

## THE INCUBATION PERIOD IN SCARLET FEVER.\*

By SIDNEY DAVIES, M.D., D.P.H.  
Medical Officer of Health, Woolwich.

THE incubation period of an infectious disease is the period between the exposure to infection and the commencement of symptoms. This period for scarlet fever has usually been considered to be from three to seven days, and it is often stated not to exceed seven days. In order to trace the source of infection and to take measures for the prevention of spread, it is very important to know how long the incubation may last. For this purpose I have been observing the intervals between the occurrence of first and secondary cases in the same house. If one child began with scarlet fever, say on the first day of the month, was at once removed to hospital, and the secondary case commenced on the seventh of the same month, it would be justifiable to conclude that the incubation period was six days. As a rule, however, the patient remains at home for several days before removal to hospital, so that it is only possible to give the period of incubation within certain limits, which may be called the maximum and minimum periods. I have got out the minimum incubation of 155 cases and the maximum of 296. In 76 cases (or 50 per cent.) the minimum incubation was from 1 to 7 days; in 40 cases (or 25 per cent.) from 1 to 4 weeks; in 31 cases (or 20 per cent.) from 5 to 12 weeks; in eight cases (or 5 per cent.) it was over 12 weeks.

Out of the 315 secondary cases the maximum period of incubation was from 1 to 7 days in 149 cases (or 48 per cent.); from 1 to 4 weeks in 99 (or 31 per cent.); from 5 to 12 weeks in 37 (or 11 per cent.); and over 3 months in 11 (or 3 per cent.).

\*Annual Report, 1910.

Of course it is impossible to say that the secondary cases were not exposed to other sources of infection, but it seems extremely probable that the first case was the source of infection in the great majority of them, and this conclusion is borne out by the rapid fall in the number of secondary cases occurring after the first four days' incubation, and especially after the first two weeks. It must also be remembered that both the primary and secondary cases may have been due to a common source of infection, especially as regards the cases in which the interval was under one week; and as regards cases where the interval was longer, there may possibly have been an intermediate case, *i.e.*, a child who, without having any symptoms recognised as those of scarlet fever, has taken the infection from the primary case and passed it on to the secondary case. But the occurrence of such missed cases only strengthens the opinion that a case of scarlet fever occurring in a house may be due to a source of infection which occurred several weeks before. It is now known that persons may carry the germs of diphtheria in their throat for weeks and months without showing any symptoms of the disease, and may occasionally after this long interval of time develop the disease. Probably the same is the case with scarlet fever, and if so it is not to be wondered at that the apparent period of incubation is in exceptional cases as long as six months.

It would appear, therefore, from the figures given (1) that the period of incubation varies from one day to six months; (2) that it is barely the majority of the total cases in which the incubation is under seven days; (3) that in a considerable proportion of cases it is over four weeks; and (4) that the days from the second to the fifth after exposure are those in which most secondary cases occur.

### SCARLET FEVER.—FOUR YEARS, 1905-8.

Minimum Incubation, *i.e.*, Period between Removal to Hospital of first case and commencement of second case.

No. of Cases ..	Days.							Weeks.				Weeks.				Weeks.				Months.	Months.	Months.	Total..
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	10	11	12	3 to 4	4 to 5	5 to 6	
	18	20	7	11	6	8	6	21	15	3	1	2	5	5	2	4	11	1	1	5	2	1	155
	76							40				14				17				5	2	1	

Maximum Incubation, *i.e.*, Interval between commencement of first case and commencement of second case.

No. of Cases ..	Days.							Weeks.				Weeks.				Weeks.				Months.	Months.	Months.	Total..
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	10	11	12	3 to 4	4 to 5	5 to 6	
	35	31	21	23	9	18	12	51	32	9	7	4	3	7	5	2	8	6	2	4	3	4	296
	149							99				19				18				4	3	4	