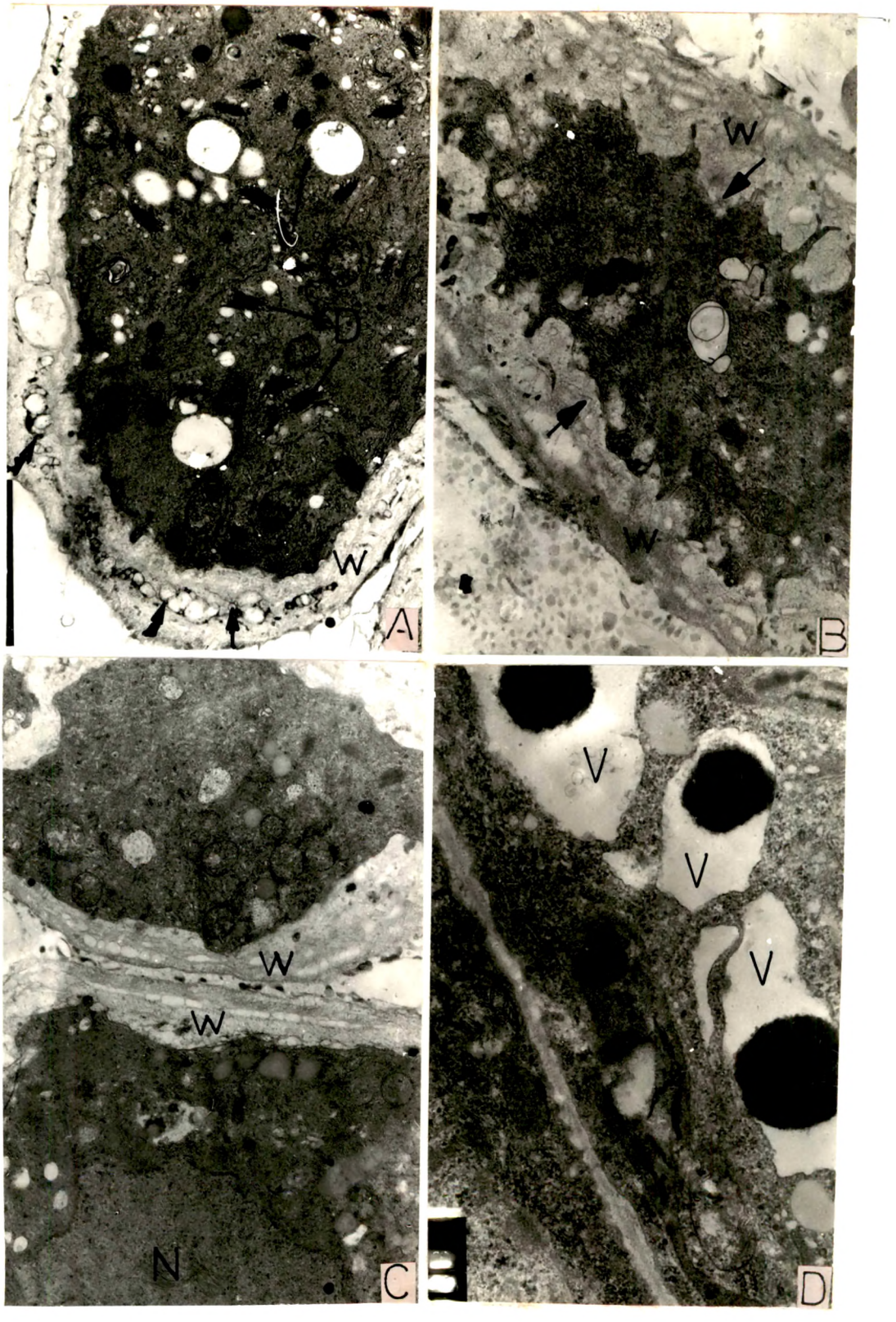

Fig 1·12

Fig. 1.13 A-D. Show the intercellular spaces between the papillae, between the papillae and sub-papillae cells showing highly dispersed microfibrills. Note the abundant osmiophilic material and vesicles amidst the intercellular substance and the dispersed microfibrills. The cytoplasm in 'A' also contain osmiophilic droplets.

A - X, 2000; B - X, 2000; C - X, 16,000; D - X, 2000.

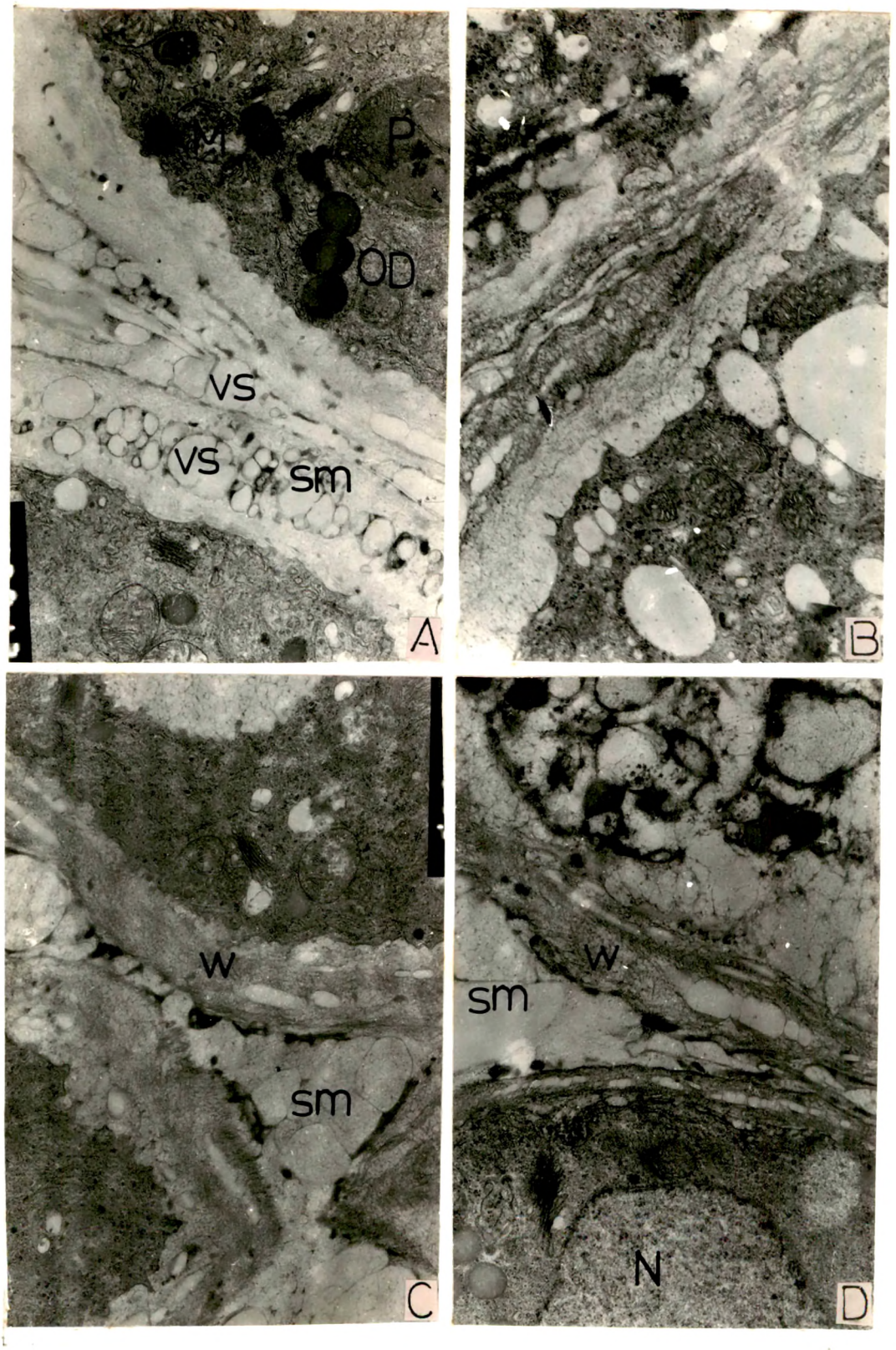

Fig 1·13

Fig. 1.14 A-C.

1.14 A. The cells immediately below the papillae cells showing highly electron dense cytoplasm.
X, 6000.

1.14 B. Plasmodesmatal connections in the common wall between the sub papillae and the cells below them.
X, 2000.

1.14 C. Show the difference in the cytoplasm of the sub papillae and the cells below them. Note the mitochondria as the prominent organelle in the cells below the subpapillae and their scanty cytoplasm. X, 16,000.

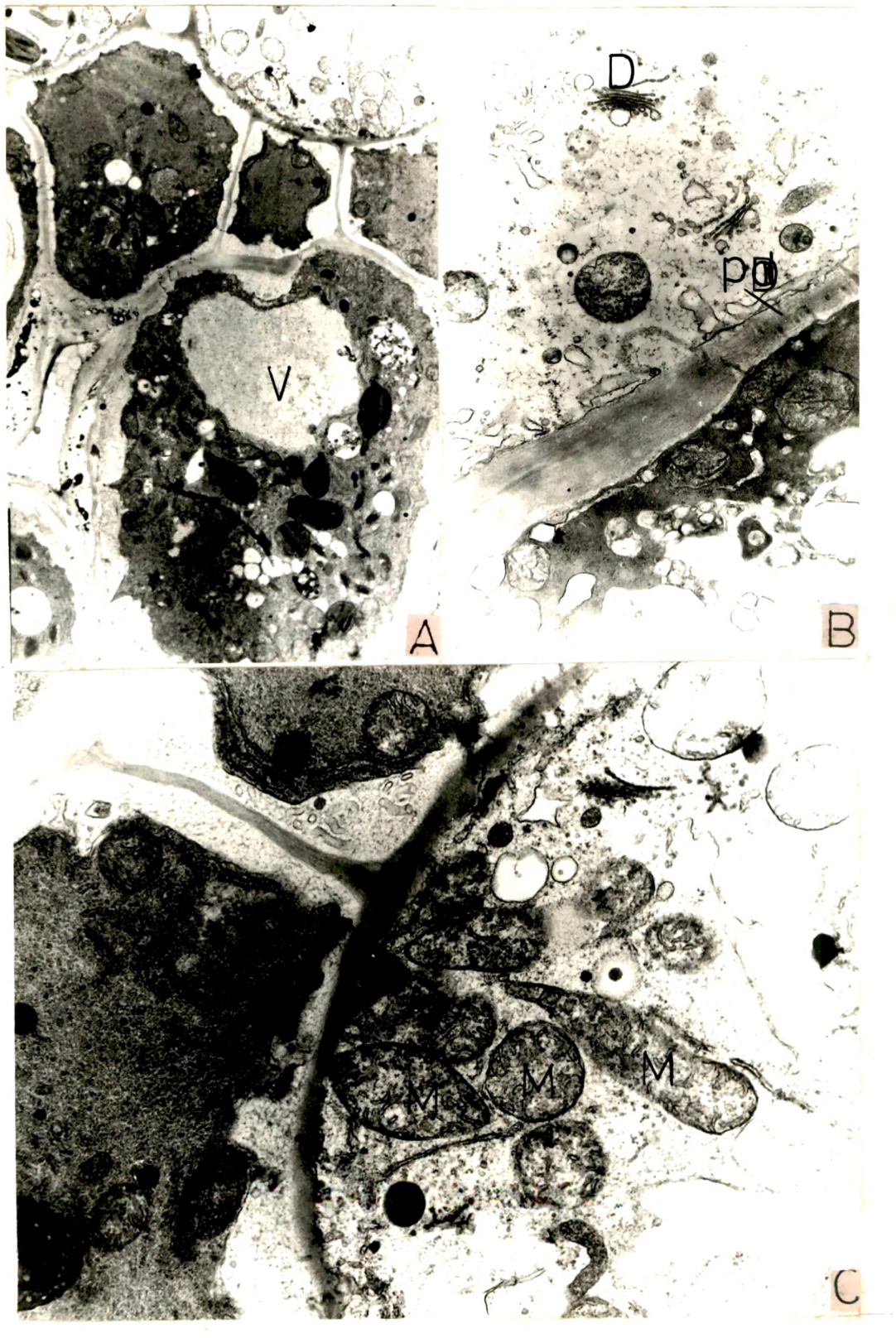

Fig 1·14

Fig. 1.15 A-C.

1.15 A. Transverse section of the style depicting three distinct vascular bundles (arrows). The ground tissue of the style is made up of angular parenchyma cells. X, 375.

1.15 B. Transverse section of the base of the stigma showing pollen tubes (arrows) in the intercellular spaces of the transmitting tissue cell. X, 938.

1.15 C. Longitudinal section of style showing elongated parenchymatous cell arranged with little intercellular space. X, 500.

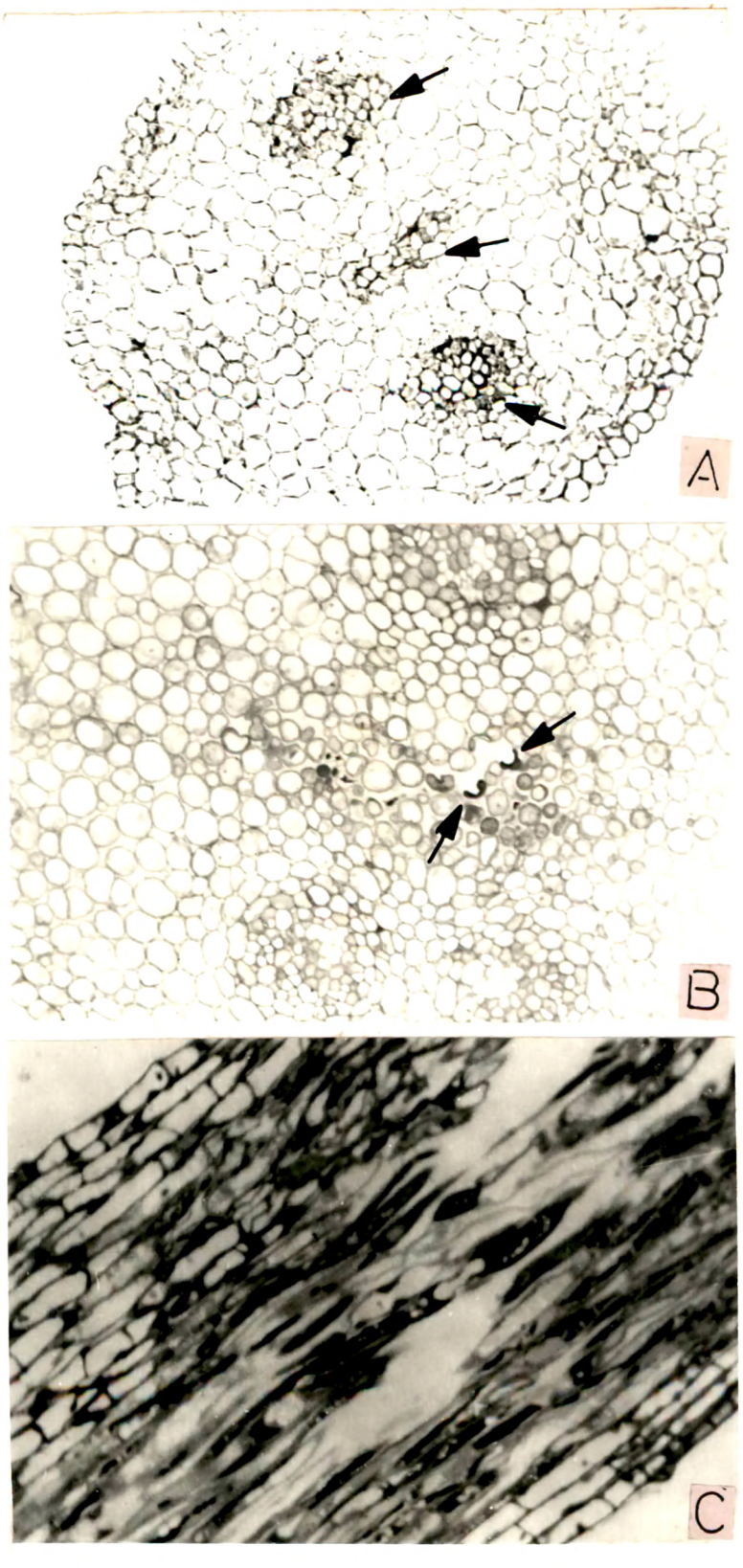

Fig 1·15

Fig. 1.16 A-D. Transmitting tissue.

1.16 A. The transmitting tissue cell showing two fusiform nucleii lying side by side. X, 12,000.

1.16 B. Elliptical nucleus with dispersed and uniformly distributed chromatin in the transmitting tissue cell. Note the profuse mitochondria and plastids. X, 12,000.

1.16C. Dilated sER in the cytoplasm. Note the abundant mitochondria with well developed cristae(arrows). X, 16,000.

1.16 D. Numerous mitochondria of various shapes in the transmitting tissue cell. Note the vacuolation on one side of the cell (arrows). X, 10,000.

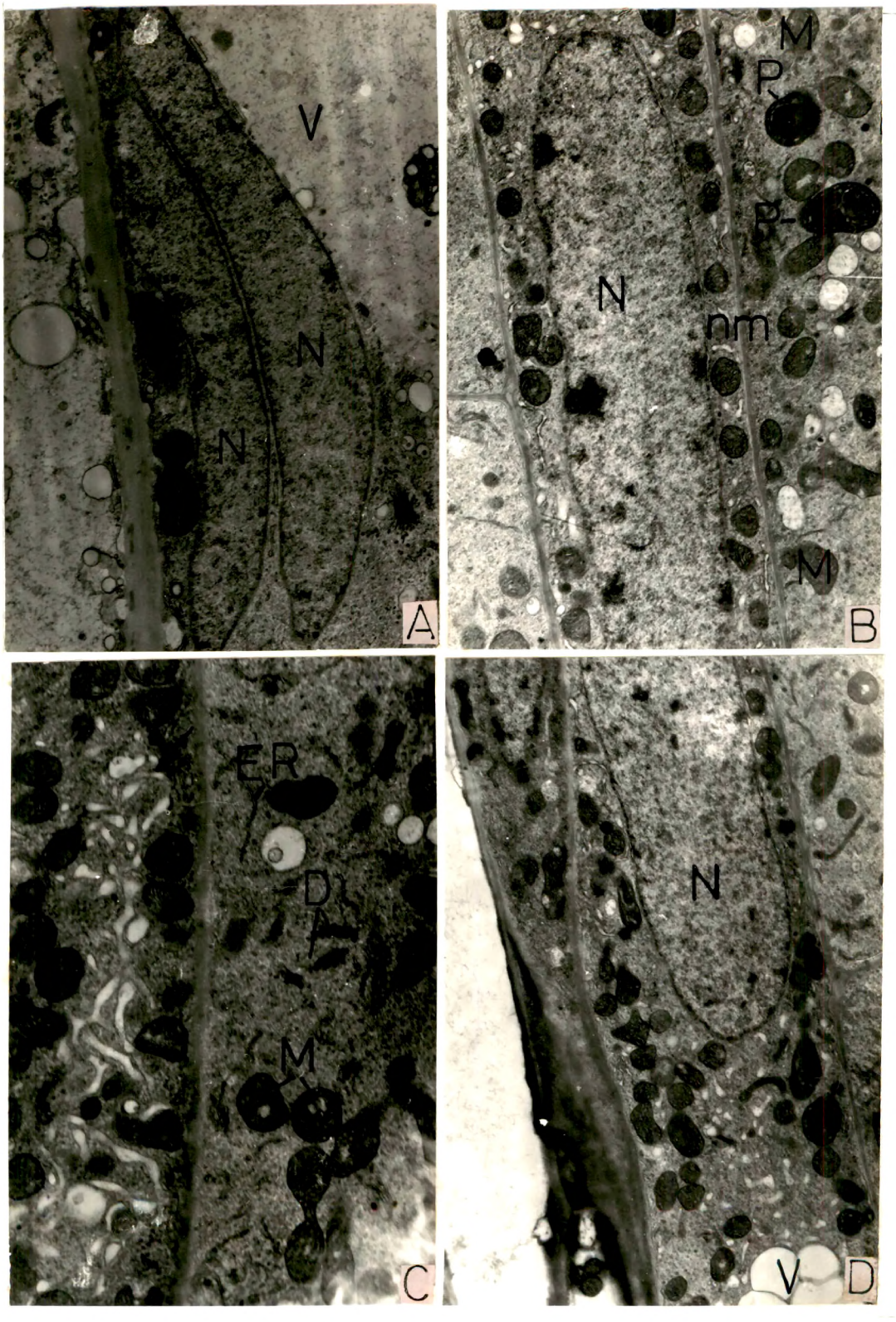

Fig 1·16

Fig. 1.17 A-D. Transmitting tissue.

1.17 A,B. Plastids with poorly developed internal membranes in the cytoplasm. A - X,10,000 ; B - X,8000

1.17 C. Long well developed chloroplasts in the cytoplasm. The chloroplasts show small osmiophilic globules. Note the seperated cell wall at the middle lamella between the cells containing dark deposits at the receptive stage of the stigma. X, 2000.

1.17 D. Pollen tubes in the intercellular space. Note the secretory material along the pollen tube wall (arrows). X, 2000.

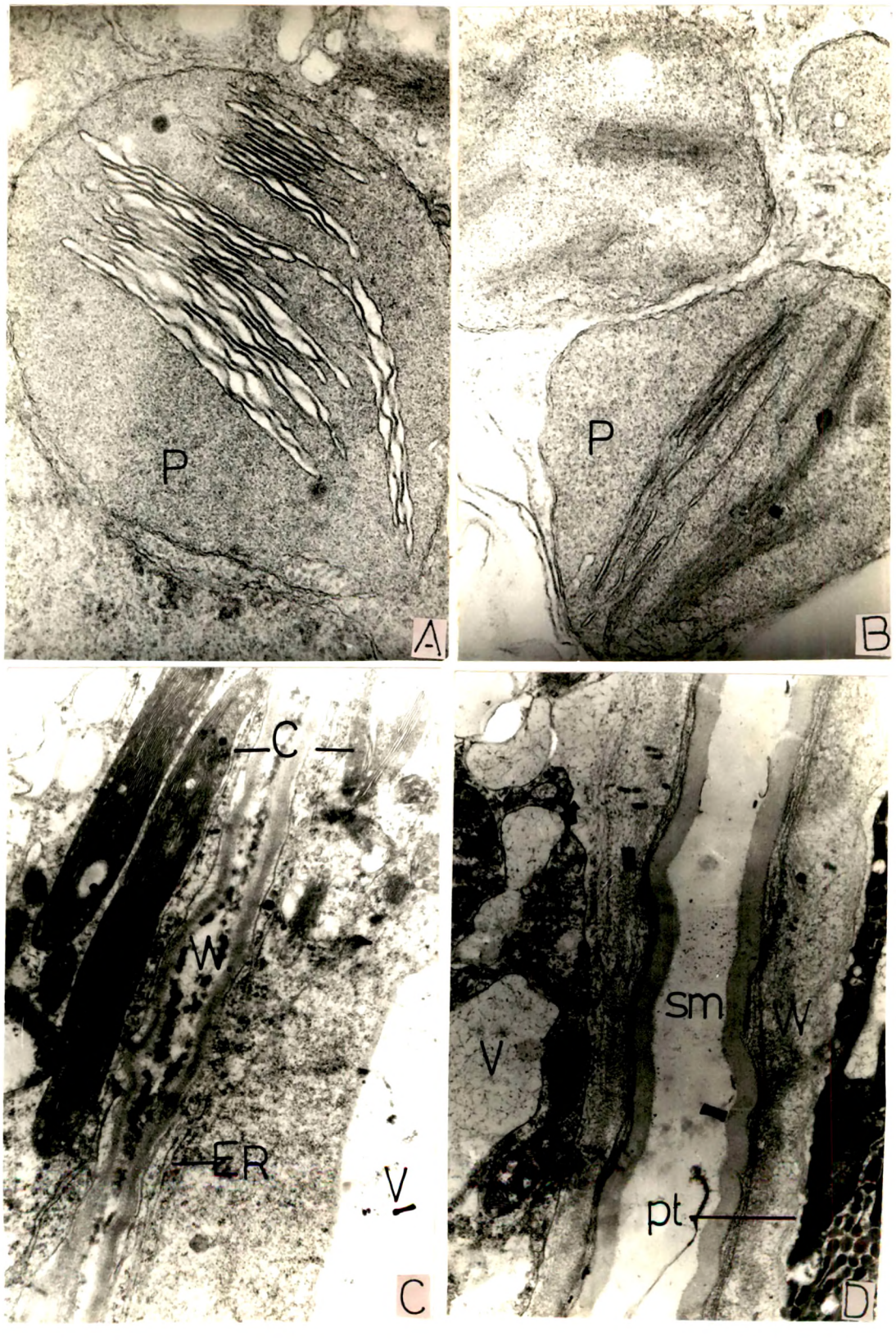

Fig 1·17

Fig. 1.18 A-D. Transmitting tissue.

1,18 A. Cross section of the cells showing large chloroplasts filling the entire lumen. Note the starch deposits in the chloroplast. X, 3000.

1.18 B. Long chloroplast with well developed thylakoids. X, 6000

1.18 C. Pollen tubes in the intercellular substances. Note the vacuole containing fibrillar material. X, 5000.

1.18 D. Degenerating pollen tubes in the transmitting tissue. X, 10,000.

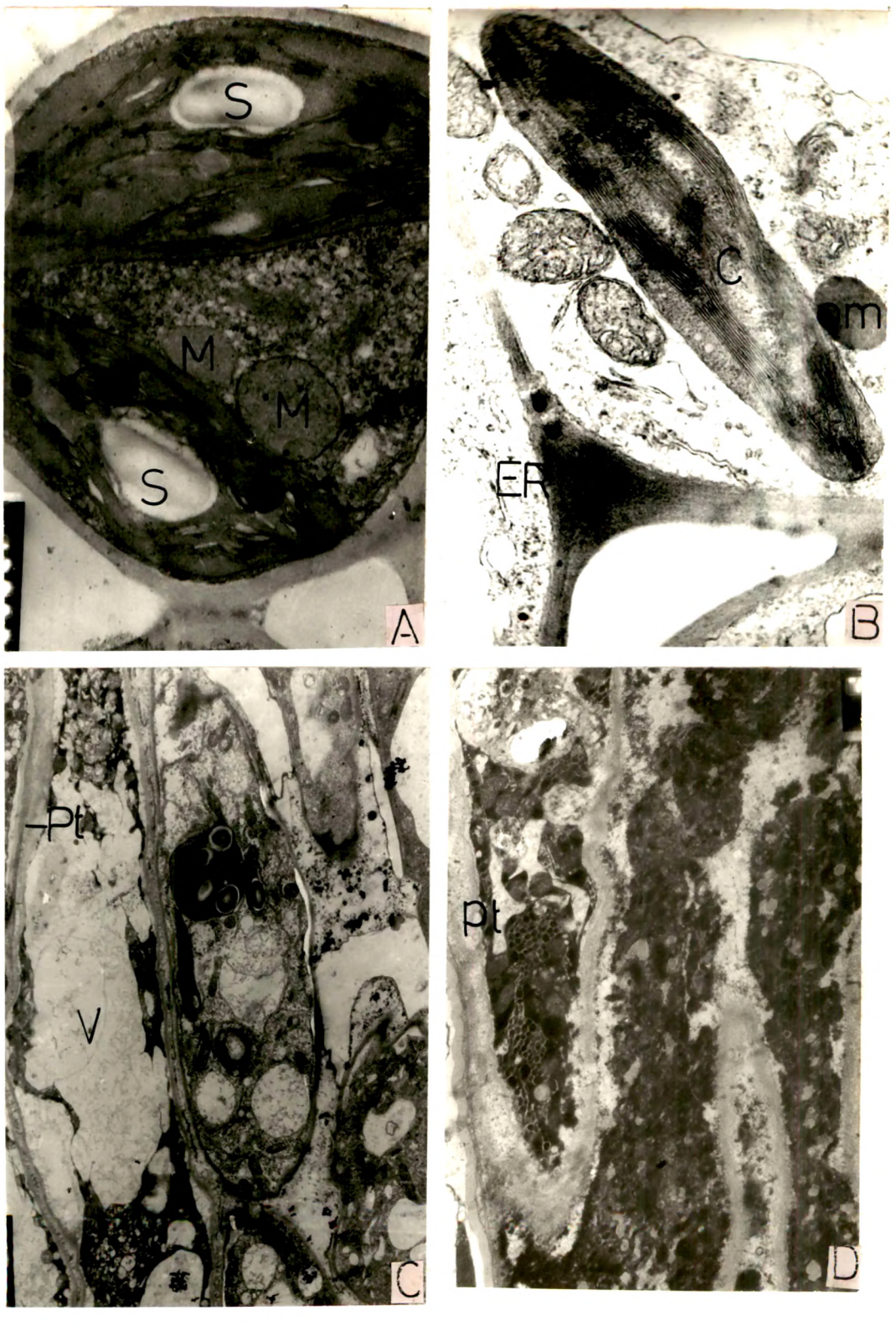

Fig 1·18

Fig. 1.19 A-D.

1.19 A. The exudate as well as the cuticular lining of the papillae showing intense fluorescence for lipids at stage IV, following staining with Auromine O. X, 938.

1.19 B. The cuticle fluorescing intensley following staining with Auromine O. The sections were washed in chloroform/methanol in the ratio 1:1 prior to staining (stage III). X, 938.

1.19 C. The lipid material in the cells below the papillae gets intensely stained with Sudan IV. The cuticle is unstained. X, 938.

1.19 D. The papillae cell wall showing protein deposition following staining with 8 ANS (stage IV). X, 938.

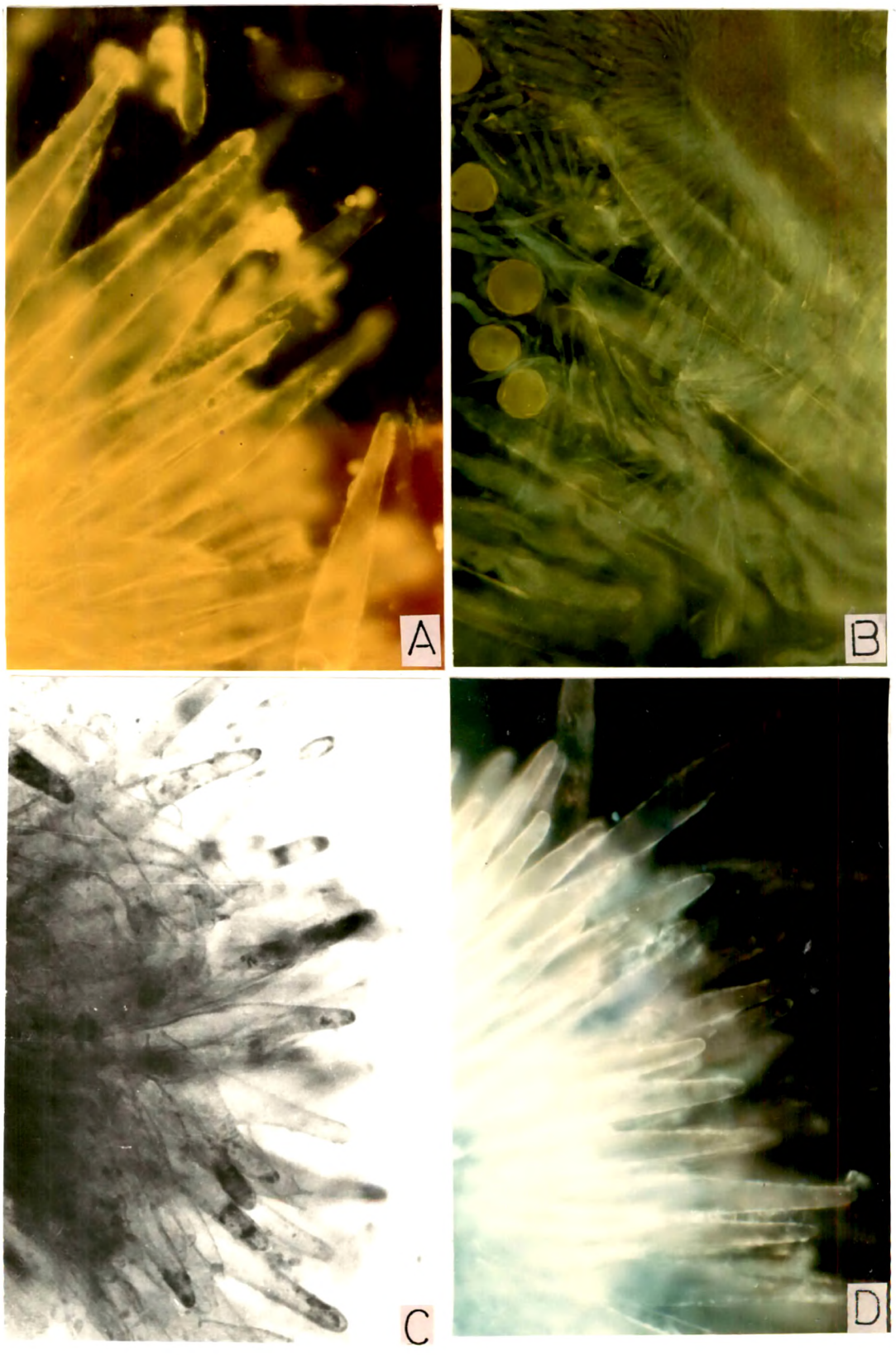

Fig 1·19

Fig. 1.20 A-F.

1.20A. Moderate peroxidase activity on the stigma papillae at stage II. The activity is dispersed in the whole papillae. Sites of activity as brownish granules can also be observed in the cells below the papillae. X, 625.

1.20B. Succinate dehydrogenase (SDH) activity on the stigma papillae at stage IV. The sites of activity are confined to the cell cytoplasm. Intense activity can be observed towards the tip of the papillae cell. X, 625.

1.20C. A denosine triphosphatase activity showing moderate reaction at stage III. The activity sites are noted in the cell cytoplasm as definite brownish black granules. X, 756.

1.20D,F. Acid phosphatase activity showing intense reaction on styme papillae at stage IV. The activity sites are confined to the tip.
D, X, 625; F- X, 938.

1.20E. Non specific esterase activity at stage III of stigma. The papillae cell shows intense esterase activity in the cytoplasm, indicating the high receptivity at this stage. X, 500.

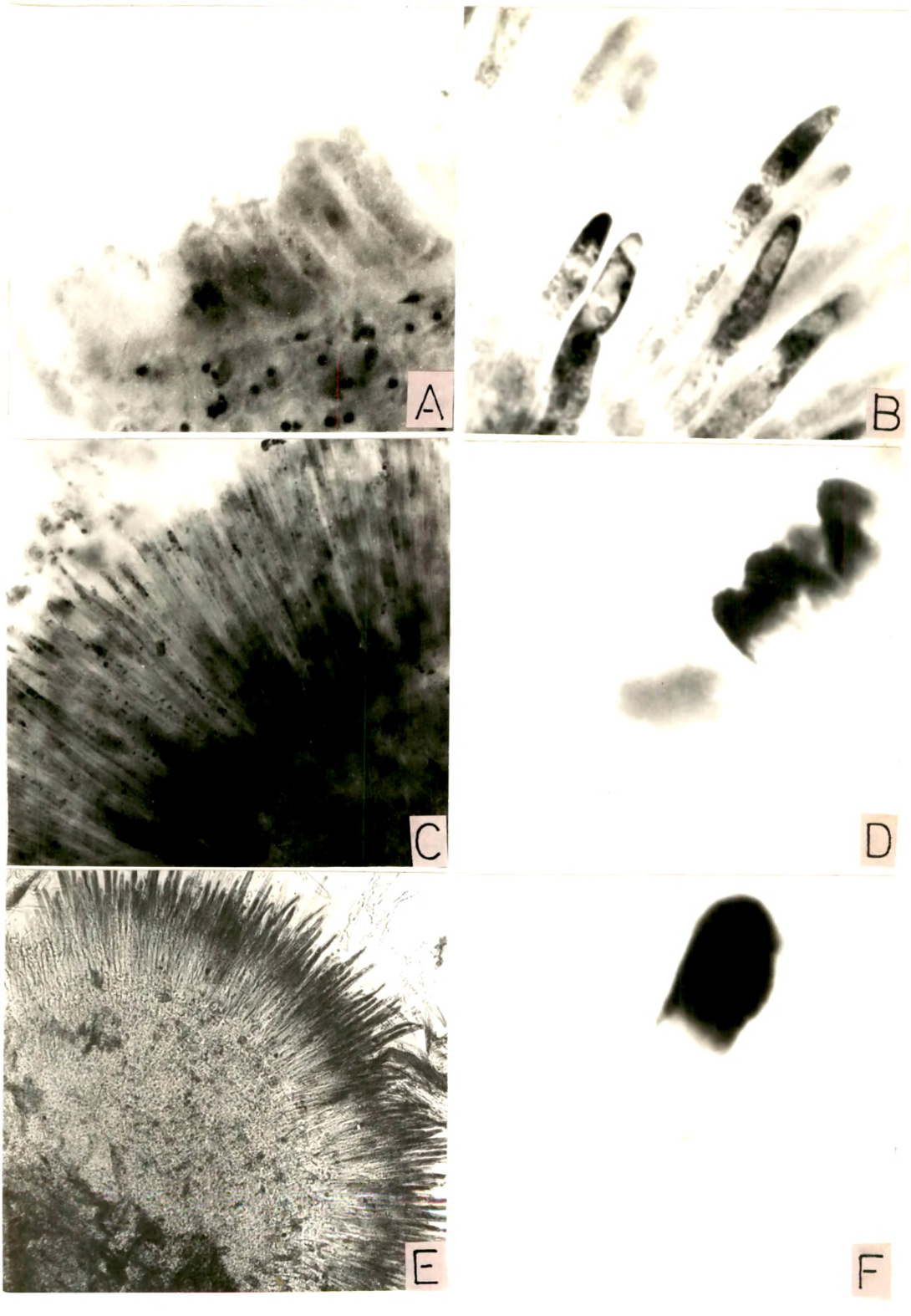

Fig 1·20

Fig. 1.21 A-F.

1.21A. T.S. of a mature anther showing microsporangium with well demarcated outer epidermis, endothecium, middle layers, tapetum and sporogenous tissue. X, 250.

1.21B. Young microsporangium showing homogenous mass of cells with a well defined epidermis. X, 938.

1.21C. Fully formed microsporangium, showing two layered endothecium, and wall layers. Note the disintegrating tapetum. X, 938.

1.21D. T.S. of the anther at stage II showing fully formed 1-2 layered tapetum in fuxtaposition to sporogenous cells. X, 500.

1.21E. The tapetal layer seen at the periphery at the microspore mother cell stage (arrow). X, 756.

1.21F. Fully formed pollen grains in the locule. Note the uninucleate tapetal layer. X, 1,500.

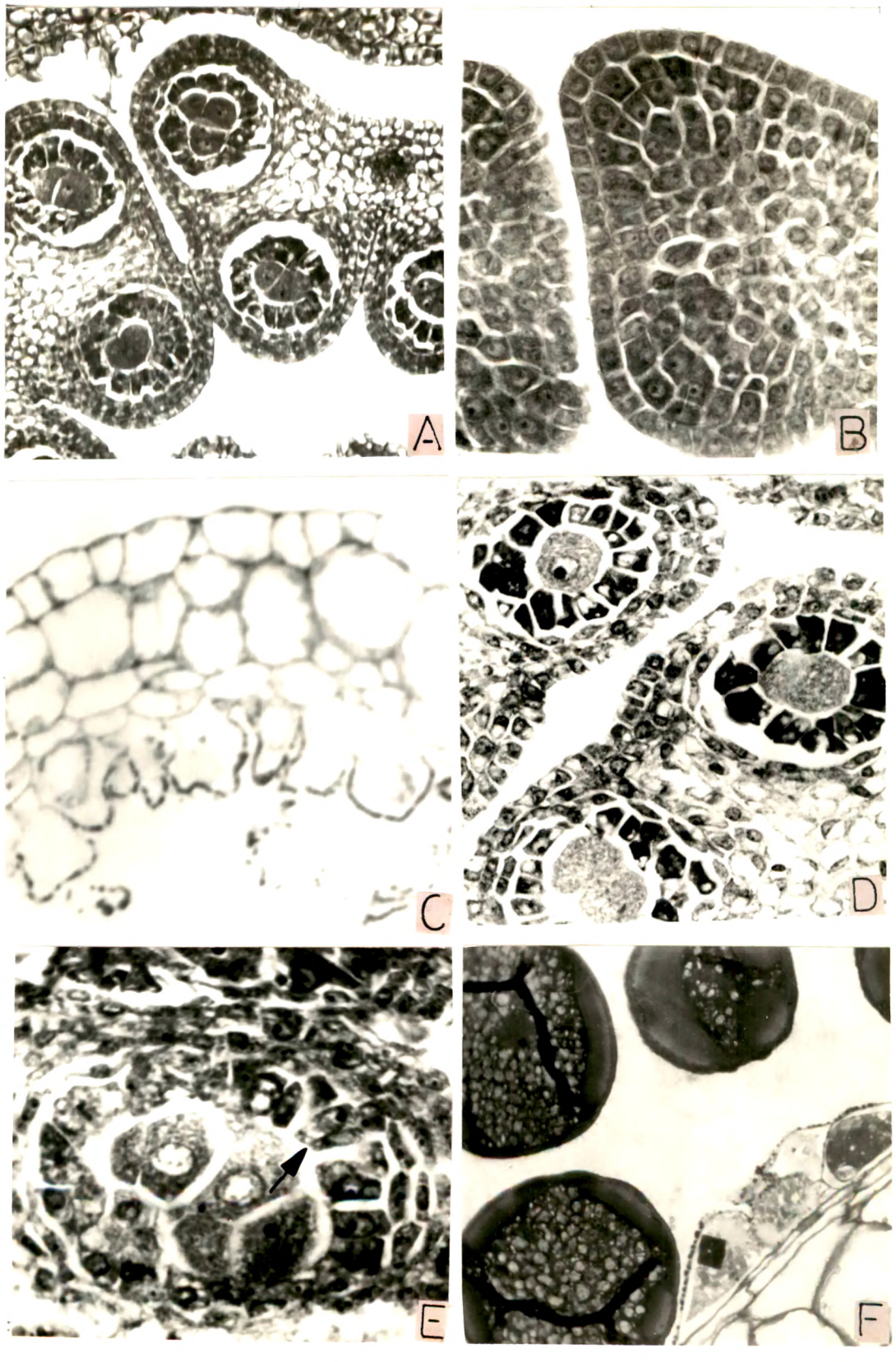

Fig 1·21

Fig. 1.22 A-E. Tapetum.

1.22A. Transverse section of anther showing the morphology of tapetum, X, 756.

1.22B. Cytoplasm of the tapetal cell in C.roseus showing plastids, ER and mitochondria. X, 2000.

1.22C. The cytoplasm of the tapetal cell shows a rich accumulation of dilated ER, mitochondria, plastids and ribosomes. X, 2000.

1.22D,E Plastids in the cytoplasm of tapetal cells partially or completely encircled by ER. ER also show accumulation of protein crystalloids. Note the active mitochondria.

D X, 2000; E X, 3000

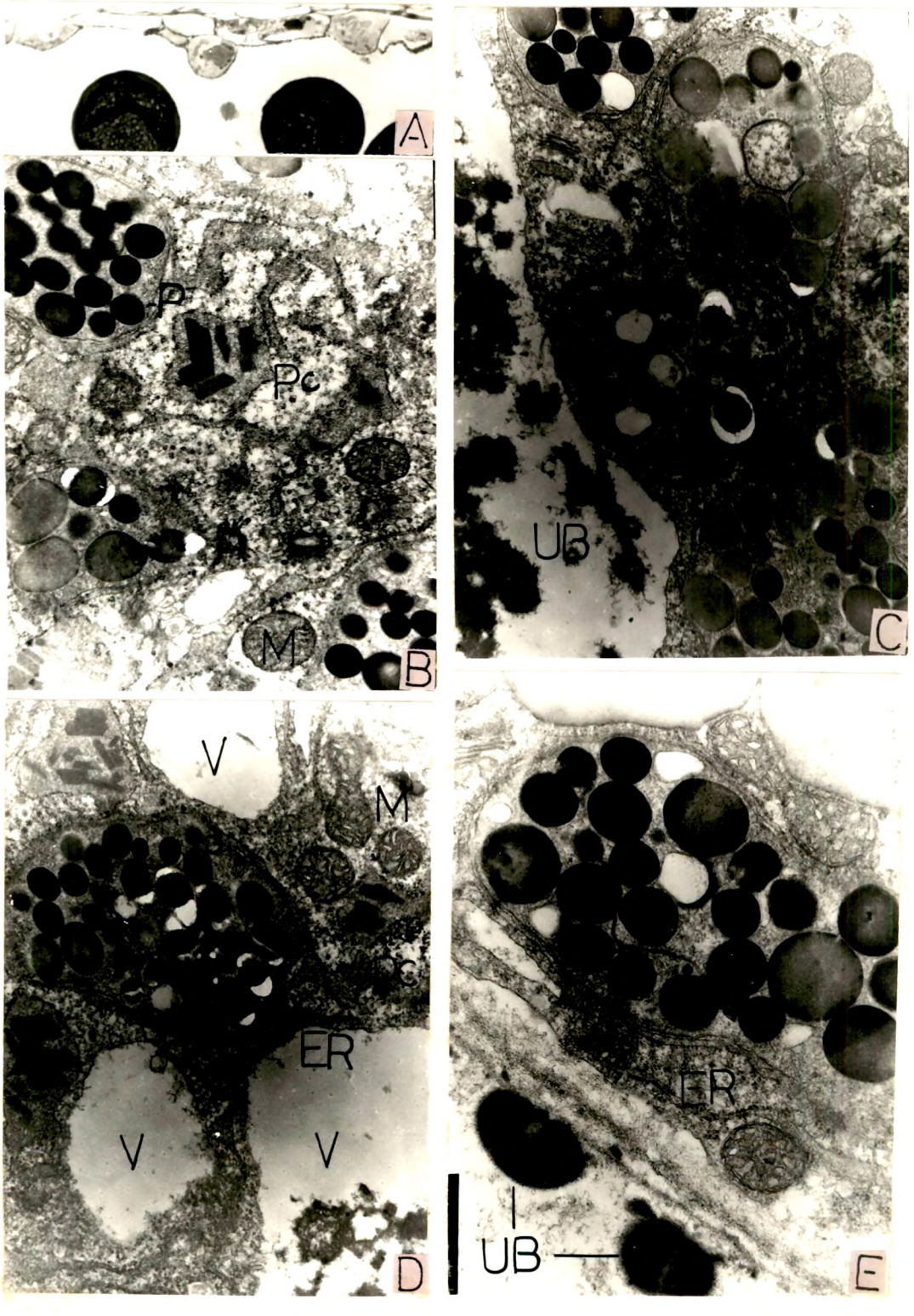

Fig 1·22

Fig. 1.23 A-D. Tapetum

1.23A. The plastids with many osmiophilic droplets in their lumen. X, 16,000.

1.23B. Large plastid with osmiophilic droplets in the late secretory stage. Note the degenerating cytoplasm. X, 2000.

1.23C. Formation of protein crystalloids in the dilations of rER. Note a large plastid loaded with osmiophilic droplets. X, 16,000.

1.23D. The r ER cisternae is dilated and the lumen exhibit an electron dense appearence during initial stage of protein synthesis. X, 4000.

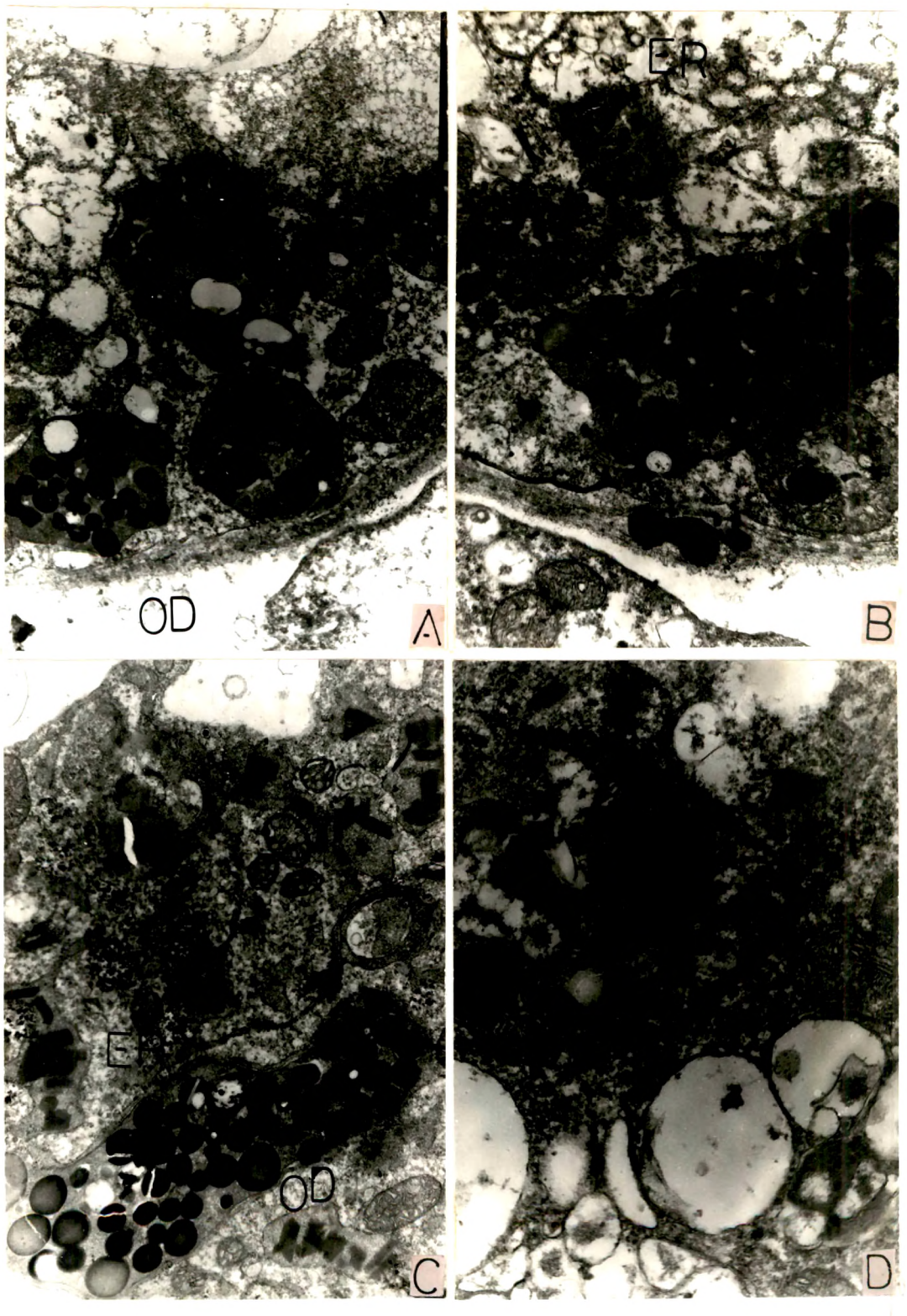

Fig 1·23

Fig. 1.24 A-D. Tapetum

1.24 A-D. Profuse rER dilation showing accumulation of protein crystalloids. The protein crystalloids show a regular lattice net work appearence.

A - X,5000; B - X, 5000; C - X, 6000;
D - X, 6000.

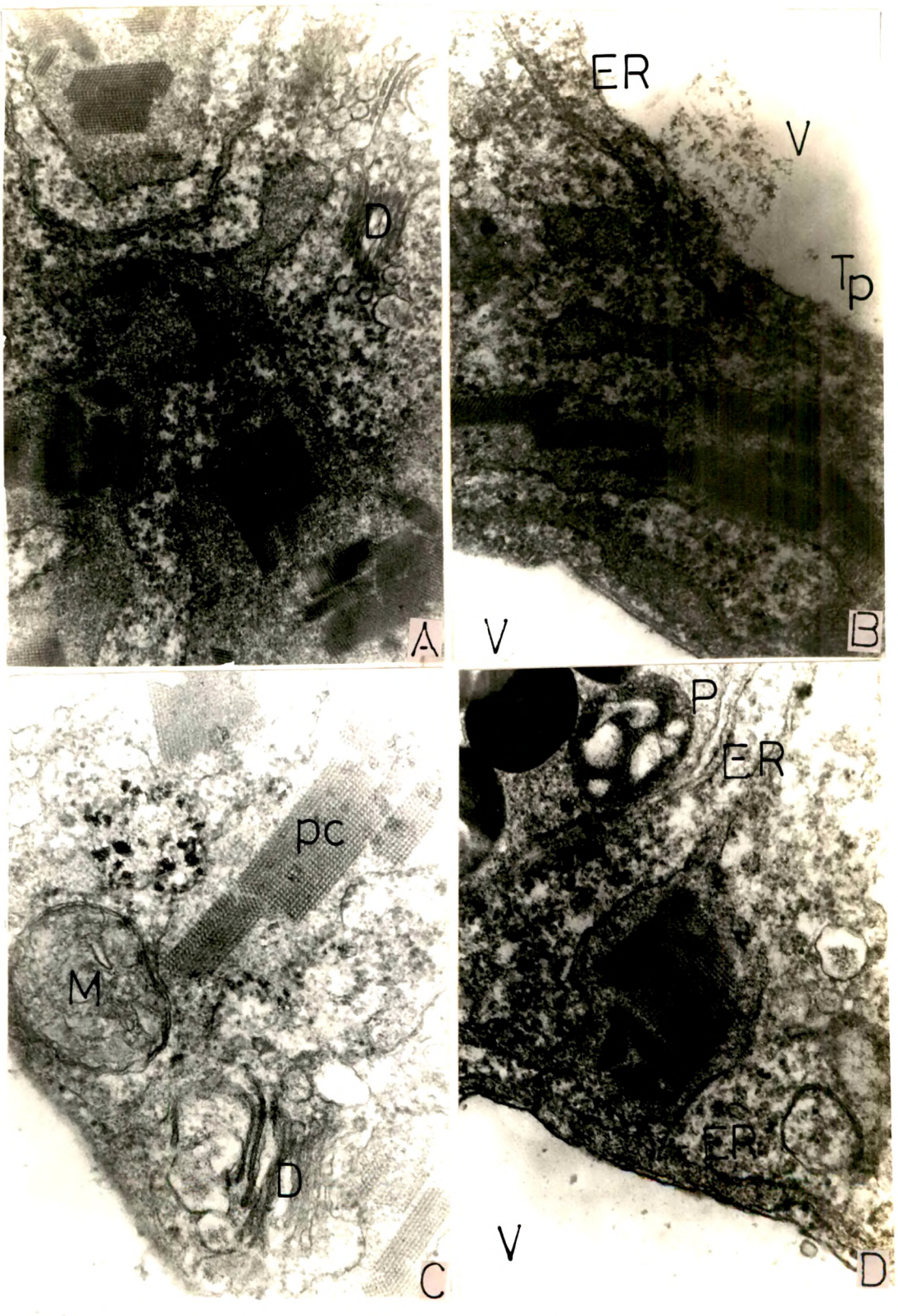

Fig 1·24

Fig. 1.25 A-D. Tapetum.

1.25 A. Senescing stage of the tapetum. The plastid envelope has disrupted and the compartmentation of the cytoplasm is lost. Note the disappearence of protein crystalloids and appearence of cuneate crystals among the osmiophilic droplets. X, 2000.

1.25B. Highly vesiculate confluent cytoplasm of the degenerating cell. Note the dark secretory material. X, 2000.

1.25C,D. Ubisch bodies in the thecal cavity showing electron dense middle region. Note the osmiophilic and fibrillar material dispersed in the cavity. C - X, 2000; D - X, 16,000.

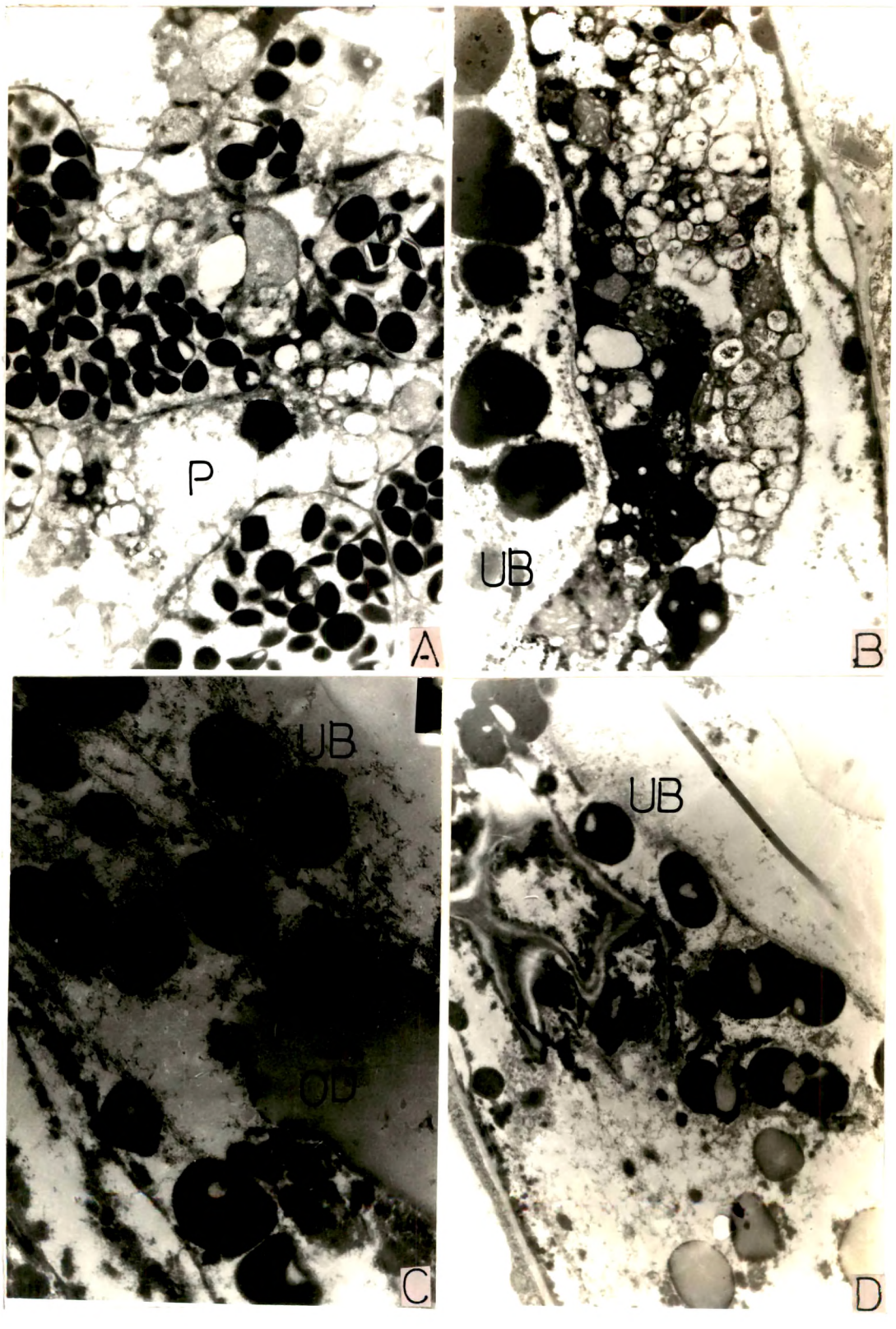

Fig 1·25

Fig. 1.26 A-C tapetum

1.26 A,B Dispersed contents of the tapetum in the thecal cavity A, X, 4000, B, X, 3000

1.26 C Osmiophilic droplets in the thecal cavity X,16,000

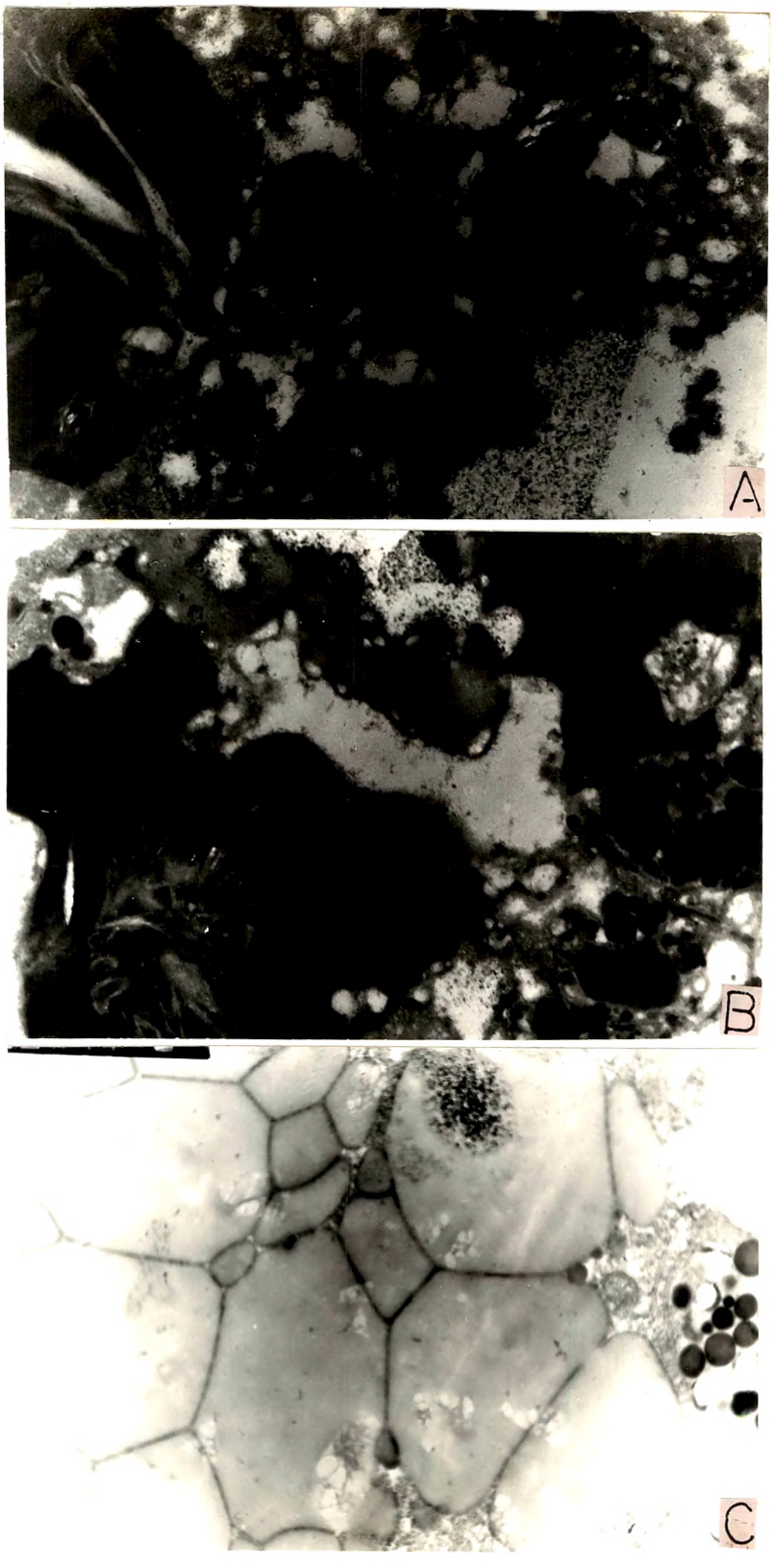

Fig 1·26

Fig. 1.27 A-D Pollen grains

1.27 A,B Pollen grain showing an electron dense intine and much demarcated exine
Note the starch grain in the cytoplasm
A, X,12000 B, X, 16000

1.27 C Abundant accumulation of starch grain which show cracks depicting amylolytic digestion X, 16,000

1.27 D Cross section of the tip of the pollen tube showing abundant mitochondria, hypertrophied dictyosomes and vesicles. The cell wall of the pollen tube is thin X, 12000

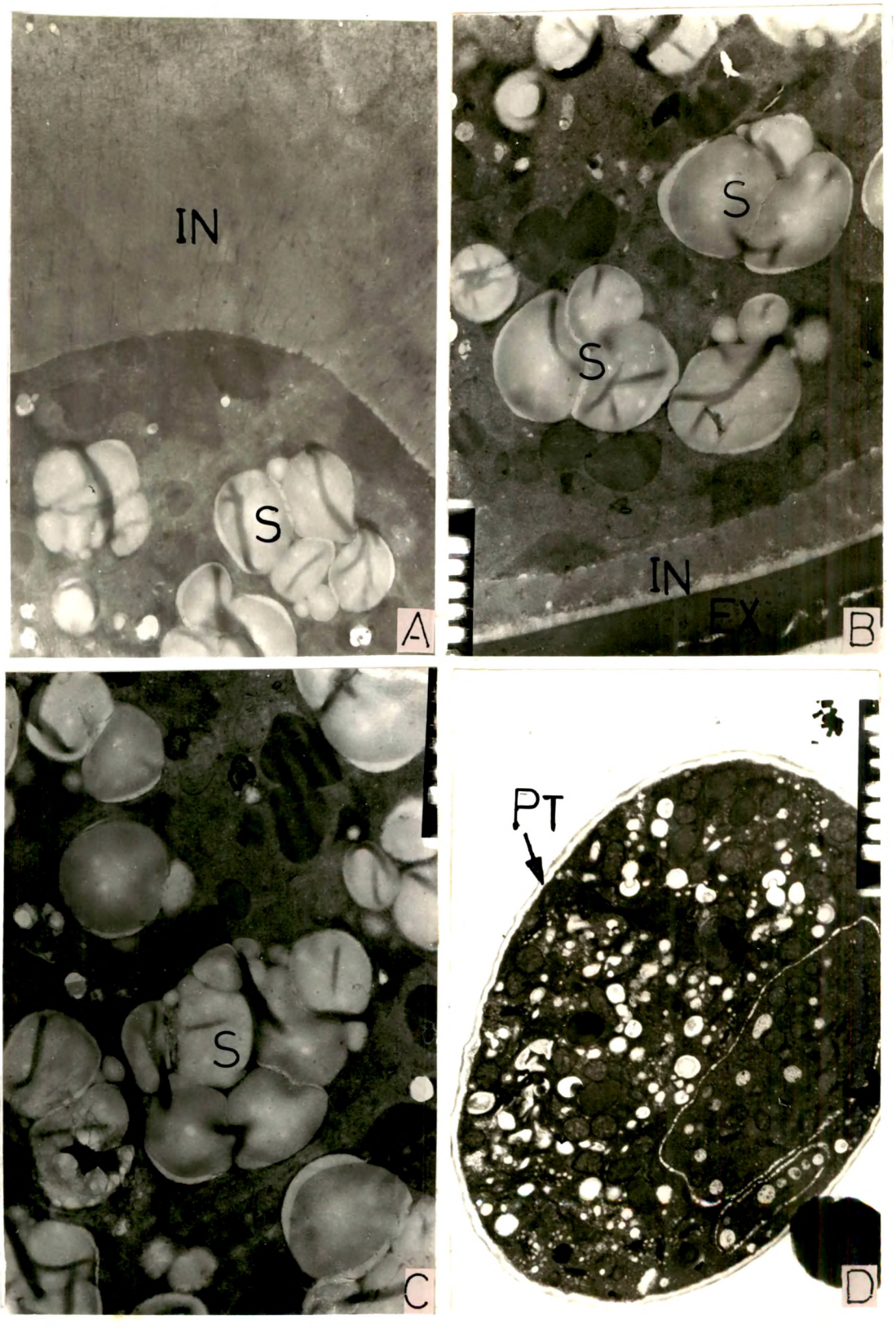

Fig 1·27

1.28 A-C Pollen tube

1.28 A Pollen tube tip showing highly vesiculate cytoplasm X, 6000

1.28 B Pollen tubes in stylar tract depict many plastids and profuse s.ER X, 16000

1.28 C Osmiophilic bodies in the wall and cytoplasm of the pollen tube (arrows) X, 2000

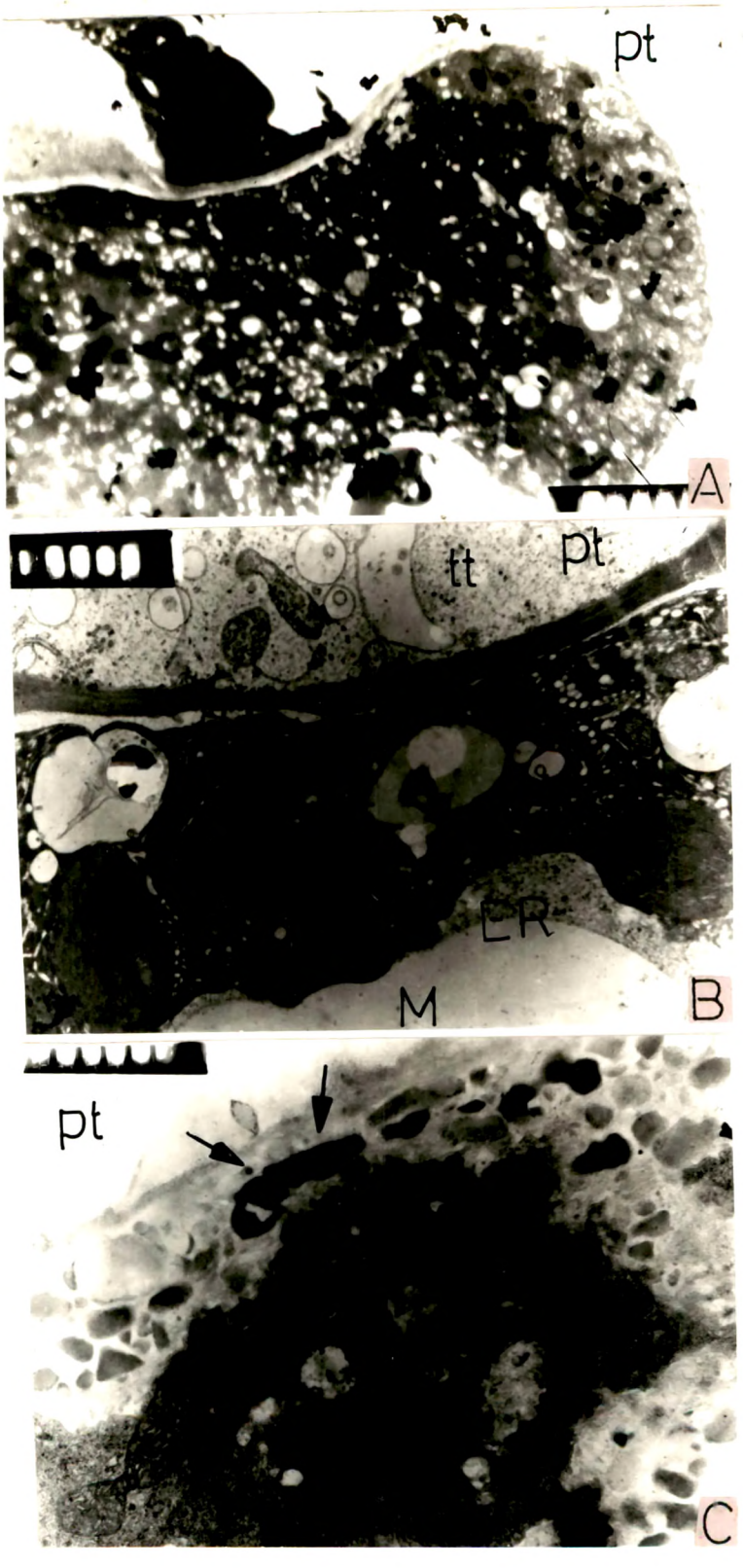

Fig 1·28

1.29 A-D Pollen tubes in the transmitting tissue

1.29 A,B Pollen tube in the stylar tract. Note the secretory material in the intercellular space and the vesiculate dense cytoplasm of the pollen tube.
A, X,2000 , B, X, 12000

1.29 C Pollen tube tip in the secretory material. Note the thin cell wall and the osmiophilic bodies at the tube tip X, 2000

1.29 D Degenerating pollen tube in the stylar tract X, 10000

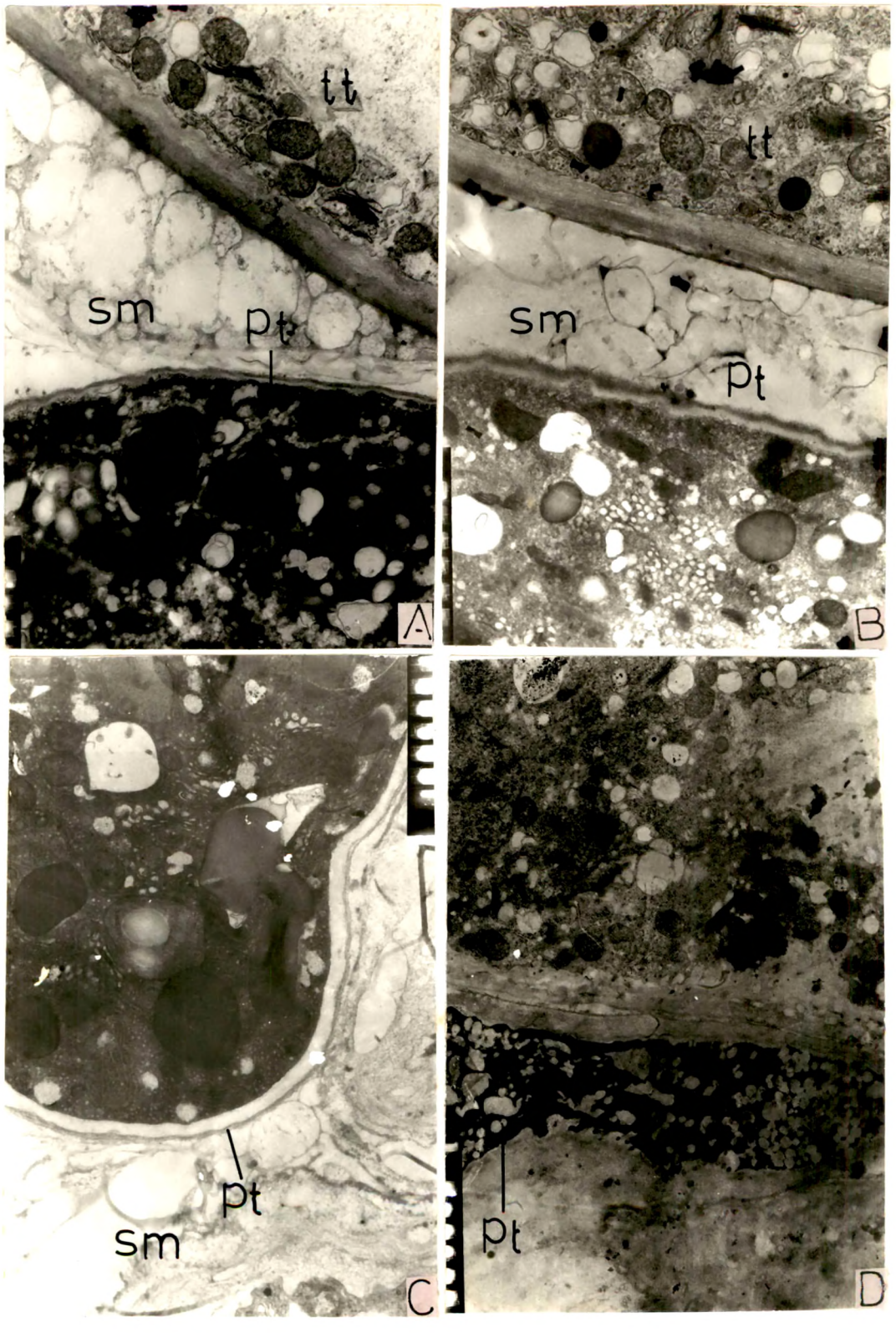

Fig 1·29

Fig. 1.30 A-D Pollen tube

1.30 A Highly vesiculate pollen tube cytoplasm showing osmiophilic material and profuse sER, X, 4000

1.30 B Dense cytoplasm showing mitochondria and dictyosomes, X,3000

1.30C Cytoplasm showing uniform accumulation of tubules (arrows) X,9000

1.30 D Plasma membrane of the pollen tube showing undulations containing vesicles and fibrillar materials. Note the osmiophilic material, sER in the cytoplasm X,3000

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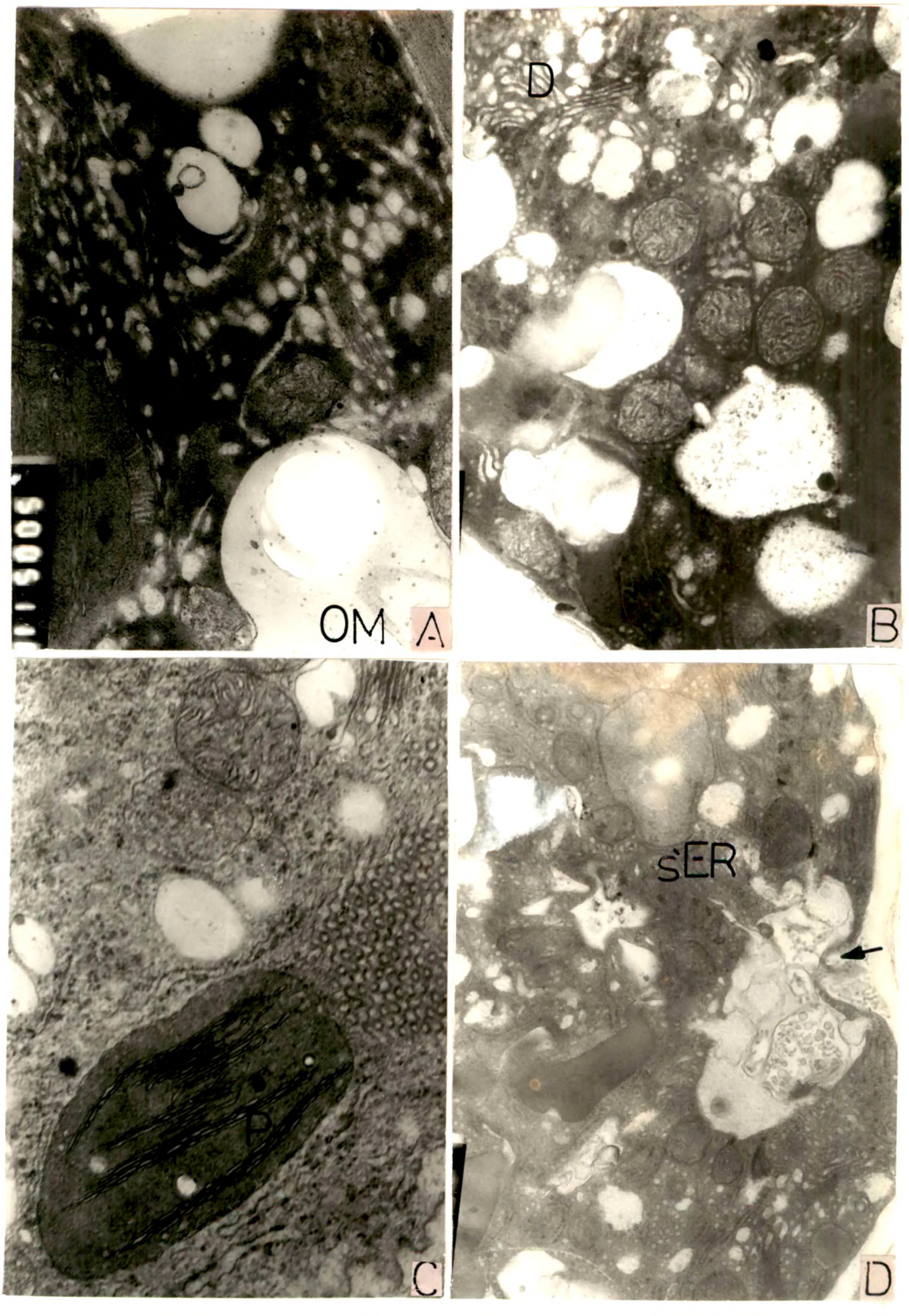

Fig 1·30

Fig. 1.31 A-D

1.31 A Anatroupous ovule showing unitegmic nature. Note the functional megaspore (arrows) X, 625

1.31 B Second functional megaspore and degenerating megaspores. Note the lateral cell layers, X, 625

1.31 C 2 Celled stage of embryo sac X, 625

1.31 D 4 Celled stage of embryo sae X,625

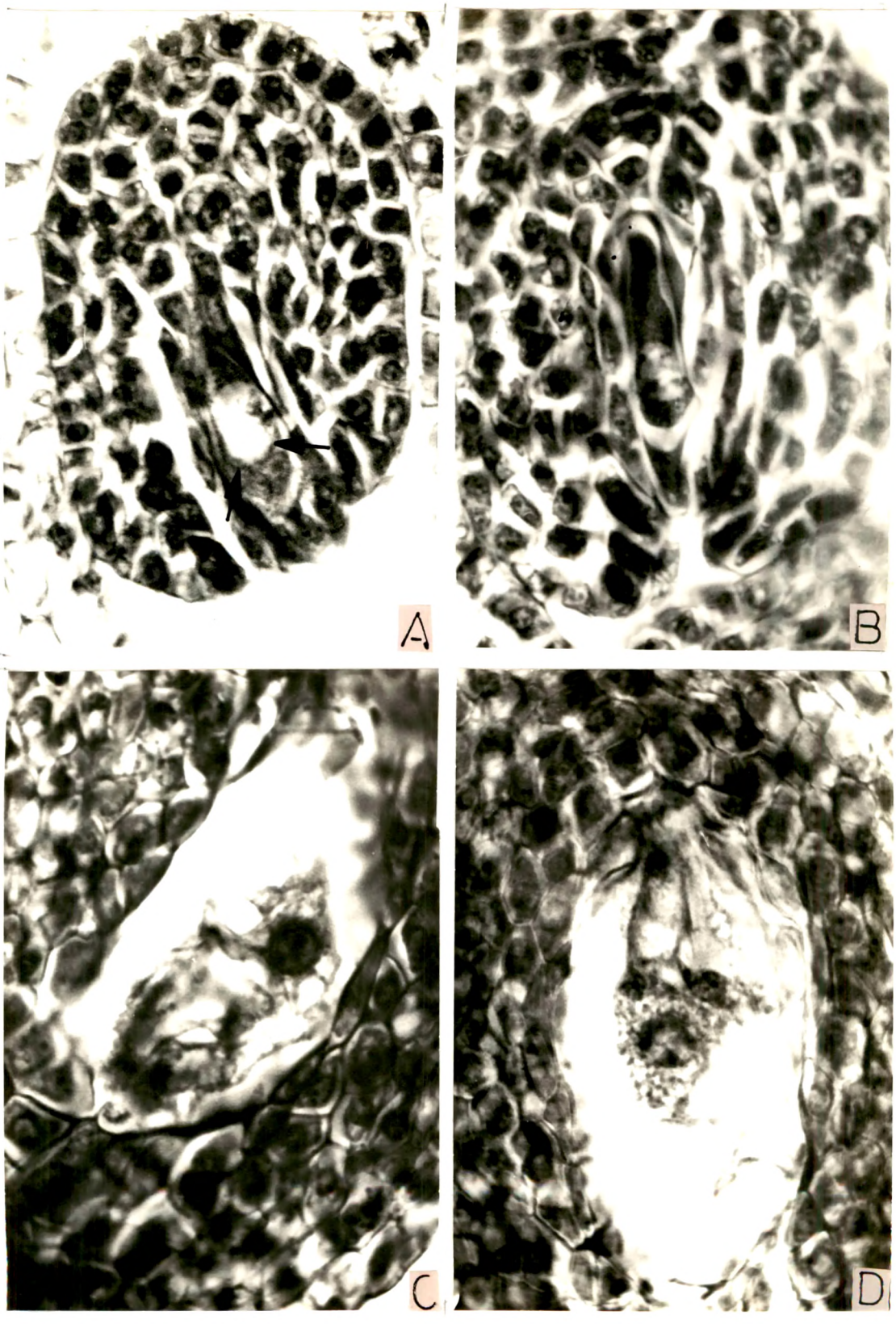

Fig 1·31

Fig. 1.32 A-G

1.32A Self pollen germinating profusely on the stigma surface (Fixed 4h after pollination) X, 375

1.32 B L.S. of stigma head showing germinated self pollen tube entry through basal, lateral side of the stigma X,500

1.32C Showing similar feature in transverse section X,500

1.32 D Longitudinal section showing a single pollen tube entering through the lateral basal side of the stigma X, 938

1.32 E Self pollen tubes entering in to the style through stigma / style junction X, 500

1.32 F Cross pollen tubes showing inhibition reactions X, 756

1.32 G Cross pollen grains at the stigma surface showing heavy collose deposition at the germ pore X, 756

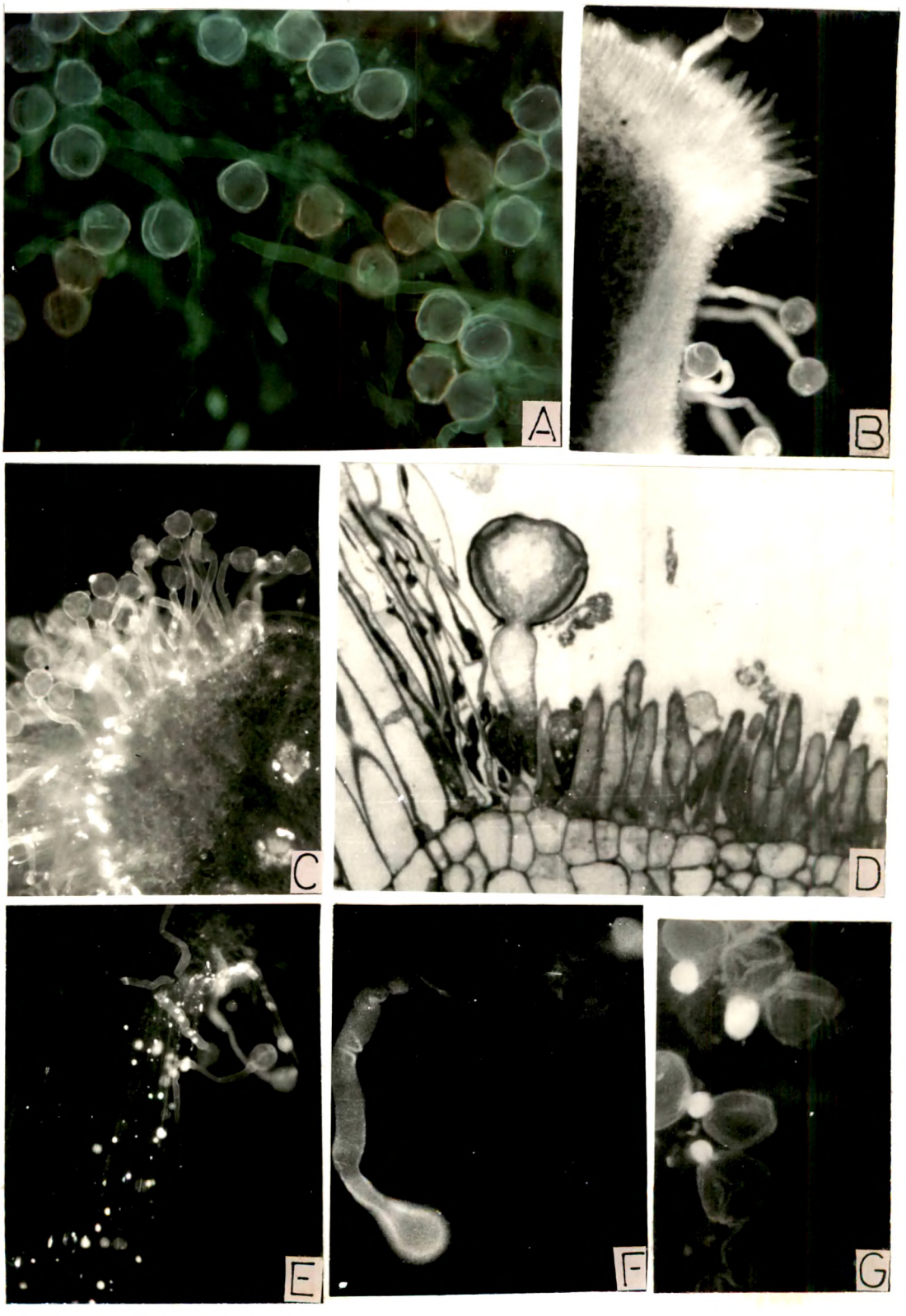

Fig 1·32

Fig. 2.1 A-D

2.1A. A twig of W.somnifera showing leaf arrangement. The leaves at a node are unequal in size.

2.1B. Longitudinal section of flower showing hairy calyx and corolla, fasifixed anthers; and fully developed pistil.

2.1C. Mature stigma showing funnel shaped nature with slight depression at the centre. X, 250.

2.1D. Mature stigma with fully developed thum shaped multicellular papillae cells X, 250.

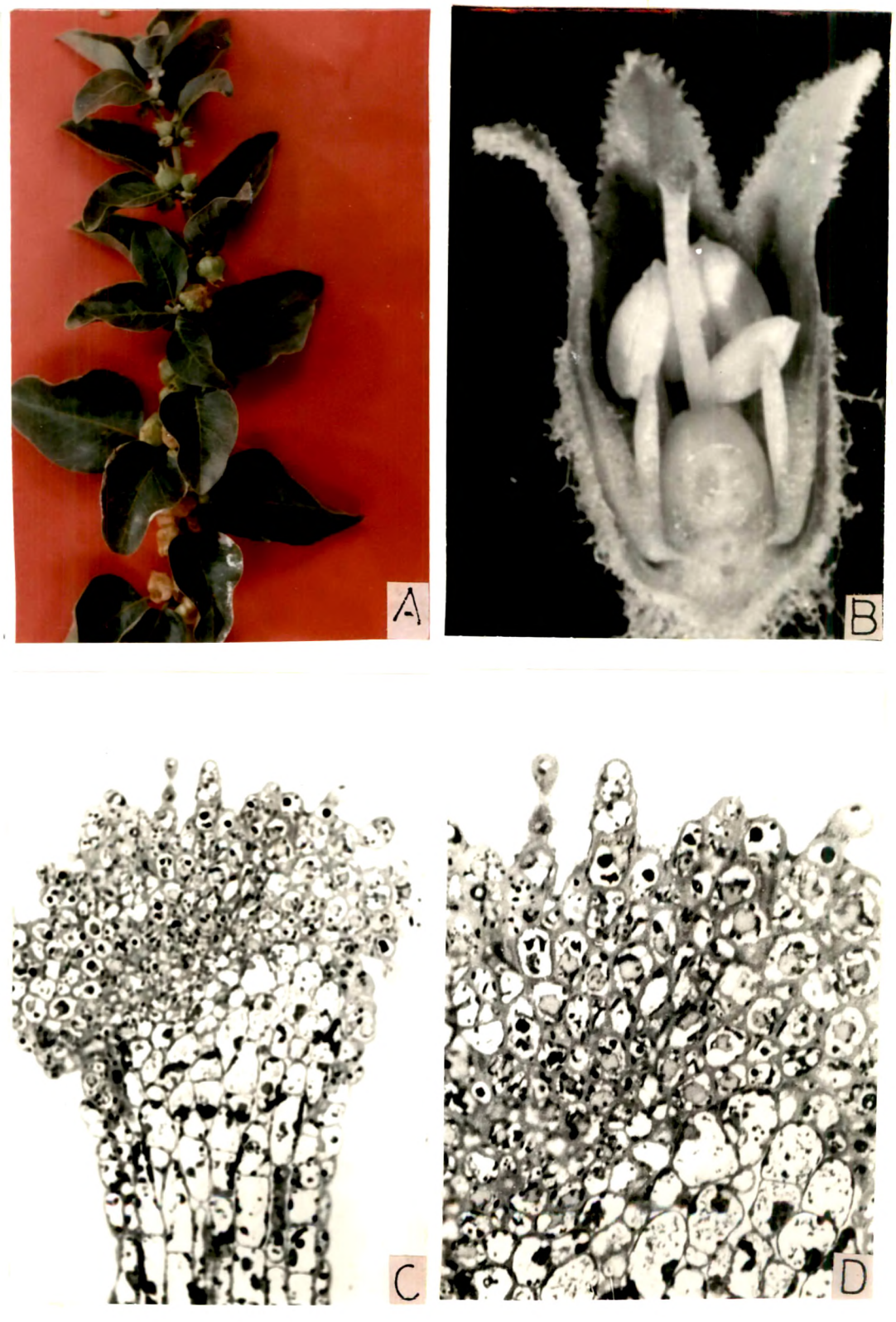

Fig 2·1

Fig. 2.2A-H.

2.2A. Scanning electron micrograph showing a distinct bifid nature of the stigma at stage I. Papillae cells are seen as oval shaped protuberances at this stage. X,

2.2B. Pistil at stage III. Note the elongated style and the uneven expanded stigma.

2.2C. Longitudinal section of the pistil at stage I showing homogenous mass of cells with a slight depression at the centre. X, 787.5.

2.2D,E- Longitudinal section of stigma showing slightly elongated. Papillae at stage III Note the Phenolic material inside the cells. X, 468.75.

2.2F. Shows a single multicellular papillae cells at stage IV. Note the vacuolation. X, 938.

2.2G. Transverse section of stigma at stage IV. Note the secretory material filling the intercellular spaces. X, 500.

2.2H. Longitudinal section of the stigma showing degeneration of some of the papillae cells at stage V. X, 312.5.

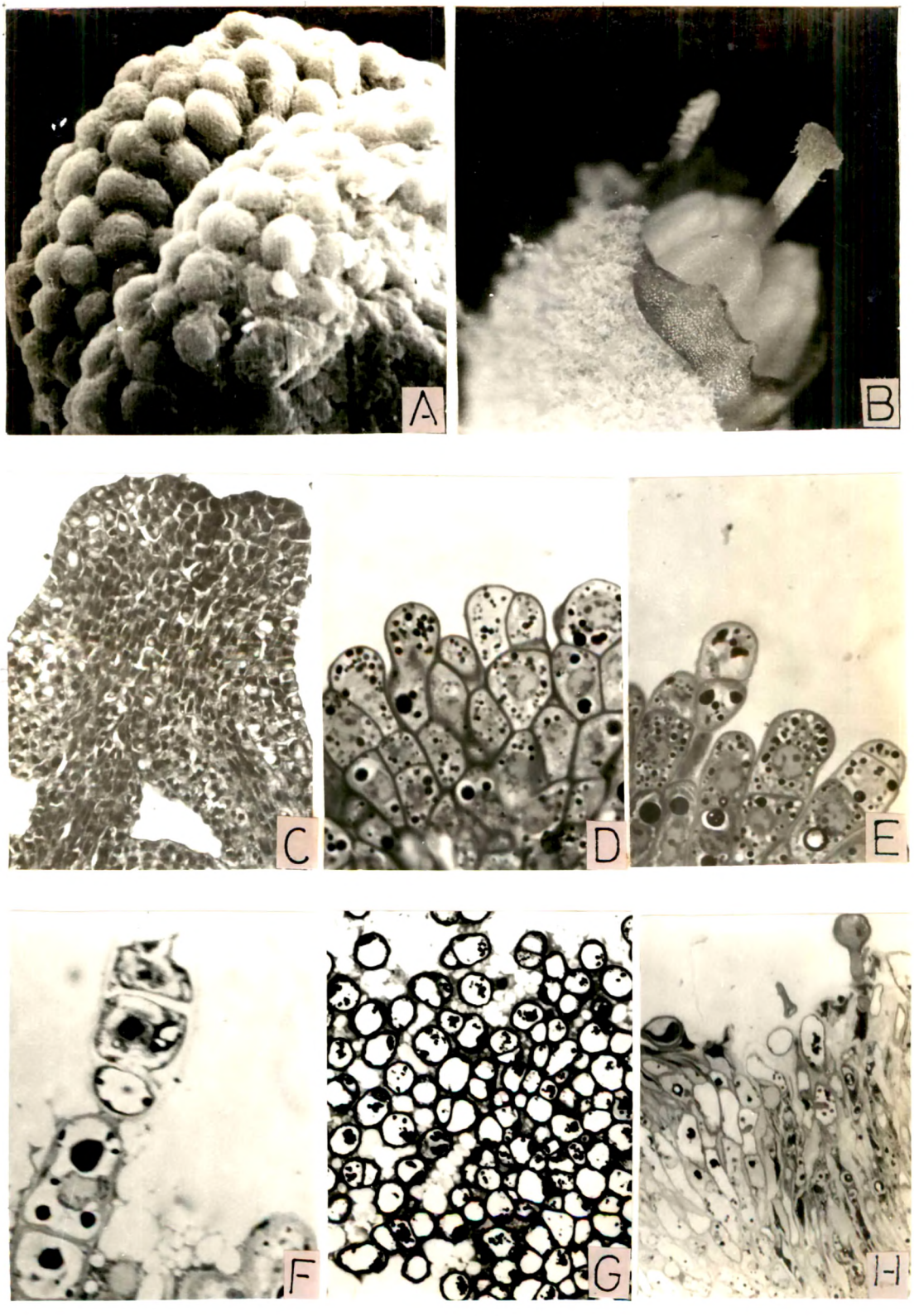

Fig 2·2

Fig. 2.3 A-B.

2.3A. Enlarged view of a single papilla showing multicellular appearence. Note the prominent vacuolation, nucleus with condensed chromatin along the nuclear membrane, osmiophilic droplets and many plastids. Both sides show definite pellicular layer and the free secreliocy material in the interstices of the cells. X, 11,250.

2.3B. The cell wall depict compactly arranged microfibrils. The pellicle (arrow heads) above the thin layer of cuticle seen as uniform.deposits of electron dense material with many osmeophilic and vesicular structures. X, 11,250.

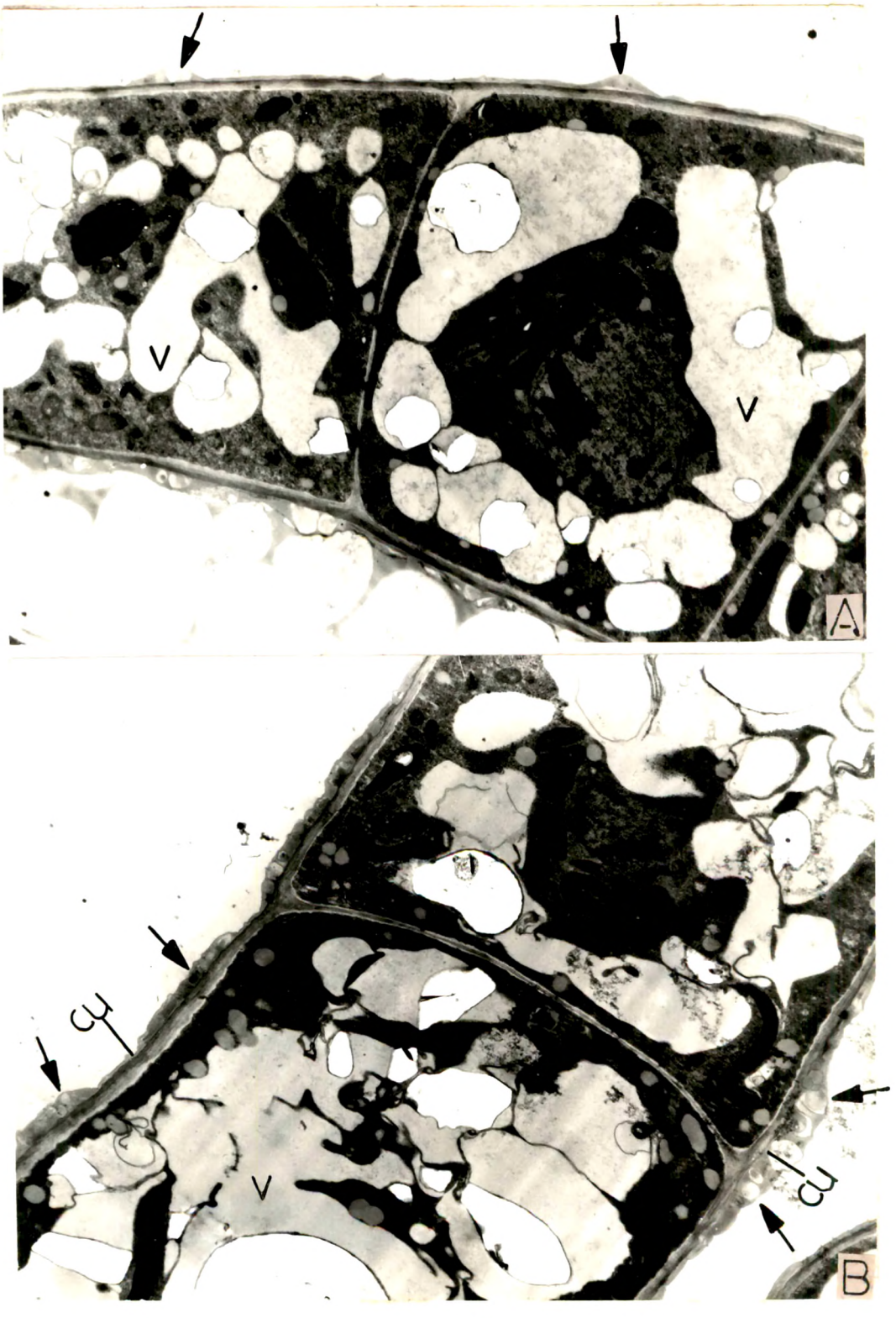

Fig 2·3

Fig. 2.4 A-B.

2.4A. Stigmatic head showing papillae at the secretory stage. Vacuoles in the papillae coalesce to form large vacuoles. Subpapillae and the cells below them all showing electron dense cytoplasm, abundant vacuolation and organelles. Vacuoles contain osmiophilic deposits. X, 6950.

2.4B. Vacuoles showing abundant secretory material. Note the traversing of osmiophilic material through the tonoplast in to the vacuole. The intercellular spaces contain abundant secretory material. The plastids in one of the cells have well developed membranes. 11,250.

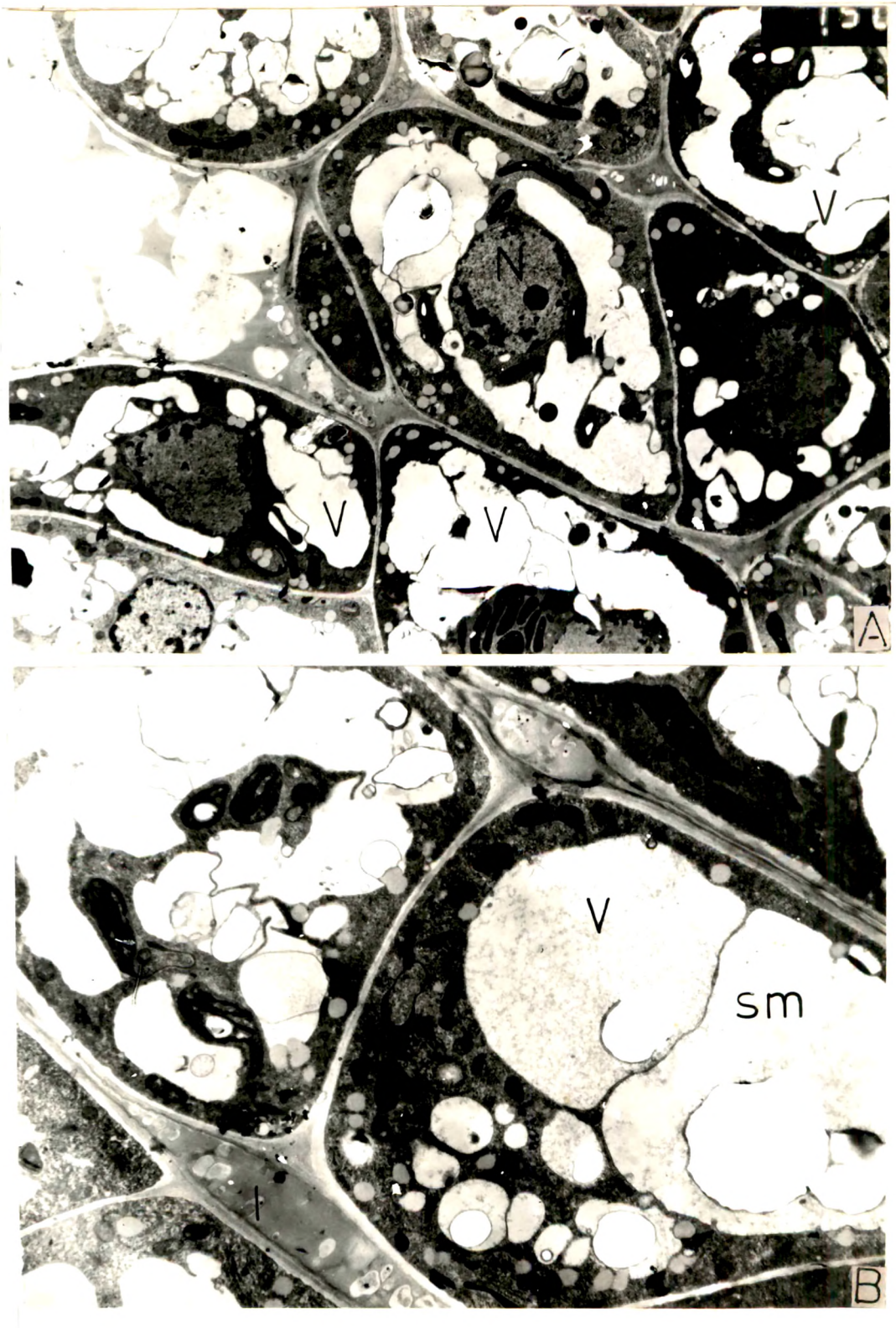

Fig 2.4

Fig. 2.5 A-B

2.5A. Late secretory phase of the papillae showing vacuoles and well developed plastids of various shapes. Note the abundant secretory material in the large vacuole while one of the smaller vacuoles shows. Osmiophilic material traversing the tonoplast (arrows). X, 27,000.

2.5B. Cytoplasm of the papillae cells showing vacuoles filled with secretory material. Plastids with osmiophilic material in their matrix and nucleus with dispersed and condensed chromatin are also seen. Note the intact pellicle on the cell surface (arrows). X, 13500.

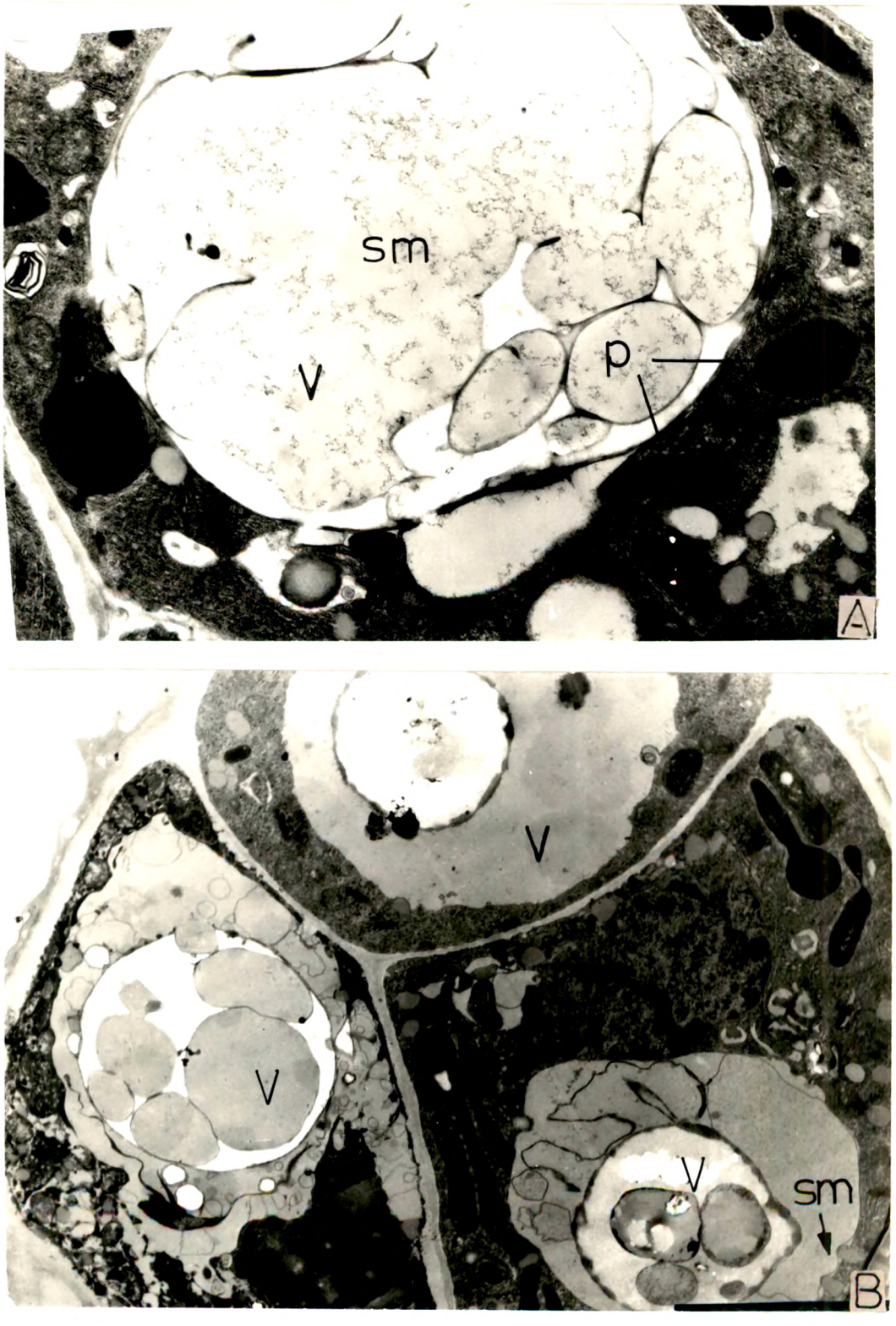

Fig 2·5

Fig. 2.6 A-C.

2.6A. Shows cytoplasm of the papillae cell having oval shaped plastids depicting well developed thylakoids. Note the ER partially enclosing the plastid Dictyosomes.represented as tubular asternae with compact stacking. Note the small vesicles around the dictyosome. X, 6000.

2.6B. Shows small dense vesicles aggregated near the wall. Note the vesicles with fibrillar contents and osmiophilic material with in the wall (arrows) X, 2000.

2.6C. Shows a portion of the nucleus in a sub papillae cell with well defined nucleolus and condensed chromatin along the nuclear membrane Mitochondria seen are without cristae. X, 3000.

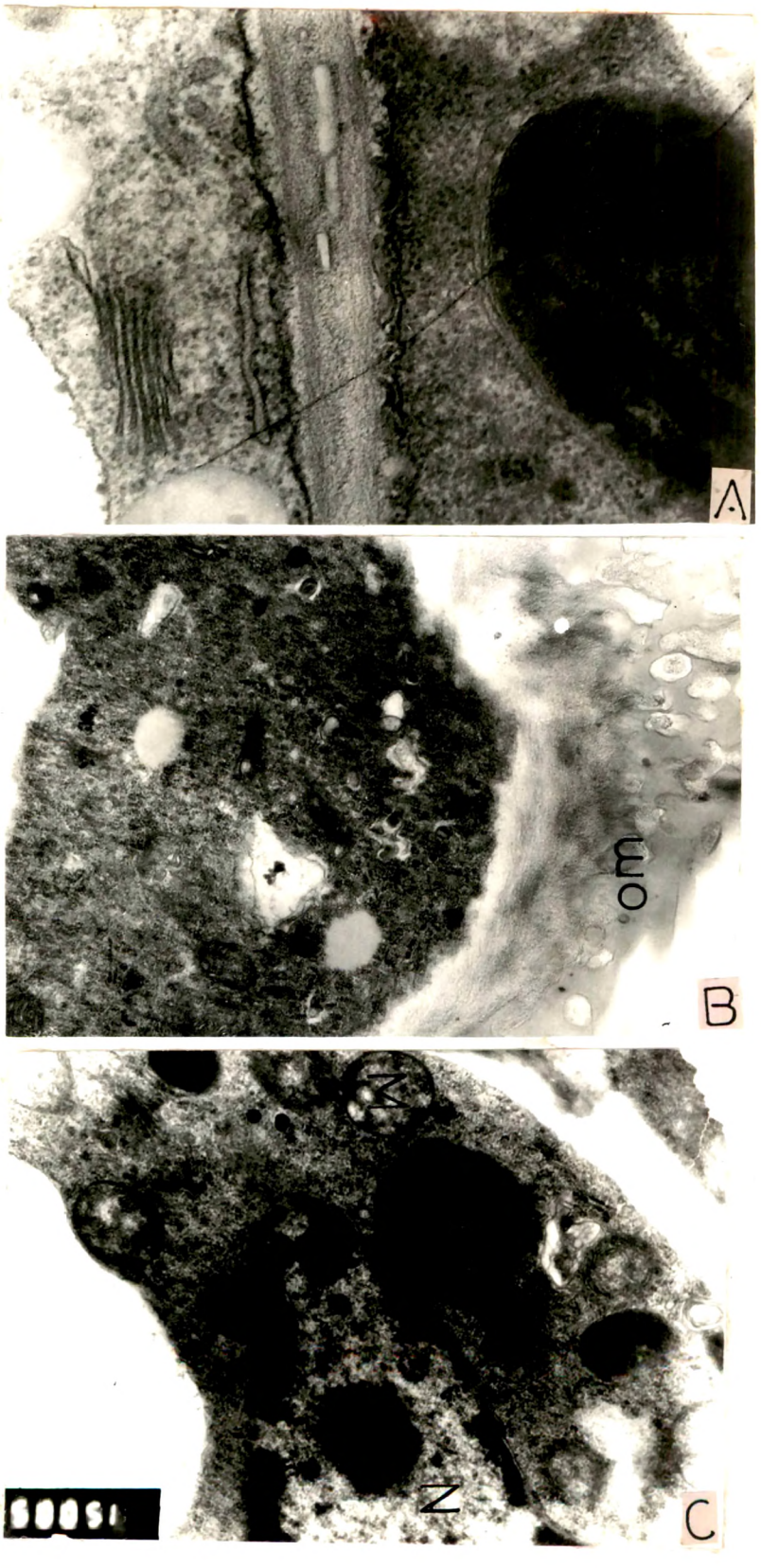

Fig 2·6

Fig. 2.7 A-C.

2.7A. Plastids in the papillae cytoplasm showing highly electron dense lumen and a large osmiophilic droplet. The intercellular space is filled with osmiophilic droplets. X, 5000.

2.7B. Shows well developed thylakoids in the plastids with moderate stacking, forming small grana. Note the ER forming close association with plasmalemma (arrows). X,5000.

2.7C. Shows chloroplasts encircled by rER. X, 5000

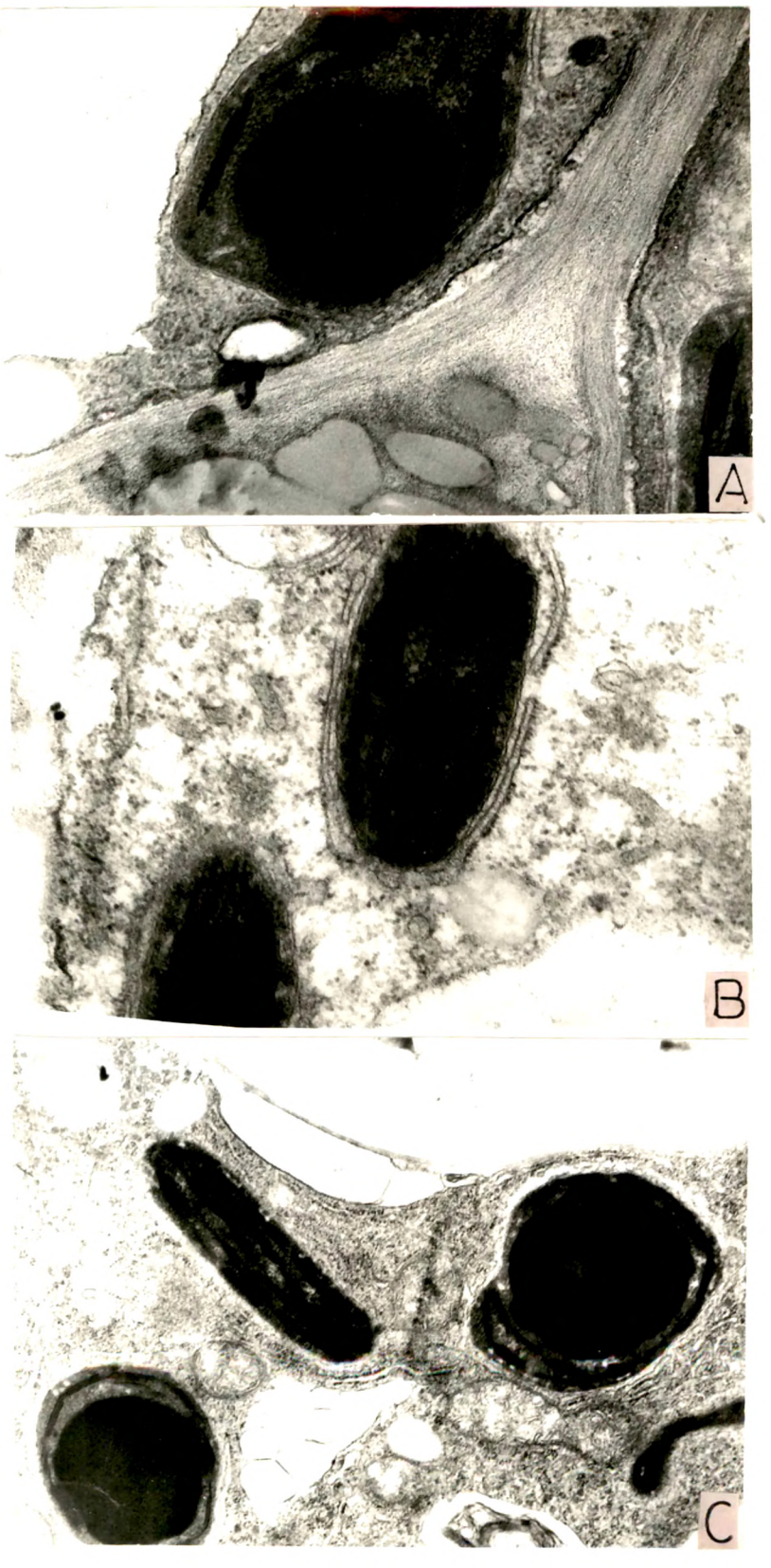

Fig 2·7

Fig. 2.8 A-D

2.8A. Shows single well developed chloroplast ategned near the wall of the papillae. Note the secretory material filling the plastid lumen. Note the dissolution of middle lamella accommodating the secretory material. X, 3000.

2.8B,C,D. Show plastids of various shapes in the cytoplasm of the papillae. Note the secretory droplets in their lumen.

B, X, 2000; C, X, 16,000; D, X, 5000.

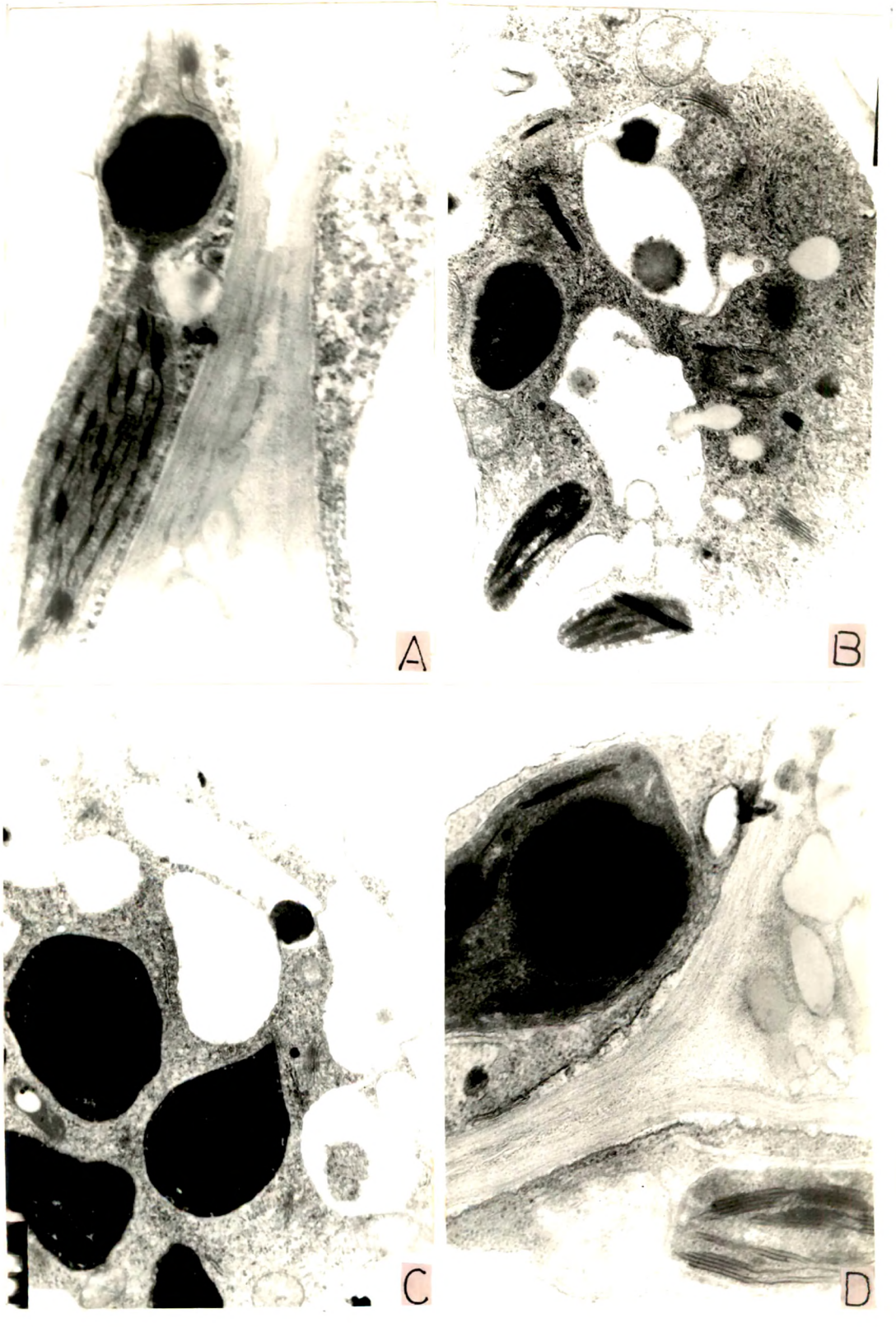

Fig 2·8

Fig. 2.9 A-D.

2.9A. shows the rough ER in the cytoplasm of the papillae having close association with vacuoles and plasmalemma. The intercellulor space depict accumulation of secretory material. X, 2000

2.9B Intercellular space of the papillae showing small irregular vesicles containing fibrillar and electron dense material (arrows) X, 2000

2.9C Shows the traversing of phenolic substances through the tonoplast in to the vacuole lumen. The rER showing close association with plasmalemma (arrows) X,3000

2.9D Osmiophilic material in the vacuole undergoing some transformation. X,2000

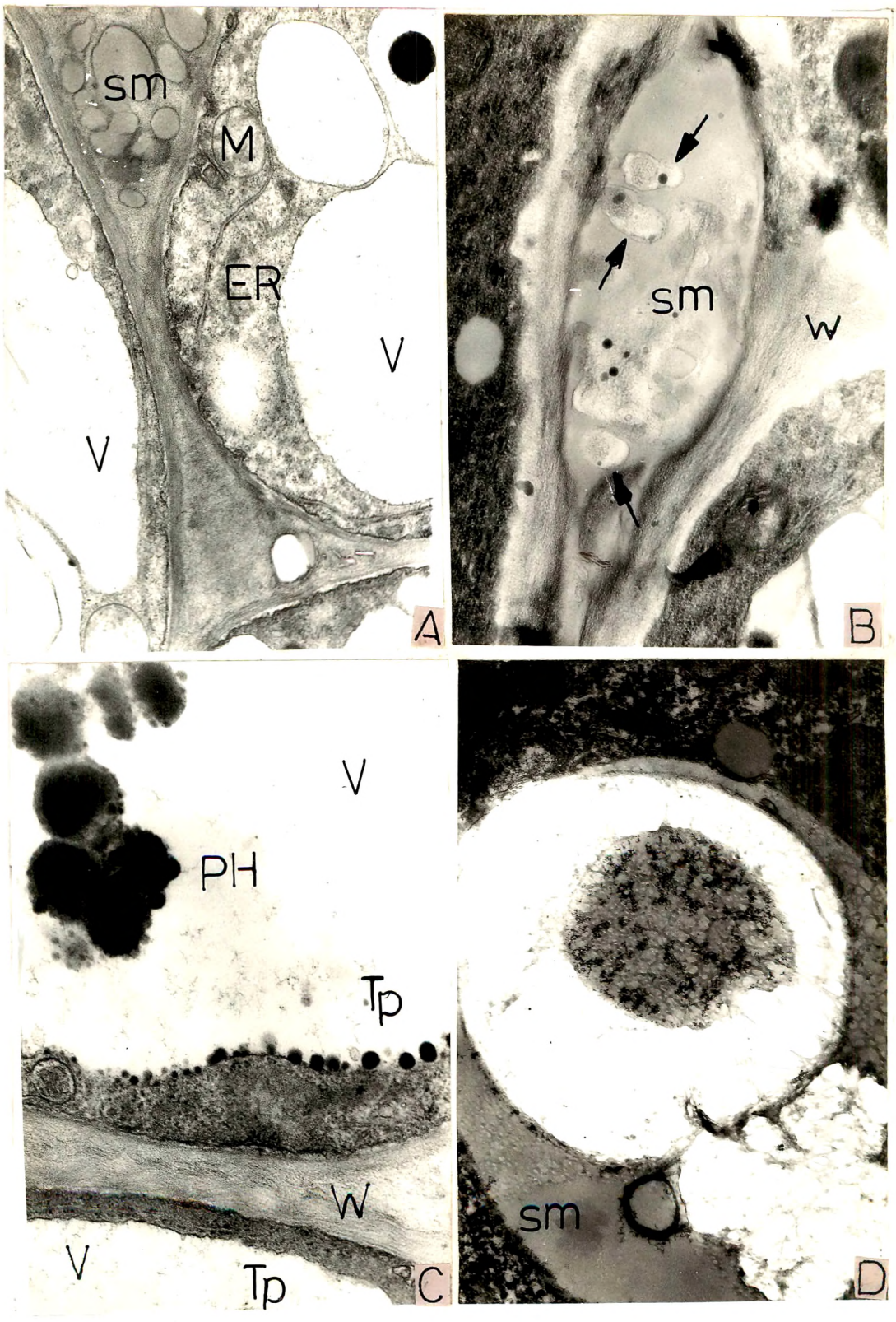

Fig 2·9

Fig. 2.10 A-C

2.10 A Papillae cell in the late senescent stage showing intact pellicle and degenerated organelles. Note the cytoplasm showing ribosomes and degenerated mitochondria. X, 13,500

2.10 B Shows degeneration of cytoplasm in a senescing papillae cell. X,2000

2.10 C Papillae cell in the late senescent phase showing degenerating mitochondria, plastids, rER and ribosomen, X,2000

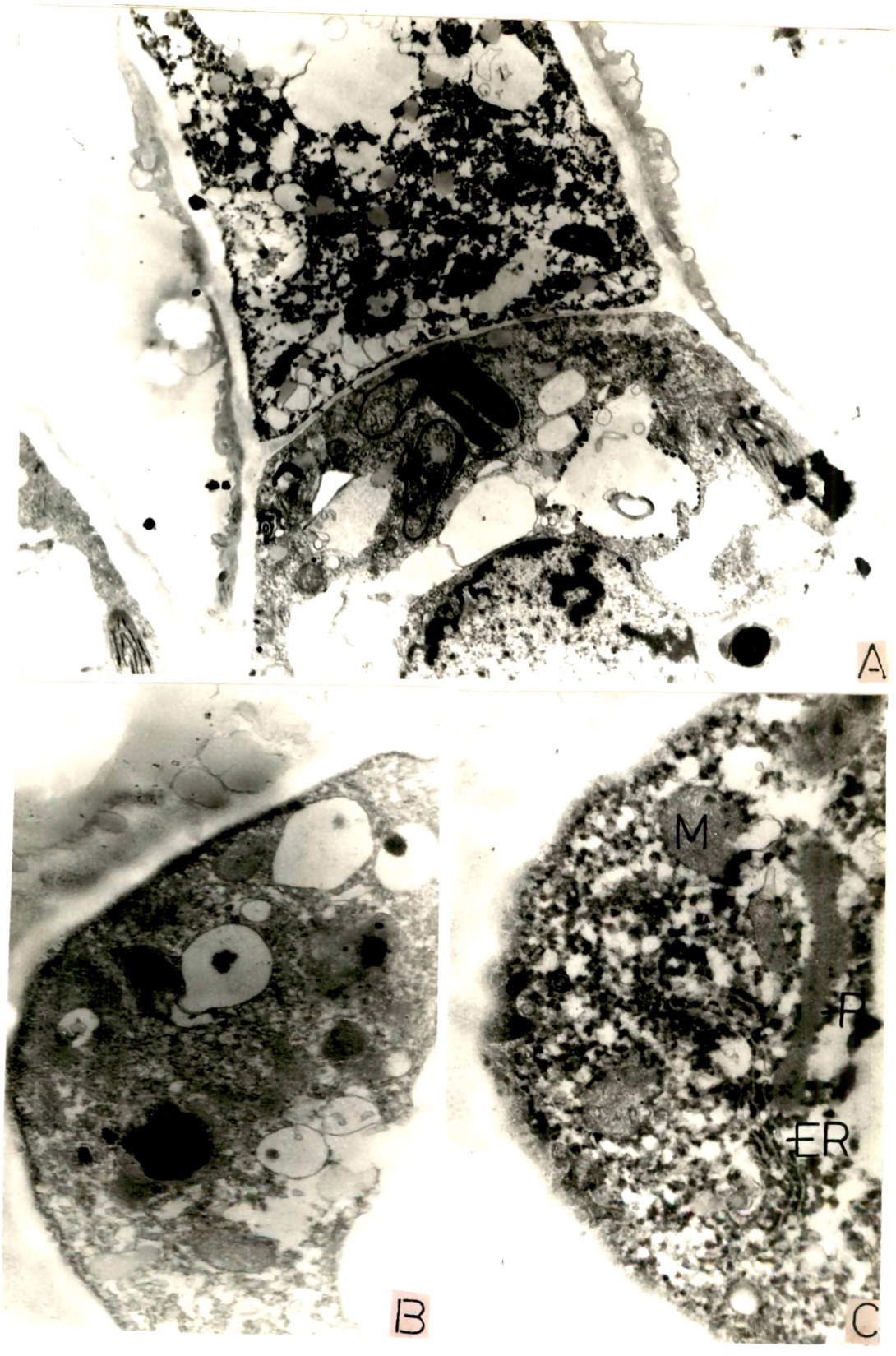

Fig 2·10

Fig. 2.11 A - D

2.11 A T.S of the style at stage II. The epidermis shows a thick cuticle. Note the vascular elements (arrow) X, 250

2.11 B T.S. of the style at stage IV showing distinct cylem and phloem elements (arrows) X, 250

2.11 C L.S. of the style. The elongated compactly arranged parenchymetous cells are discernible. The cuticle is continuous in the style. X 785

2.11 D Shows similar feature. X, 312.5

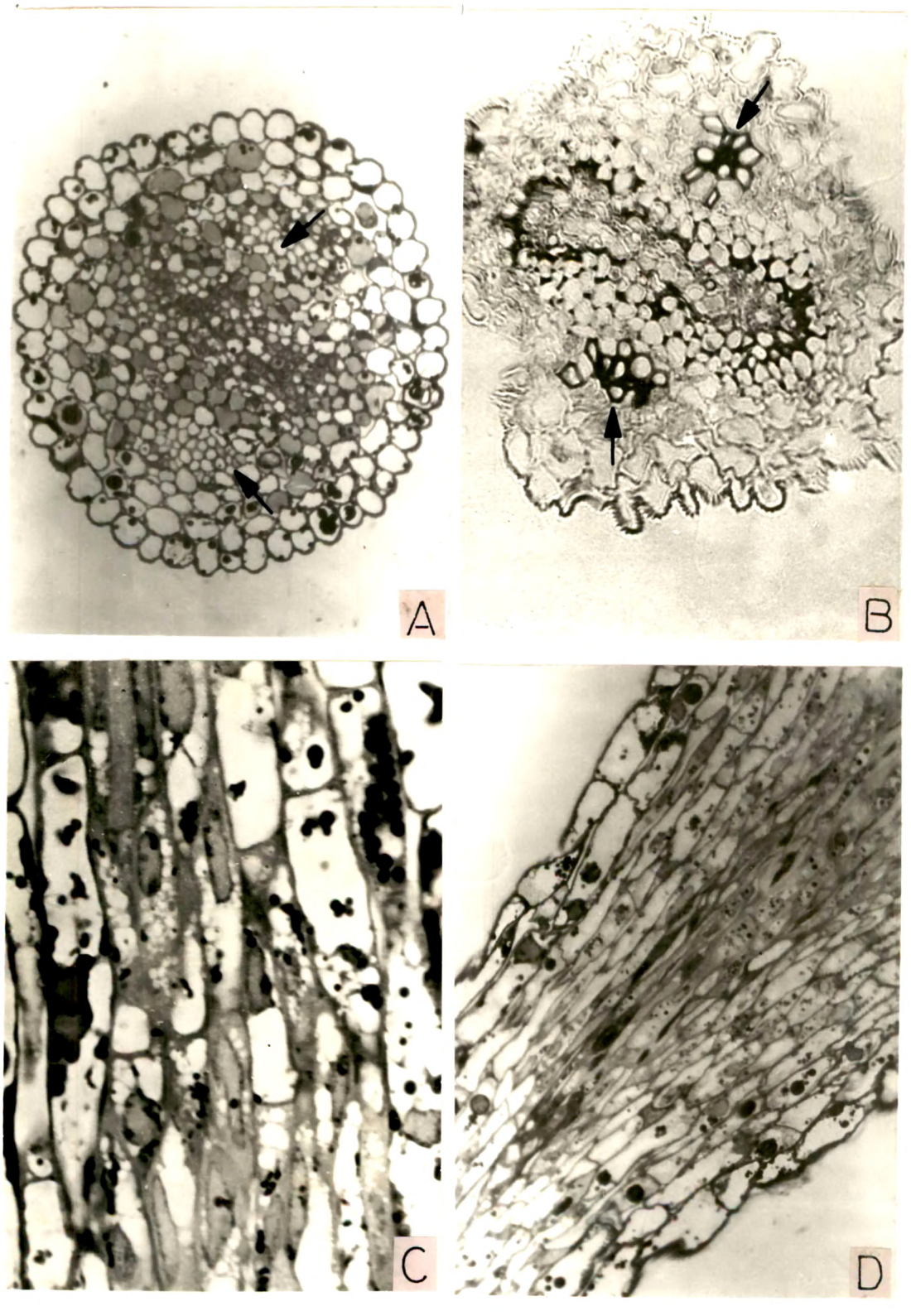

Fig 2·11

Fig. 2.12 A-C

2.12 A Shows transmitting tissue cells. Note the intercellular space and thickening of cell wall at certain regions (arrows). Also note the dense cytoplasm with prominent hucleous, vasuoles with fibrillar as well as plastids. X, 6750

2.12 B Transmitting fissue cell showing accumulation of osmiophilic droplets near rER. Also observe the loosened appearence of middle lamella and the vesicler with fibrillar material in the secretion (arrows) X, 4000

2.12 C Shows accumulation of secretory material in the intercellular space. Also note the phenolic substances in the vacuole.X,12,000

(W - wall. pH - phenolics; V - Vacuole; Vs - Vesicles. ER - Endoplasmic reticulum SM - Secretory materials)

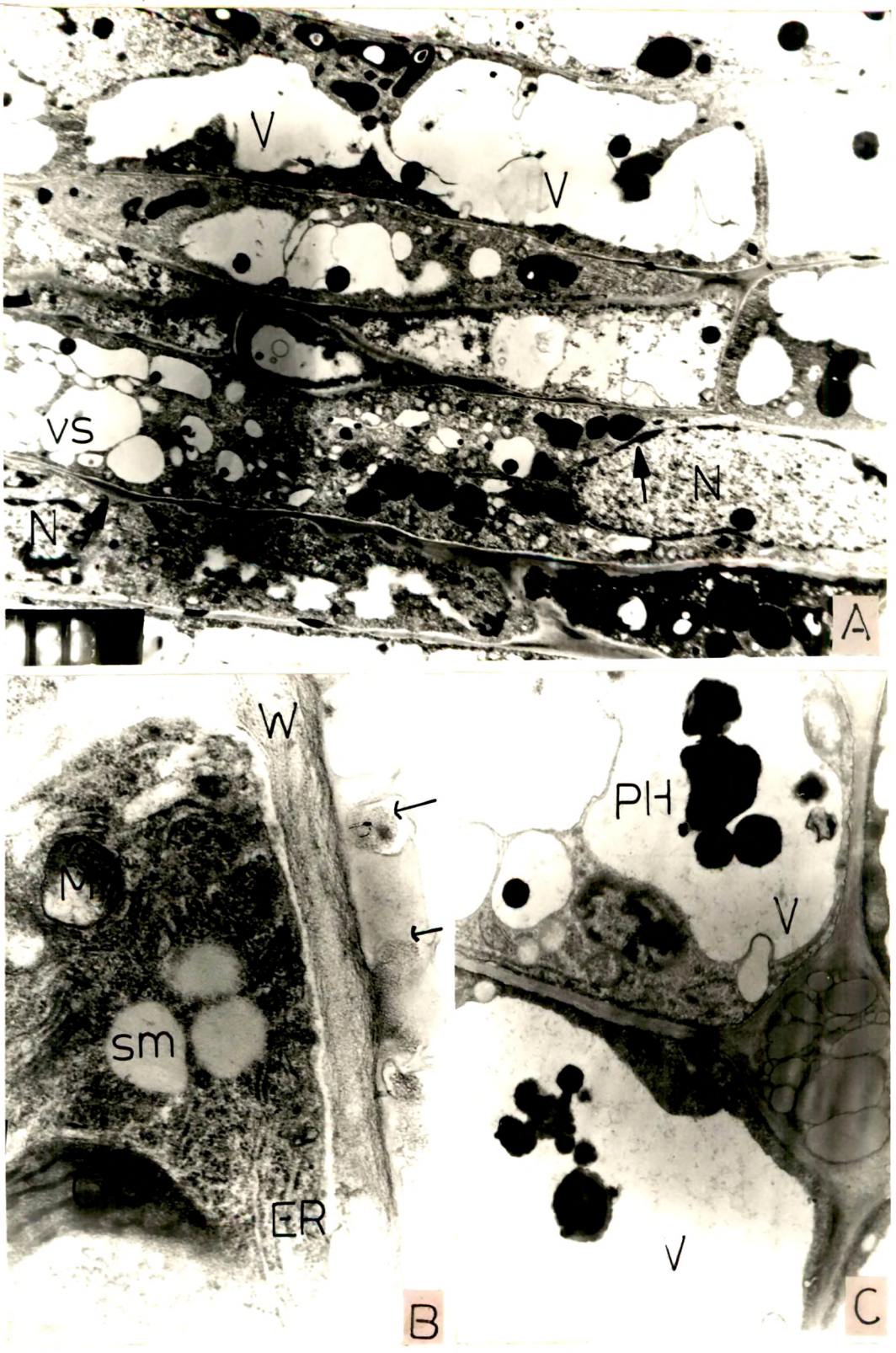

Fig 2·12

Fig. 2.13 A-F

2.13 A PAS reaction on stigma papillae showing polysaccharides in the secretory material (see arrow) at stage IV of the stigma development. X, 625

2.13 B Suden IV staining carried out on the stigma papillae showing surface lipids. Note the cuticle. X, 625

2.13 C Lipid material contained in the secretory substance showing intense fluorescence following staining with Auromine O at stage III. X, 625

2.13 D The stigma at stage IV stained with Auromine O after washing in chloroform/ methanol in the ratio 1:1. Note the cuticle showing intense fluorescence X, 625

2.13 E T.S. of style at stage IV showing polysaccharide deposition in the ground tissue and in the transmitting tissue. X,625

2.13 F Pellicle investing the papillae as a thin layer showing intense fluorescence following staining with 8 ANS. X, 625

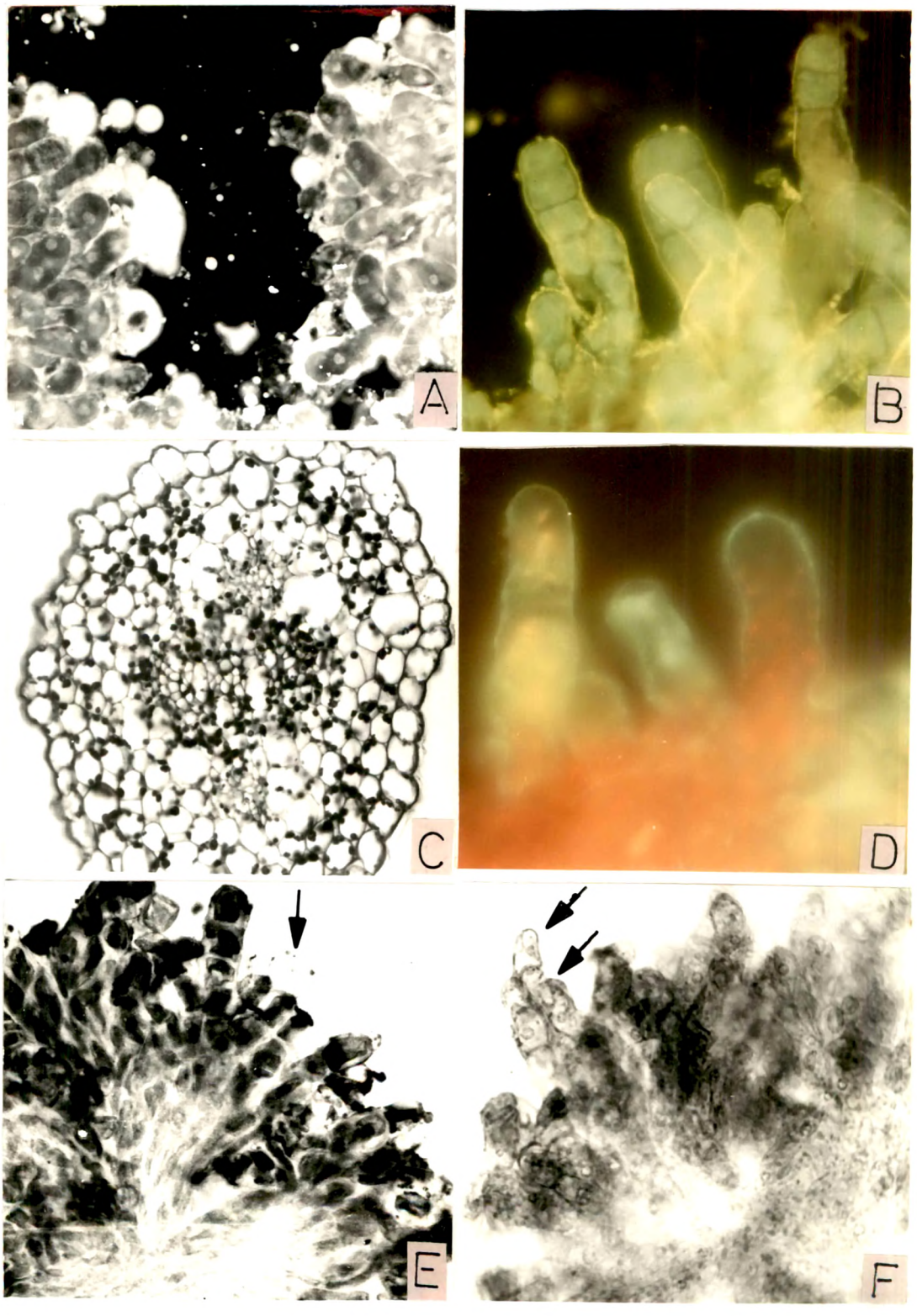

Fig 2·13

Fig. 2.14 A-F.

2.14A. A single papilla showing intense reaction for non specific esterase at stage IV. Note the intense reaction in the pellicle. X, 938.

2.14B. Peroxidase activity on stigma papillae at stage III. The activity in the cytoplasm is moderate. X, 938.

2.14C. Intense SDH reaction at stage IV towards the basal portion of the papillae cell. X, 938.

2.14D. Intense acid phosphatase activity in the stigma papillae at stage IV. The cells immediately below the papillae also depict meagre activity. X, 625.

2.14E. Moderate ATPase activity in the papillae

2.14F. Moderate ATPase activity in the stylar tract. X, 938.

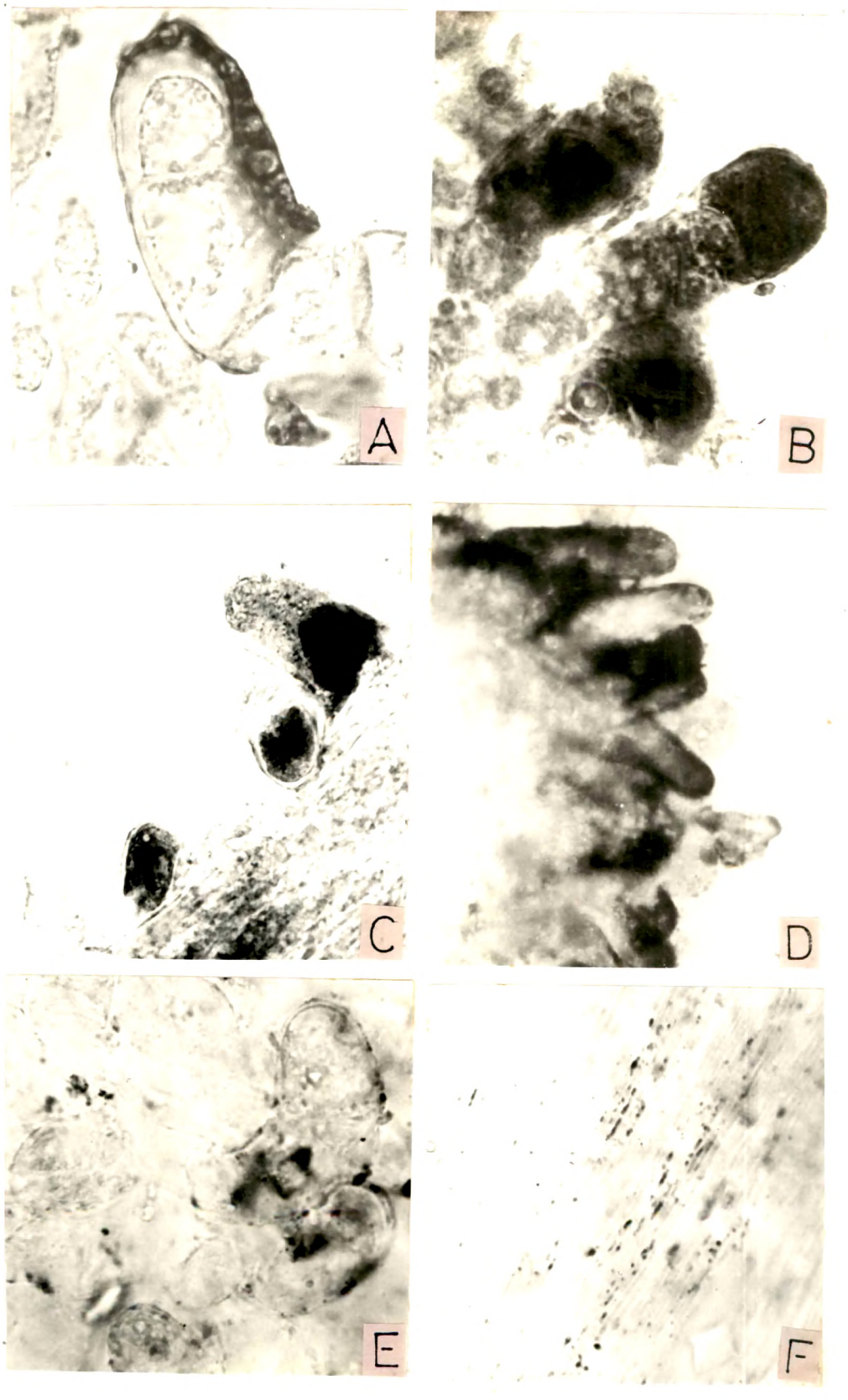

Fig 2·14

Fig. 2.15 A-F.

2.15A. Longitudinal section of the anther at stage I. Note the microspore mother cells as large densley stained cells having conspicuous nucleii (arrows). X, 500.

2.15B. Shows intact tapetal layer and the microspore mother cells (arrows). X, 625.

2.15C,D,E. Microspore mother cells undergoing division. Note the enlarged size of the microspore mother cells. X, 625.

2.15F. Shows microspore tetrads aggregated in groups. Note also the disintegrated. Sporogenous cells. Isobilateral as well as tetrahedral tetrads are observed. X, 500.

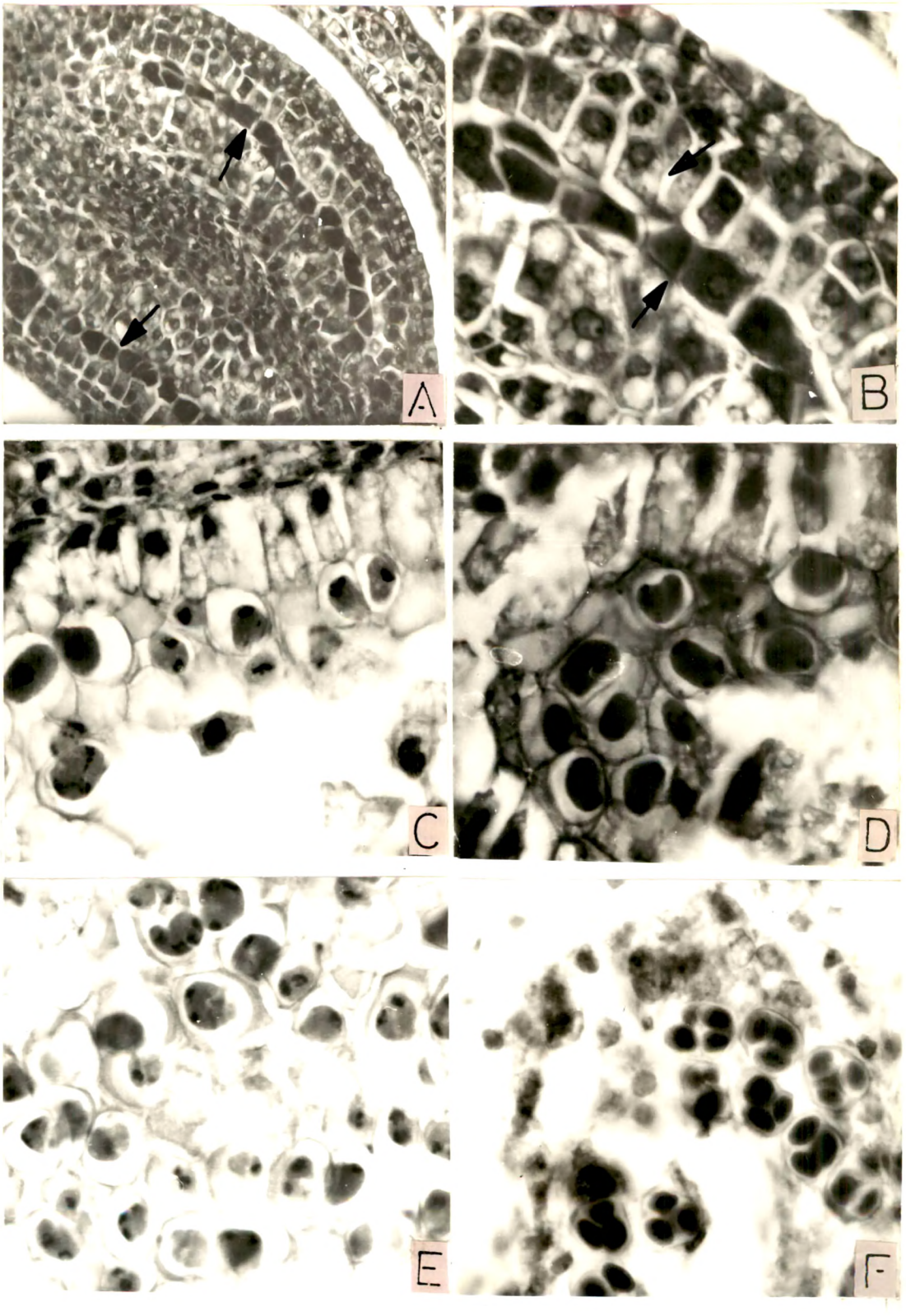

Fig 2·15

Fig. 2.16 A-F.

2.16A. Transverse section of the anther showing an single epidermal layer, endothecium layer wall layer and intact tapetum. X, 625.

2.16B. Enlarged view of the same. Note the fibrous endothecium. X, 938.

2.16C. Transverse section of the anther showing the disintegrating tapetal cells. X, 787.5.

2.16D,E,F. Tetrasporangiate anther prior to dehiscence showing fully formed pollen grains. The fully developed endothecium shows fibrillar bands arrows indicate point of dehiscence.

D - X, 500; E - X, 625; F - X, 938.

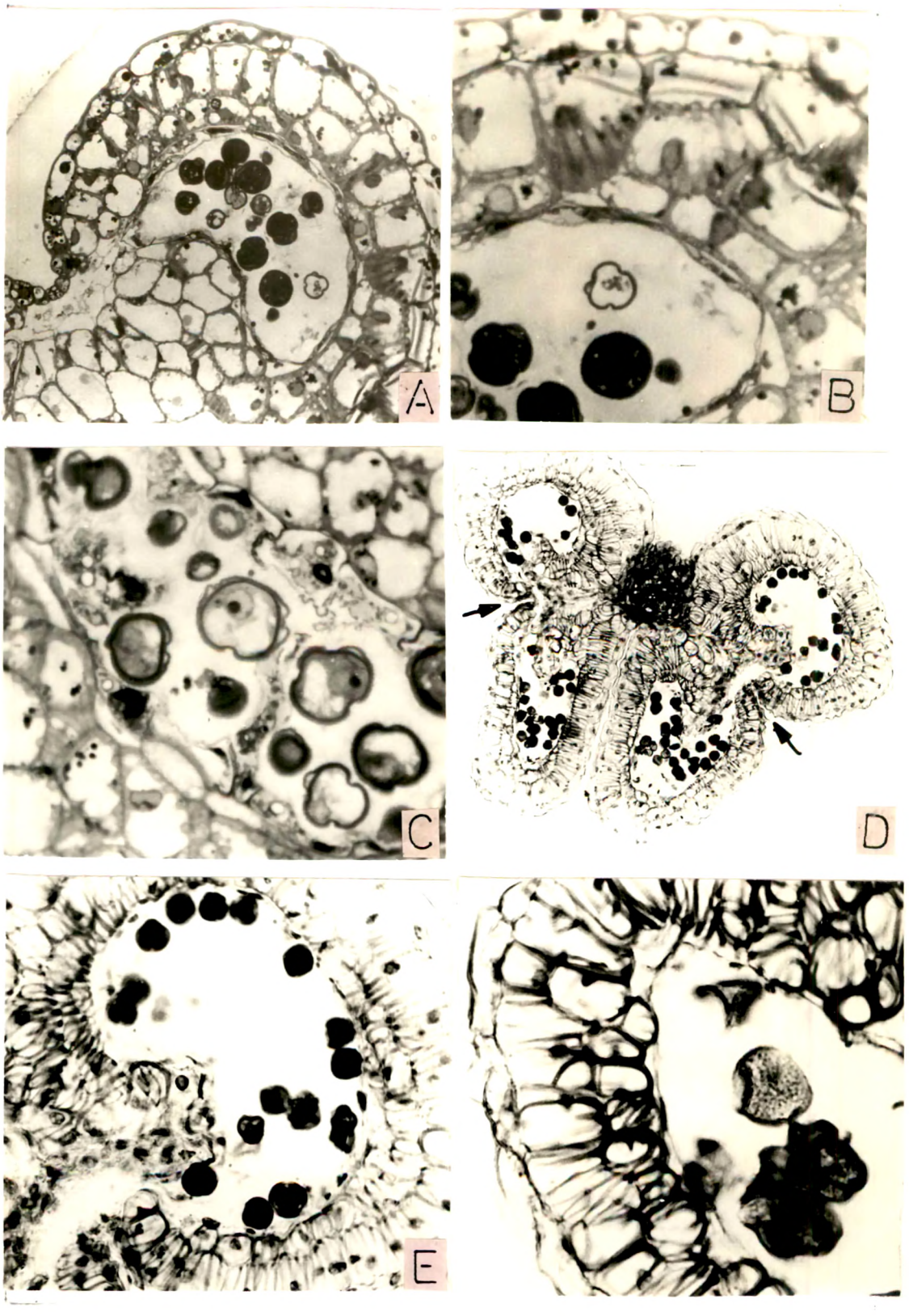

Fig 2·16

Fig. 2.17 A-C.

2.17A. Pollen grain showing a dense intine and a highly electron dense ornamented exine (arrows). Also note the mitochondria, ER and numerous vesicles in its cytoplasm. X, 3000.

2.17B. Shows the outer sculptured layer sexine (arrows) of the pollen. Note the osmiophilic material associated with the exine, X, 4000.

2.17C. Shows the demarcated exine and intine in the pollen wall. X, 3000.

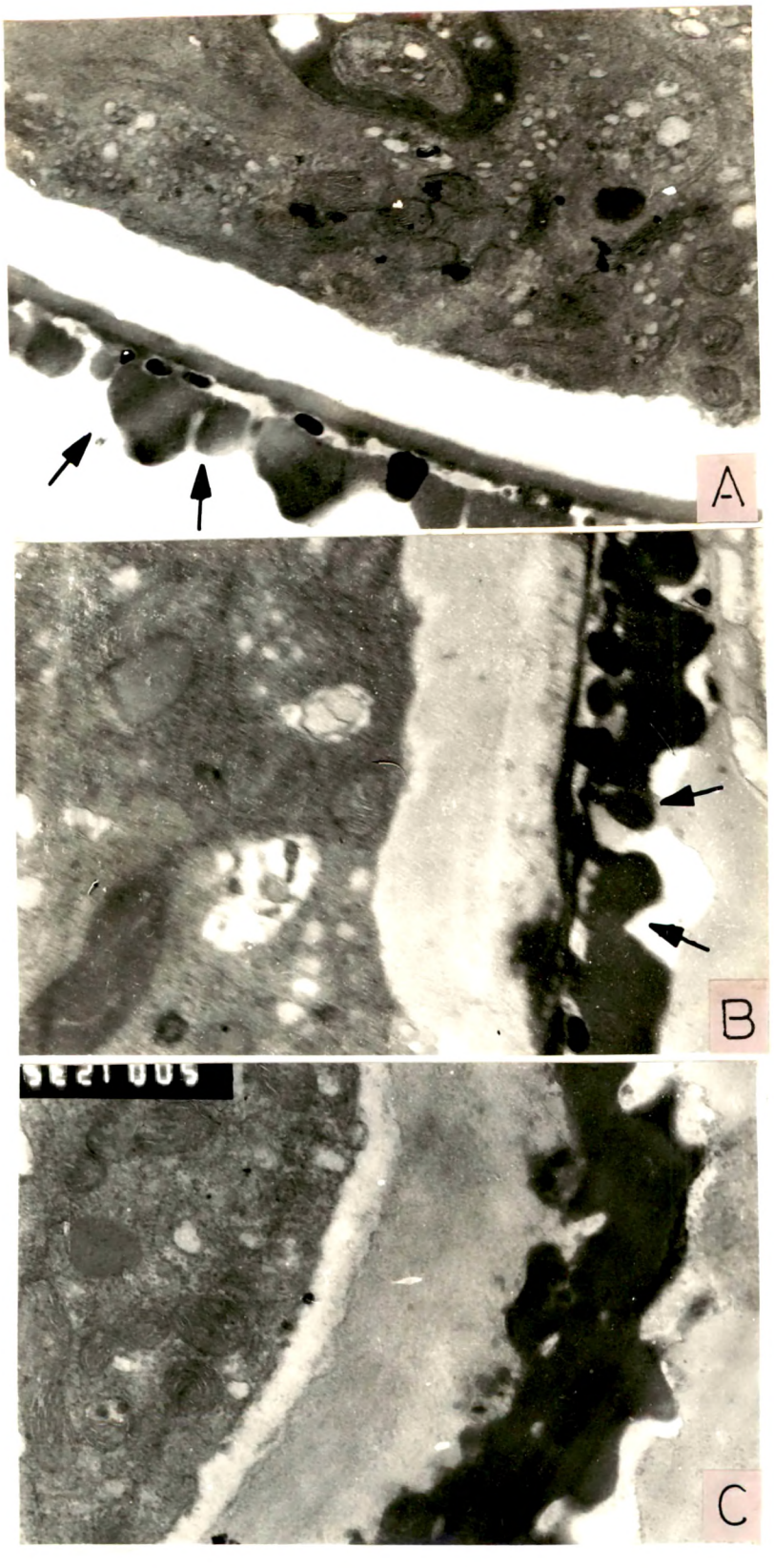

Fig 2·17

Fig. 2.18 A-C.

2.18A. Shows pollen tube having a highly fibrillar cell wall texture. The pollen tube cytoplasm is dense. X, 12,000.

2.18B. Shows fusion of vesicles in the pollen tube cytoplasm. Note the concentric membrane structures (arrows). X, 3000.

2.18C. Shows numerous dictyosomes and associated smaller vesicles and multivesicular bodies (arrow). X, 2000.

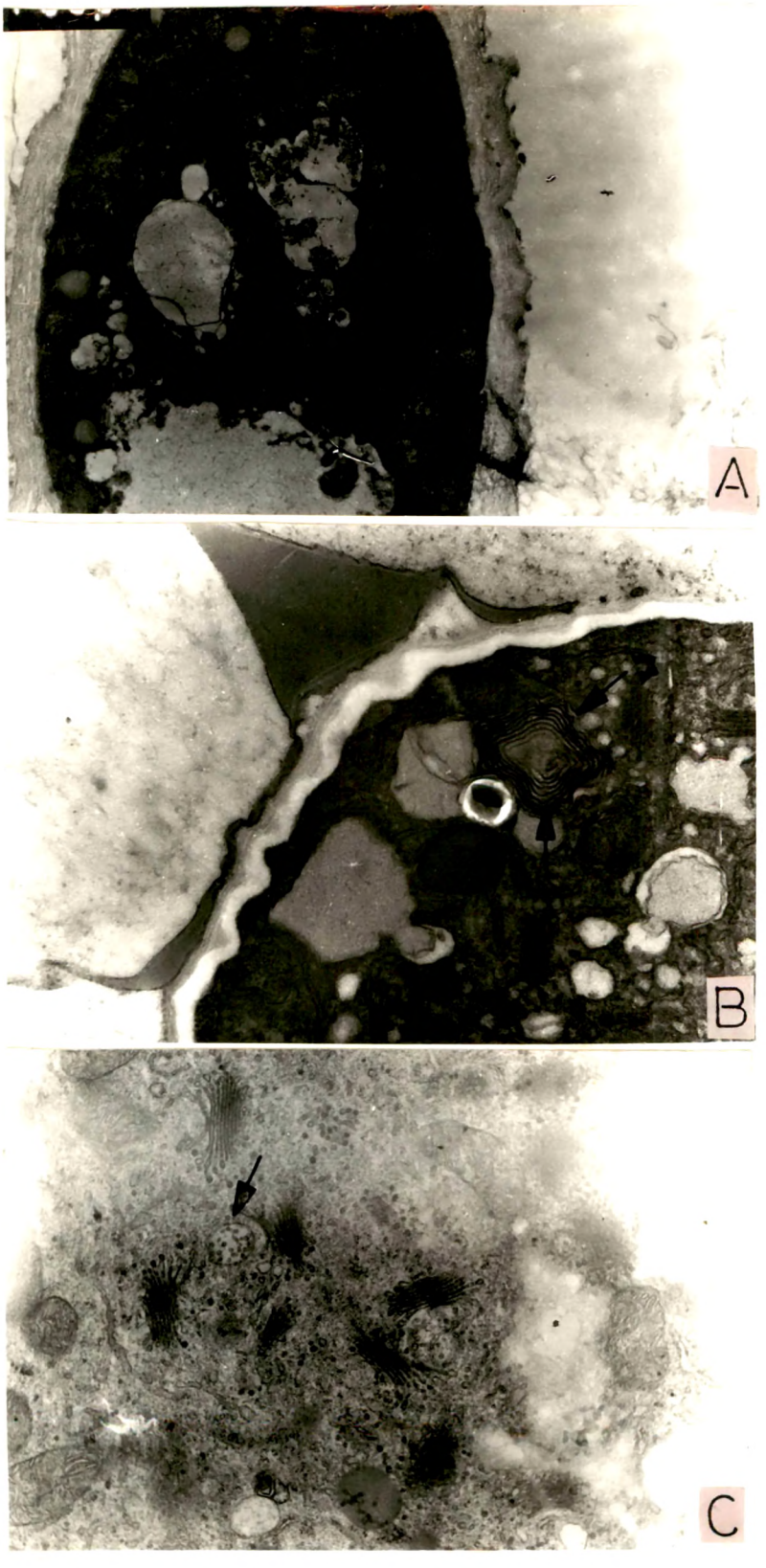

Fig 2·18

Fig. 2.19 A-B.

2.19A. Shows cross section of the stigma with pollen tube in between the intercellular space of the sub papillae cells. Note the secretory material around the pollen tube. X, 4500.

2.19B. Cross section of stigma with pollen tube in the intercellular space. Note the highly vesiculate nature of the tube cytoplasm and the osmiophilic material surrounding it. X, 27000.

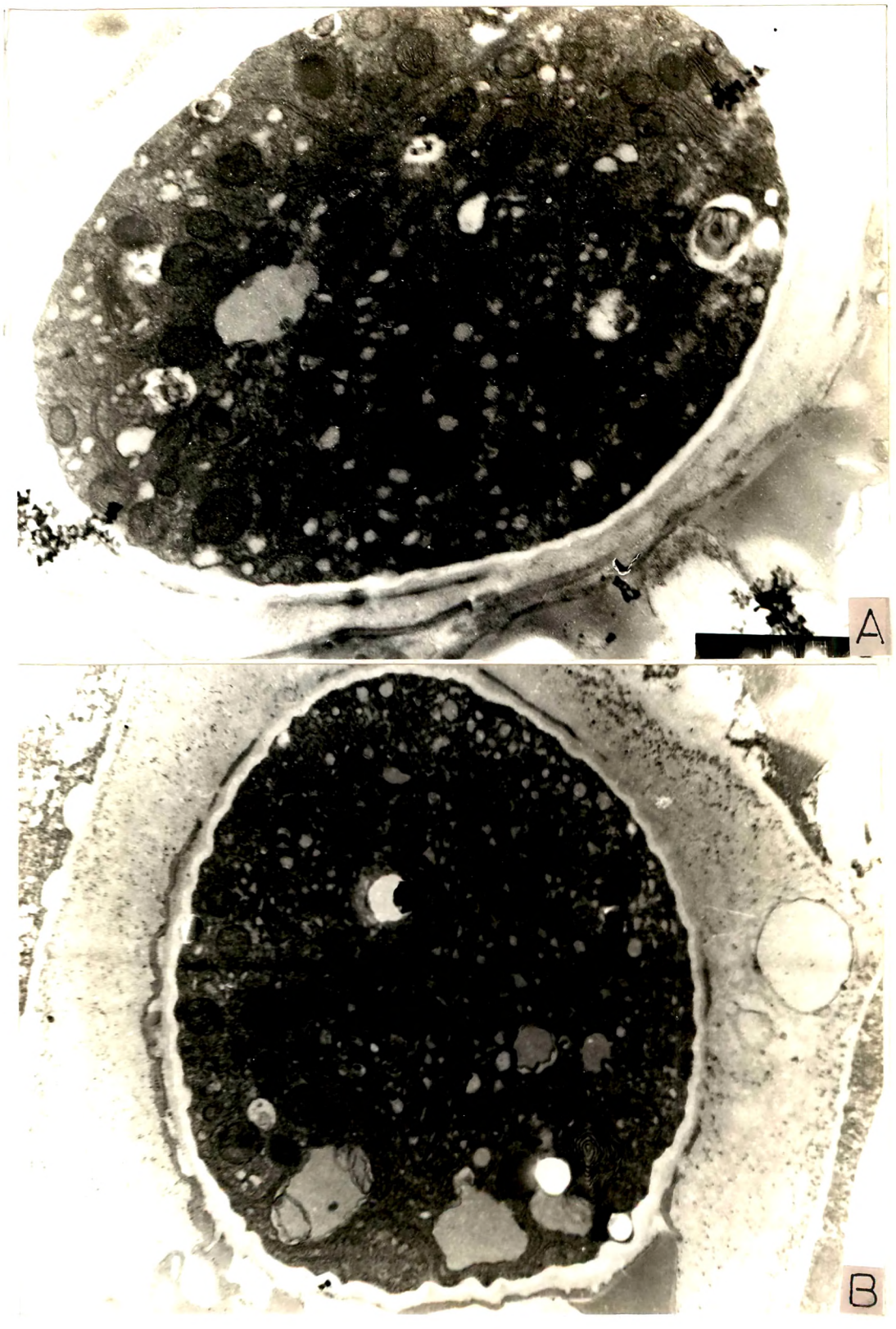

Fig 2·19

Fig. 2.20 A-F.

2.20A. Early stage of ovule showing the archerporial initial getting differentiated in to sporogenous cell and parietal cells (note the arrows). X, 938.

2.20B. Shows functional sporogenous cell undergoing transverse division. X, 938.

2.20C. Section showing functional megaspore at the centre. Note the degenerated megaspores. X, 625.

2.20D. 2 celled stage of the embryosac. X, 938.

2.20E. 4 celled stage of the embryosac. X, 938.

2.20F. 8 celled stage of the embryosac. Note the degenerating antipodal (arrow). A drohnit endothelial lining is observed (arrow). X, 938.

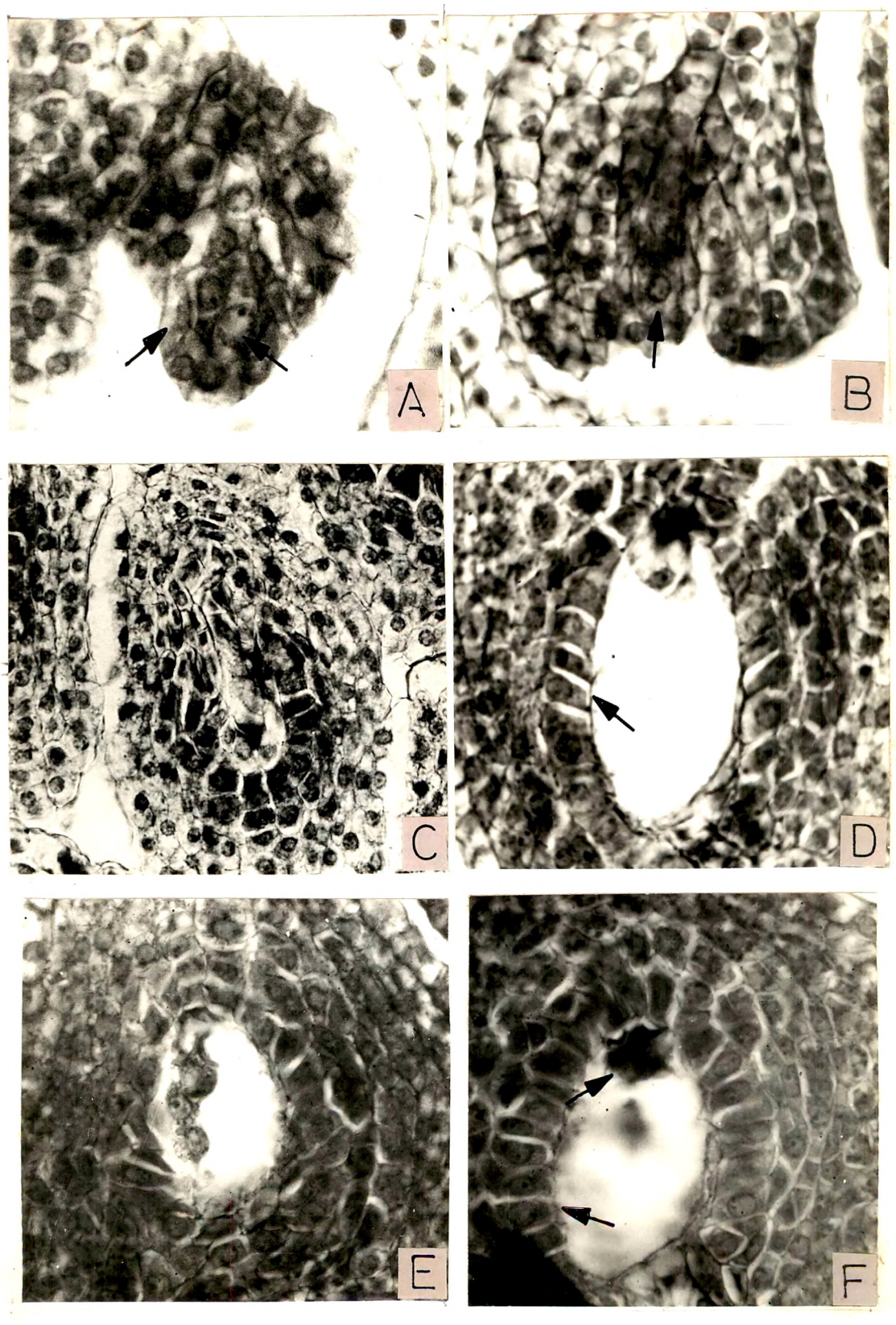

Fig 2·20

Fig. 2.21 A-H.

2.21 A,B. Cross pollen germinating on the stigma surface. A,- X, 625; B - X, 500.

2.21C,D,E. Pollen in the style. Note the normal callose plugging, and tufts of pollen tube at the base of style. C- X, 500; D- X, 500; E - X, 500.

2.21 F,G. Callose deposition on the stigma papillae as well as on the cell wall of the transmitting tissue of the style following self pollination. F - X, 625; G - X, 625.

2.21 H. Pollen tube near the ovule. X, 787.5.

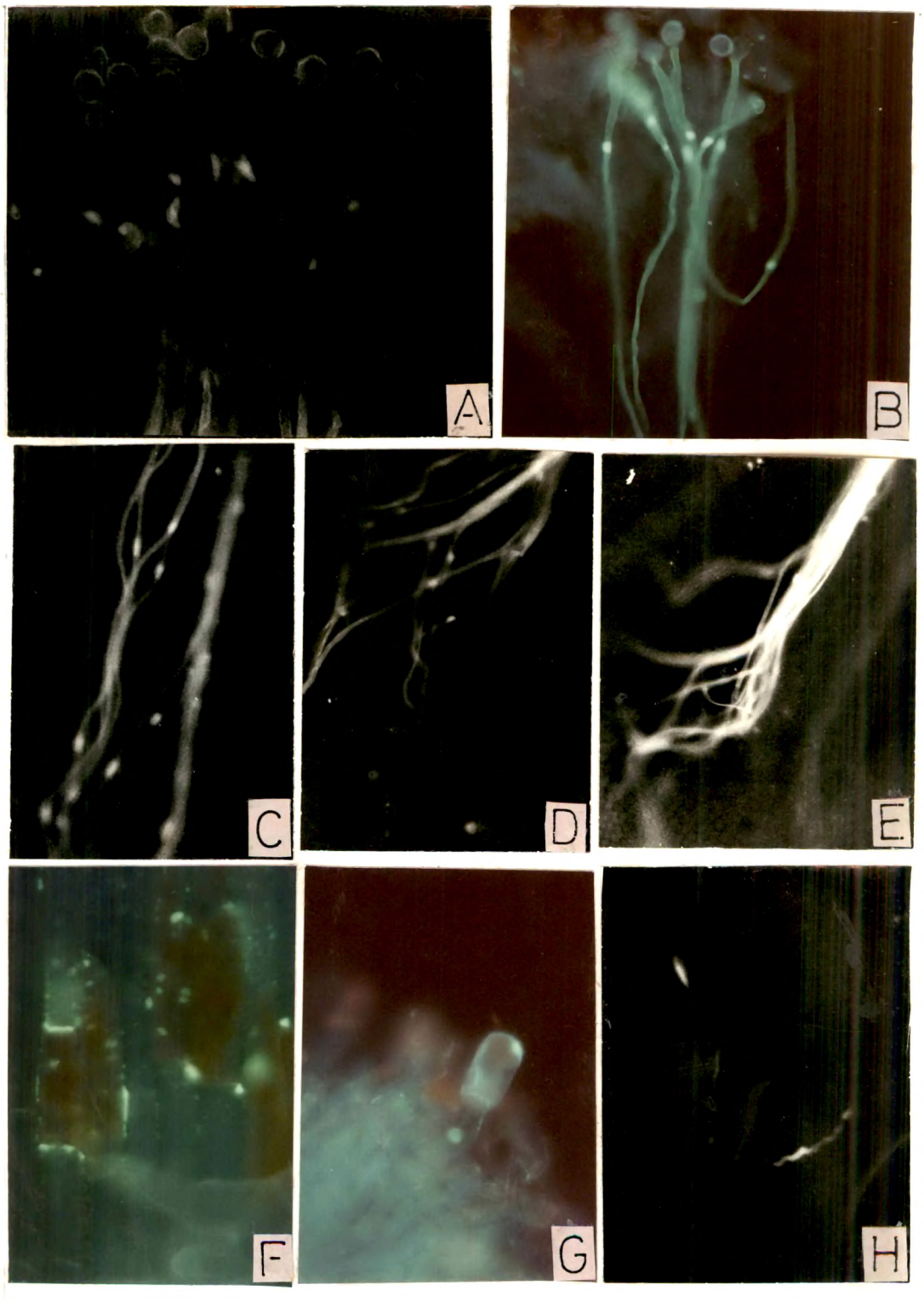

Fig 2·21