

teriological methods in the conduct of warfare, sending bacteriologists with each division, which has had the wisdom to recognize that *le General Microbe* would be for her a far more powerful ally than Czar Nicholas's *General Fevrier*, that from the experience of recent wars for every one Russian put out of action by shot, or shell, or bayonet, four would be invalidated by pestilence and, accepting the warnings and advice of the bacteriologists, has managed to much more than reverse these figures in her own army; that nation and the bacteriologists of that nation deserve our respect. It is a recent paper by Kitasato that I wish to bring before you. In this, with a wealth of statistical data, he has shown that the deaths from tuberculosis in Japan are just about in the same proportion to the total deaths and the total population as are the deaths from this disease in European countries. There is in fact a remarkable similarity in his tables, suggesting very strongly that the factors at work are identical. In the second place, though here I confess his data might be fuller, he shows that in those under 18 years of age the number of cases of evident primary intestinal tuberculosis is certainly not less, but on the contrary rather more than among Europeans and Americans, namely 30 per cent. of the total deaths from this disease, whereas in Europe of late there has been a rather remarkable consensus of observations giving the proportion at about 25 per cent. But, as I have already stated, it is usual to attribute these cases in early life to infection from cow's milk, while Von Behring goes so far as to attribute most human tuberculosis to this cause—the use of cow's milk in infancy. But now, says Kitasato, the use of cow's milk for feeding infants is unknown in Japan; if a mother is unable to feed her child a foster mother is employed. Singularly little milk is consumed in Japan and a careful calculation made from the total population, from the census of milch cows throughout Japan, and the average daily amount of milk yielded per cow, indicates that the individual Jap on an average consumes daily just about three quarters of a teaspoonful of cow's milk. Even in Tokio, the largest city, where most milk is consumed, the amount per individual works out to two and one-third teaspoonfuls.

Next it is shown that bovine tuberculosis is unknown among the native Japanese cattle, though by cross-breeding with imported European cattle they become infected. Experimentally, subjected to a severer test than is ever likely to occur in nature, a certain number can be given the disease. A few, very few, cases have been reported in which the disease has been notified as found in native cattle and this only in Tokio and Yokohama where most foreign cattle have been introduced and the so-called native cattle may have been of mixed breed; for, in accordance with Mendel's law a certain proportion of cross-breeds are likely to have