of various animals (guinea pig, rabbit, rat, mouse, cat, dog, chicken and even tadpole) eventually will produce silicotic nodules but at different rates. Similar introduction of long fiber asbestos has resulted in a fibrous reaction in the lung and, to a lesser extent, in the peritoneum but not in other organs of the guinea pig, the rabbit, the cat and the white rat. In our experience the lungs of the dog and the white mouse failed to respond with fibrosis, although Schuster [2] has reported such changes in a dog that lived in an asbestos-fabricating plant. This variation in species and in organ susceptibility is yet to be accounted for [3]; it is presumed that in the susceptible animals the greater reaction of the lung to asbestos, far exceeding the reaction of other organ tissues, is due principally to the greater mobility of the lung.

Peculiar Characteristics of Asbestos

Experience has demonstrated that most of the nonfibrous dust particles inhaled into the lungs of man and animal are 10 microns or less

Table 1.—*Reaction to Long Fiber Chrysotile in Lungs of Man and Other Species of Animal*

Species	Mode of Exposure	Fibrosis *	Asbestosis Bodies
Man	Inhalation	4+	Numerous
Guinea pig	Inhalation and injection	2+	Moderately numerous
Rabbit	Inhalation and injection	+	Rare and atypical
Cat	Inhalation and injection	+	Rare and atypical
White rat	Inhalation and injection	+	Very rare
White mouse	Inhalation	0	Rare and atypical
Dog	Injection	0	None

* The symbols 0 to 4+ refer to the degree of tissue reaction.

in maximum dimension. Larger particles apparently do not gain access to the lungs, because, first, large particles settle in air so rapidly that few remain suspended in the atmosphere breathed and, second, large particles are more effectively removed by the protective mechanisms of the upper respiratory tract. In the case of fibrous materials these factors have less influence and fibers 100 and even 200 microns in length have been found in the terminal air spaces of human lungs. In small laboratory animals exposed to asbestos dust the maximum length of fiber found in the lung rarely exceeds 60 microns.

A large proportion of nonfibrous particulate dust inhaled into the lung is found in the terminal air spaces (alveolar ducts, atriums, alveoli) in all parts of the organ; in contrast, inhaled asbestos fibers are first discovered in the respiratory bronchioles. These small passages are immediately distal to bronchioles lined by ciliated epithelium.[4] Their

2. Schuster, N. H.: Pulmonary Asbestosis in a Dog, J. Path. & Bact. **34** (pt. 2):751, 1931.

3. Vorwald, A. J.: Variations in Individual Susceptibility to Industrial Dusts Inhaled into the Lungs, Am. Rev. Tuberc. **62**: (IB) 13, 1950.

4. Miller, W. S.: The Lung, Springfield, Ill., Charles C. Thomas, Publisher, 1937.