and the animal exposure chamber and their use have been described previously.[6] However, the following modifications were incorporated to allow more nearly reproducible control.

1. A constant exhaust flow of 280 l./min. was maintained from the 2,600 l. exposure chamber through a cotton waste filter by a Lyman pump. The rate at which the aerosol flowed into the chamber was maintained always less than 280 l./min., and the difference was made up by outside air flowing in through a chamber opening in the vicinity of the aerosol inlet. Thus the rate of aerosol turnover in the chamber was always one change in 9.3 minutes. To avoid difficulties resulting from variable filter resistance, a flowmeter was placed on the exhaust side of the pump, separated from it by an oil filter consisting of a flask filled with glass beads. A leak valve was placed on the inlet (vacuum) side of the pump between pump and cotton waste filter. This

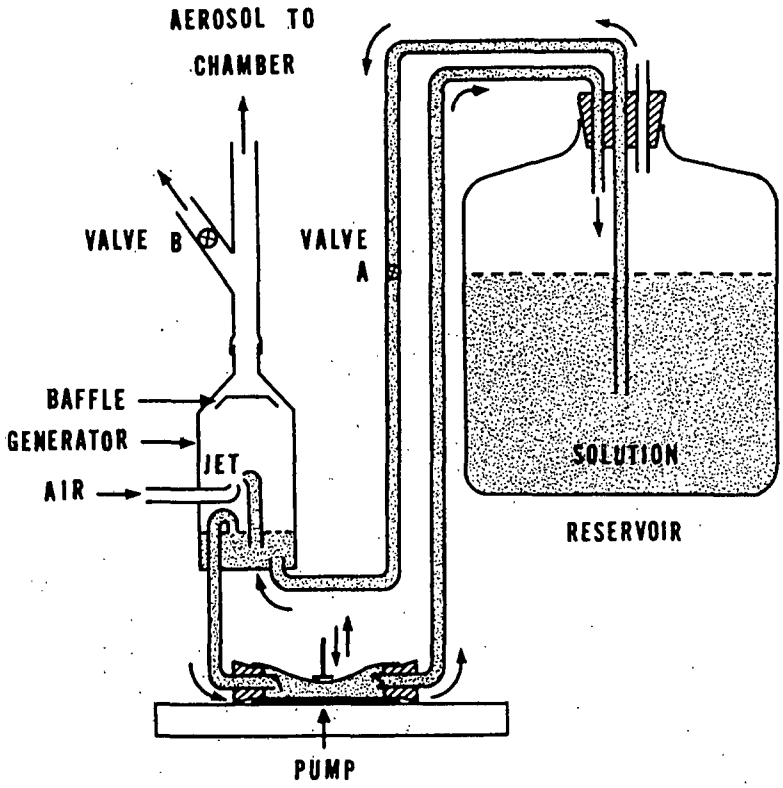

Fig. 1.—Circulation scheme used to prevent appreciable increase in concentration of a sodium chloride solution in the aerosol generator. Valve A is adjusted until the solution syphons into the generator at such speed as will give roughly half air and half solution passing through the pump. Valve B is adjusted to vary the concentration of aerosol in the chamber without altering the conditions under which it is generated. The pump consists of two valves and a rubber tube which is alternately compressed and relaxed.

valve was adjusted until the difference between the total exhaust flow (about 380 l./min.) and the leak valve flow (also measured by a rotameter) was 280 l./min.

2. For silica aerosols it was found necessary to pack the silica dust in the generator storage tube as tightly as possible to insure uniform density along the tube height. Otherwise the dust concentration in the exposure chamber gradually increased as the feed point approached the bottom of the tube. An agitator placed against the feed tube aided in lessening the tendency

6. Dautrebande, L.; Alford, W. C.; Irwin, D. A.; Mitchell, E. R.; Thompson, E. C.; Weaver, F. L., and Wood E. J.: Studies on Aerosols: VI. Effect of Aluminum Powder and of NaCl Aerosols upon the Pulmonary Deposition of Silica Dust (Long Exposure), Arch. internat. pharmacodyn. **80**:388, 1949.