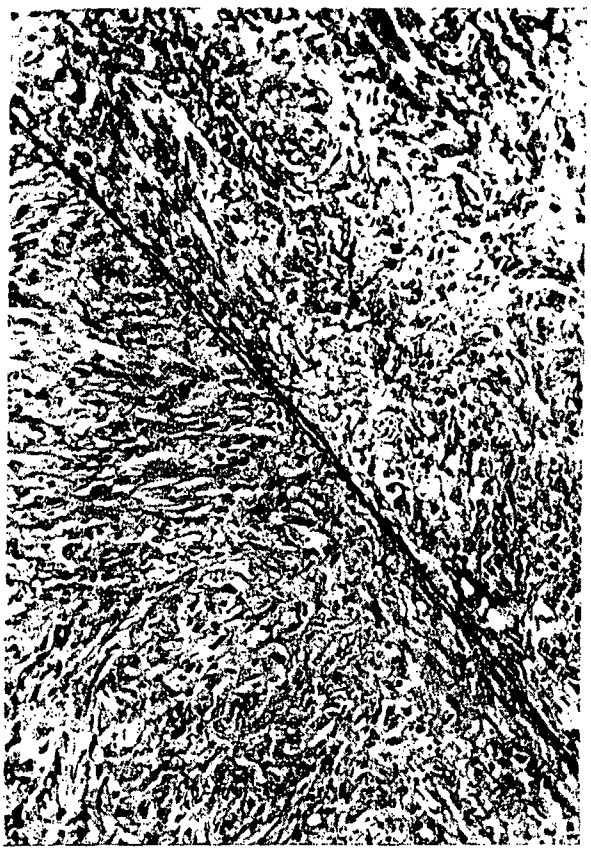

FIG. 13. *Case 6. The intact elastic membrane of the visceral pleura runs obliquely across the field with fibromatous tumour on either side of it. Lung is above and to the right, and the tumour here has greatly thickened the normal thin layer of connective tissue between elastic membrane and alveoli. Most pleural mesotheliomata are restricted to the depth shown here. Occasionally the most superficial pulmonary alveoli are invaded. The plump spindle-shaped cells below and to the left of the elastic membrane are found in all fibromatous mesotheliomata, although often only present in foci between less cellular collagenous areas. Compare with Figs. 7 and 11. Weigert's elastic tissue stain, counterstained with Van Gieson,* × 120.

thickening may cover a lung (Fig. 11). In the series presented here, the presence of metastases in lymph nodes was of crucial assistance in this distinction, but in all the necropsy cases, where multiple pieces of tissue were available for study, cellular foci with plump spindle cells were also found (Fig. 13), although sometimes these were infrequent.

Wagner, Munday, and Harington (1962) have suggested that metachromatic staining within a tumour (demonstrated by Hale's technique), and removable by exposure to hyaluronidase, is strong evidence in favour of mesothelioma. This, of course, is only applicable when stains for epithelial mucin are negative (P.A.S. or Southgate's mucicarmine). They suggest that the substance responsible for the metachromasia is hyaluronic acid, produced by the mesothelial cells, and a feature of mesotheliomata.

Hyaluronic acid is soluble in water (and in formol saline), and as most of the tissues of this study were formol fixed, this reaction was not found in my cases. In four cases, metachromatic staining was shown with thionine, the metachromatic material being situated within intracytoplasmic vacuoles (Fig. 5), the stains for epithelial mucin showing no reaction in these areas.

While this reaction probably is important in the recognition of mesotheliomata, caution must be exercised in the interpretation of metachromasia. A florid, mucoid, stromal reaction elicited by invasive carcinoma or by inflammation of the pleura may also exhibit similar metachromasia, and I feel that the material must be intracellular to be of significance from the point of view of mesothelioma. Harington, Wagner, and Smith (1963) have suggested that quantitative biochemical estimation of hyaluronic acid in pleural or peritoneal fluid may give diagnostic results, the levels being higher in cases of mesothelioma than in inflammatory or neoplastic lesions involving serosal surfaces.

Wagner (1960) first suggested an association between mesotheliomata and exposure to asbestos, and this study confirms this association. As a control group, the cases rejected from the series were used, and the results show a clear significant difference in incidence (Table III).

In an attempt to assess the incidence of asbestos bodies in necropsy tissues at this Institute, the lungs of 50 consecutive necropsies were examined for them, and none was found. (Cases of tumour within the chest were excluded.) The incidence in 50 cases of carcinoma of the lung studied *post*

TABLE III

Group	Lungs Available	Asbestos Bodies or Fibres	Fibrosis of Lung	Cases with Asbestos Bodies or Fibres (%)
A	7	6	5	85
B	10	1	2	10
C	11	7	6	63
D	2	1	0	50
E	16	1	0	6·5
F	11	0	0	0
G	50	3	0	6
H	50	0	0	0

Group A—certain pleural mesotheliomata. Group B—probable pleural mesotheliomata. Group C—certain peritoneal mesotheliomata. Group D—probable peritoneal mesotheliomata. Group E—rejected from pleural series. Group F—rejected from peritoneal series. Group G—consecutive necropsy cases of carcinoma of lung. Group H—consecutive necropsy cases excluding tumours in chest.