

TUBERCULOSIS AS A LOCAL AND CONTAGIOUS  
DISEASE IN NEW HAVEN.

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MORE than one-seventh of the human race die from tuberculosis. Dr. Salmon, estimating from census returns, placed the deaths from this cause in the United States for the year 1880 at 150,000.

Were such a number to die from any acute disease in one year, it would create a state of panic; but the stealthy, gradual progress of tuberculosis tends to prevent a true appreciation of the deadly role it ever plays in nearly every community. The attitude of the world on the subject has generally been one of resigned indifference.

The government of Italy at one time offered an exception to this rule. In 1782 tuberculosis had become so prevalent and virulent in the kingdom of Naples that a series of laws, intended for the restriction of the disease, were enacted.

The principal features were: 1. The compulsory notification by the attending physician of all cases coming under his care; 2. The destruction, after death, of the patient's personal apparel; and 3. The complete renovation of the dwelling. Ill-aimed and unscientific as were these laws, they wrought a great change. Dr. Lawrence F. Flick, who has studied this subject with great care, in considering the condition in Italy before the enactment of these regulations as compared with the present, writes: "It will not be overstepping the mark to place the mortality-rate from tuberculosis for the kingdom of Naples and Italy in 1782 at 10 per 1000 living. In 1887 the mortality-rate from all tubercular affections for all Italy was 1.29 per living 1000. Expressed in figures, the reduction in mortality from tuberculosis in Italy since 1782 ranges from 50 to 90 per cent."

The great loss and trouble incident to carrying out these laws led to their gradual abandonment and final repeal in 1860.

Although, during the seventeenth and eighteenth centuries, probably from 33 to 50 per cent. of the deaths in England were due to tuberculosis, English authorities were especially active in combating the theory of infection. The statistics of the Brompton Hospital for consumptives, by which it was shown that phthisis was exceedingly rare amongst the attending nurses and physicians, were very effectively used for this purpose. The favorite English theory was that of heredity.

The theory that consumption was contagious has never lacked advocates. But the indispensable, the connecting link was until very recent years lacking. When, at last, in 1882 Koch announced and demonstrated that the bacillus tuberculosis was the ever-present, ever-active agent, it became possible to join theory and fact.

First, it was shown, by the investigations of Koch, Tappeiner, Bollinger, Grancher and Cadeac, Malet and Naegeli, that the mere breath of tubercular patients did not contain the bacillus and consequently was not infectious. Secondly, experiments of Koch showed beyond all doubt that inhalations of vapor charged with cultures of the bacillus (23 cultures extending over fifteen months) were highly infectious. Still further, Cornet proved that the dried sputum of phthisical patients contained bacilli in large numbers, and that inhalations or inoculations of animals with the bacilli or with the cultures obtained from this source were highly infectious. And lastly, Schill and Fisher were able to obtain results with sputum which had been in a dried state for ninety-five days. De Toma, also, found that sputum, which had been kept dry at an average temperature of  $77^{\circ}$ , was infectious after nine months. And Gebhard asserts that sputum, diluted to the proportion of 1 : 100,000, is still virulent.

We shall not need to relate the many experiments and researches made in this field, but may accept as fairly proven the fact that the dried sputum is in a very large majority of cases the conveyor of the infection. And, further, that this infection generally takes place through the lungs.

Naturally, the gain of the theory of infection has been the loss

of the theory of heredity. The latter still has, however, many able advocates, and considerable statistical information has been collected bearing upon this point. Williams, in 1011 cases at the Brompton Hospital, found that heredity (parents only) gave 24 per cent. Polluck's 1200 cases (including parents, brothers and sisters) furnished 30 per cent. ; Colton's (same relatives) 36.7 per cent. ; and Fuller's 85 cases (including grandparents) also gave 59 per cent. These statistics are more or less vitiated by the fact that undoubtedly a large majority of the patients were brought up in an atmosphere infected by their parents.

As an offset to the Brompton Hospital observations concerning nurses, Cornet has brought forward the following: The vital statistics of the religious orders in Germany for the care of the sick show that out of a total number of 2099 deaths there were 1320, or 62.80 per cent. from tuberculosis. While for the whole German nation the tubercular death-rate for the ages from 15 to 20 was only 18.64 for each 10,000 living, for the nurses it was 116.96.

Among the nurses the proportion of deaths from tuberculosis up to the age of fifty years was 73 per cent. To eliminate a very serious element of error, which greatly vitiates the Brompton statistics, only those orders were taken whose term of service was for life.

Stick has also brought forward the following fact, bearing strongly against heredity. He shows that in the Nuremberg Orphan Asylum there had been but one death from tuberculosis in eight years; and that in the Munich Asylum, among 361 children, more than one-half of whom had lost father or mother, or both, from tuberculosis, there had been in twelve years but one case of that disease.

It has been pointed out by several writers that the fact that nearly all cases of so-called hereditary consumption are cases of tuberculosis of the lungs, instead of such organs as the liver or spleen, is very strongly against the theory of heredity.

It might be well, as our statistics deal with tuberculosis in a city, briefly to mention and illustrate the principal hygienic conditions favoring the development of the disease under such circumstances; for large cities are in general unhealthy. Thus,