

VOLUME II

Illustrations



Figure 1. Schmorl's original illustration of placental giant cells in pulmonary blood vessels.

("Ektachrome" transparency. Please raise this edge and view against attached reflecting back-board.)

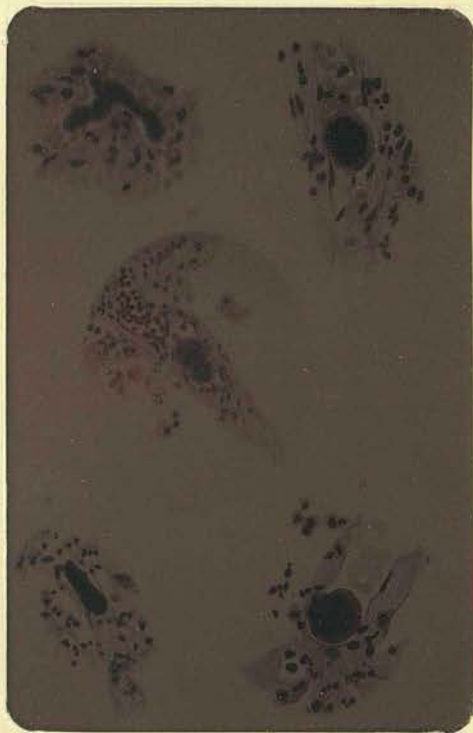


Figure 2. A Type I structure: an elongated monolobular mass of chromatin within an alveolar capillary - a megakaryocyte. H. & E. x 600

Figure 3. A Type II structure: a single but multilobular mass of chromatin - a megakaryocyte. H. & E. x 600

Figure 4. A Type III structure: a multinucleated mass or giant cell. H. & E. x 600

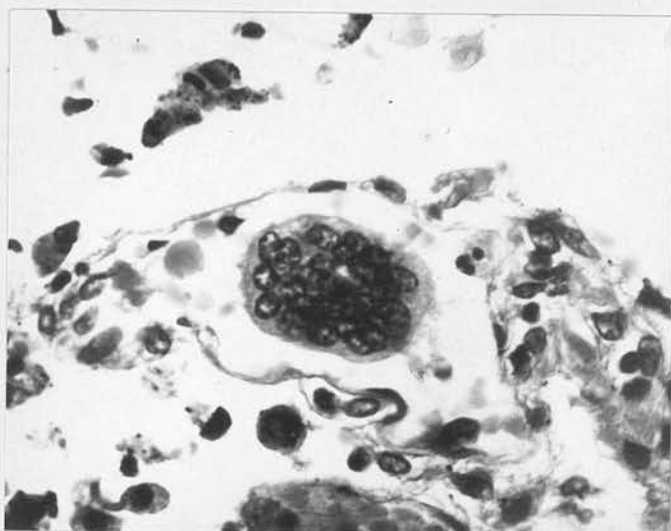
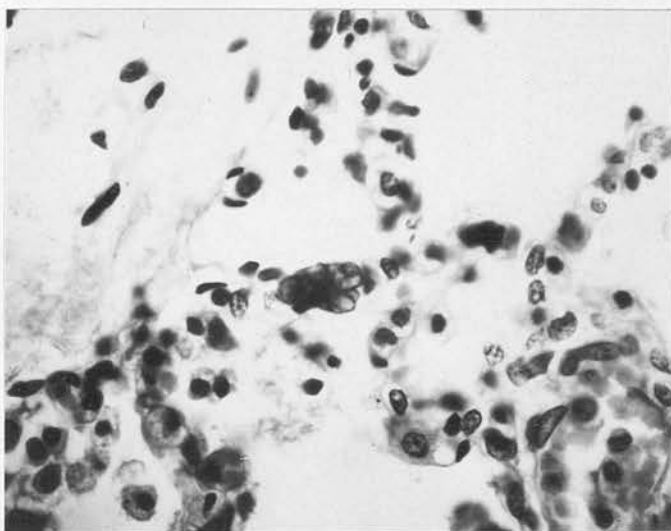
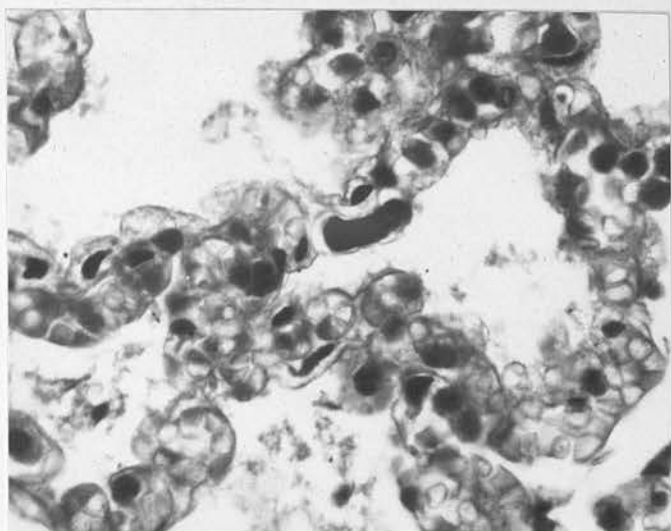


Figure 5. Type I structure: the essentially solid character of the chromatin and the total lack of cytoplasm is evident.

H. & E. x 600

Figure 6. Type I structure. H. & E. x 600

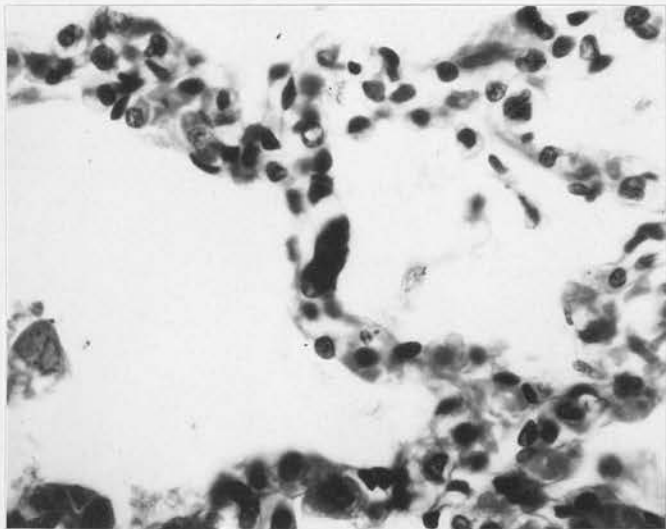
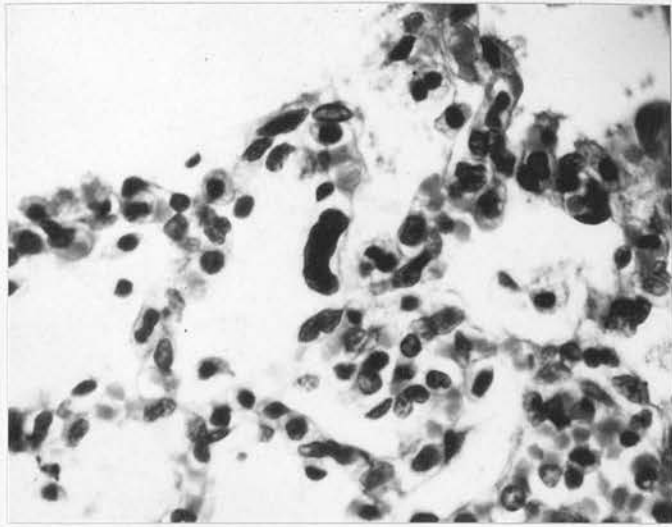


Figure 7. Type I structure: the shape of the mass of chromatin is largely determined by the contour of the capillary in which it lies. H. & E. x 600

Figure 8. Type I structure. H. & E. x 600

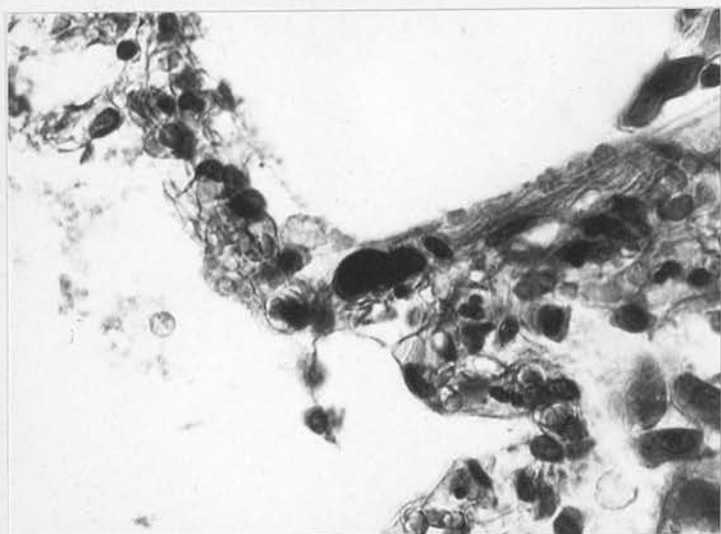
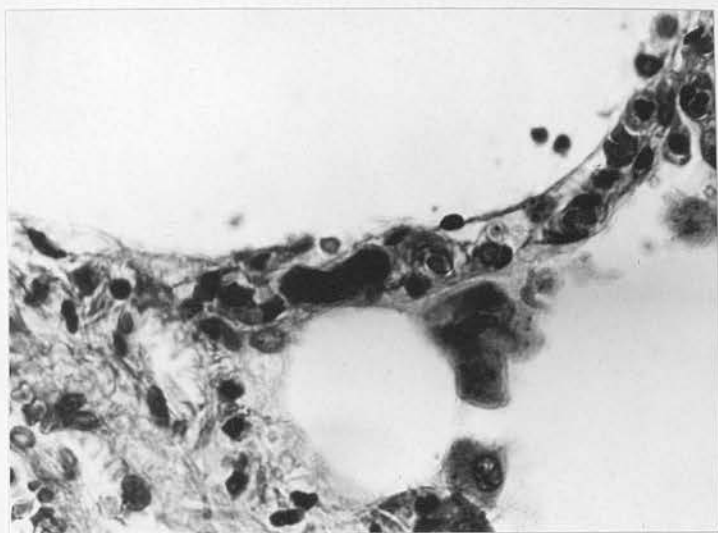


Figure 9. Type II structure: a multilobular mass of chromatin, its shape determined by the contour of the capillary.

H. & E. x 600

Figure 10. Type II structure: the multilobular mass is closely moulded by the capillary wall.

H. & E. x 800

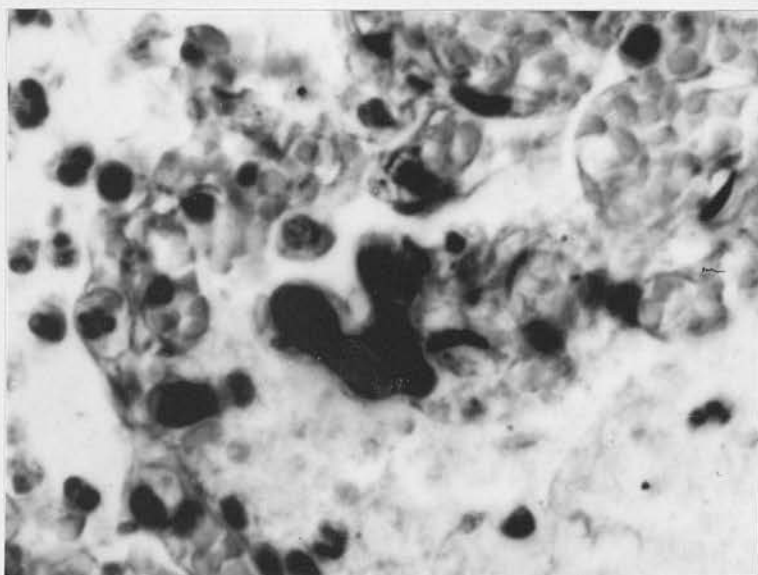
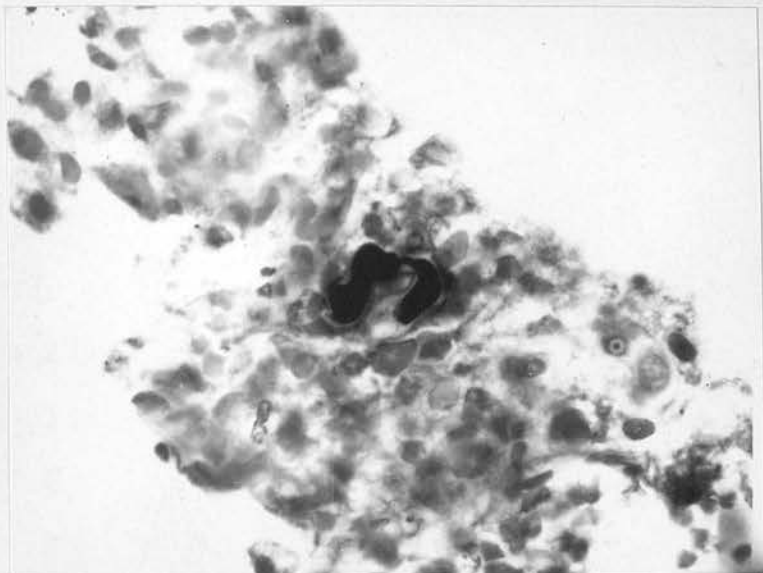


Figure 11. Type II structure: a multilobular mass of chromatin with scanty cytoplasm.

H. & E. x 850

Figure 12. Type II structure: one of the rarely seen forms showing an appreciable amount of cytoplasm. The chromatin, of apparently multinuclear pattern in this plane, was shown by focussing throughout its depth to be in fact multilobular. H. & E. x 850

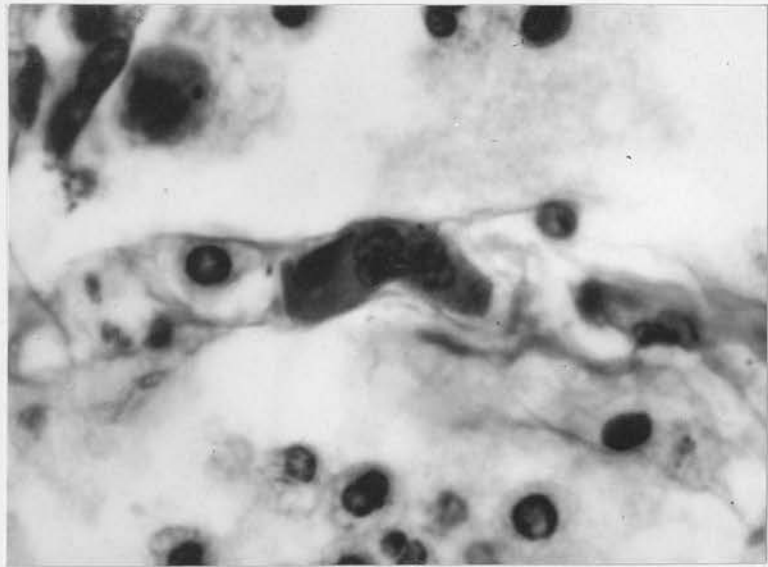
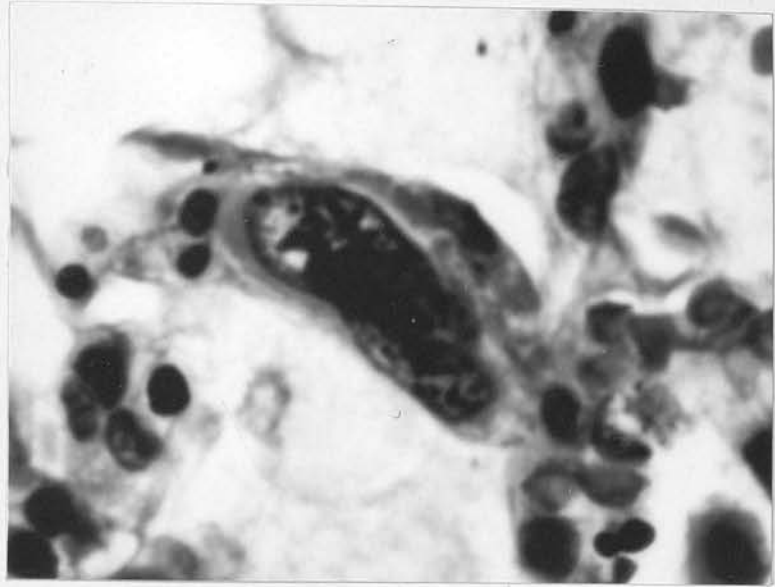
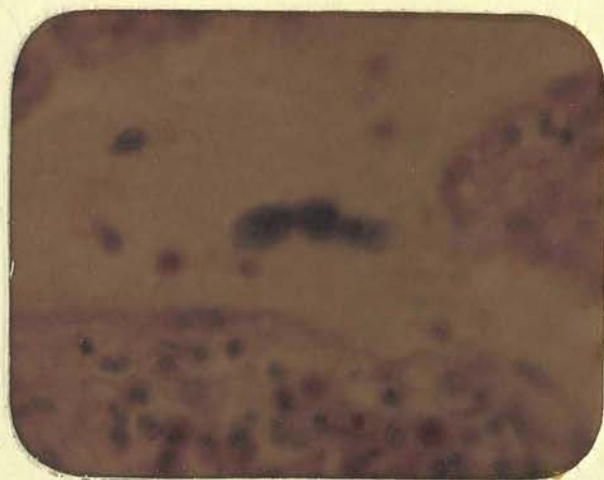
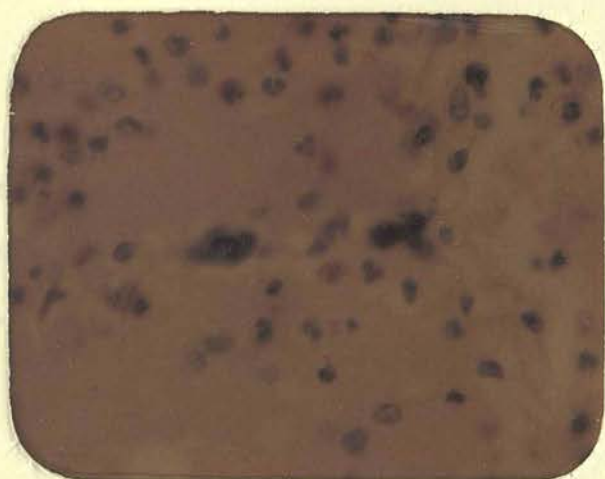


Figure 13. Two Type II structures within an alveolar capillary. Their multilobular architecture is evident. P.A.S. x 600

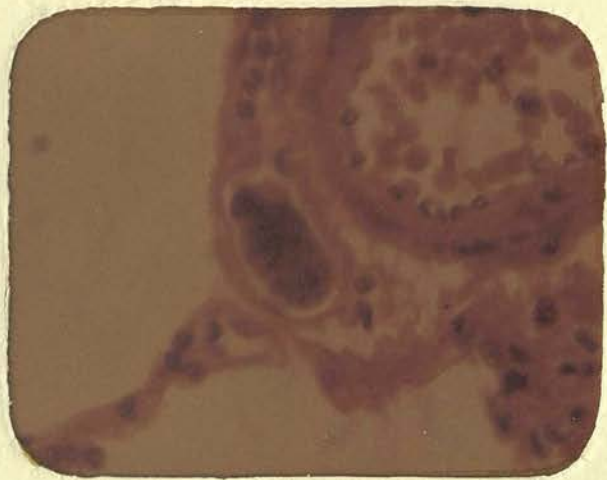
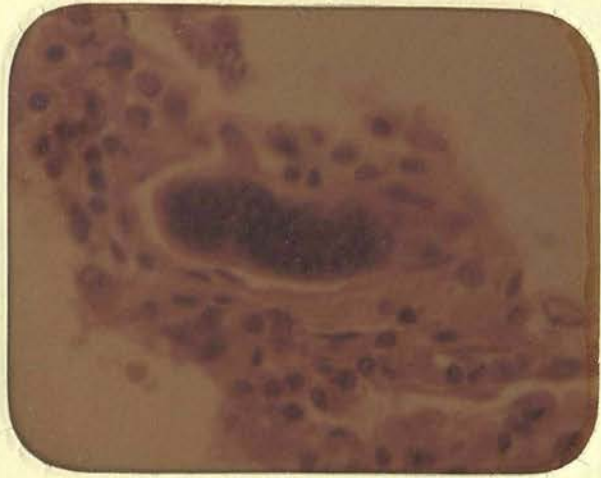
Figure 14. Type II structure: the chromatin shows some internal pattern unlike the characteristic Type I structure.

P.A.S. x 600



Figures 15, 16. Characteristic Type III structures of pregnancy: multinucleated syncytial giant cells within pulmonary blood vessels. Some quantity of cytoplasm is always present. Absence of associated thrombus formation may be noted here as in all the later illustrations of embolic trophoblast within the lung.

H. & E. x 600



Figures 17, 18. Syncytial giant cells of characteristic appearance. This morphology is diagnostic of embolic trophoblast.

H. & E. x 600

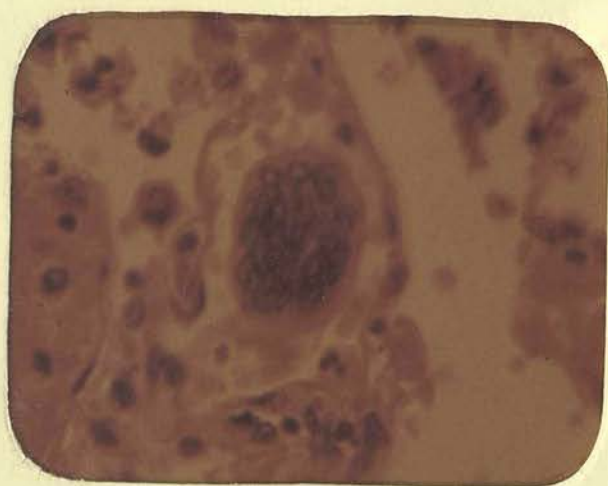


Figure 19. Two separate portions of multinucleated tissue completely blocking an alveolar capillary. H. & E. x 300

Figure 20. A typical syncytial mass. The two adjacent lymphocytes indicate the relative size of the mass. H. & E. x 840

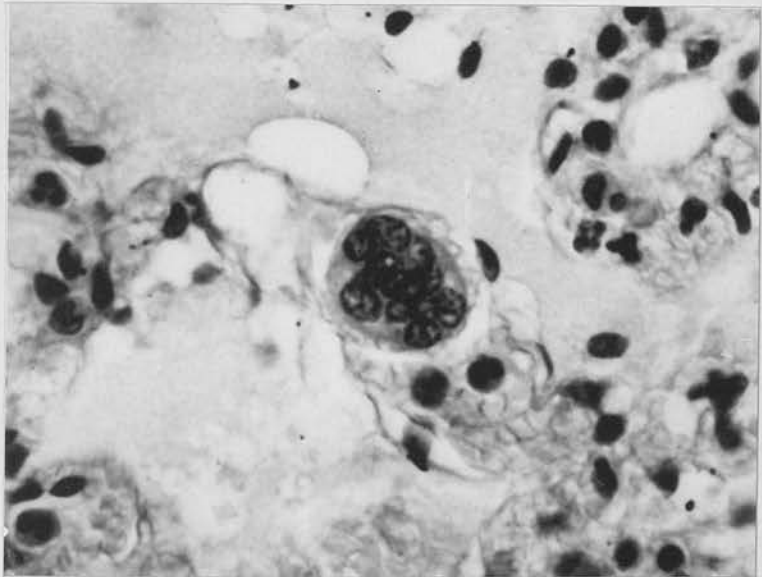
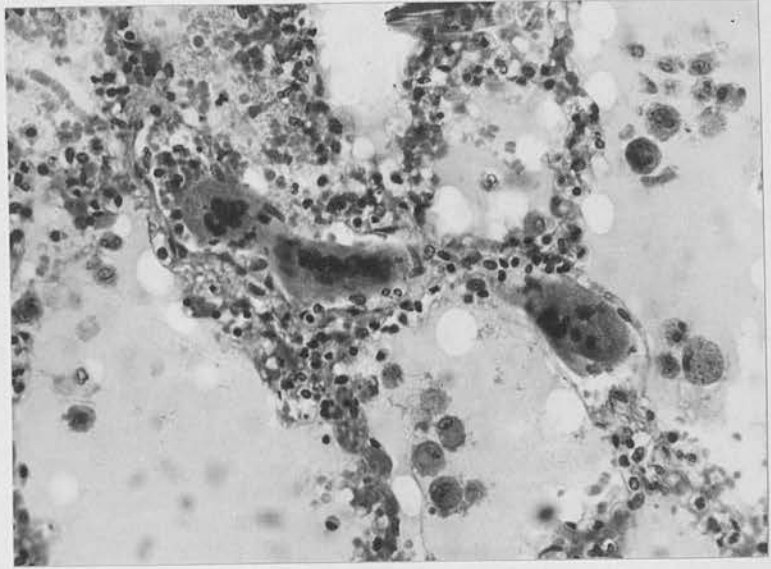


Figure 21. A relatively large syncytial mass
containing very many nuclei.

H. & E. x 800

Figure 22. A typical syncytial clump.

H. & E. x 800

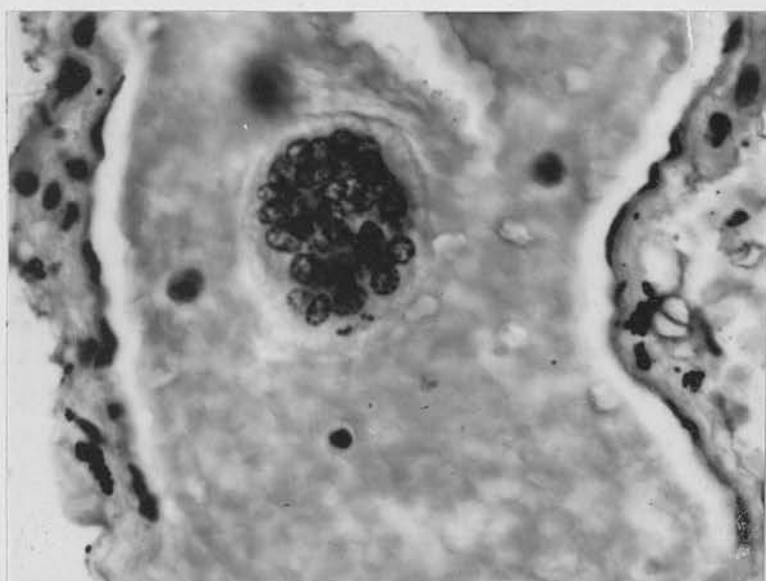
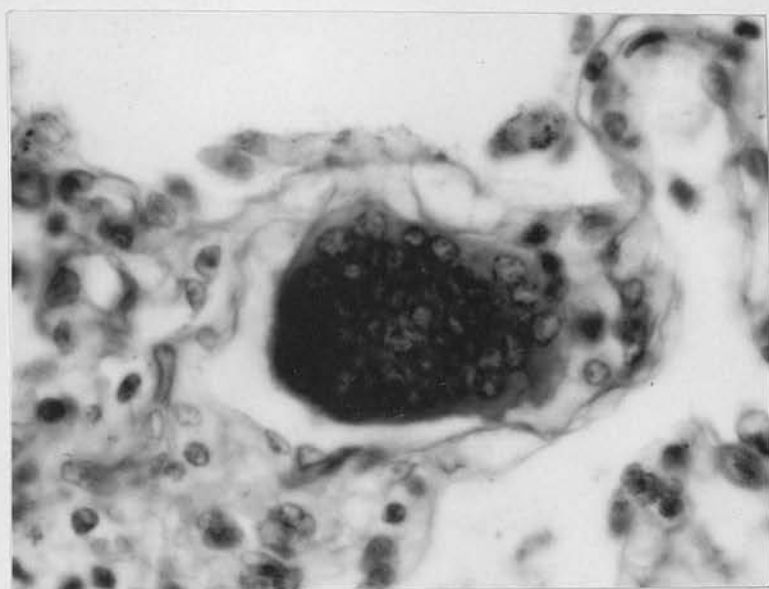


Figure 23. A rather smaller clump of syncytium,
but again the appearance is characteristic.

H. & E. x 600

Figure 24. Another syncytial mass: pyknosis of
some of the nuclei is evident.

H. & E. x 600

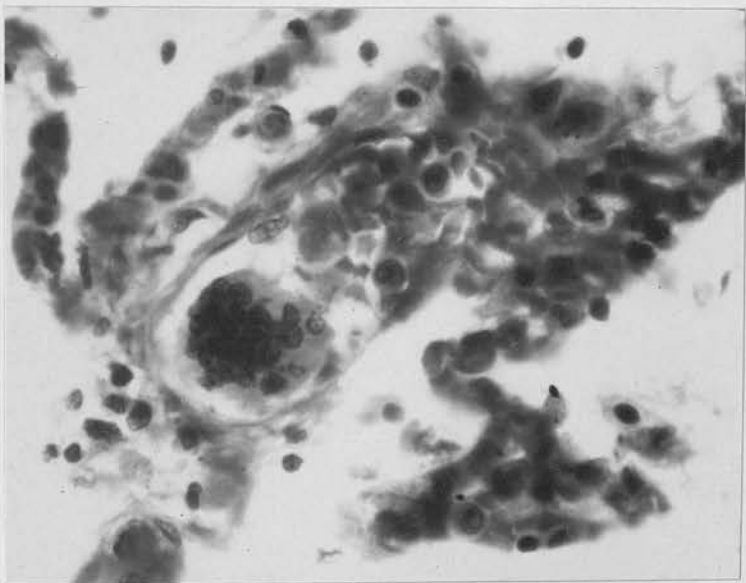
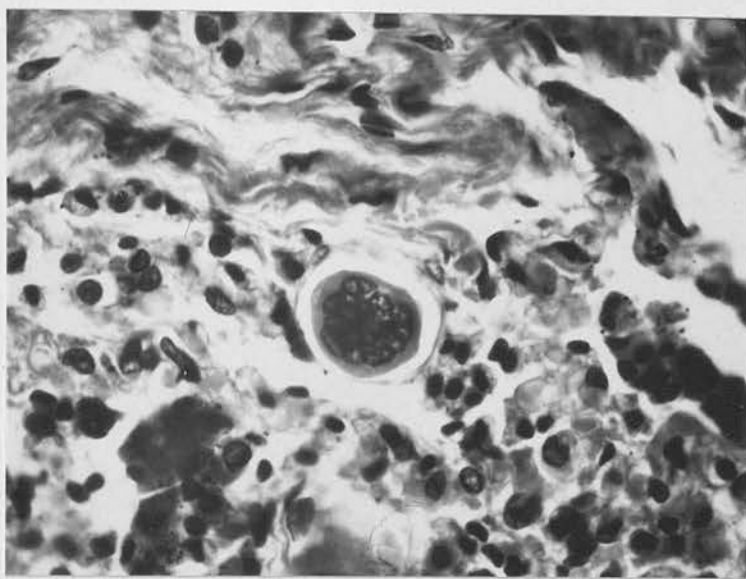


Figure 25. Despite the relatively small size of this multinucleated mass, its appearance is unmistakable and unlikely to be confused with that of a megakaryocyte.

H. & E. x 600

Figure 26. A syncytial giant cell whose nuclei have become almost wholly pyknotic.

H. & E. x 600

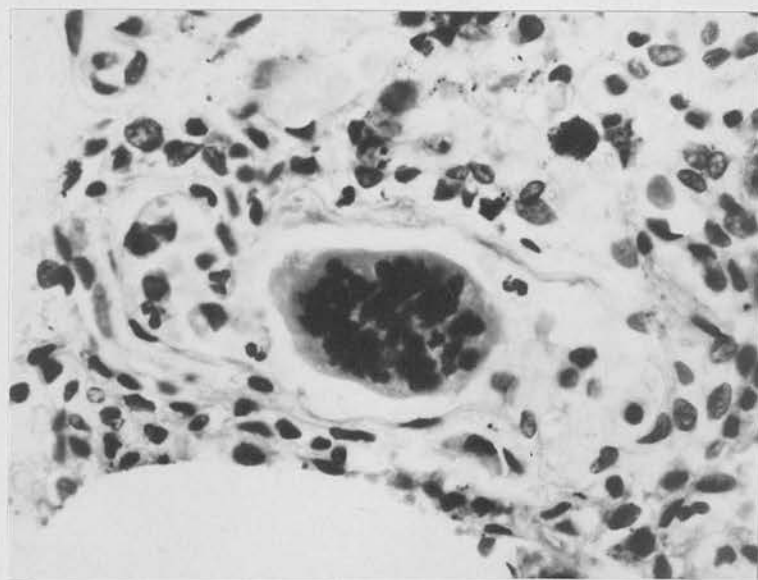
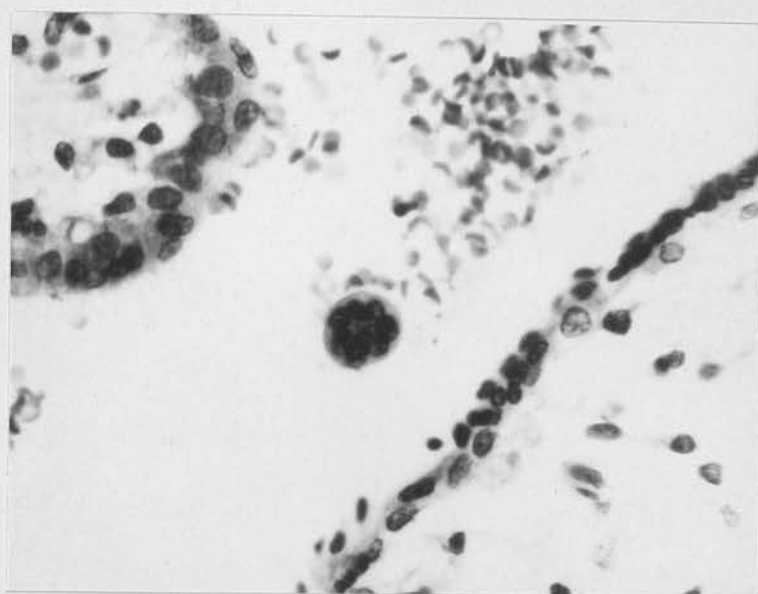


Figure 27. Nuclear pyknosis is again prominent.

H. & E. x 600

Figure 28. Complete disintegration of a mass of syncytium: the cytoplasm has undergone coagulation, and extrusion of nuclear material appears to be occurring. Despite this, no thrombosis has taken place in the region of the trophoblast.

H. & E. x 450

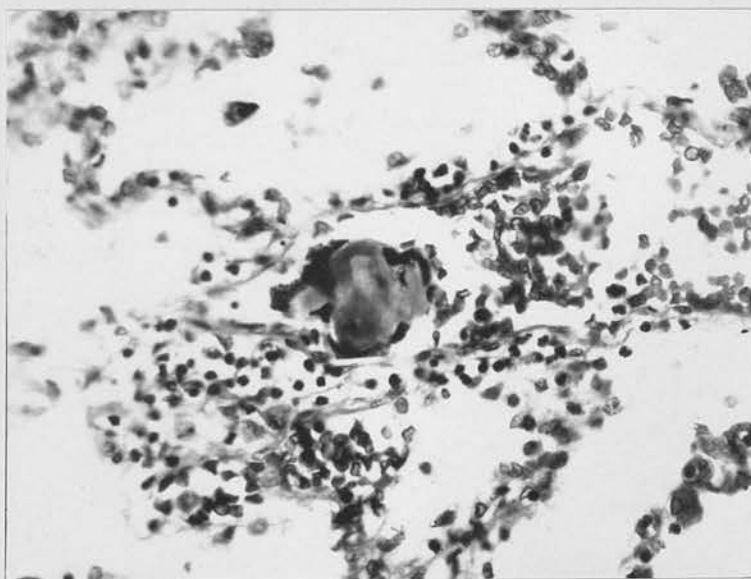
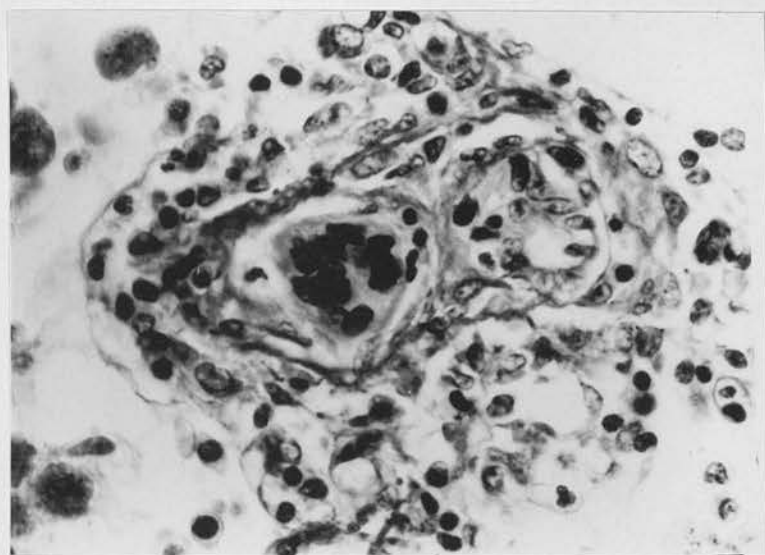


Figure 29. Small clumps of tissue in an alveolar capillary in a pregnant patient. They are almost certainly syncytial in character but show some resemblance to a megakaryocyte. The relatively large amount of cytoplasm favours a syncytial origin.

H. & E. x 600

Figure 30. A small multinucleated mass in an alveolar capillary in a non-pregnant patient. It shows some similarity to the pyknotic clumps illustrated above.

H. & E. x 600

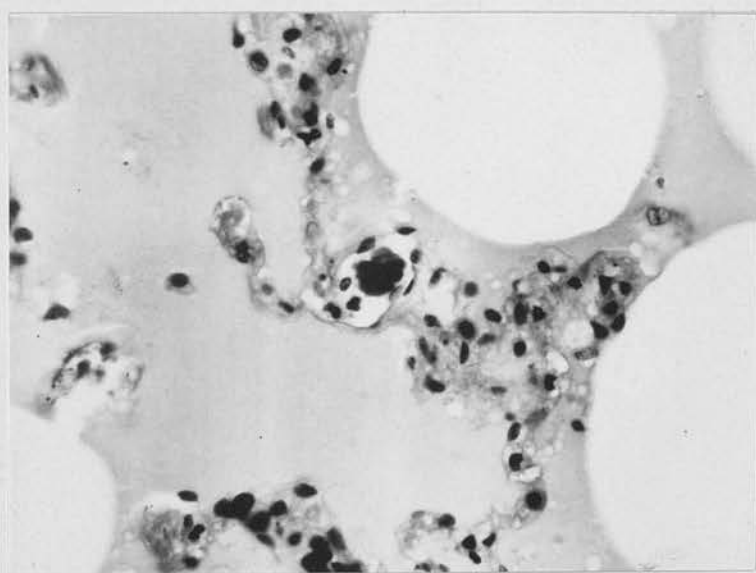
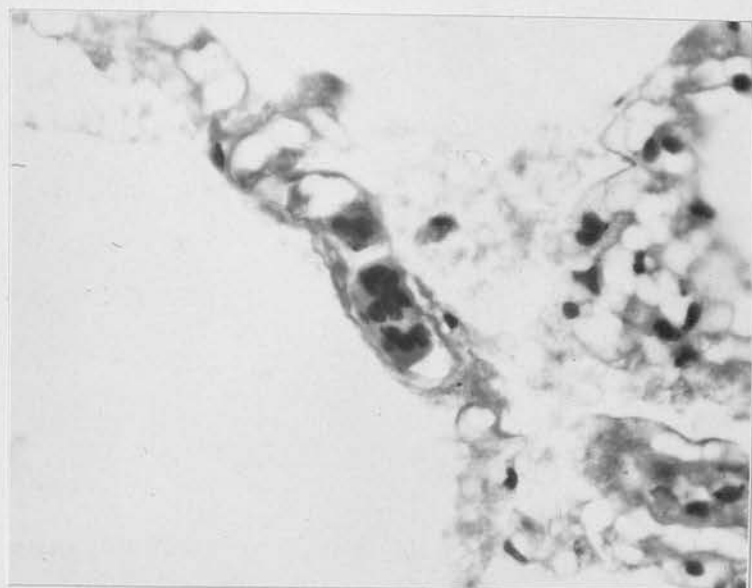


Figure 31. A mass of cellular tissue within a pulmonary arteriole in a non-pregnant patient. It may be a coalescent mass of detached endothelium, an extreme form of the artefact shown below.

H. & E. x 150

Figure 32. Detachment of endothelium in a pulmonary vessel - a common type of artefact producing the appearance of a "multi-nucleated structure" within blood vessels.

H. & E. x 200

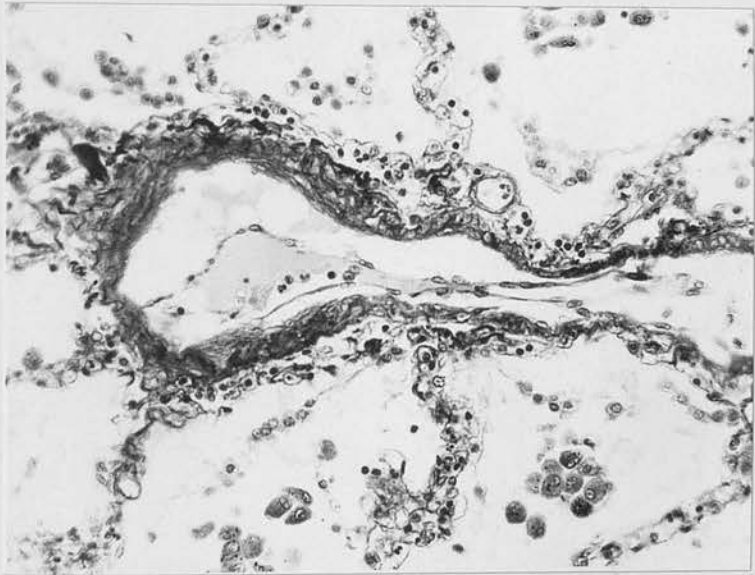
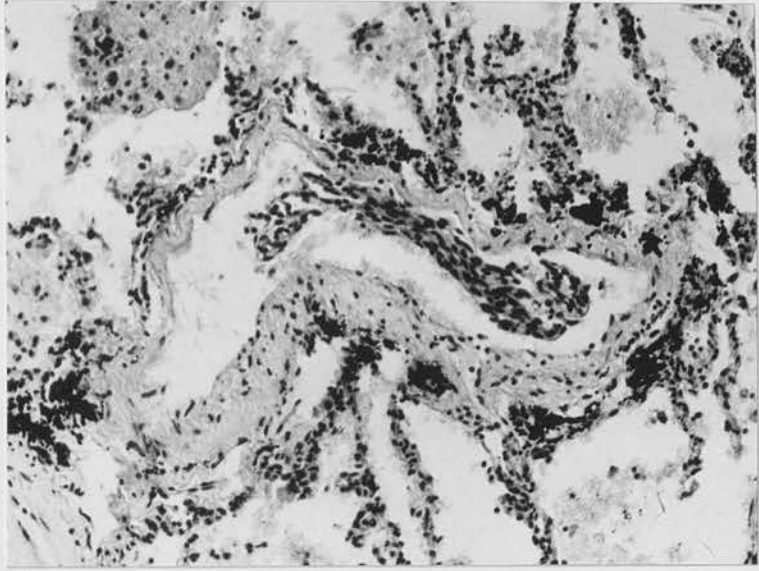


Figure 33. A multinucleated clump of tissue, similar in appearance to a pyknotic syncytial giant cell, seen in the lung of a non-pregnant patient. The patient had a papillary adenoma of the kidney, and this is probably a metastatic particle even though the neoplasm appeared to be histologically benign. H. & E. x 420

Figure 34. A small mass of cytoplasm containing clumped chromatin in the lung of a man dead of bronchopneumonia. It is possibly detached pyknotic endothelium or an unusually large megakaryocyte.

H. & E. x 600

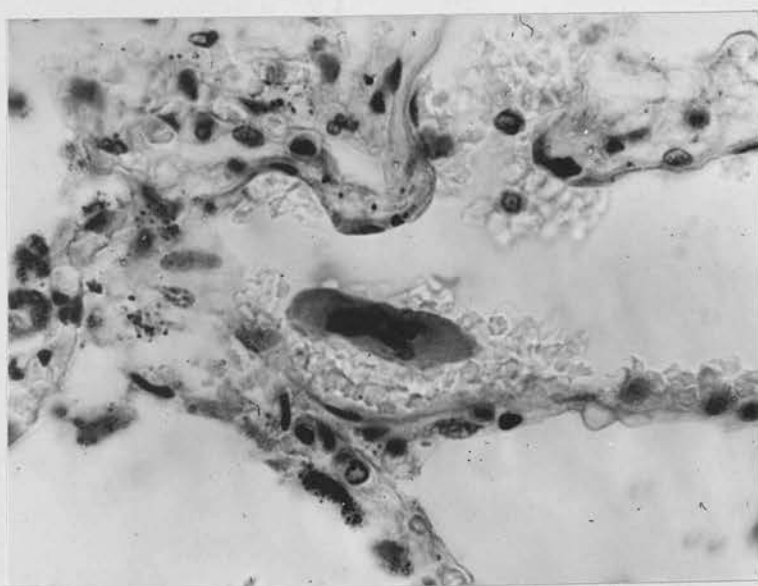
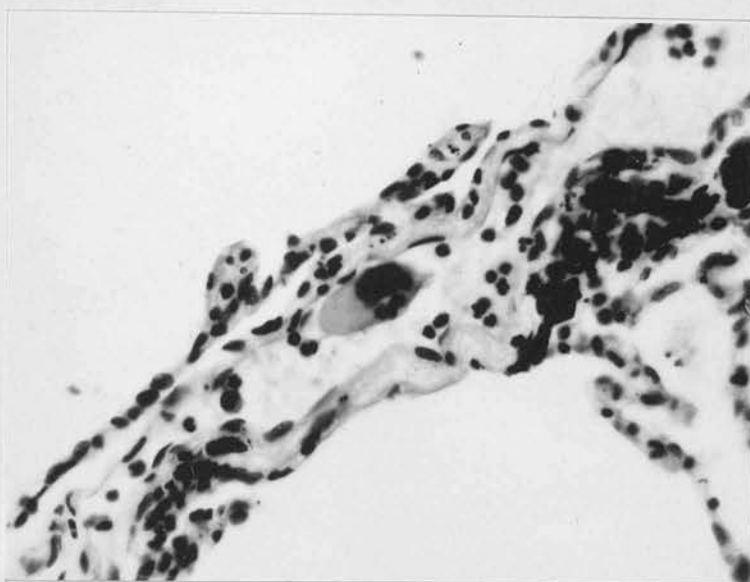


Figure 35. Incipient bifurcation of a pulmonary arteriole with cross-cutting of the "spur" has resulted in the appearance of an apparently intravascular multinucleated mass. H. & E. x 420

Figure 36. A clump of tissue containing many nuclei in a vessel heavily surrounded by carbon. The disposition of the nuclei is quite unlike that in a typical syncytial giant cell. H. & E. x 420

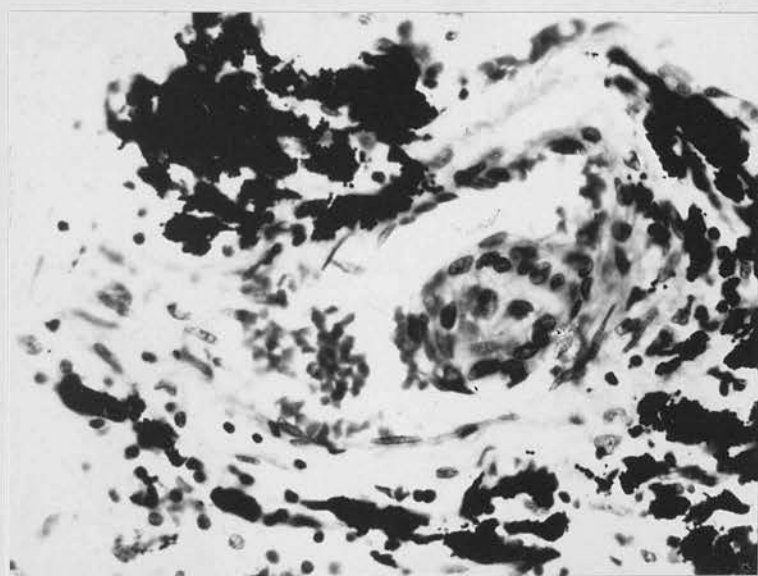
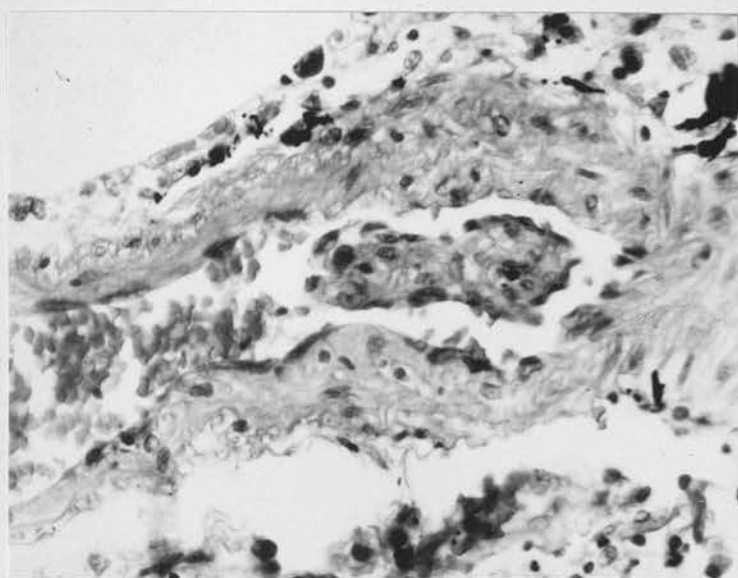


Figure 37. A multinucleated mass, but clearly a portion of bone marrow, present in the lung of a pregnant patient with no history of injury to bone. H. & E. x 280

Figure 38. Another particle of bone marrow, but this time in a patient in the control series who did have a history of injury to bone. H. & E. x 110

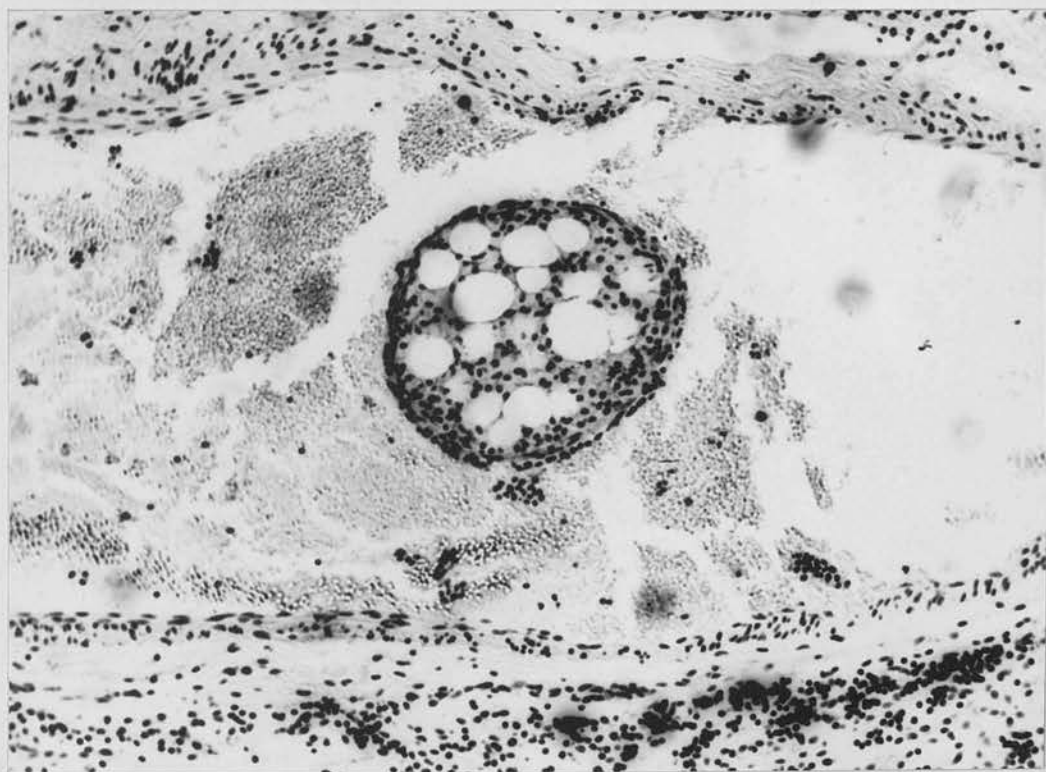
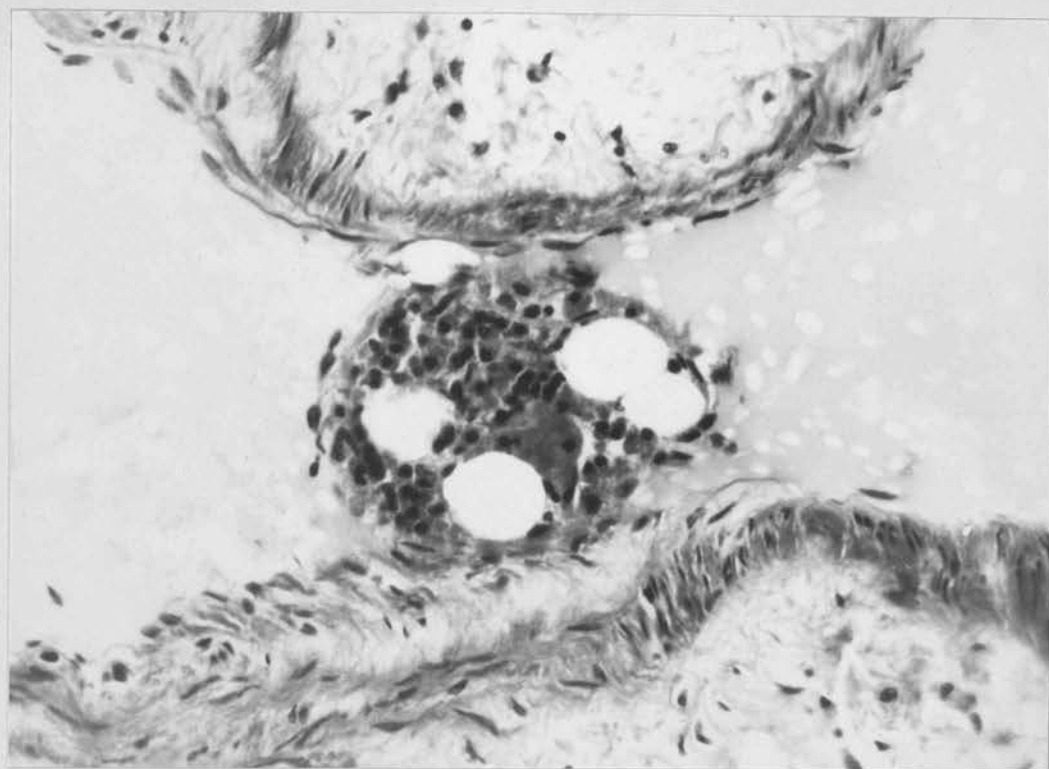


Figure 39. Multinucleated giant cells lying beside an intact pulmonary arteriole in a patient who died suddenly sixteen hours after delivery with, as the only significant lesion, focal necrotising myocarditis.

H. & E. x 600

Figure 40. Further multinucleated cells from the same patient. Asteroid bodies are clearly seen in one of the cells, as in one of the cells in figure 39. The patient showed no evidence of sarcoidosis. H. & E. x 600

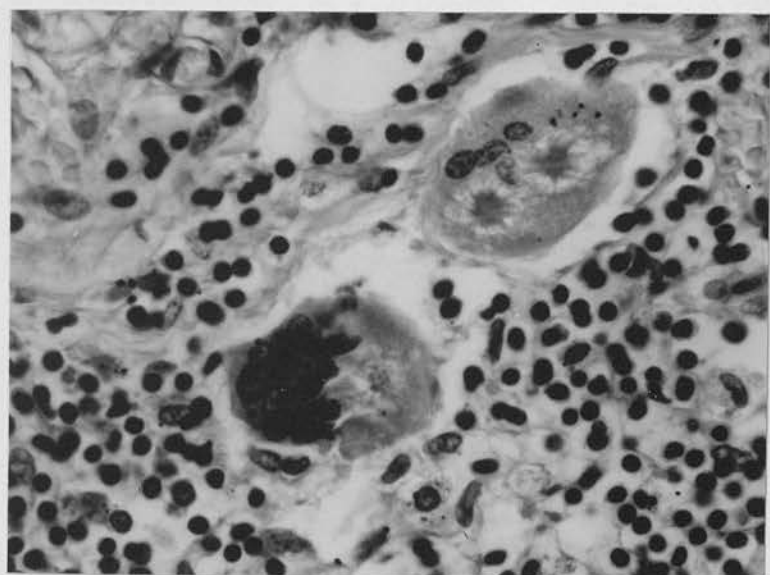
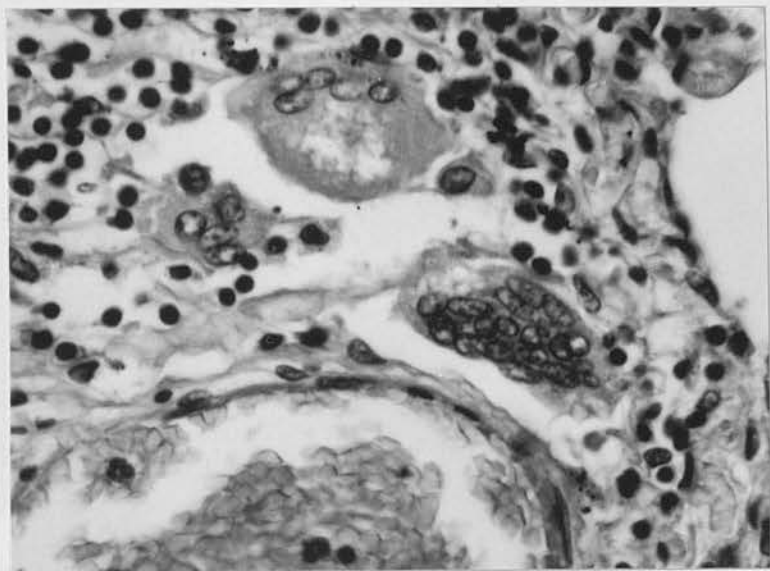


Figure 41. Epithelial squames and mucin completely blocking a pulmonary capillary in one of the patients with amniotic embolism.

Alcian blue-phloxin x 600

Figure 42. Similar appearances in one of the other patients who died of amniotic embolism.

Alcian blue-phloxin x 600

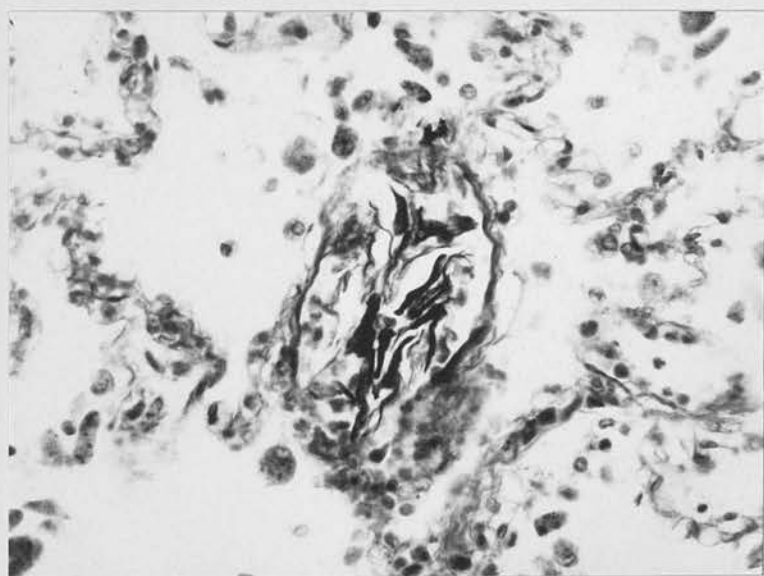
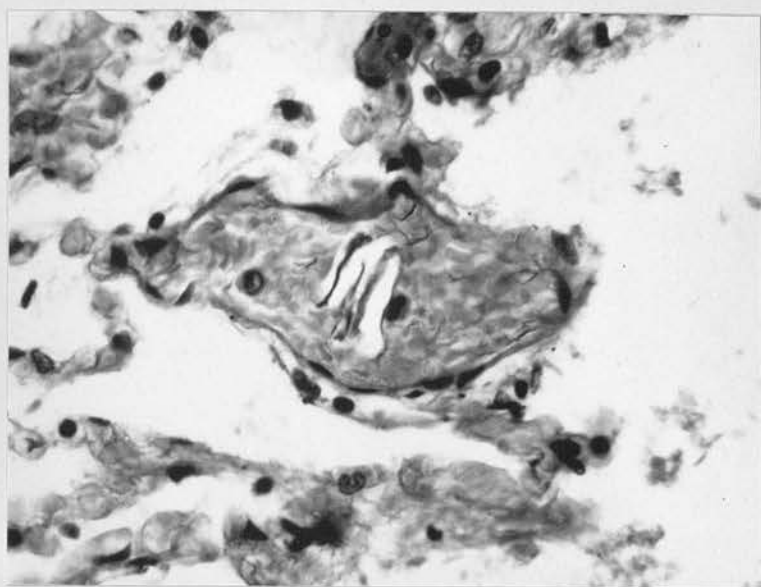


Figure 43. Two detached clumps of syncytium beside a chorionic villus in the placenta. The resemblance of these multinucleated masses, and those shown in the next three figures, to the syncytial giant cells in the lung illustrated in figures 15 to 18 is clearly recognisable. H. & E. x 600

Figure 44. One small multinucleated clump of syncytium lying free in the intervillous space, and a larger mass still tenuously attached to a villus. H. & E. x 600

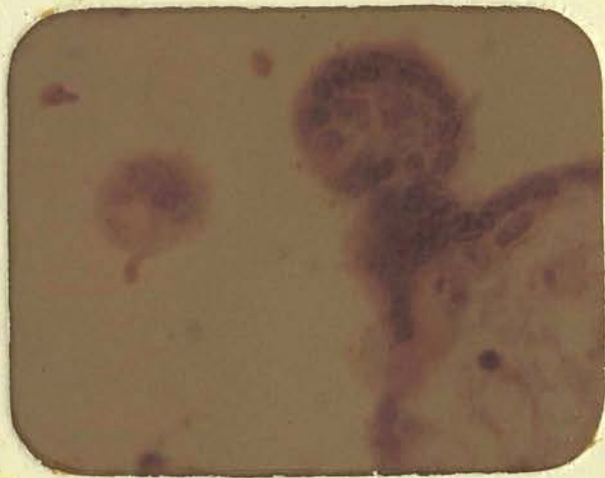
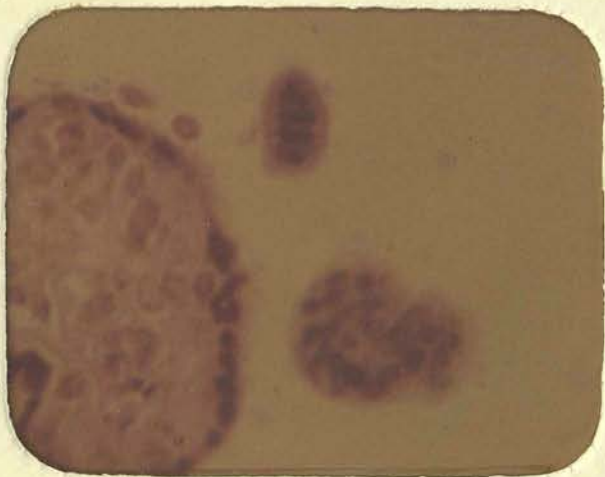


Figure 45. A mass of syncytium which has apparently just become detached from the knot of syncytium still in contact with the villus.

H. & E. x 600

Figure 46. Several clumps of syncytium, and a small villus in cross-section, in the intervillous space.

H. & E. x 600

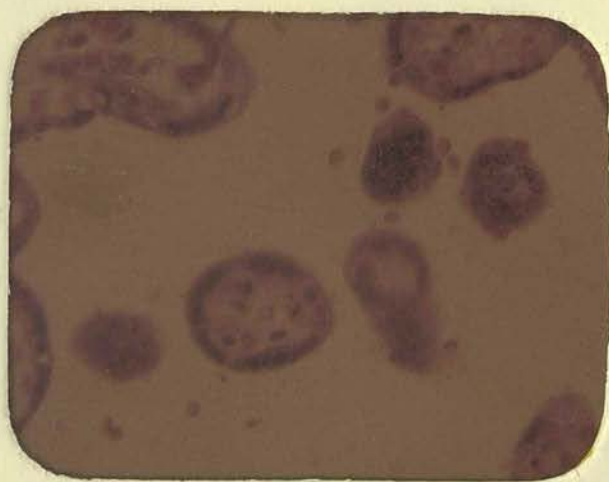
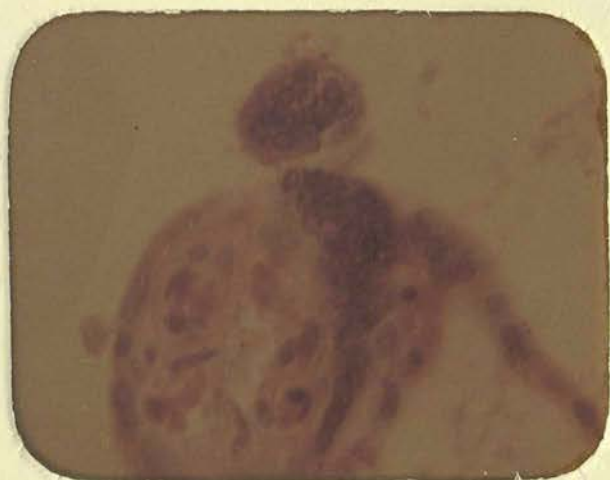


Figure 47. A portion of tissue within a large pulmonary capillary in a patient with a hydatidiform mole. It resembles detached cytotrophoblast rather than syncytium. H. & E. x 600

Figure 48. Clumps of tissue of probably syncytial type. H. & E. x 600

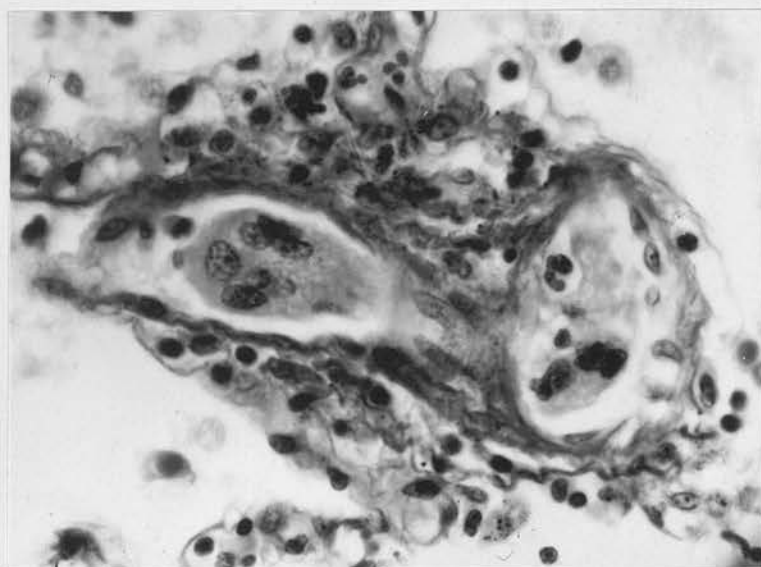
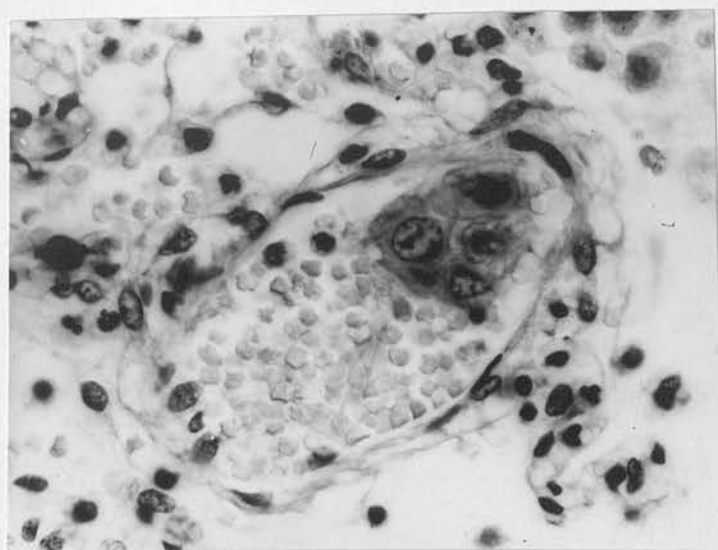


Figure 49. A larger mass of tissue very similar
to the syncytium of an intra-uterine
hydatidiform mole. H. & E. x 600

Figure 50. Another large mass of tissue, now
showing complete nuclear pyknosis, in
the same patient. In no other patient
in the series were the clumps of
syncytium so consistently large.

H. & E. x 600

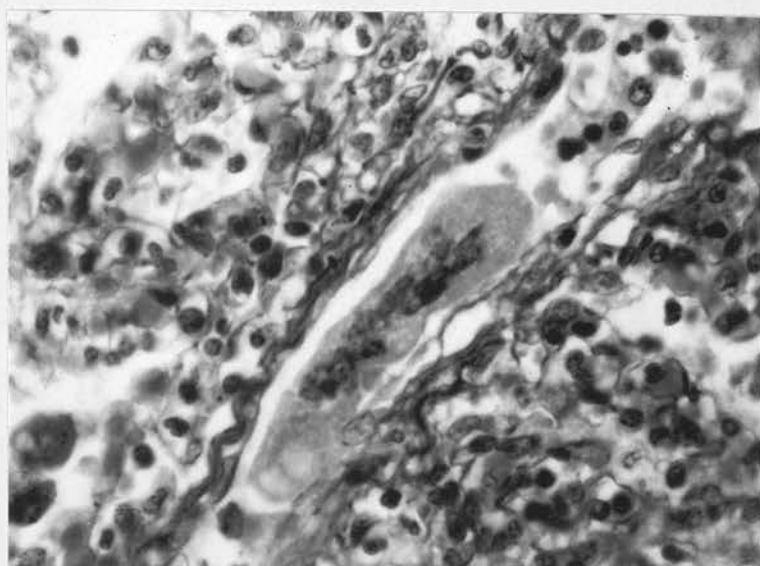


Figure 51. A focus of decidual tissue largely filling a pulmonary alveolus. The cells have abundant cytoplasm.

H. & E. x 300

Figure 52. Another section of the same mass stained with the periodic acid - Schiff sequence. The dense staining of many of the cells reflects a high content of glycogen characteristic of decidua.

P.A.S. x 300

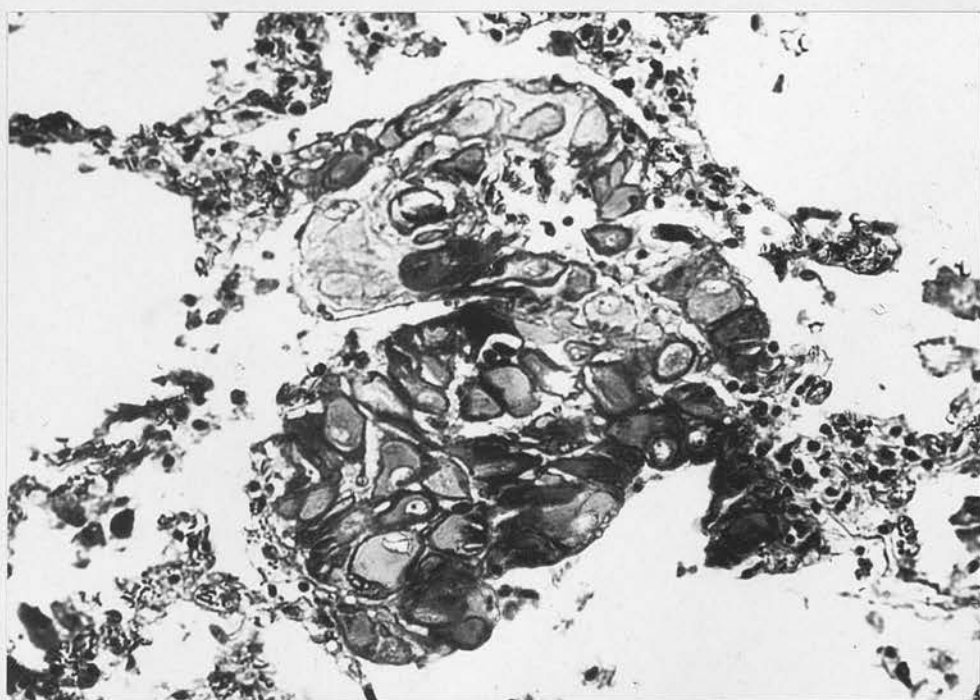
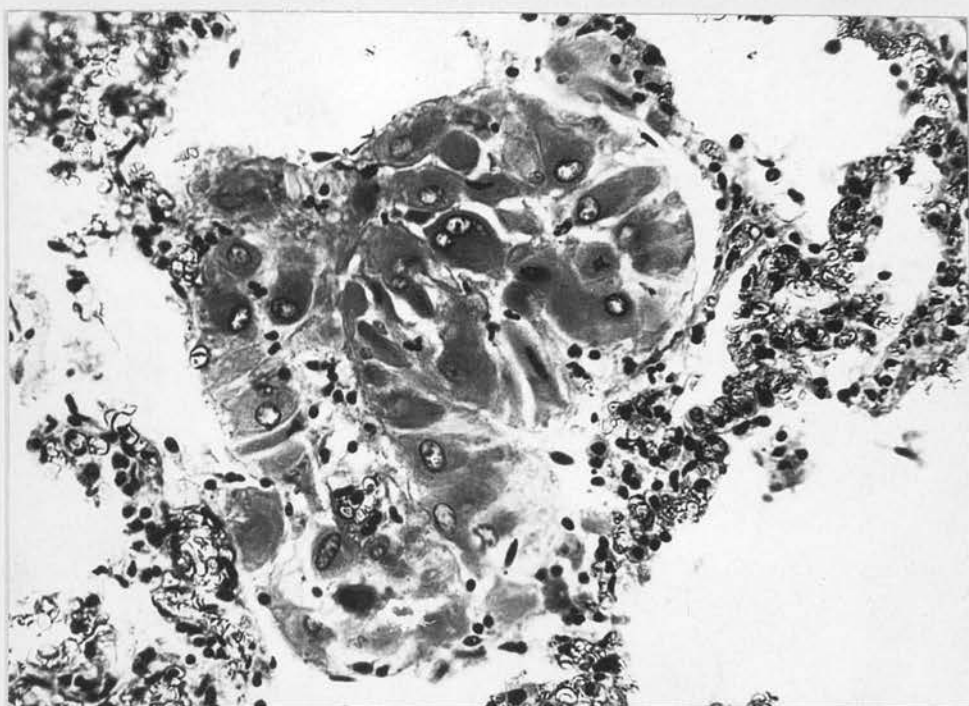
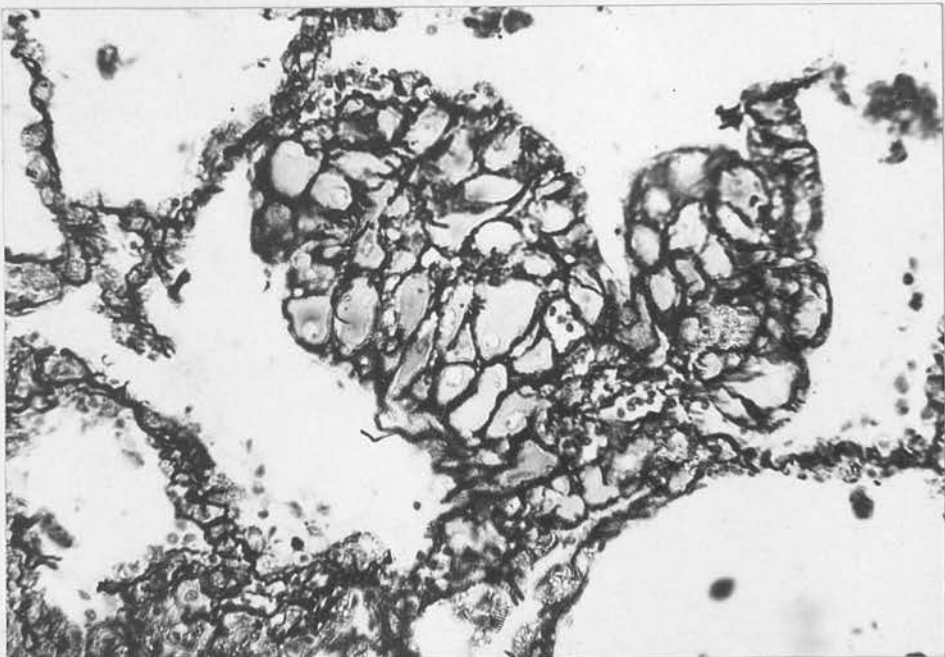
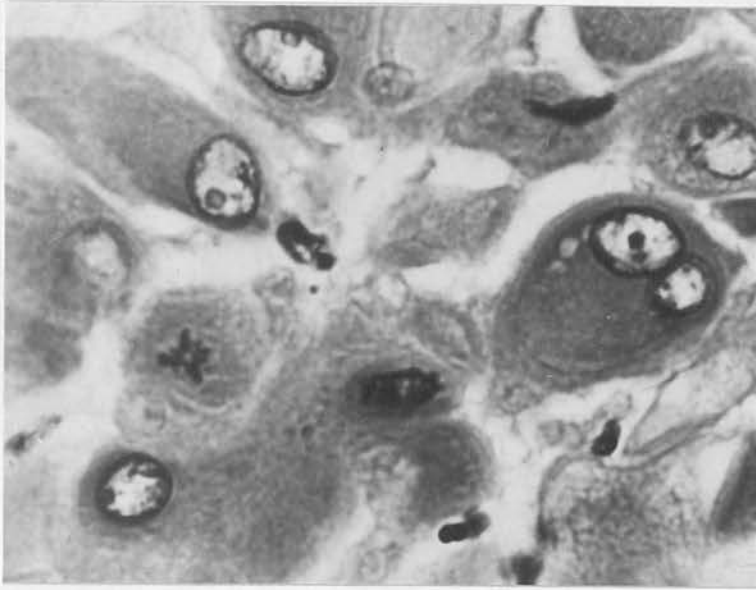


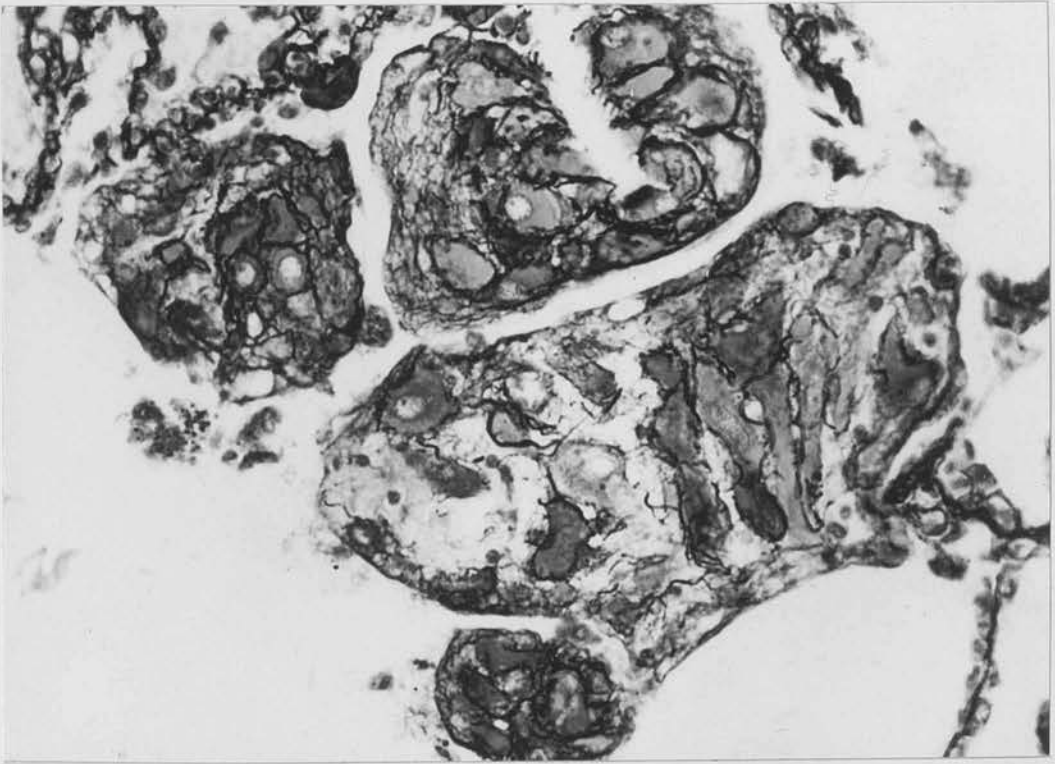
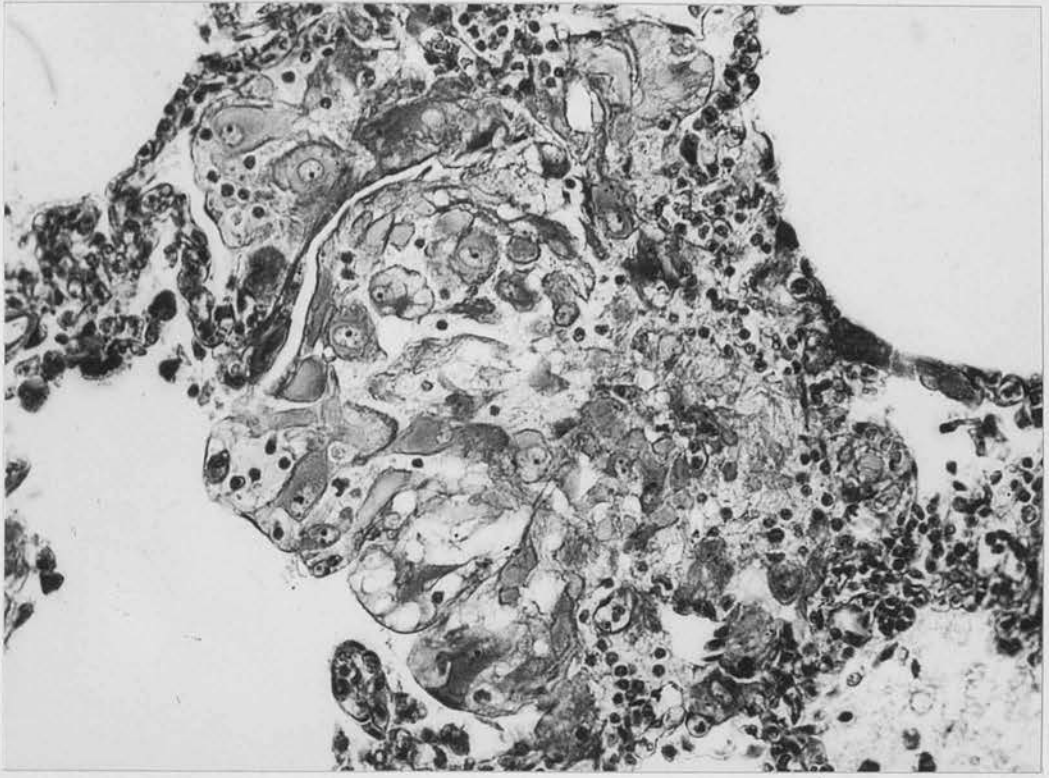
Figure 53. Higher magnification shows the ample granular cytoplasm of the cells, and, in one, a mitotic figure.

H. & E. x 600

Figure 54. Reticulin staining shows fine argyrophil fibrils between the cells - again a characteristic of decidua as seen in the uterus.

Silver impregnation x 300





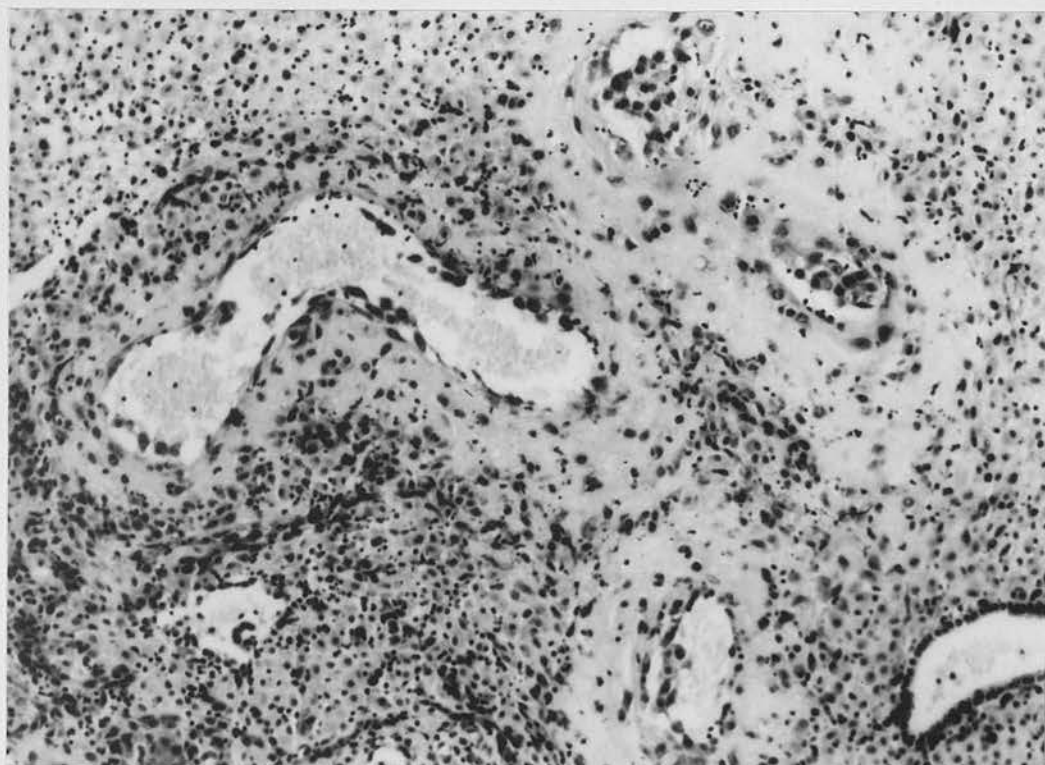
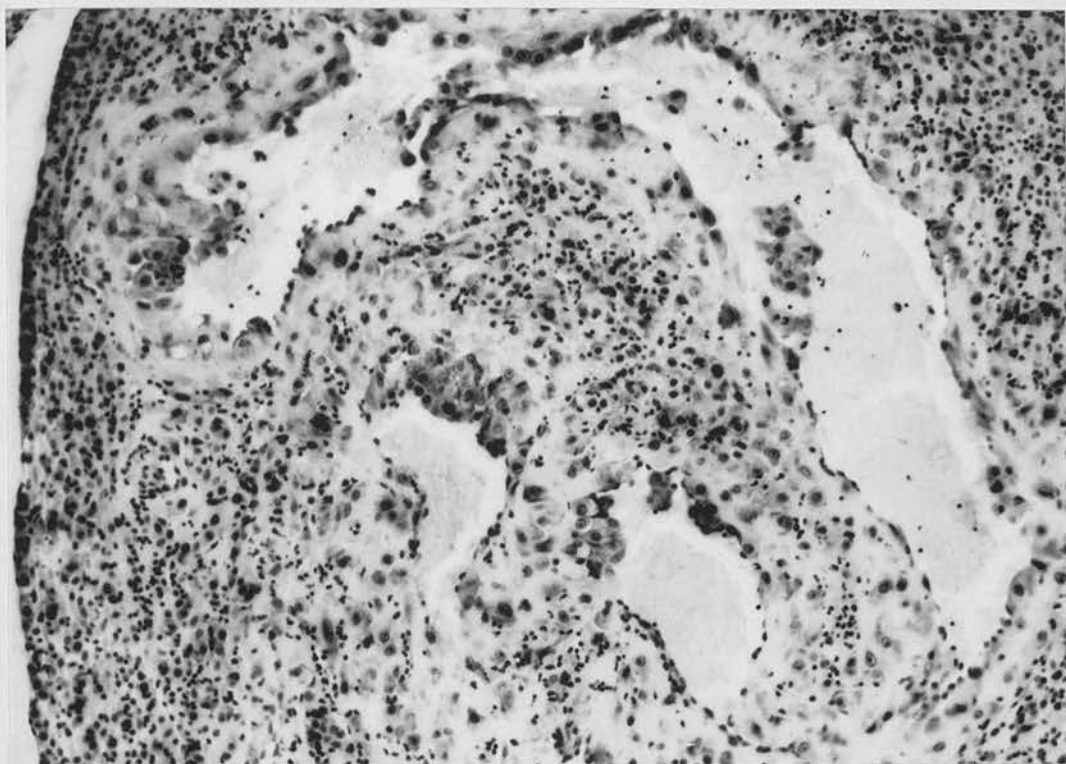


Figure 59. Clusters of swollen cells within the lumen of a decidual sinus whose wall contains many cells of the same kind in considerable depth. The lumen of the vessel at the left of the field is largely filled with this type of cell.

H. & E. x 120

Figure 60. Shows the peculiar appearance of a vessel whose endothelium has been completely replaced by (or very doubtfully transformed into) large cells of decidual type. Such cells, if indeed decidual, could be expected to lead to the formation of metastatic foci of decidua in the lung.

H. & E. x 500

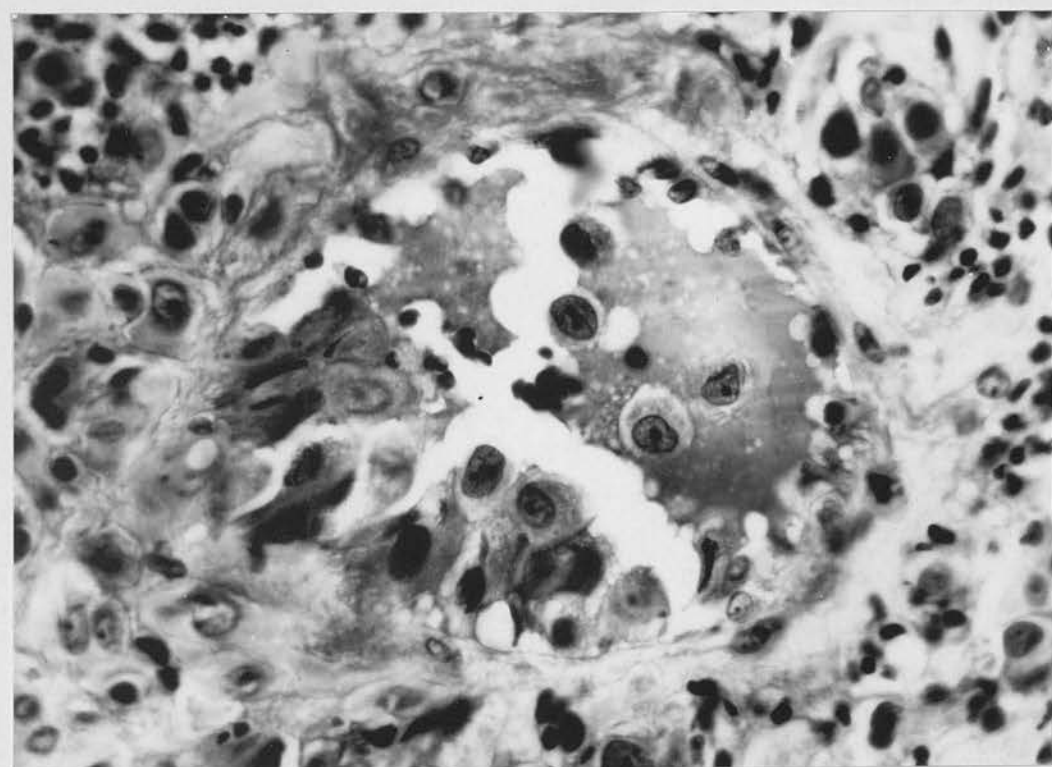
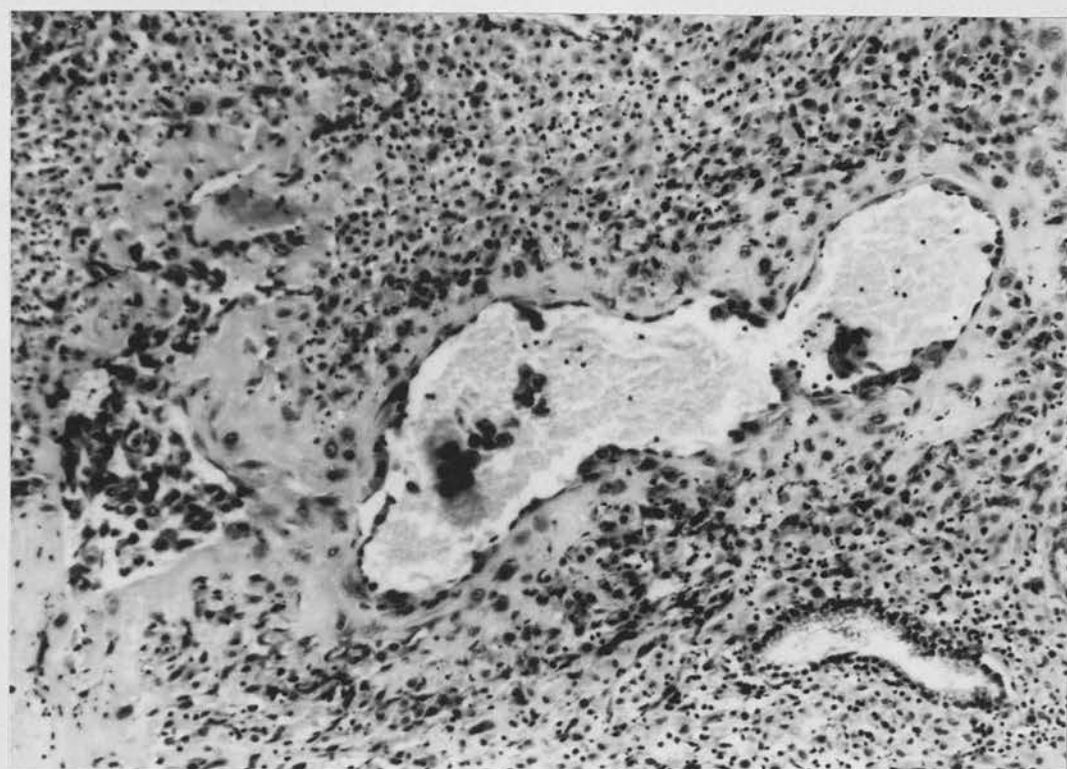
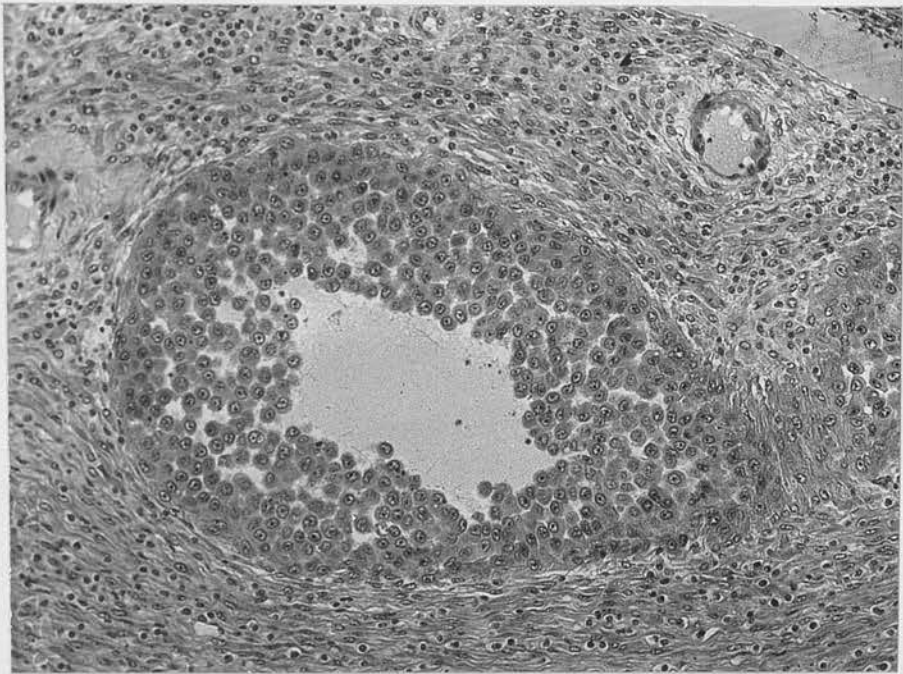
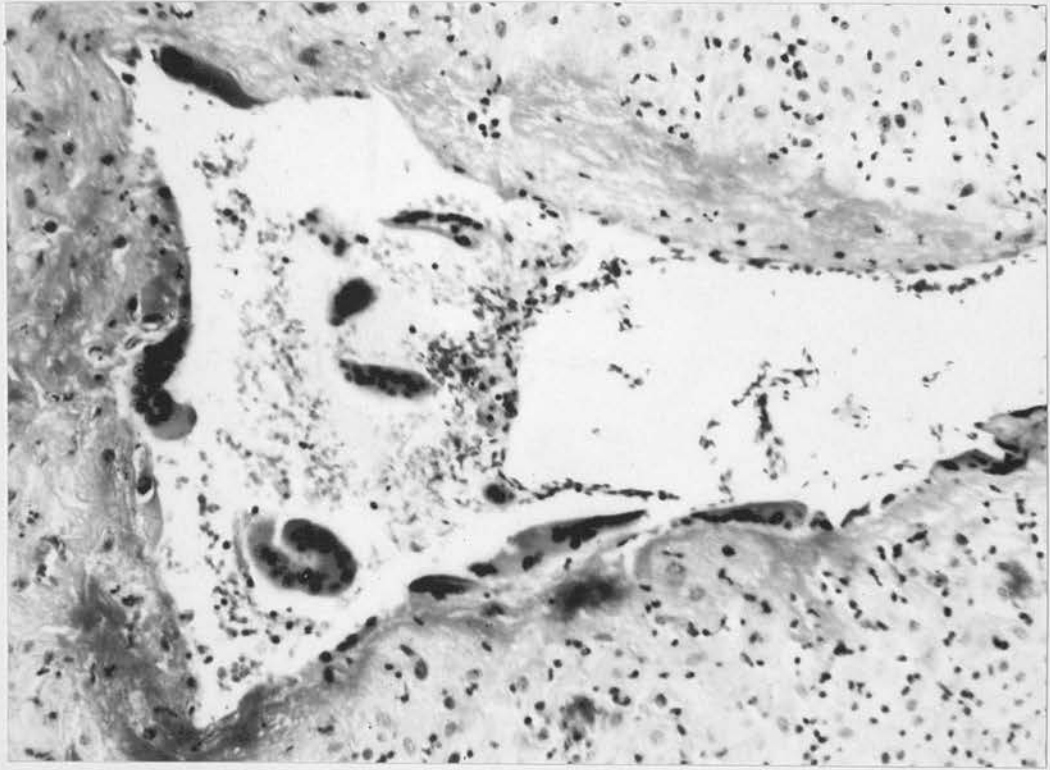


Figure 61. A decidual sinus lined and partly filled by clumps of multinucleated tissue that is clearly syncytium. This appeared to have been the result of downgrowth from the trophoblastic shell into a sinus that opened into the intervillous space.

H. & E. x 160

Figure 62. Reproduction of an illustration published by Wislocki and Streeter (loc. cit.) showing the striking transformation undergone by the endothelium of decidual vessels in the rhesus monkey - "epithelioid cytomorphosis".

H. & E. x 150



Figures 63, 64. Clusters of cells in the lung of a patient who died of chorionepithelioma. Not only are they much larger than the characteristic intra-pulmonary syncytial masses of normal pregnancy, they are clearly multicellular and not multinucleated symplastic masses. This is malignant cytotrophoblast.

H. & E. x 240

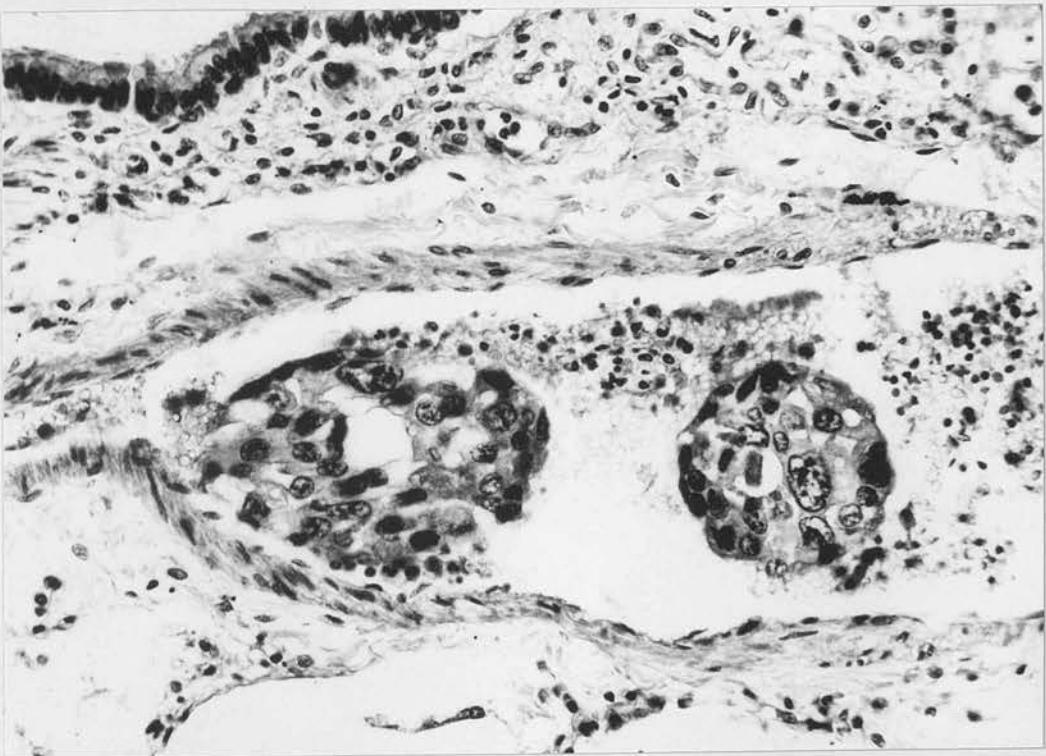
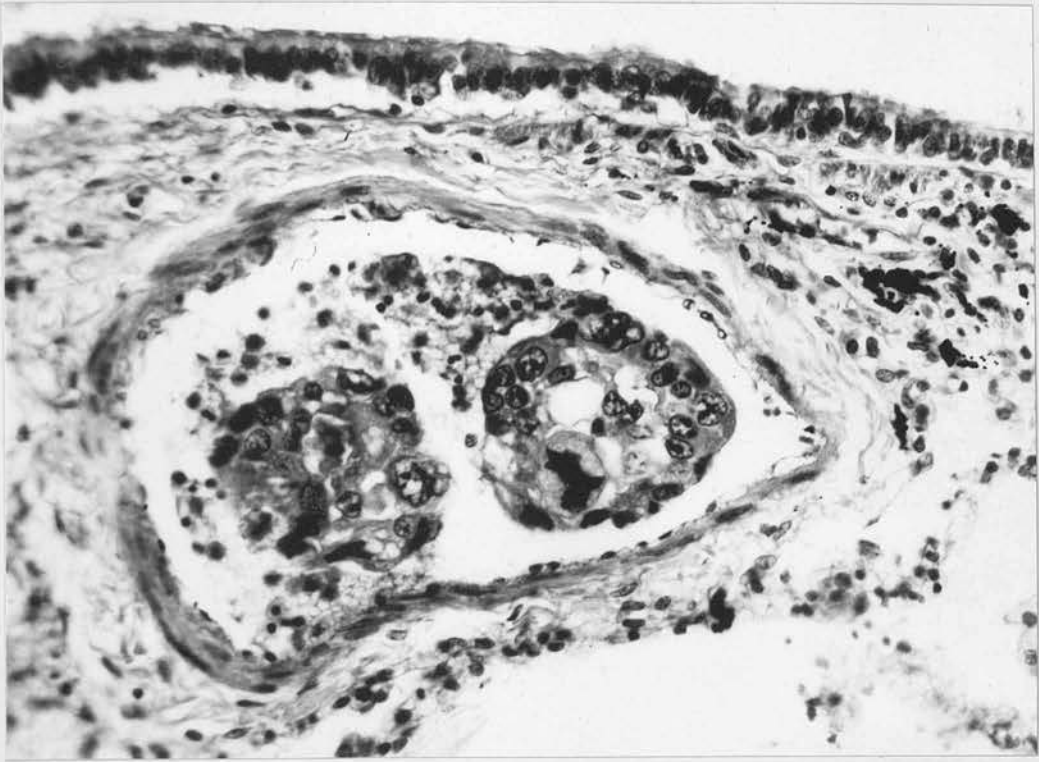


Figure 65a. Shows the trophoblastic indices of the fifty-three "positive" patients plotted against their megakaryocytic indices. There is a gradual swing upwards and to the right indicating a tendency for high trophoblastic indices to be associated with high megakaryocytic indices.

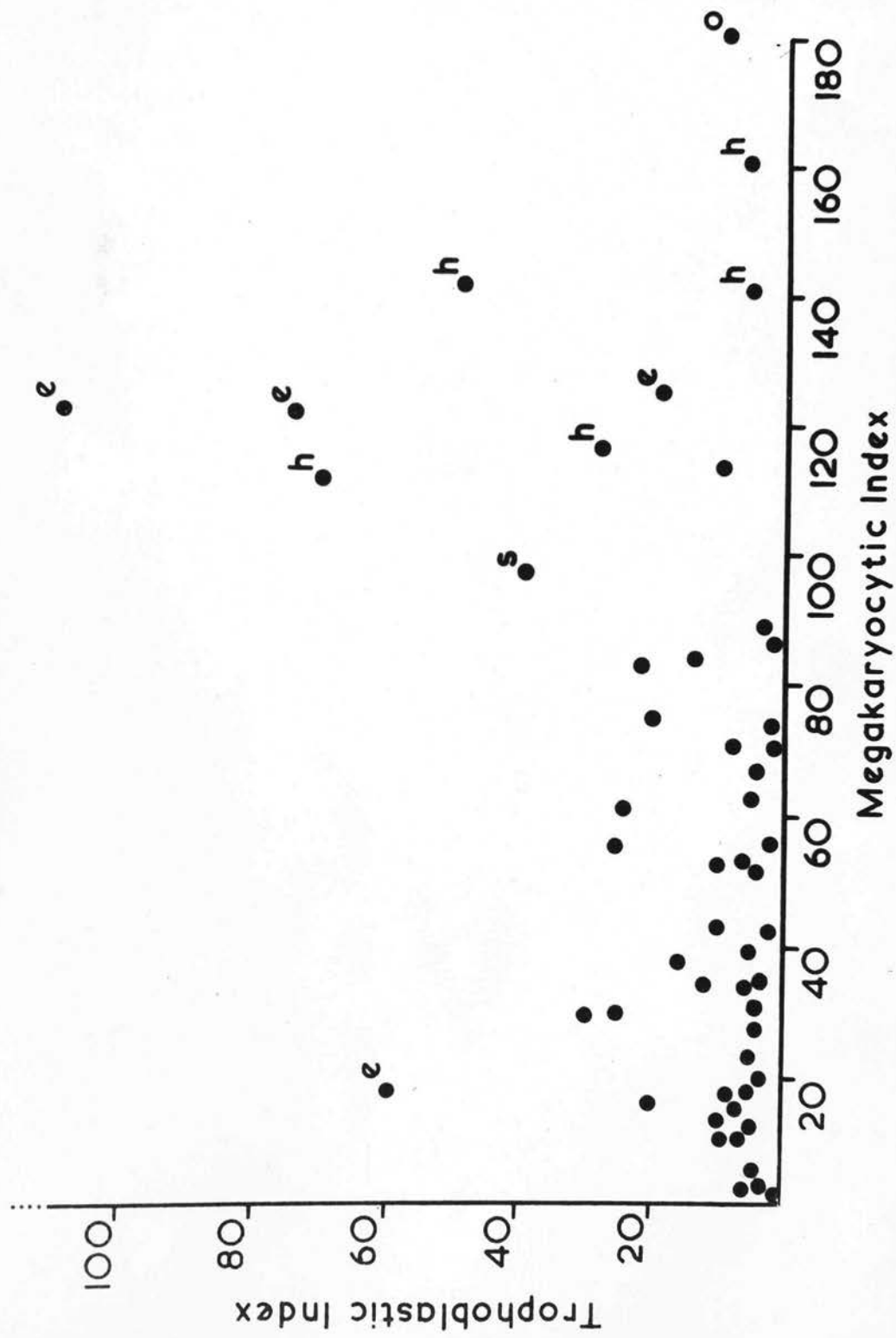


Figure 65b. Shows the distribution of patients in the two series according to their megakaryocytic indices. Patients in the "pregnancy" series tend to show more megakaryocytes in the lung than patients in the control series. Undue loss of blood was a feature of the clinical data of nine out of the fourteen pregnant patients whose megakaryocytic index was greater than 100.

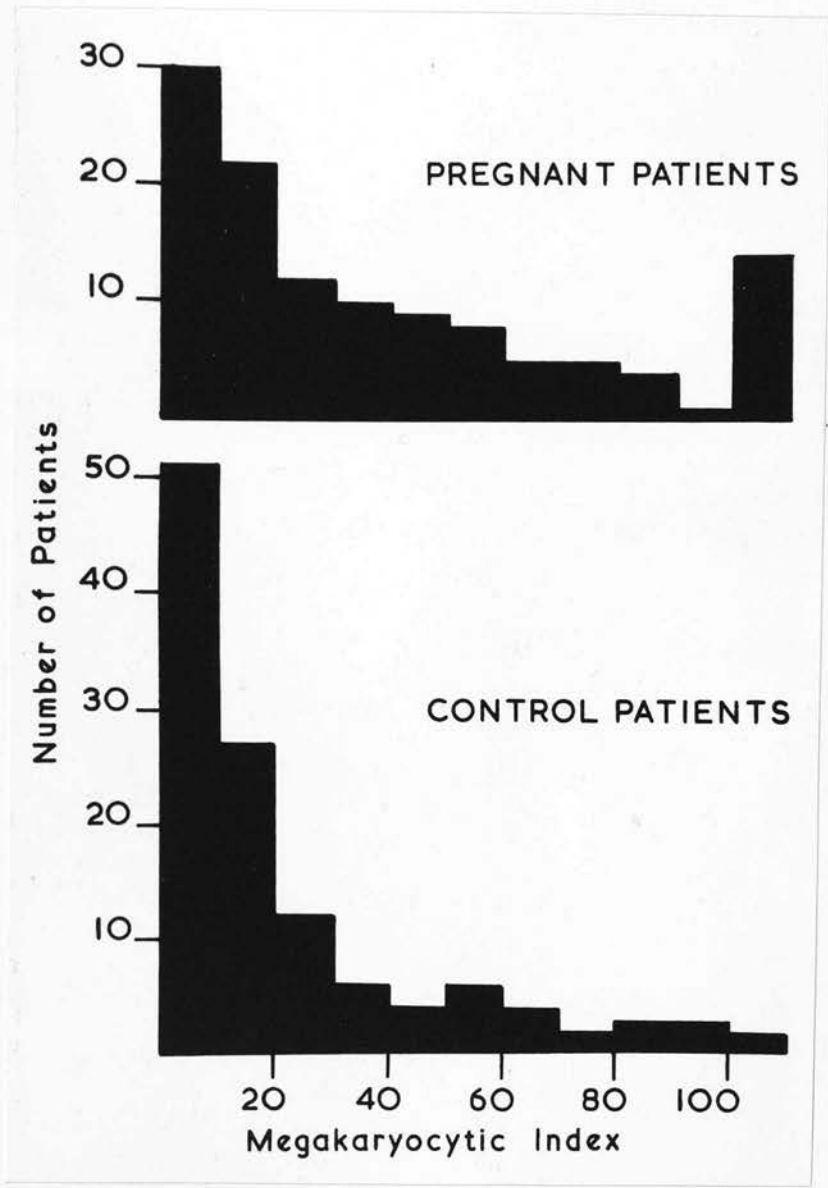
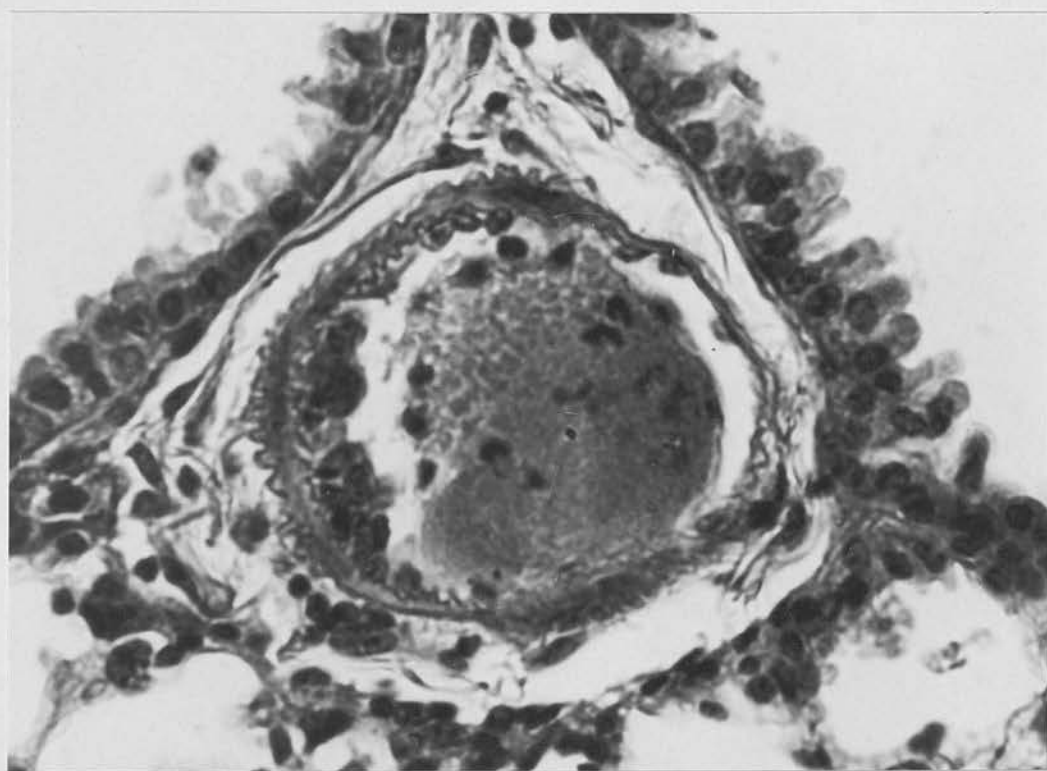
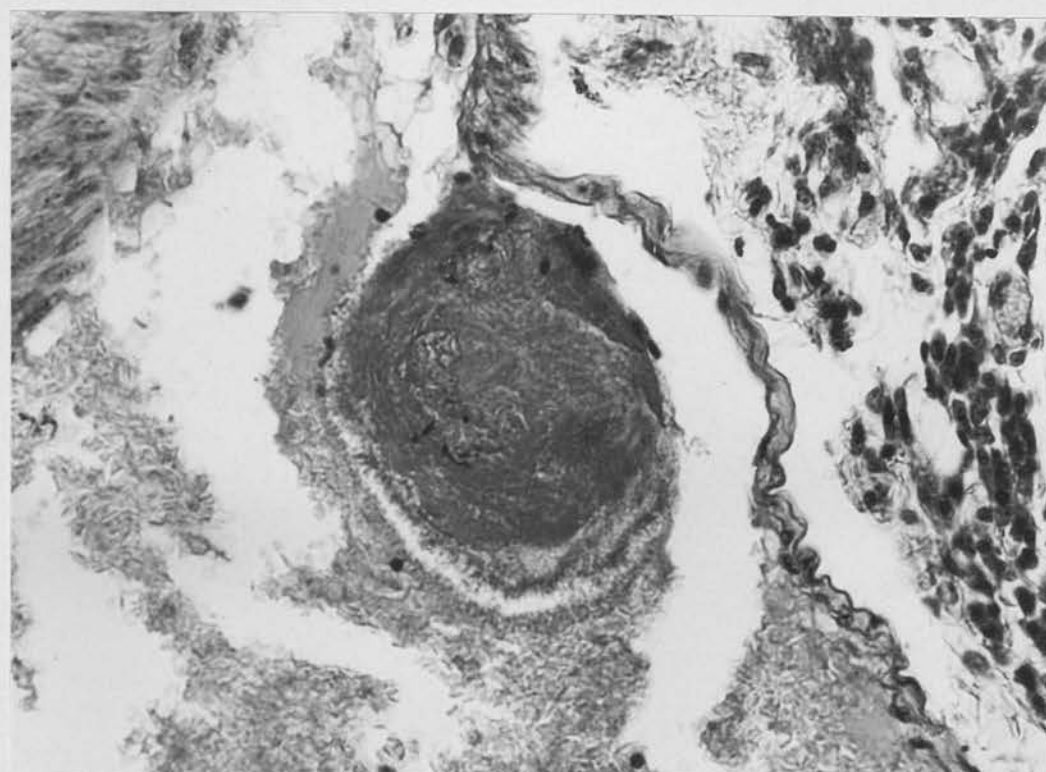


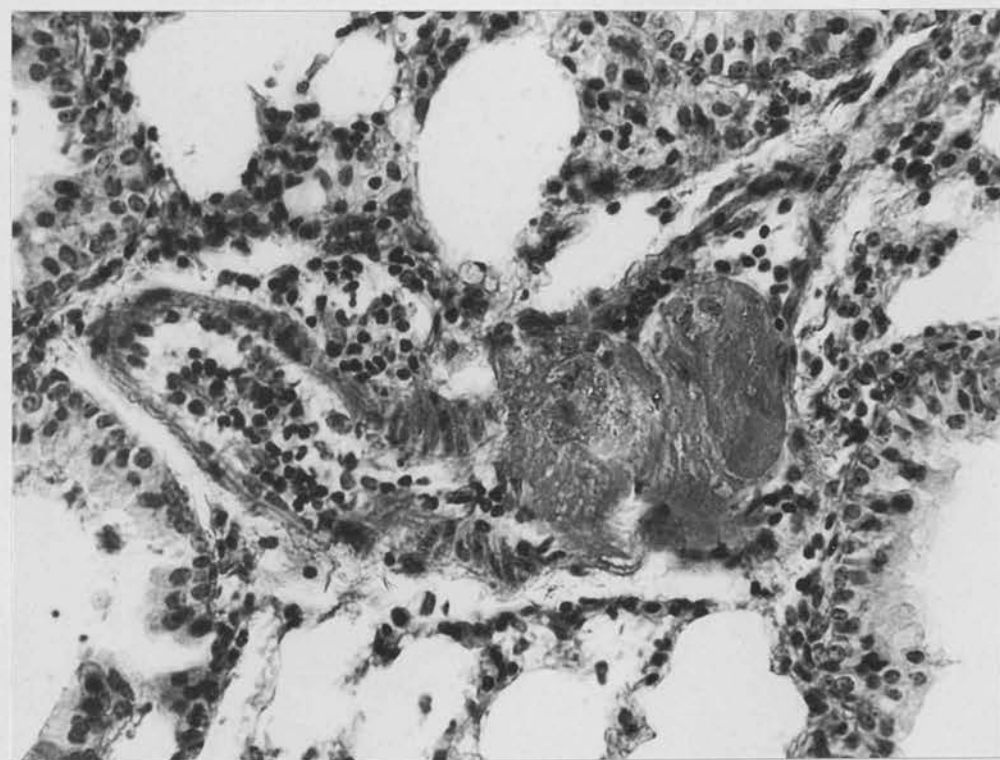
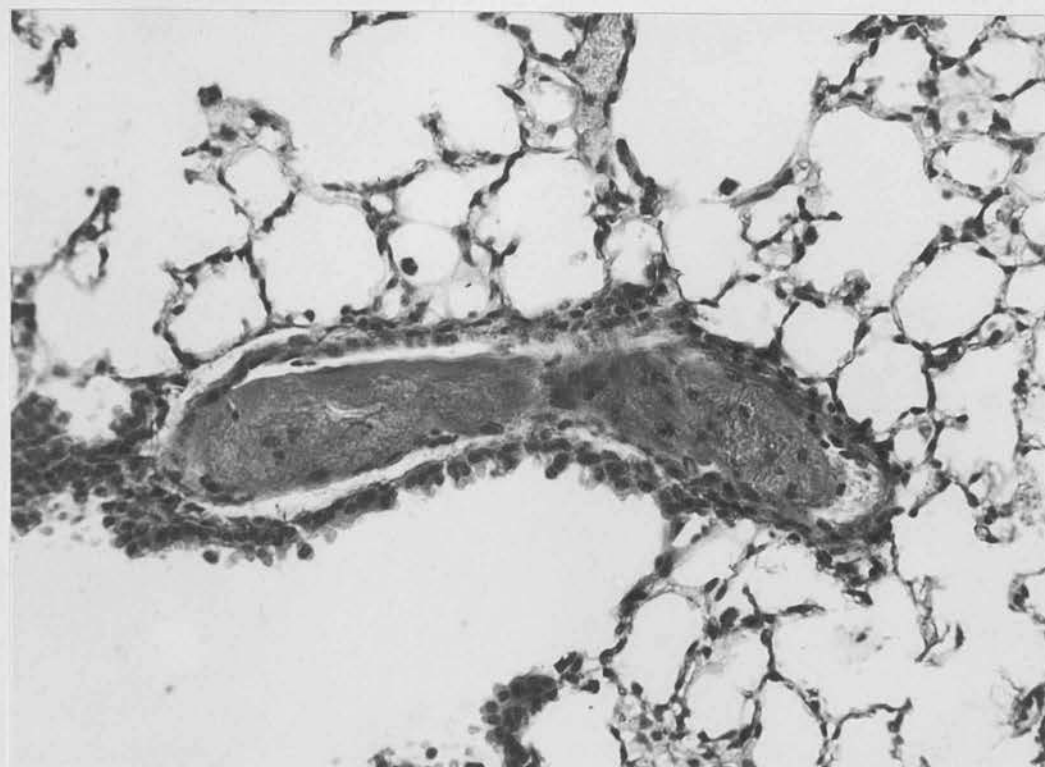
Figure 66. A finely frayed appearance over part of the surface of this embolus suggests lysis of the cytoplasm.

H. & E. x 450

Figure 67. Dissolution of this mass is suggested by the loosening of texture in its upper part and some fraying of the surface.

H. & E. x 860





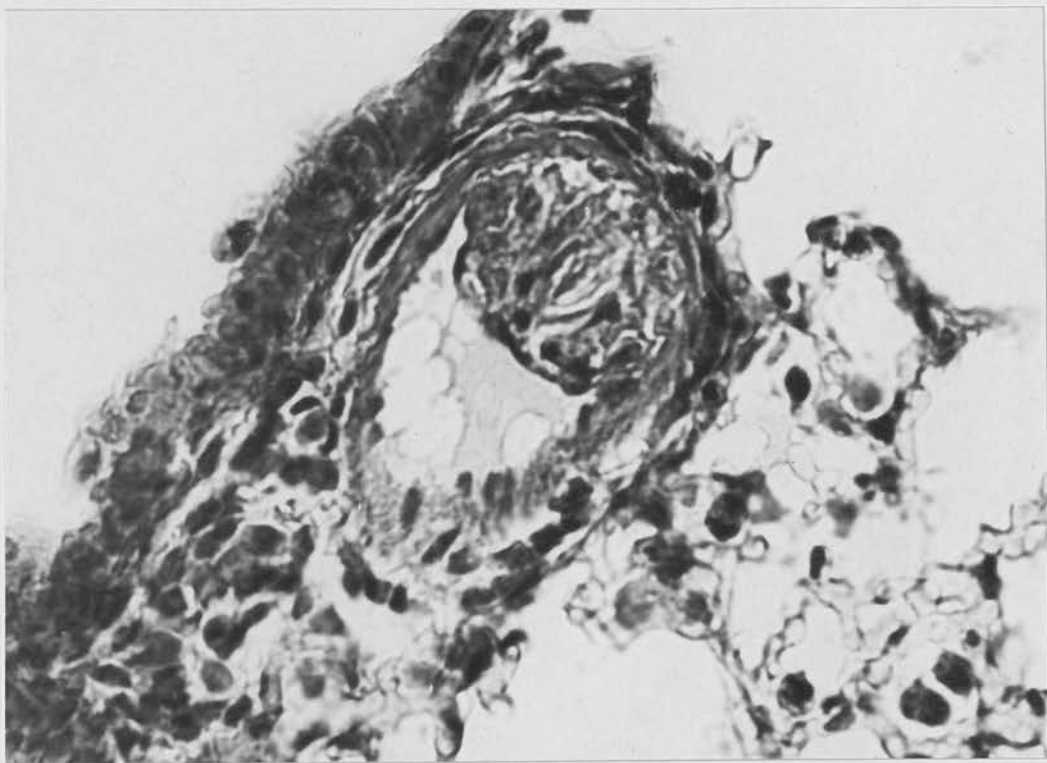
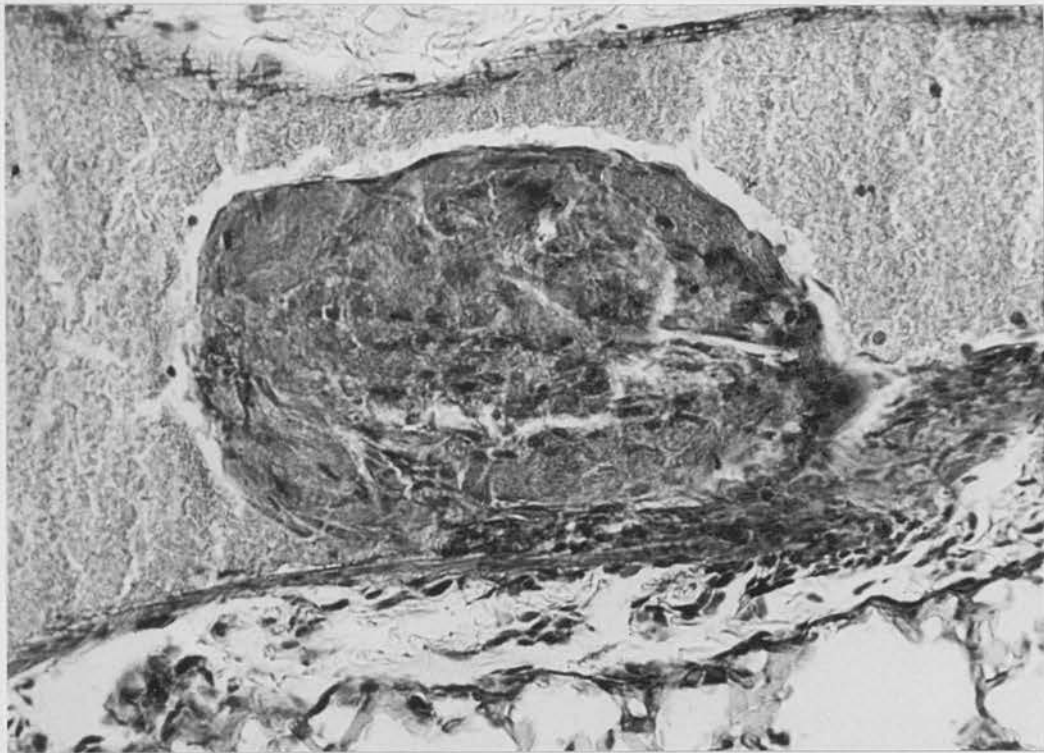
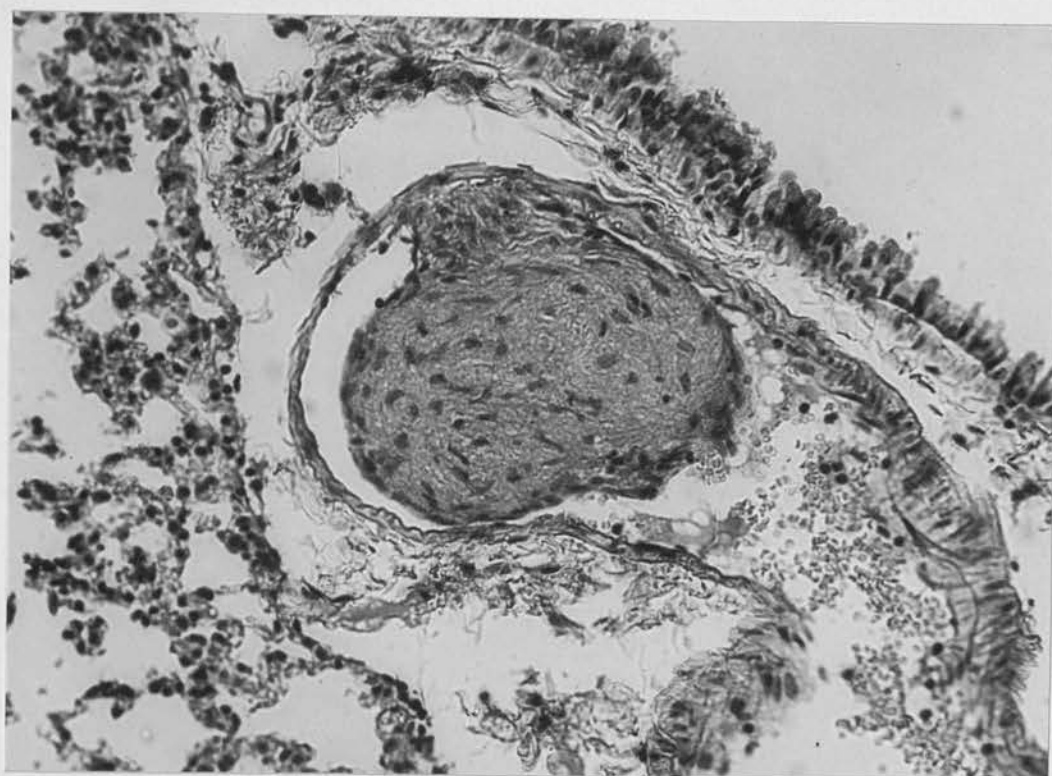


Figure 72. Apparent dissolution over part of the surface of a placental embolus eighteen days after injection into the lung. Some of the nuclei still appear viable.

H. & E. x 300

Figure 73. See text.



Animals killed at 2-day intervals after i.v.i.
of placental suspension.

Persisting placental emboli seen

Animals (20 per group) treated with: in lungs at dates marked X.

OESTROGEN

XXX X X X X

PROGESTERONE

XXXX X X

CHORIONIC
GONADOTROPHIN

XXX XX X X X X

NO HORMONE

XXXX X X X

2 10 20 30 40

DAYS AFTER INJECTION

Figure 74. A large mass of highly cellular tissue within a pulmonary vessel twelve days after injection. No notable inflammatory response has occurred.

H. & E. x 310

Figure 75. An exceptionally large portion of tissue within a pulmonary vessel at the thirty-eighth day after injection.

H. & E. x 70

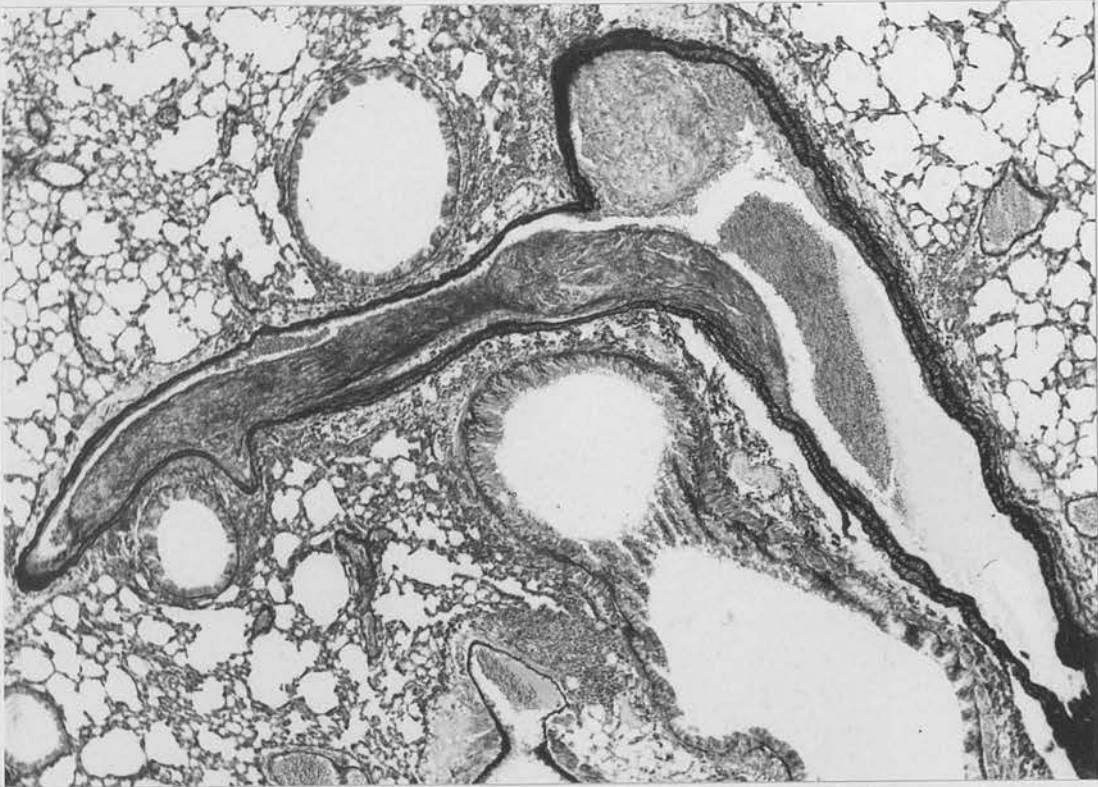
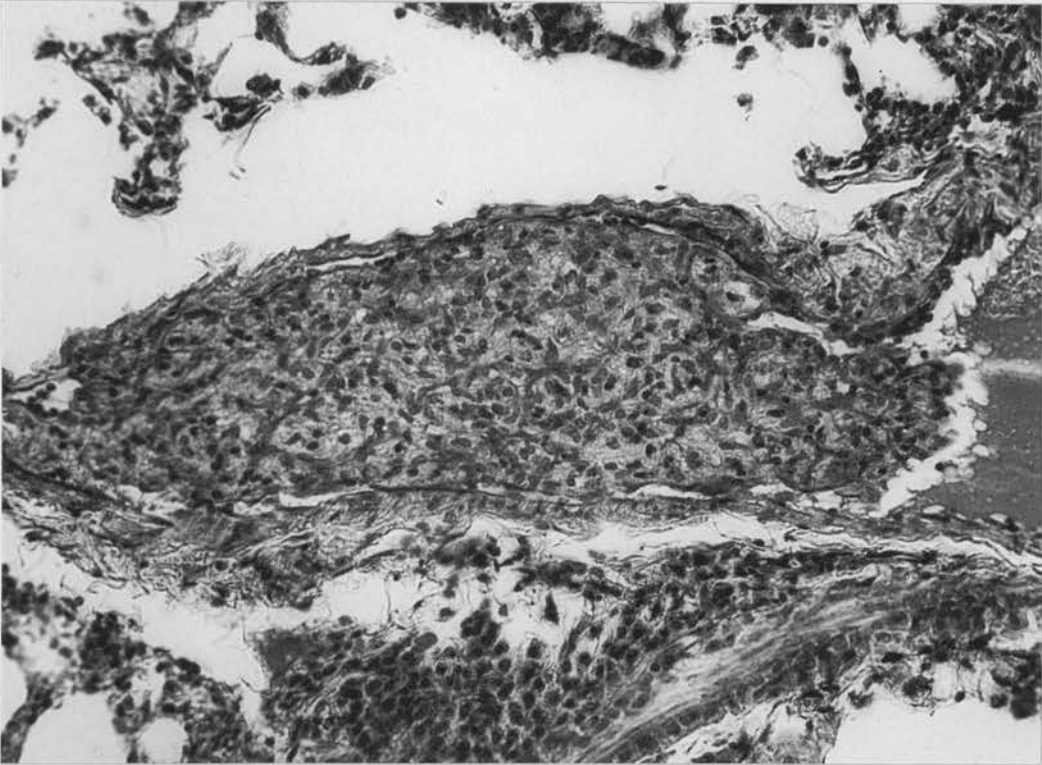


Figure 76. A further section from the same
 animal. The mass closely resembles
 decidua. H. & E. x 80

Figure 77. Shows the large size of the component
 cells of the mass illustrated in figures
 75 and 76. There is some permeation by
 lymphocytes at the upper right edge but no
 signs of organisation. The lymphocytes at
 the lower left corner, outside the vessel,
 are no more than may be seen around many
 vessels in the lung of a normal mouse.

H. & E. x 320

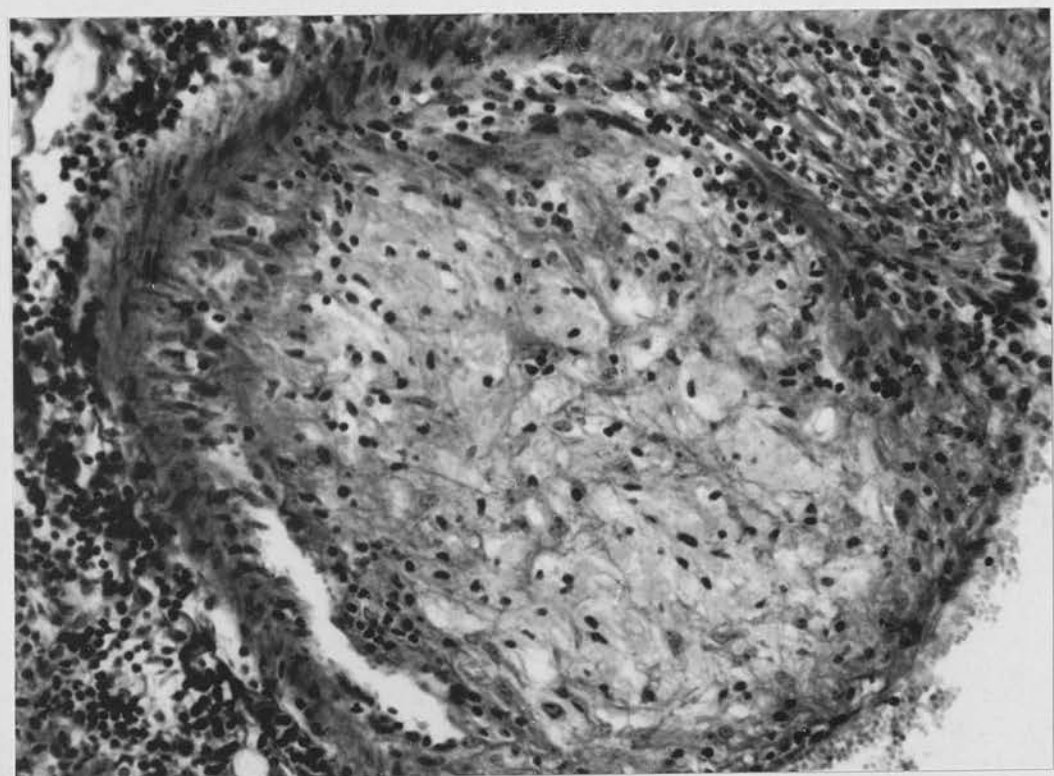
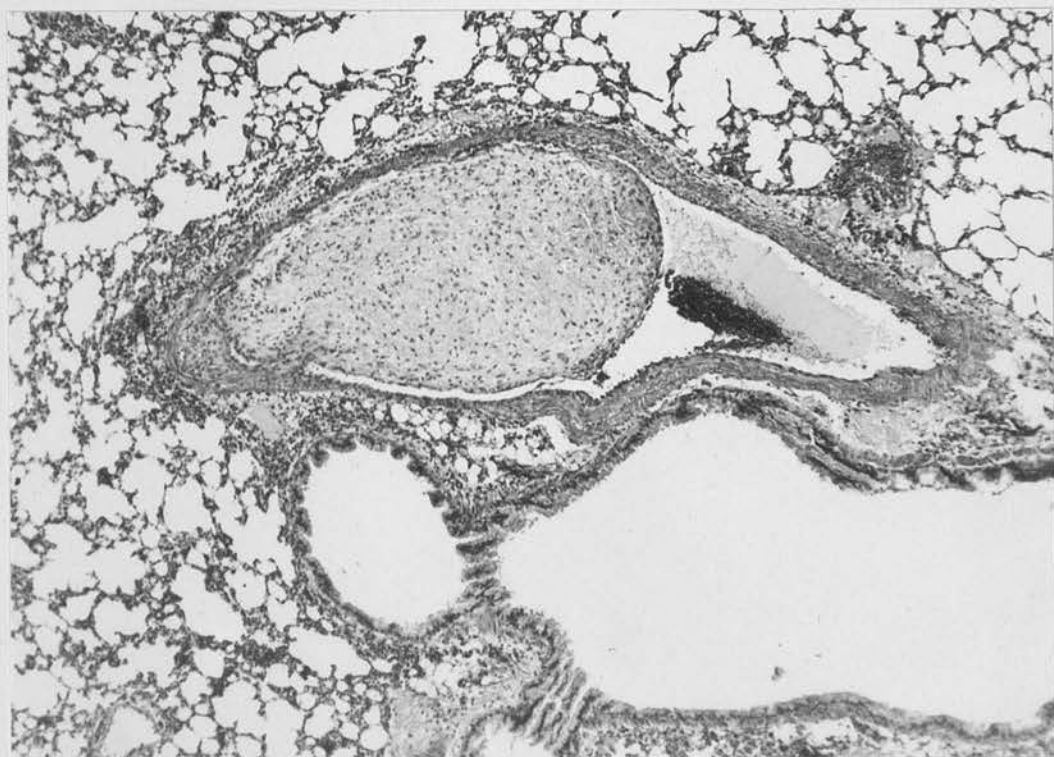


Figure 78. The reticulin pattern of the mass in the 38-day animal. The fine network is characteristic of decidua.

Silver impregnation x 750

Figure 79. Calco-spherites in the wall of a pulmonary arteriole.

H. & E. x 650

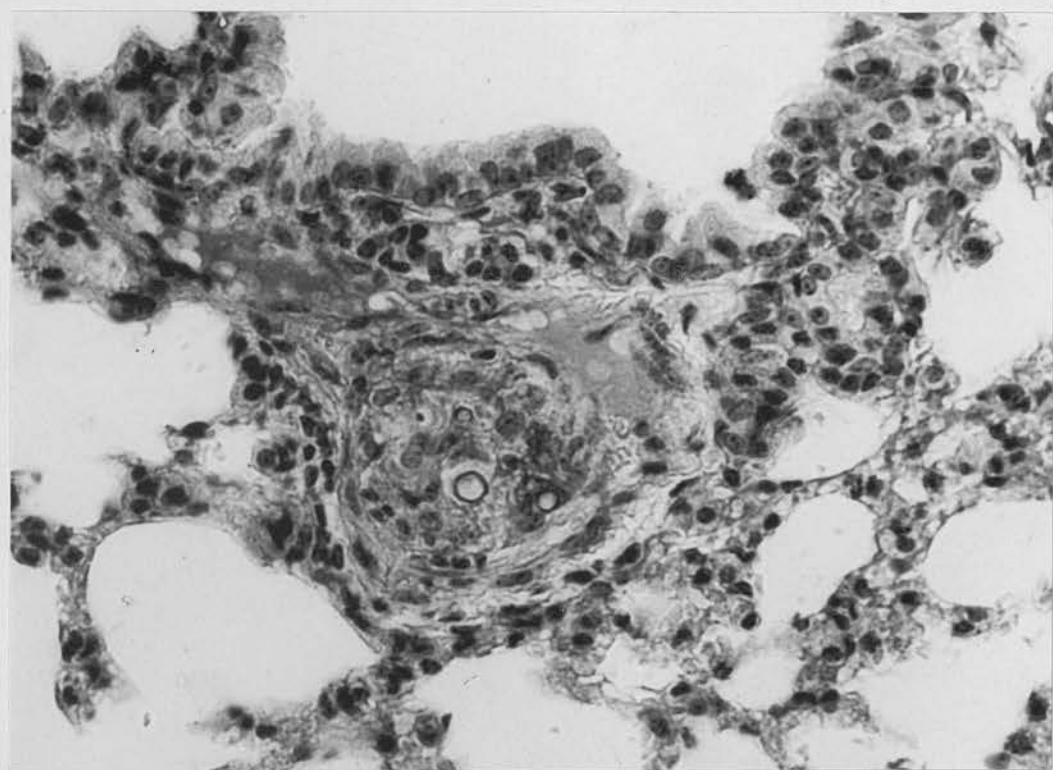
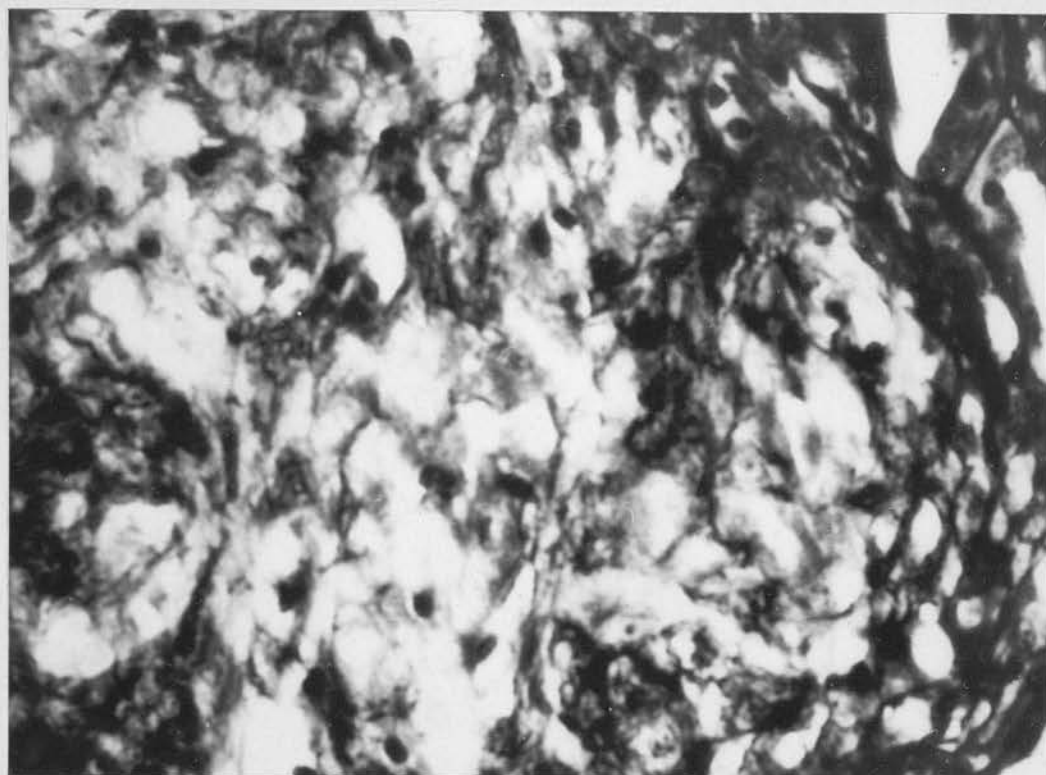


Figure 80. An injected particle of kidney fused to the wall of the vessel and accompanied by much surrounding inflammatory cell reaction. H. & E. x 170

Figure 81. Lymphocytes and macrophages surround a pulmonary capillary largely obstructed by an embolus of renal tissue.

H. & E. x 550

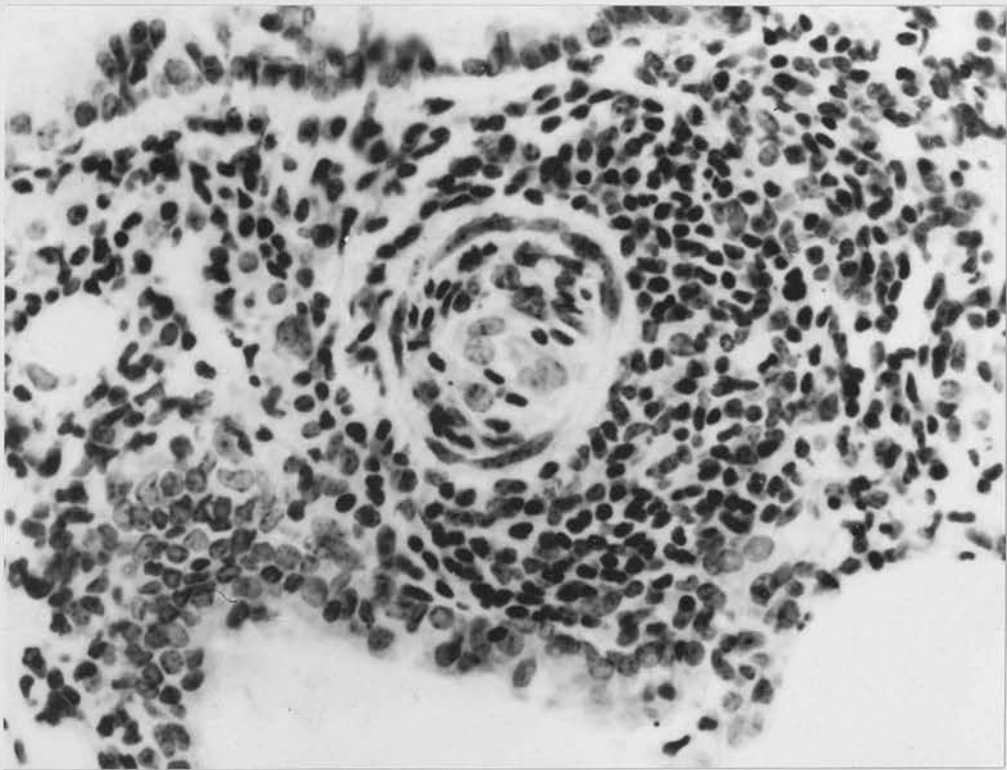
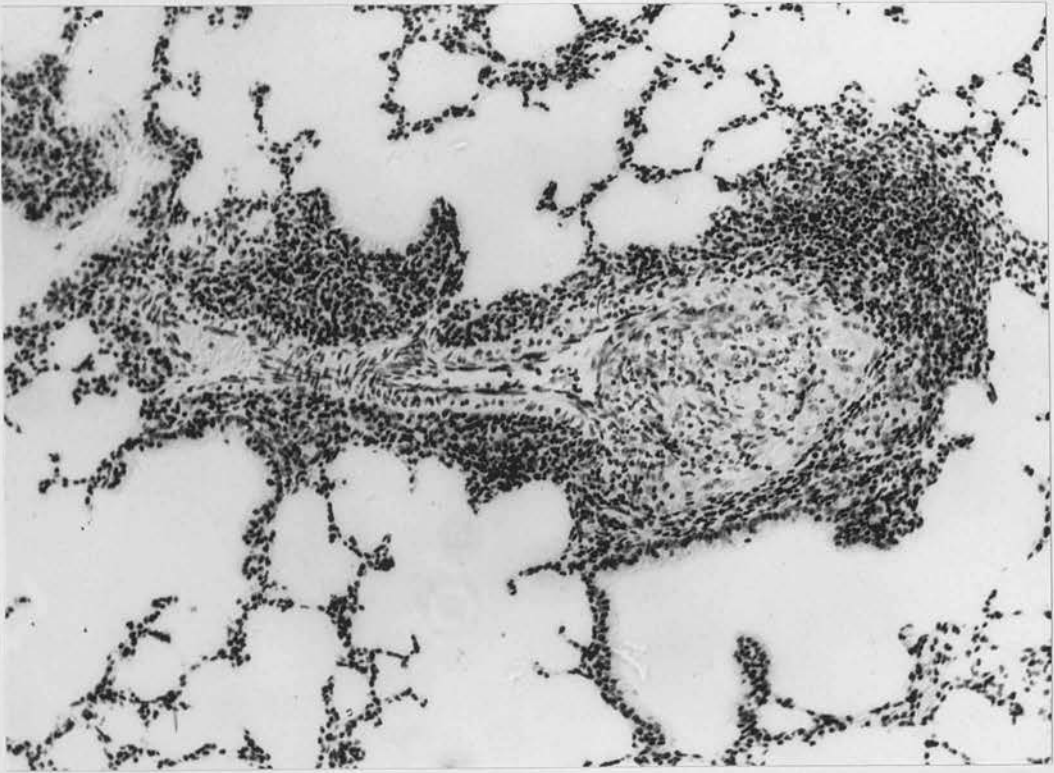


Figure 82. Shows the numbers of patients dying on the day of evacuation of the uterus ("D + 0") and on succeeding days ("D + 1" &c.): the proportion of patients whose lungs contained trophoblast within each of the five groups; and, in these patients, the amount of trophoblast in their lungs denoted by the height of the trophoblastic indices ("Tr. Index").

Total patients in each group

Patients whose lungs contained trophoblast

