

FIG. 1. A section of a macrophage from a mouse granuloma 2 wk after an injection of chrysotile asbestos heated to 600°C. Groups of chrysotile crystals are seen in two phagosomes (P) within the cell, and the structure of these crystals appears normal. In both cases, the dust appears loosely arranged in the phagosomes and the phagosome membrane has not at this stage contracted closely around the dust. × 65,000.

some collagen was usually present among the plagocytic cells that made up the main part of the lesions. During the first few weeks after injection collagen production was more rapid in those granulomas induced by chrysotile dust heated to 800°C or more, than in granulomas resulting from either unheated chrysotile or chrysotile heated to no more than 600°C. However, by 6 mo after injection this distinction was no longer apparent, and the long-term production of collagen in any given area of granulation tissue did not appear to differ much between similarly prepared chrysotile samples that had been heated to different temperatures. The physical shape of the dust particles did, however, have considerable effect on fibrosis. The total amount of collagen produced in response to a 10-mg dose was closely related to the size of the resulting granulomas and since unsieved samples heated to no more than 400°C produced large lesions these samples were more fibrogenic than sieved samples heated to 400°C or to samples heated to higher temperatures. All these produced very small granulomas.

Electron microscope studies showed that almost all the injected dust from samples heated at 600°C or less was phagocytosed by macrophages and occasional giant cells and few extracellular dust particles were found. The process of