ISOLATION HOSPITALS AND SCARLET FEVER.*

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RECENTLY doubts have been raised as to the value of Isolation Hospitals in dealing with scarlet fever. It should be understood, however, that no attempt has been made to question their utility in dealing with small-pox, enteric fever, and diphtheria.

The case against the isolation of scarlet fever is based upon statistics which have failed to comply with the essential condition of *cæteris paribus*. The charges have obtained a wide hearing; the public have been told that "the infective sick are herded like dumb cattle in pest houses, miscalled Isolation Hospitals." It is advisable to examine the grounds for these charges, to seek the truth that is in them and the remedial steps that can be taken, so that we can avail ourselves of such benefits as isolation conveys without incurring its drawbacks. The case against the isolation of scarlet fever is that "statistics show that scarlet fever is, speaking generally, just as prevalent and causes as many deaths in towns and districts which have built hospitals and spent large sums of money in maintaining them as in those towns and districts which have spent little or nothing on hospitals. Statistics also show that scarlet fever is just as prevalent in towns since they have practised hospital isolation as it was before the practice was begun." The reply to this statement is, in the words of Sir Shirley Murphy, that "the statistical method is inapplicable," for the reason that other conditions bearing on the question are not the same in the groups compared.†

To explain why the statistical method is inapplicable we must bear in mind, as Dr. Fremantle points out, that "the more precise statistics show that the curves of this disease (scarlet fever) undergo a 30-yearly swell, a 5-yearly wave and a seasonal ripple."

A reference to the curve of monthly incidence of cases of scarlet fever in Derbyshire 1894-1906 shows the waves and ripples, and makes it obvious that any result can be obtained by making comparisons of districts in the trough period with districts in the crest period, that no statistics can be reliable until they have been obtained over a sufficiently long period to minimise the effect of waves, and

* From a Special Report to the Derbyshire County Council.

† Although the statistical argument is fallacious, if to minimise this difficulty the groups compared are made to include all available information, the figures taken relating to ninety-three towns with a total population over 10,000,000 show that the attack rate diminishes as the percentage isolated increases.—KAYE.

then only when the districts compared have experienced the same number of waves, and in other respects are comparable.*

There are other facts bearing on the prevalence of scarlet fever which are incapable of statistical presentment, such as social conditions, the general keenness of the medical officer of health and his committee, the efficiency of methods of disinfection, etc.

Then again, in these days of cheap transit the amount of infectious disease in a district does not depend alone on its own sanitary arrangements. In a neighbouring county borough, in which there is an isolation hospital, there was a wide-spread outbreak of enteric fever, traced to a single case in a Derbyshire district in which there was no isolation hospital ("the wrong cloth had been used to wipe a milk can"). Again, some 280 cases of scarlet fever in a London district, in which there is an isolation hospital, were traced to a case in the family of a milker in a Derbyshire rural district in which there was no isolation hospital. These are not isolated examples: the argument in favour of the isolation of the first cases in the rural districts is obvious—but if the statistics were available, although they might point the moral, "don't isolate," it is clear they would be misleading.

With regard to the comparison of the same towns before and after practising isolation, here again the comparisons must be over longer periods than are yet available, and the periods compared must have the same number of wave crests and troughs. The figures ought also to be expressed in rates per 1,000 children under 15. It must also be borne in mind that the density of population, the proportion of children attending elementary schools, are increasing, and would thereby tend to discount the beneficial effects of isolation.

If an attempt is to be made to express in figures the effect of the isolation of scarlet fever, the investigation should be made on the recognized lines of small-pox enquiries, and the attack rate should not be expressed in terms of the entire population, the bulk of whom

* As examples of these other conditions which invalidate the comparisons made, Dr. Kaye gives the following data relating to two towns (Preston and Warrington) which have been used to show the failure of the isolation hospital in the latter.

		Preston.	Warrington.
No. of persons per house	...	4'8	5'5
Proportion (per 1000) of houses with one or two rooms only	...	32	88
Proportion (per 1000) of population living in ditto...	...	19	58
Proportion (per 1000) of children under 10	...	239	270
Number of seats in schools per 100 scholars on register	...	150	107

might, as far as the infection is concerned, be living a hundred miles away, but *in terms of the population exposed to infection*.* Working on these lines Dr. Malet, of Wolverhampton, has collected the facts relating to 4,864 cases of infectable children living in 1,758 houses. He found that after removal to hospital 4·8 per cent of the remaining children contracted the disease, but that when the cases were left at home 28·2 per cent of the other children were infected.

But from the nature of infection no statistics are required to prove that secondary cases must be reduced in houses from which the first case is promptly removed to hospital. We shall not have the full benefit of the system until the whole country is isolating those cases which, if left at home, are a danger to the public health.

There are dangers in connection with isolation hospitals which must be clearly faced—and until we know more of the pathology of scarlet fever the steps to be taken to prevent “return cases” must err on the side of over-caution.

SEDIMENTATION IN THE PURIFICATION OF WATER.

TWO new reservoirs for the storage of water for supplying London were recently opened, one having a storage capacity of 480 million gallons, and the other of 718 million gallons. The provision of these two reservoirs increases the total capacity of the storage reservoirs for unfiltered water possessed by the Metropolitan Water Board to 8,884 million gallons. The Chairman of the Board quoted the following remarks of Dr. Houston, the Board's Water Examiner, on the influence of storage on pathogenic bacteria.

“The chief importance of storage lies in the fact that the micro-organisms of water-borne disease gradually die where they have to contend against the ordinary water bacteria in the struggle for existence. All the available evidence points not only to the practical inability of pathogenic bacteria to multiply in water, but also to the fact that their loss of vitality is only a question of time. If water is stored for weeks or months, the probability of any harmful bacteria surviving becomes excessively remote. Water stored sufficiently long (even if turbid or unpalatable) is in the light of present knowledge a water incapable of giving rise to epidemic disease. The aim of the Water Board is to render it practicable for every gallon of water to pass through a sedimentary stage before it is passed on to the filter beds, thus ensuring the safety of the water-drinkers.”

* Failure to recognize this is at the bottom of the statistical arguments of the opponents of vaccination.