

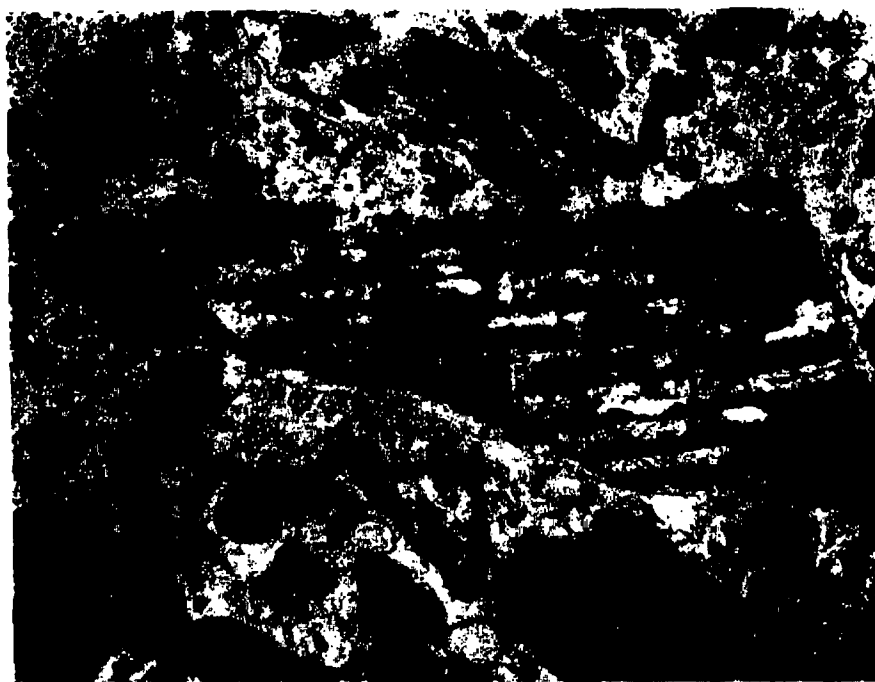


FIG. 4. Particles of chrysotile dust within a macrophage from a mouse pleural granuloma, 3 mo after dust injection. The dust had been heated to 800°C before injection, and by this stage the chrysotile crystal pattern has been replaced by an irregular honeycomb structure. The largest dust particle (P) is associated with masses of dense granules (F) that probably represent ferritin, or haemosiderin, and in some areas these have penetrated deeply into the dust. $\times 35,000$.

least in the early stages. With the masses of heated fused chrysotile however, although they were taken up into membrane bounded vesicles the membrane was always seen in close contact with the dust. Many of the small dust masses could still be taken up by single macrophages which usually showed no signs of damage. In these granulomas, however, it was not uncommon to find dead macrophages containing dust although such dead macrophages have only rarely been found in lesions produced by normal chrysotile.

In animals injected with either unsieved normal chrysotile, or chrysotile heated to 400°C some typical ferruginous bodies (Davis, 1970b) were found in the granulomas from about 2 wk after dust injection. Sieved samples of normal chrysotile and chrysotile heated to 400°C did not, however, result in the production of any ferruginous bodies. This was also true of both sieved and unsieved samples of chrysotile heated to 600°C. In animals treated with chrysotile heated to either 800°C or 1000°C no true asbestos bodies were found in which the dust particles were surrounded by a distinct coating of ferruginous material. However, with some of the larger chrysotile fragments, especially those showing the greatest degree of dissolution, it appeared that dense granules similar to ferritin or haemosiderin had penetrated deep into the dust (Fig. 4).

Brake lining dust when injected into the pleural cavity of mice produced smaller granulomas than any of the asbestos types used in this study and these

granulomas by thin strands could be seen. The diameter, however, was from 2 to 2.5 μ m. The cells were able to engulf them but always contained them quickly surrounding them after injection, and within 2 wk the lesions had been transformed into granulomas to the dust.



FIG. 5. Granuloma membrane mainly composed of dense granules, and the dust particles are surrounded by a distinct coating of ferruginous material.