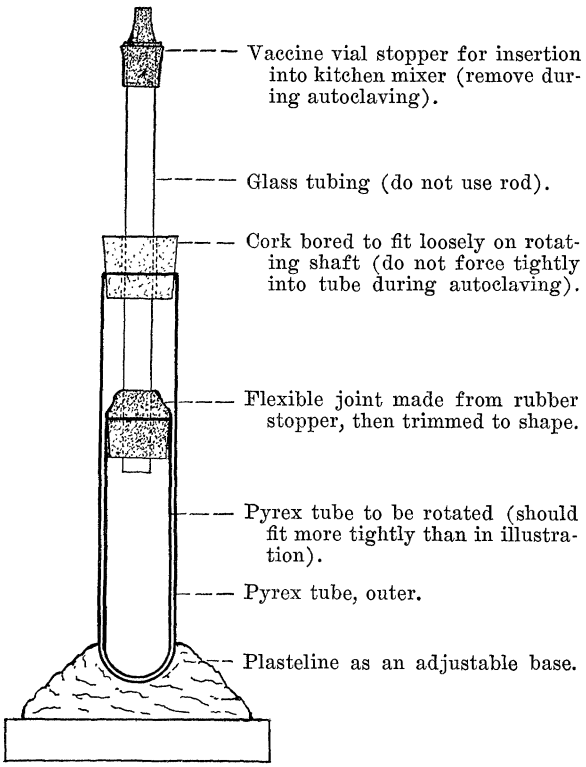

FIG. 1. Grinding Device (½ natural size). The outer tube is plugged with cotton and sterilized separately to facilitate loading with cultures or tissues. The inner tube assembly is sterilized in a full-length test tube and transferred into the outer tube aseptically when the materials are ready for grinding. Since each pair of inner and outer tubes is ground together, the tubes are given the same number to prevent accidental interchanges.

is hollow to permit expansion of gases during autoclaving, which should be done with the small rubber cap removed. A standard kitchen mixer is used to rotate the grinding tube, but the terminal fittings for this tube can readily be adapted to any source of power. The size of the tubes and the relative length of the inner tube can be varied to suit almost any amount of material.

Due to the large grinding surfaces, the diluting fluids can be added rapidly by simply sliding the sterile cork up the shaft, rotating at low speed while fluid is added, and then giving a final brief spin while the inner tube is raised and lowered in the outer one a few times. Removal of the inner tube and substitution of sterile stoppers into the flamed mouth of the outer tube permits ready access to the suspensions.

The amount of silica liberated through the abrasive action of the two grinding tubes varies with the conditions of operation. If the two tubes are separated by water only, they produce suspensions of silica which are fine enough to remain in virtually complete suspension for considerable periods of time. When cultures of acid-fast bacteria are being ground to a smooth paste, the tubes are lubricated by the bacteria and do not liberate perceptible amounts of silica. The amount that is liberated in the grinding of tissues is influenced by the amount of tissue (more tissue, less silica) and by the period of grinding. Best results are obtained with just enough fluid or material to fill the space between the tubes. For some purposes silica suspensions may be desired and for others they must be guarded against.

JOHN H. HANKS
LEONARD WOOD MEMORIAL LABORATORY,
CULION, PHILIPPINES

DENATURATION OF EGG ALBUMIN BY PRESSURE

BRIDGMAN'S[1] observation that the white of egg becomes coagulated by high hydrostatic pressure suggested that egg albumin is denatured by pressure. Late in 1939 and early in 1940 the writers made a preliminary study of the subject of the exposure of –SH linkages by high pressures to verify the effects of denaturation by pressure.

Twenty grams of Merck's impalpable powdered egg albumin were dissolved in 500 milliliters of water and the mixture dialyzed under toluene, filtered four times through a filter cell, twice through filter paper and stored finally under toluene. Ten cc samples were subjected to pressures ranging from 1,000 to 7,500 kg/cm², the samples being submerged under sterile mineral oil in the pressure chamber to separate from the pressure transmitting liquid. In every case the solutions were coagulated by the pressure treatment, the amount of coagulation becoming more copious the higher the pressure.

The exposure of –SH linkages was verified in two ways after the pressure treatment. Using the 2–6 dichlorophenolindophenol dye in the manner of Todrick and Walker[2] it was observed that the bleaching effect increased with the magnitude of the pressure used for the treatments. Some of the tests were made using the Kassel and Brand[3] modification of Folin and Marenzi's[4] technique. These also showed exposure of –SH groups. Circumstances did not permit further quantitative study of these interesting preliminary observations.

E. A. GRANT
R. B. DOW
W. R. FRANKS

BANTING INSTITUTE,
UNIVERSITY OF TORONTO
PENNSYLVANIA STATE COLLEGE

[1] P. W. Bridgman, *Jour. Biol. Chem.*, 19: 511, 1914.
[2] Todrick and Walker, *Biochem. Jour.*, 31: 292, 1937.
[3] Kassel and Brand, *Jour. Biol. Chem.*, 125: 115, 1938.
[4] Folin and Marenzi, *Jour. Biol. Chem.*, 83: 103, 1929.