

Dr. Ross states that "it should be noted that very little cotton is exported actually from Cairo itself, but that the majority is packed in the country districts and exported mainly from Alexandria." It is obvious from what has been said that very little infection of cotton occurs at the ports, and that the great danger exists from mild cases working in the cotton fields.

Under ordinary circumstances the disease is communicated by more or less intimate contact with an infected person, and there is little doubt in the case of this disease that fomites and infected materials are a source of danger, so that the mere handling or contact with such infected articles is sufficient to spread the disease.

Raw cotton, on account of its texture and organic nature, would no doubt constitute a suitable nidus for the organism of the disease. It is acknowledged that the "striking distance" and infectivity of smallpox is very great, probably greater than that of any other infection; but there is also evidence that the virus of smallpox becomes rapidly attenuated, and that infected material becomes entirely non-infective after a relatively short period. The time which elapses between the gathering of the cotton and its appearance at the mill, in the card-room, or in the spinning room, would probably be sufficient to reduce the infectivity of the material to a minimum and negligible quantity unless the infection was actually introduced *into the mouth* of a susceptible person.

I am inclined to the view that, although the imported raw cotton, containing, as it may, an occasional living attenuated organism of smallpox, may it be handled *en masse* without danger of infection by a large number of people, and in more detail by winders, reelers, splicers, doublers, and doffers, the only operatives who would be subject to infection in the manner I have indicated would be those in the blowing-room, the card room, or the spinning room.

If the cotton was so infective as to produce a case of smallpox by the mere handling, frequent epidemics would be inevitable in the cotton industry, and hence it is probable that all instances of smallpox occurring in operatives in the cotton trade are due to the accidental introduction of the attenuated virus from the raw cotton into the system by the mouth. The resistance of the individual has to be taken into consideration, more especially as very

many operatives in a cotton mill are unvaccinated and practically none of them revaccinated.

In considering how far the occupation as a cotton worker may have acted as a factor in causing the disease, the following facts have been shown to exist:

Smallpox was very prevalent in districts where cotton was gathered. Missed cases undoubtedly occurred among natives employed in the gathering fields. It is impossible to entirely avoid cotton becoming infected by the natives. The raw material from these districts is imported for use in mills in Lancashire, and certain employees working with this cotton contract smallpox, when no other possible source of infection can be ascertained, and when no other cases have occurred in the country. Thus, short of actually finding the organism in the infected material, which unfortunately at the present time is impossible, there is a complete chain of evidence showing that smallpox is conveyed from the native, gathering cotton in Egypt or in the States, to some employees in the cotton mills in England. Fortunately, the probability of accidental infection of smallpox arising from imported raw cotton is very small under ordinary circumstances, inasmuch as the coincidence of a number of contingencies is necessary for its occurrence:

(1) Infection during gathering and importation is guarded against as far as possible, and is therefore not of frequent occurrence;

(2) Considerable attenuation of infectivity in any infected material occurs before it is dealt with by the employee;

(3) With such reduced infectivity there is little chance of infection unless this is introduced directly to the mouth or inhaled;

(4) A person employed in piecing only occasionally uses the saliva as a means of facilitating the process, and the probability of the strands of cotton requiring to be pieced just at a point where a portion of infected material is situated, is small;

(5) It is necessary, for infection to occur, that the individual should be susceptible to the disease. This susceptibility, though greater with age, is not common in vaccinated persons, and practically non-existent in revaccinated persons.

Naturally the danger arising from raw cotton becoming infected with smallpox by natives suffering from the disease is not so