of the dust to be picked up in bursts rather than in a smooth, continuous fashion.[7] It also prevented "caking" on the walls surrounding the Venturi jet. At the end of each run the dust which had collected in the elutriators was shaken out.

3. The washing flask through which the silica aerosol was passed before entering the chamber was removed as a possible source of variation (after three hours' operation sediment sometimes stopped up the outlet tube), and two more elutriators in series were substituted. Each elutriator removed roughly one-fourth the dust volume removed by the one preceding it; hence the total amount of dust removed [6] was not greatly altered.

4. For sodium chloride aerosols the scheme of figure 1 was employed to avoid appreciable increase in concentration of the salt solution due to the trapping of larger particles which had been concentrated by partial evaporation in the generator. Continuous circulation of the solution prevented build-up of concentration in the generator, and fresh solution was used when the reservoir volume was about 10 per cent depleted.

5. The constricting rubber sections of the tubular baffles [8] in the salt generator sometimes slipped off, and so were replaced with similarly shaped baffles machined from brass.

One difficulty which was never solved lay in the practical impossibility of duplicating particle size with the method of silica grinding used.[6] This was evidenced by (*a*) different coloring of different batches of ground dust, the smaller particles giving a darker appearance,[9] and (*b*) inability to reproduce concentrations (measured in milligrams per cubic meter) in the exposure chamber, sometimes by a factor of two or more. From the data accumulated, the only saving feature of this situation appeared to lie in the filter action of the elutriators which, to some extent, tended to pass only particles below a limiting size, even though the rate of feed of dust had to be altered to attain a given concentration.

The weight of iron mixed with the silica dust as a result of grinding in the Braun disc mill was estimated by Dautrebande and associates [6] as 2 per cent. At the time the experiments reported here were performed, the mill plates were considerably worn, and a greater time was consumed in grinding a given amount of silica. No iron determination was made.

### COMPARISON OF SILICA AND SODIUM CHLORIDE AEROSOLS

Figure 2 shows the charge-weighted distribution curves of a group of aerosols (curve 1 is the silica aerosol of our figure 11 shown elsewhere [3] and discussed in some detail by us there) taken under comparable conditions— e. g., when the silica aerosol was run, the same volume of air was introduced through the salt aerosol channel as when a salt aerosol was run, and vice versa. From the discussion in the appendix it is evident that at this point practically all the water has evaporated from the salt aerosol particles. In this connection it is interesting to note that the relative humidity was 47 per cent for silica, 61 per cent for an 8 per cent and 65 per cent for a 2 per cent salt solution, and 67 per cent for water. In the case of silica the conditions would have been more nearly comparable had there been water in the salt aerosol generator.

7. Baking the silica dust in an oven just before its use to insure dryness seemed unnecessary, because of its subsequent violent agitation in comparatively dry air.

8. These are not shown in figure 1. See article by L. Dautrebande, B. Highman, W. C. Alford and F. L. Weaver (Studies on Aerosols: III. Production of Liquid Aerosols with an Average Mean Micellary Diameter of One-Half Micron; Study of the Agglutination of Liquid Micellae, Arch. internat. pharmacodyn. **76**:247, 1948).

9. This was determined by comparing samples retained by the elutriators with samples passed by them.