ON THE APPLICATION OF SERUM DIAGNOSIS TO THE INVESTIGATION OF THE ORIGIN OF EPIDEMICS AS EXEMPLIFIED BY THE MAIDSTONE OUTBREAK.

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It is a common experience that outbreaks of typhoid fever are not infrequently accompanied by the prevalence of cases which, as far as their clinical characters go, are simply diarrhoeas, and it has been surmised that these attacks of diarrhoea are in reality due to infection by the typhoid bacillus.

Obviously, it is of great importance that the question as to whether such cases are typhoid fever or mere diarrhoea should be settled by any means in our power, as it is otherwise impossible to trace with certainty the origin of an epidemic.

Professor Wright, with the aim of throwing light on this question, and believing, moreover, that in the serum test will be found a method of deciding cases of this nature, commissioned me to proceed to Maidstone and endeavour to establish the point. Attention was specially directed to this matter by the perusal of a special article in the *BRITISH MEDICAL JOURNAL*,¹ in which reference was made to a row of houses known as "Mill Cottages" at West Farleigh, where the occupants had suffered from diarrhoea, which the *BRITISH MEDICAL JOURNAL* Medical Commissioner suggested was in reality due to typhoid infection.

At "Mill Cottages," therefore, the first inquiries were made, and it was found that diarrhoea had been prevalent, as stated in the *BRITISH MEDICAL JOURNAL*. Samples of blood were taken from the persons said to have suffered from diarrhoea, and the serum was tested both in sedimentation tubes and under the microscope as to its reaction on typhoid bacilli. The following are the results of the examinations:

1. Mrs. C. had severe diarrhoea for a few days in August. Serum diluted 1 in 10 has marked reaction on the typhoid bacillus, but 1 in 50 has no reaction.

2. Mrs. M. had diarrhoea for two or three days in July. No reaction.

3. Mrs. G., twelve years in residence, used to have bad diarrhoea every hop-picking time, but for the last three years has been less troubled with it. No reaction.

4. Mr. C., twelve years in residence. Diarrhoea at this year's hop-picking not so bad as usual, but two of his children had it. Tested sera of husband, wife, and the two children. No reaction.

5. Mr. P., ten years in residence. All the family subject to colicky pains and diarrhoea in summer. The man himself was fourteen days on the sick list with diarrhoea in July and August of this year. Tested sera of husband, wife, and two children. No reaction.

6. Mr. C. Husband, wife, and one child had severe diarrhoea at intervals during two months this summer; the child was ill for five weeks. Tested sera of all three. Husband, marked reaction 1 in 10 dilution, but 1 in 50 no reaction; wife and child no reaction.

In the total of 14 cases examined, the result is negative in 12 cases and positive in 2 cases. The positive reaction, however, is not present in a high degree, and does not warrant, and at the same time does not negative, the conclusion that the diarrhoeas which occurred this year were due to the operations of the typhoid bacillus. There were severer cases of diarrhoea in the group which did not give the reaction. Moreover, the blood changes due to typhoid fever persist for a considerable number of years in some cases, and in people of the class under examination the records of disease are not very accurately kept.

Having completed the examination of "Mill Cottages," and having failed to get any positive evidence that the diarrhoea which had occurred there had any connection with the epidemic at Maidstone, and hearing at the same time that diarrhoea had been epidemic at another group of cottages which derived their water from the Farleigh supply, the inquiry was extended to these. Evidence was obtained that diarrhoea had been prevalent in this group of cottages at a period some

months antecedent to the epidemic. Examinations were made as follows:

1. Mr. C. Had to take to bed with diarrhoea and influenza for five weeks in April and May last. Wife and daughter also had diarrhoea badly about the same time. Tested sera of all three. No reaction.

2. Mr. Cr. Laid up for fourteen days with diarrhoea in April last, and was unwell for some time afterwards. Mrs. O. in the same house was very ill with diarrhoea for some weeks about the same time. Tested serum of the man only. No reaction.

The results in this group of cases are entirely negative, and we may deduce from this that these diarrhoeas had nothing to do with typhoid fever.

CONCLUSION.

The results of the examinations which have been detailed above show that it is unsafe, without a controlling bacteriological examination, to infer that cases of diarrhoea which occur either before or in the course of epidemics of typhoid fever are in any way cause or consequence of the prevailing epidemic.

THE LONDON ASYLUMS.

ADMINISTRATION.

THE eighth annual report of the Asylums Committee to the London County Council shows that the total number of pauper lunatics in asylums, workhouses, and with relatives and friends, under the care of the Committee on January 1st, 1897, was 19,954, which is an increase of 607, according to the previous annual return, but the Committee explain that they are aware there were some 40 or 50 lunatics who were, failing accommodation, waiting removal to asylums, and that the increase may fairly be put down as over 700. The Committee, however, come to the conclusion in a letter addressed to the Commissioners in Lunacy by Mr. Partridge, their Secretary, that occurring insanity has not increased so greatly out of proportion to the population furnishing it as appears at first sight.

The question of providing the necessary accommodation to cope with an increase of between 600 and 700 lunatics per annum is an exceedingly serious matter, and the Committee can see no prospect of any diminution in this number so long as the population increases as it is now doing. Much of the time of the Committee during the past year has been devoted to the question of accommodation, and strenuous efforts have been made to cope with the existing deficiency in beds. Unfortunately, not only has the present deficiency to be met, but the immediate future promises in three years an increase equal to the population of an asylum with 2,000 beds, so that by the time the Bexley Heath Asylum is finished there will be sufficient patients to fill both it and the Horton Asylum "about to be commenced." Having purchased the Horton Manor Estate of 1,060 acres at Epsom, the County of London is now in possession of several eligible sites on this one estate, and it is a question whether it would not be better policy to erect two asylums at once there rather than go tinkering on with temporary accommodation for a few hundred patients here and there, who will ultimately have to be permanently accommodated. The more speedily the deficiency in accommodation is overtaken the sooner will the present expenditure of from 38. to nearly 58. per head per week be saved upon the 1,126 patients who are now boarded out in the various asylums throughout the kingdom—a charge upon the ratepayers which, calculated at 48. per head per week, amounts to between £11,000 and £12,000 per annum. The weekly cost per head per week for patients chargeable to parishes and unions in the county remains at 10s. 2½d.

Clinical teaching is now provided at Colney Hatch Asylum, for the London School of Medicine for Women; for St. Bartholomew's at Banstead; Westminster at Cane Hill; and for St. George's at Hanwell.

The percentage of recoveries stands at 32.66, calculated upon the total number admitted.

THE PATHOLOGICAL DEPARTMENT.

Under this head, the Committee refer to the equipment of the laboratory, the establishment of a scholarship in neuropathology, and the appointment of two labora-

¹ Typhoid Fever at Maidstone, *BRITISH MEDICAL JOURNAL*, October 9th, 1897.