amine in saline causes a significantly greater decidual reaction than intra-uterine injection of saline alone.

C. A. Finn
P. M. Keen

Department of Physiology,
Royal Veterinary College,
London, N.W.1.

Loeb, L., *J. Amer. Med. Assoc.*, **50**, 1897 (1908).
[2] Shelesnyak, M. C., *Amer. J. Physiol.*, **170**, 522 (1952).
[3] Shelesnyak, M. C., *Proc. Soc. Exp. Biol. N.Y.*, **100**, 380 (1959).
[4] Kahlson, G., *Lancet*, i, 67 (1960).

MICROBIOLOGY

Spherical Pseudomorphs in Aerosols of *B. lactis aerogenes*

During an investigation of bacterial aerosols formed by spraying from a suspension, a striking effect was observed which does not appear to have been reported previously. A small quantity of washed *B. lactis aerogenes* in distilled water was sprayed from an atomizer and the resulting aerosol passed through an evaporation tube to dry the organisms. Samples for electron microscopy were obtained with a thermal precipitator by direct deposition on to collodion-covered specimen grids. Instead of elongated bodies, spherical particles, the shape of which was verified by shadowing at 45°, were found (Fig. 1, above). The diameter of many of the particles was two or three times that of a sphere of the same volume as a given organism, and all particles were uniformly opaque with no sign of a cell wall. Similar shapes were found when sedimentation samples were taken, so the effect could not have been caused by heating during thermal precipitation.

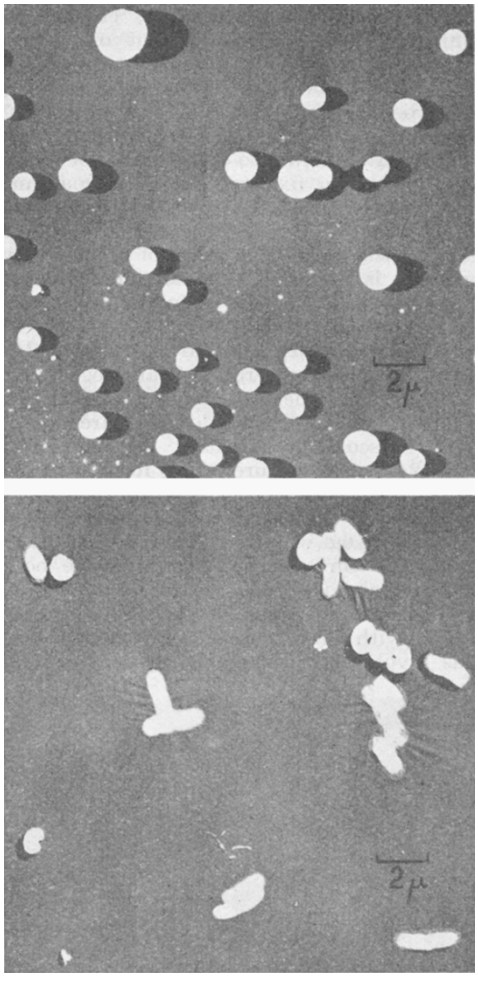

Fig. 1. Electron micrographs of *B. lactis aerogenes*. Above, dried organisms from atomizer; below, dried organisms after addition of drop of water

Attempts were made to regenerate the normal shape of the bacteria by exposure to a high concentration of water vapour; but these proved unsuccessful. However, when a small drop of water was placed on the particles on a grid, which was then allowed to dry before examination, particles in various stages of reversion to their normal shape could be seen (Fig. 1, below). It is apparent that the bacteria folded end-to-end when reaching the spherical shape, an effect which is almost certainly due to the predominant action of surface tension forces in the last stages of evaporation of the spray droplets. The larger spheres shown in Fig. 1 (above) are undoubtedly aggregates of organisms.

In another experiment, organisms were sprayed on to prepared grids so that the droplets impacted before much evaporation took place. Single organisms and closely packed aggregates were found, similar in appearance to bacteria dried on a surface from an aqueous suspension, but no spherical particles were present. It appears that complete evaporation before deposition is necessary for the bacteria to attain the spherical form.

Further experiments, in which spores (*B. globigii*) were sprayed, failed to produce any abnormal shapes.

J. M. Creasey

War Department,
Chemical Defence Experimental Establishment,
Porton Down, Wilts.

A Medium for the Axenic Cultivation of *Entamoeba invadens*

Cultures of *Entamoeba invadens* Rodhain, 1934, growing without other micro-organisms, were first obtained in media containing chick embryo or liver tissue[1-4]; these media were prepared under aseptic conditions as they could not be sterilized by heat or filtration. The presence of tissue cells raises some doubts as to whether these cultures should be designated axenic, as defined by Dougherty[5,6], and Diamond[7] attributes the first axenic cultivation of *E. invadens* to Stoll[8,9], whose medium contained particulate matter, but not living cells. Stoll's medium comprised a heat-sterilized liver extract together with sodium chloride, peptone and mucin, to which a Seitz-filtered liver extract was added aseptically. Diamond[7] has developed a medium free of gross particulate matter, but containing inactivated serum, presumably sterilized by filtration, which was added aseptically to a heat-sterilized, buffered solution of Trypticase, yeast extract, maltose and reducing agents. This medium supported the axenic growth of both *E. invadens* and *E. terrapinae* Sanders and Cleveland, 1930.

It was felt that a medium containing only heat-stable ingredients was desirable, as it could be sterilized in one stage, thus simplifying preparatory procedures and reducing the risk of accidental contamination. By progressive modification of Stoll's medium, I have obtained such a medium, which is