



Fig 3.—Minimal, moderately healed asbestotic lesion in rat exposed to chrysotile dust for one month, then pastured and killed 24 months later. Lesion consists of a partially thickened alveolar duct. Mural thickening is caused by hypocellular connective tissue that has obliterated alveoli near bottom of field (hematoxylin and eosin, $\times 150$).



Fig 4.—Field same as in Fig 3 after silver impregnation shows that scar is composed of nonbranching, largely parallel, thick collagen fibers that are fairly densely arranged (Gordon and Sweets, $\times 150$).

stices of the precollagenous stroma of the inflammatory tissue.

When examined one year or longer after the intratracheal dust injection, asbestotic fibrosis was found in all rats so injected. The characteristic lesion was sharply limited to the alveolar duct as well as to the short respiratory bronchiole and consisted of moderate to severe collagenous thickening of the wall, often also associated with striking hyperplasia of smooth muscle (in more than one third of the injected animals). The collagenous mural thickening involved much of the wall and resulted in the obliteration of many of the evaginating alveoli. Generally speaking, the involvement of the alveolar ducts, even in animals injected with but a

single dose of 3.5 mg of chrysotile dust, was greater than the minimal lesion observed in rats that had inhaled high concentrations of the dust for one month. As judged from the examination of a single section of both lungs of the rats, greater dust dosage was often, but not always, associated with an increased incidence of thickened alveolar ducts. The occurrence of larger collagenous scars containing small remnants of air spaces seemed also to be related to the multiplicity of the asbestos dust injections, as was a metaplasia to the columnar variety of the epithelium lining the surviving evaginating alveoli.

The sharply delimited mural thickening of the alveolar ducts (Fig 3) and respiratory bronchioles, with the collagenized, nonarborescent, thick stromal fibers (Fig 4), and the associated reduced cellularity (Fig 3),