Impinger samples taken soon after the experiment was started indicated that the dust concentration was at first quite low, the average dust count being only 6.0 million particles per cubic foot of air by the standard light field technic and 0.8 million for particles and fibers greater than 10 microns. After the inhalation experiment had been under way for about two years, the speed of the rotating paddle in the dusting machine was increased and for the remaining 10 months of the experiment considerably more dust was dispersed into the atmosphere. The average dust count of impinger samples collected after this change was 53.7 million by the usual light field method and 1.6 million for particles and fibers larger than 10 microns. It is probable, however, that the true values of the dust concentration were higher than the counts given in this paragraph. The impinger samples for the King's floats experiment were collected in water, but later studies [7] have shown that counts of impinger samples of asbestos dust taken in water are not reliable. Ethyl alcohol instead of water was used as the collecting fluid in all subsequent experiments.

TABLE 4.—*Summary of Inhalation Experiment with King's Floats Asbestos Dust*

Nature of Experiment	Animals	Maximum Dust Exposure, Mo.	Maximum Survival After Dust Exposure, Mo.	Results
Dust exposure continuous throughout life	54 guinea pigs	33	0	Typical peribronchiolar fibrosis after 16 months
	9 rabbits	19	0	Foreign body bronchitis
	18 rats	6	0	Little or no reaction
Dust exposure followed by prolonged residence in normal air	25 guinea pigs	6	35	Nonprogressive fibrosis
	25 guinea pigs	9	37	Nonprogressive fibrosis
	1 rabbit	6	30	Absorption of foreign body reaction
	1 rabbit	19	34	Absorption of foreign body reaction
Tuberculous infection * at start of dust exposure	40 guinea pigs	35	0	Temporary progression of infection, followed by healing with fibrosis
Controls to infection: no dust exposure	23 guinea pigs	0	35 †	Healing by resolution (one exception)
Tuberculous infection * after 26 mo. of dust exposure, then residence in normal air	12 guinea pigs	26	14	No appreciable increase in susceptibility to tuberculous infection; healing with fibrosis
Controls to infection: no dust exposure	12 guinea pigs	0	19 †	Healing by resolution

* The guinea pigs were infected with low virulence R_1 strain of tubercle bacillus.
† This means the survival period following infection.

Results of the investigation, briefly summarized in table 4, show that inhalation of King's floats asbestos dust produced a typical peribronchiolar fibrosis in guinea pigs but not in rabbits or rats.

Reaction in Normal Guinea Pigs.—Guinea pigs inhaling this dust for periods up to 33 months had a characteristic fibrosis occurring in conical patches about the respiratory bronchioles. During this exposure the peripheral alveoli were not involved. The particulate elements of the dust were transported through the lymphatic system to the bronchial nodes, causing no significant reaction in either site; the fibrous elements remained fixed at the points of original localization and were seldom detected in the lymph nodes.

After exposure of approximately a year a small amount of cellular reaction had been produced about many respiratory bronchioles (fig. 3 *A*). As more dust was inhaled, it continued to accumulate in the same location, and later stages of the disease (fig. 3 *B*) consisted of extensions of the original lesions.

Apparently, the inhaled fibers were caught in the pocket-like alveoli that are given off from the lateral walls of the respiratory bronchioles. There they

7. Fulton, W. B.; Houtz, R. L.; Dooley, A., and Mathews, J. L.: Asbestosis: I. The Collection and Counting of Asbestos Dust Encountered in Asbestos Fabricating Plants, Special Bulletin 37, Pennsylvania Department of Labor and Industry, Harrisburg, 1934.