The Midwife.

"THE PROTECTION OF INFANTS AGAINST TUBERCULAR INFECTION."*

(*Abridged.*)

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The subject of our discussion, "The Protection of Infants against Tubercular Infection," seems to me like a mansion with many doorways—it is highly embarrassing to decide where to enter it, and it seems also somewhat uncertain at the outset where we shall emerge.

Perhaps we had better enter the subject with a reminder of the ubiquity of the tubercle bacillus among crowded communities.

Post-mortem and tuberculin tests alike show that but few living in towns remain uninfected with the tubercle bacillus after the age of fourteen years, and the proportion in country districts is not very much lower. Obviously infection cannot be avoided under modern conditions of life, and it might be asked why we should discuss here the protection of infants against tubercular infection which is sooner or later inevitable.

The answer to this must be that it makes all the difference in the world when and how the infection is first met—whether the organism is of the human or bovine variety, the pathway of infection, and whether the dosage—as regards virulence and quantity—is large or small. Here we are at once supplied with a series of important problems, none of which we can afford to neglect in a discussion such as this, and so I propose to take these points one by one and consider their bearing on our subject.

Incidence of Fatal Tuberculosis in Infancy.—At the outset let us convince ourselves of the dangers of tuberculosis in infancy, and this is but too readily done. If we study the Registrar-General's reports we find that the incidence of tuberculosis falls heaviest on children below the age of five years, that, indeed, there are many more deaths, per million living, in this five years than in any other age period of life.

The Age Factor.—How much of this susceptibility, it will be asked, is attributable to the influence of age, and this is a more difficult matter to decide than might appear at first sight. Practical experience of manifest tuberculous disease certainly teaches us that the younger the child the more serious the outlook.

The Virgin Soil Factor.—Even more important than age, however, in determining the peculiar susceptibility to tuberculosis in childhood is the fact that we are dealing with a primary as opposed to a super-infection.

We must, then, take into account two factors in the high mortality of infancy: the susceptibility of age, and the fact that the seed falls on virgin soil.

Human or Bovine.—We may now turn to a matter of great importance to the problem of tuberculosis prevention. It has been found that two varieties of the tubercle bacillus exist, the human type proper to man, and the bovine type proper to cattle, but undoubtedly able to infect humans. The former is certainly the more virulent to man, its own proper host, and is responsible for all forms of lung disease and most of the fatal tuberculosis of humans. The bovine bacillus is very virulent to cattle, but of low virulence to man, its activities being confined to the years of childhood, and mostly giving rise to mild and recoverable forms of disease in the abdominal viscera, or in the neck glands. Fatal generalized tuberculosis may occur, but is rare. Attempts to inoculate adults with the bovine tubercle bacillus have hitherto failed.

It may be said, then, that the human type of tubercle bacillus is that to be feared by man, the bovine bacillus being of but mild virulence to humans and only leading to disease, probably, when given in massive dosage and to young infants.

Pathway of Infection.—Closely associated with, indeed inseparable from, the consideration of human or bovine infection, is that of the pathway by which the germ enters; for bovine infection is of necessity alimentary, whereas the human type of bacillus is air-borne as dust or droplets, and may enter either the respiratory or alimentary tracts, or both. The importance of this is evidenced by the fact, well vouched for, that many hundred thousand times the dose is required for alimentary infection as suffices to cause disease through the respiratory apparatus.

Recapitulation.—At this stage it may be well to recapitulate some of our premises, so that

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