

Return cases of scarlet fever and diphtheria : reports and papers relative to the Board's inquiries / Metropolitan Asylums Board.

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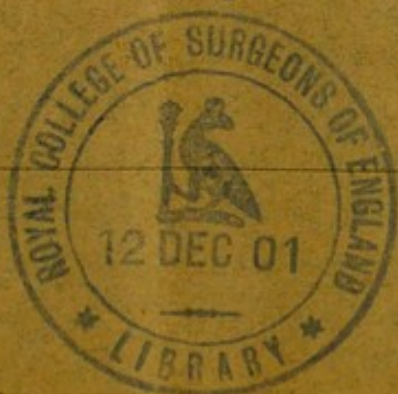
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Metropolitan Asylums Board.

RETURN CASES

OF

SCARLET FEVER AND DIPHTHERIA.

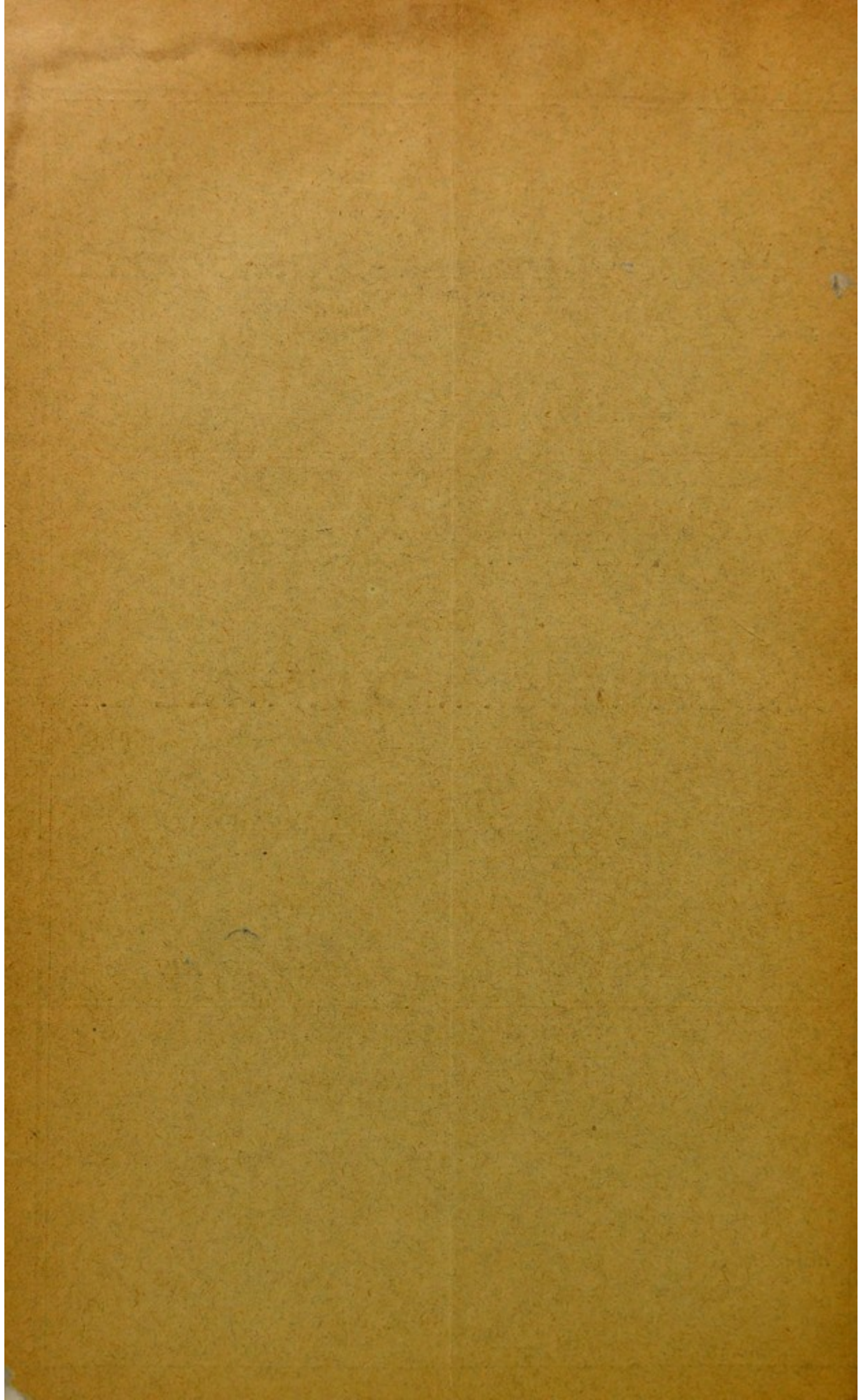
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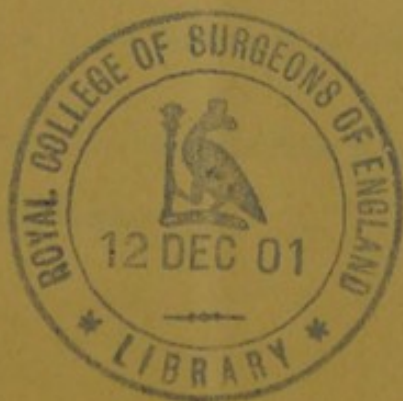
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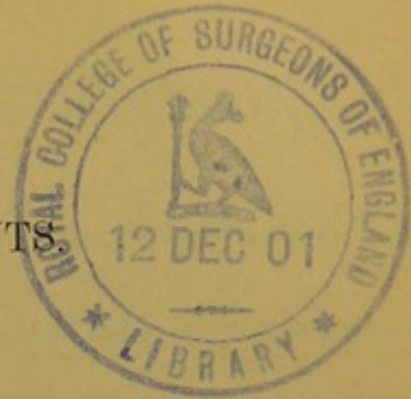


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RETURN CASES: INVESTIGATION.

Extract from the Board's instructions to W. J. R. Simpson, Esq., M.D.,
C.M., F.R.C.P., D.P.H. :—

*“ To investigate, on the Board's behalf, alleged ‘ return cases
“ of scarlet fever and diphtheria.’”*

30th July, 1898.

REPORT:

DR. W. J. R. SIMPSON UPON ALLEGED “ RETURN ”
FEVER CASES.

OCTOBER, 1898—MARCH, 1899.

5th June, 1899.

SIR,

I have the honour to submit the following report on the result of the investigation made by me under the instruction of the Board into all return cases of scarlet fever connected with their infectious hospitals that have been brought to my notice during the six months, commencing on the 1st of October, 1898, and ending on the 31st of March, 1899.

**The main
object of
the investi-
gation.**

The main object of the investigation was to trace, if possible, by a prompt inquiry into each case the probable source of infection of the return cases, in order that the information so obtained might be considered in its bearing on the duration of treatment of hospital cases, the return cases having been attributed to premature discharge.

For the purposes of this report all cases of scarlet fever and diphtheria occurring in a house within a month of the return home of a patient from the Managers' infectious hospitals have been considered as return cases, and have been inquired into.

**The cordial
assistance
given me by
the Medical
Officers of
Health and
Medical
Superinten-
dents.**

Before proceeding, I desire to acknowledge with very many thanks the cordial assistance I have received from the Medical Officers of Health and from the Medical Superintendents, who have been much interested in the inquiry, and who have, at great trouble to themselves, placed at my disposal a mass of valuable information. Many of the Medical Officers of Health have visited the cases in their districts along with me, and the inquiry has been a conjoint one. In those instances in which the Medical Officers of Health were unable, owing to other engagements, to accompany me, they have always placed the books at their office at my disposal, and rendered me every assistance.

Every primary case suspected of giving rise to secondary cases has been personally examined.

could be arrived at.

Difficulties in tracing the probable source of infection of the secondary cases.

Every case, with the exception of two or three that had gone direct into the country, returned from hospital, suspected of giving rise to fresh or secondary cases in the house, has been personally examined, and the mother or guardian of the child interrogated as to the circumstances connected with the illnesses of the secondary cases. This has involved much labour and expenditure of time, and has at times necessitated more than one visit. Frequently the results have not been commensurate with the time spent on the inquiry, for, even after the most searching examination, no satisfactory conclusions could be arrived at.

The class of people among whom these inquiries have often to be made are so little accustomed to accurate observation and remembrance of events, even the most recent, that they do not always inspire confidence in the accuracy of the history received, and this is accentuated if suspicions as to blame being imputed arises in their mind, which no assurance to the contrary allays. Again it is necessary only to observe what goes on among children in crowded localities to become cognisant of the variety of ways by which infection may be spread, if one of them happens to be infective. They play together in the streets, or gardens, or schools, or other places of resort, and come into the closest contact with one another. They kiss one another, place round each other their scarves, handkerchiefs, and jackets, lend each other their whistles, trumpets, and toys, while even the baby in the perambulator gets its share of caresses and attention. I find it to be the general opinion that much of the infection of scarlet fever is received in this way from mild or unrecognised cases, and it can readily be understood that infection of this kind is well-nigh impossible to trace to its source. It is only after very careful elimination that occasionally some positive facts can be obtained, and it is then only by numbers that errors are likely to be minimised. In order that some degree of uniformity in the material collected in each case might be obtained, I had the form in Appendix I. drawn out, which covers most of the sources of infection and of the circumstances connected with the household or house, and it is on the material thus collected and arranged, supplemented by the information sent to me by the Medical Officers of Health and the Medical Superintendents, that this report is based.

Favour in which the hospitals and hospital authorities are held.

General satisfaction caused by the inquiry into return cases.

There are two points which I have much pleasure in bringing prominently before the Managers' notice, and these are: firstly, the popularity of the hospitals among all classes with whom I have come into contact during these inquiries; and secondly, the general satisfaction that has been caused by the fact that the Board are making an investigation into these return cases. It has been the general and almost invariable rule during these investigations for the mother to voluntarily express her great satisfaction at the kindly treatment which her child has received from the doctors and nurses in the hospitals. This appreciation does not, however, prevent the parents from attributing the fresh cases arising in their house to the return of the primary case, and they are pleased that an inquiry is being made into their own special case.

Statistics. During the six months commencing on the 1st of October, 1898, and ending on the 31st of March, 1899, 9,782 cases of scarlet fever and diphtheria were discharged from the Metropolitan Asylums Board infectious hospitals. Of these 6,507 cases were scarlet fever and 3,275 were diphtheria. During the same period there occurred within a month in houses to which discharged cases were returned, 339 fresh cases of scarlet fever and diphtheria. Of these 253 were cases of scarlet fever and 86 were diphtheria. The following tabular statement gives the numbers discharged for each disease; number of primary cases discharged from hospital in whose homes fresh or secondary cases arose; number of fresh or secondary cases in houses to which primary cases were sent; percentage of primary cases on total discharges; and percentage of secondary cases on total discharges:—

DISEASE.	Total number discharged from hospitals.	Number of primary cases discharged from hospitals in whose homes fresh or secondary cases arose.	Number of fresh or secondary cases in houses to which primary cases were sent.	Percentage of primary cases on total discharges.	Percentage of secondary cases on total discharges.
Scarlet fever	6,507	193	253	2·9	3·8
Diphtheria	3,275	64	86	1·9	2·3
Total	9,782	257	339	2·6	3·4

There occurred at the same time in the districts of London, 13,955 cases of scarlet fever and diphtheria, so that the 339 secondary cases arising in houses subsequent to the arrival of primary cases discharged from hospital were equal to a percentage of 2·4 on the total number notified, or 2·8 for scarlet fever and 1·9 for diphtheria. The incidence of the secondary cases varied much in the 52 districts of London, or 51 districts if the Port of London be excluded, and the variations corresponded in some measure with the prevalence of the disease in the districts.

The greatest incidence was in Battersea, in which there were 56 secondary cases, representing 8 per cent. of the notified scarlet fever cases and 5 per cent. of the notified diphtheria cases in that district; and over 16 per cent. of the 339 cases in London arising in houses to which primary cases discharged from hospital had been sent.

Result of investigations into causes of secondary cases.

demonstrable.

Investigations into the 339 secondary cases disclosed the fact that they were not all due to the same cause and that, in many instances, they were in no way connected with the return of primary cases from hospital. They turned out to be coincidences, which in some instances were of a positive nature, while in others they were less

Coincidences positive and less positive.

The more positive coincidences were those in which (a) the secondary cases occurred immediately before the primary case returned home from hospital; (b) the secondary cases were of a different nature from the primary; (c) the secondary cases were traceable to outside infection or to an infection not caused by the primary case. The less positive kinds were those secondary cases in which there was no evidence to show any connection between the primary and secondary.

Secondary cases which on investigation were ascertained to have taken ill before the primary arrived home.

There were seven secondary cases which were ascertained to have taken ill before there was any possibility of contact between the primary case from hospital and the secondary case at home. Of these the following may be mentioned :—

- (a) Lily T. returned home from hospital, where she had been treated for scarlet fever for 45 days. Later, Ida and Dudley T. were reported as suffering from scarlet fever. On investigation, it was ascertained that Elsie, a cousin living in the same house, had been attacked with scarlet fever *one day before* Lily returned, and that the probable cause of Elsie's attack was infection from a mild case that had been kept at home and not sent to hospital.
- (b) Bessie and Helen L., sisters, returned convalescent from hospital, having been treated there 77 and 75 days for diphtheria. A few days afterwards Richard and William L. were reported as suffering from diphtheria. Inquiry elicited the fact that Richard fell ill *one day before* his sisters returned from hospital, and that he attended a school in which diphtheria was prevalent, some cases occurring in his class.
- (c) Harry G. returned convalescent from hospital after 51 days' detention in hospital for scarlet fever. A few days afterwards Winifred W. and Clara G., living in the same house, were reported as suffering from scarlet fever. On inquiry it was found that Winifred W. had been removed to hospital for scarlet fever *about half an hour before Harry arrived home.*

Secondary cases different in nature from the primary cases.

There were 18 secondary cases in which the disease that occurred in the house was of a totally different nature from that which the case discharged from hospital had suffered or been treated for, and evidence was not wanting to demonstrate that the disease was not brought home by the child. Of this class eight were diphtheria in houses to which primary cases convalescent from scarlet fever had returned, and 10 were scarlet fever in houses to which convalescents from diphtheria had returned. The following instances will serve as illustrations :—

- (a) Alfred G. was treated in hospital for diphtheria and was detained there 63 days; 17 days after his return home Lily G. was attacked with scarlet fever. The probable source of Lily's infection was from cases which occurred amongst children on the opposite side of the street.
- (b) Ada D. was treated in hospital for diphtheria and was detained there 120 days; four days after her return home she was attacked with scarlet fever. It was ascertained that on the day of her return she had visited and stayed at a cousin's house, where there had been a case of scarlet fever a few days previously.
- (c) Horace P. was in hospital for diphtheria and was detained there 44 days. Some time after his return, May P. was attacked with scarlet fever, and a few days later Horace was also attacked with scarlet fever, having caught the infection from May.
- (d) Frederick V. was admitted to, and treated in, hospital for diphtheria and was detained there 46 days; four or five days after his return, four of his

sisters were attacked with scarlet fever, the infection of which was probably received at a children's party.

- (e) Rose E. was treated in hospital for scarlet fever and detained 63 days; 11 days after her return, Emily E., her sister, was attacked with diphtheria. It was ascertained that diphtheria prevailed in the district, and that there were cases in the school that Emily attended.
- (f) Frederick J. was treated in hospital for scarlet fever, and detained there 75 days. Within 18 days of his return five persons in the house were attacked with diphtheria. But the history of the cases pointed to a source of infection quite distinct from that of Frederick, the diphtheria first appearing in a family who had suffered from the same disease the same time the year before. A notable feature of this case was the discovery of a pure culture of diphtheria bacilli in the throat of Frederick, which was evidently the result of living in the midst of an infected household. In this case the discovery of diphtheria bacilli in Frederick's throat gave no indication that he had infected the others, but rather that he had been infected by them.

Together, these two classes represent 7 per cent. of the 339 which have come under investigation, or an incidence on the houses to which the 257 cases were discharged of 9 per cent.

As regards source of infection, they obviously have no connection with the primary cases discharged from hospital. This is clearly so in both cases. Still, as a group they are particularly valuable in this inquiry in demonstrating that among the large number of cases of scarlet fever and diphtheria discharged from the Board's hospitals there will arise, within a short time in the homes to which they have been discharged, fresh or secondary cases of scarlet fever and diphtheria which are unquestionably coincidences, and which are in no way causally related as shown by the time at which the illness commences or by the difference in the nature of the disease, and as coincidences they are in no way causally related with the primary case discharged from hospital.

Secondary cases similar in nature to the primary cases. When the fresh or secondary cases are of the same kind as the primary the source of infection is more difficult to trace. Naturally, the primary case just returned from hospital bulks largely in every one's mind as the probable cause, and there is little hesitation on the part of the parents to attribute the secondary cases to that cause; but, even in these, inquiry not infrequently traces the infection to a different source altogether, or shows that there is no evidence to favour the view of there being any connection or, at least, throws considerable doubt on the assumed connection.

When the infection is derived from some other source than personal infection of the primary case discharged from hospital, it may be due to an infection which belongs to the house, or which is unconnected with the house, and is derived from the outside.

Secondary cases due to outside source of infection. There were 26 cases in which the probable infection of the secondary cases may be set down as due to outside infection. The following example will suffice to show the nature of these cases:—

- (a) Arthur D. was discharged from hospital after 63 days' treat-

RETURN CASES OF SCARLET FEVER

ment for scarlet fever; three days after his return home, Cecil, his brother, was attacked with scarlet fever. It was ascertained that the source of infection had not been due to Arthur's return, but to a cousin who played with Cecil one day before Arthur's return, and who was attacked with scarlet fever with the appearance of the rash on the same evening that Cecil had been playing with him.

Secondary cases due to house infection.

There were 20 secondary cases in which the probable infection was due to house infection. By house infection I include infected clothing, toys, dampness, drainage, and general insanitary condition of the house. They are as a rule difficult to separate, and may, I think, be best dealt with under the general term house infection.

As instances of infected clothing or toys the following may be quoted. The first represents a clear case of clothes infection without reference to the condition of the house:—

- (a) Henry L. was attacked with scarlet fever and sent to one of the Board's infectious hospitals 13 days after Leon, his brother, had been discharged from an infectious hospital outside the Metropolitan area, and not belonging to the Board. Eleven days after Leon's return his mother visited the hospital in which he had been treated, and fetched away the clothes which he had worn when taken to the hospital, the excellent system adopted at the Board's hospitals being evidently not practised in this suburban institution. The mother states that when she received the clothes they were wet, and appeared to have been worn by some other child, for the knickers smelt of urine and the tunic was dirty. The clothes were first of all taken by the mother to the grandmother's, where Elizabeth T., aged eight years, was living, and then they were taken home. Two days after the clothes were brought home Henry L. was attacked with scarlet fever, and three days after they had been for a few hours at the grandmother's, Elizabeth T. was attacked with scarlet fever.
- (b) Theodore W. was attacked with scarlet fever 16 days after the return of his sister from hospital, where she had been detained 76 days. On her return she remained in excellent health. For the first week she slept with two of her sisters, aged 17 and 7 respectively. The sister aged 7 was the delicate one of the family. Neither of these were attacked. Later Grace slept with Theodore. On the twelfth day after her return a dressed doll which Grace played with while in bed, and which was put away when she was taken to hospital, was brought out and played with by Grace and Theodore. Grace washed the flannel clothes of the doll and Theodore washed his face and mouth with the flannel clothes. Two days after this Theodore began to complain, and on the fourth day the rash of scarlet fever appeared on him.
- (c) Thomas P. and William L., members of different families, were attacked with scarlet fever 14 days after the return of Amy C., who belonged to a third family living in the same house. Amy C.'s three brothers and sisters, with whom she came much in contact, remained quite well. Eleven days after Amy's return, Thomas P. and William L. were permitted to go downstairs

and play with her, and, to amuse them, Amy's books and satchel, which she used when ill in bed, before she was taken to hospital, were brought out from a cupboard in which they had been lying since her removal to hospital. Three days after both children were attacked with scarlet fever.

In those cases in which the evidence points to infected clothing or other belongings as being the cause of the secondary cases, the history is generally that the article in question was worn or used by the patient when ill and was put away in a closed drawer, box, or cupboard at the time of the patient's removal to hospital, and was not disturbed until he or she returned home from hospital. Possibly this laying aside for a considerable time in a closed receptacle which is dark secures the infectivity remaining longer alive than would be the case if the infected article was left untouched in the room or exposed to the air.

On inspecting a house, even after a secondary case has been sent to hospital, and after the room and bedding have been disinfected, it is not an infrequent occurrence to come across dolls and playthings belonging to the secondary case stowed away, and it is only when the mother's attention is drawn to the possibility of such small articles retaining infection, that she becomes fully alive to the danger and is anxious to destroy them.

In connection with this part of the subject my inquiries have led me to the conclusion that, while great attention is paid, as a rule, to the disinfection of infected bedding, similar attention is not usually paid to the wearing apparel, toys, playthings, and belongings of the infected child and to the clothes which the mother is wearing whilst nursing the child. There are frequently difficulties in the way of carrying out this kind of disinfection on account of the articles being concealed and locked up prior to the visit of the sanitary authorities. On the part of the mother or guardian one common objection is the belief that disinfection will spoil the things. "I had everything disinfected that was of no value," and "I had not time to get out from the room even a petticoat before the disinfectors arrived," which were remarks made to me several times, express the fear of loss due to damage, and represent the estimation in which disinfection is often held by the householder.

Both represent a very common practice of concealment which effectually checkmates the intentions of the sanitary inspectors and reduces the usefulness of the disinfection which is carried out. At the same time I think more ought to be done to warn the people concerned of the dangers of the practice, and I feel convinced that if greater attention were paid to steam disinfection of clothes and other articles belonging to the child removed to hospital, fewer fresh cases would crop up on its return home. It is unsafe to rely on fumigation.

Secondary cases due to the house.

There were cases which came under observation that seemed to point to a close connection between the condition and surrounding of the house and the occurrence of the disease; such for example was the following:—

- (a) Ethel S. was attacked with scarlet fever and was removed to hospital, and after 100 days' detention she was discharged. She had no diphtheria in hospital: 12 and 15 days after her return home a sister was attacked with scarlet fever and a brother with diphtheria. The house is damp, the

carpets get green, and the boots become mouldy. Diphtheria was in the house at the same season of the year two years ago, as well as in the next house, while diphtheria and scarlet fever occurred in two neighbouring houses two doors away.

I have already mentioned on page 8 the T. case of scarlet fever, which occurred in the house a day previous to the return of the primary from hospital. In addition to the facts already given, the condition of the house, with the facts connected with it, are of special interest. The T.'s, who consisted of two families, cousins, came into the house in the early autumn, and in a short time two of the children, one in each family, were laid up with scarlet fever. One was taken to the hospital and the other remained at home. Six weeks after, and one day previous to the return home of the child that had been treated in hospital, another of the T. family fell ill, followed by two others, and five weeks later the sixth member of the family was attacked. I found the house to be damp, with a strong musty smell. This was stated to be due to a water-pipe having burst, and having flooded the foundations of the house in the early part of the year. A black coat, taken from a cupboard in the breakfast room, was quite green, and boots and other articles placed in cupboards downstairs were covered with mould. Mr. T., soon after his arrival in the house, was attacked with dysentery, from which he had never suffered before. It was ascertained that the previous owner of the house had had four of his children ill with scarlet fever in the late autumn of the year before; that they had all been treated at home, and that one had died.

There are other instances of a similar nature that I came across during the investigation, pointing to a clinging of the infection to a particular house and a periodical recurrence of diphtheria or scarlet fever at certain seasons.

Dr. Dudfield, the Medical Officer of Health for Paddington, informs me that in his district, reconstruction of the drainage and the removal of other insanitary conditions in houses in which scarlet fever and diphtheria recurred periodically had produced a remarkable diminution in the frequency of recurring cases.

In view of the information which the notification of diseases places in the hands of the Board as to the houses in London in which scarlet fever and diphtheria happen, I think that, by having this information properly indexed year by year, some very valuable and important facts might be obtained as regards the periodical incidence of these two diseases in the houses in the different districts, which would likely lead to practical local measures being taken to lessen that incidence, and thus ultimately diminish the number of cases requiring to be isolated.

Secondary cases in which no evidence pointed to any connection with primary case.

There were 52 secondary cases in which there was no evidence, either in the condition of the primary case or in the circumstances under which the illness of the secondary case took place, to show that the infection was connected with the return home of the primary.

Summary. Accordingly, 123 cases out of 339, or 36 per cent. of the cases which came under investigation in the six months, and which, previous to inquiry and analysis, appeared to be return cases, turned out after examination

not to be return cases, or, at least, furnished no evidence in support of them being return cases.

Between this large group of coincident cases and the remaining group there is a very small group which should be mentioned because it indicates that at times infection is received in the hospital itself.

Cases discharged from hospital attacked the same day by another infectious disease.

During the six months four cases came under observation in which the child discharged from hospital was attacked on the same day by another infectious disease, and in which the infection had been contracted in hospital immediately previous to the discharge of the convalescent.

- (a) On October 1st Louisa L. was discharged from hospital after 42 days' detention from diphtheria. She was unwell on her way home, and a rash appeared on her body on the same day, which was later diagnosed to be scarlet fever. In hospital there occurred in the ward from which she was discharged a small outbreak of scarlet fever, which the superintendent attributed to the admission into the diphtheria ward of a masked or unrecognised case of scarlet fever.
- (b) On January 21st Rebecca L. was discharged from hospital after 91 days' detention, convalescent from diphtheria. She was unwell on her way home, and the rash of scarlet fever appeared in 45 hours after discharge from hospital.
- (c) On February 24th Elizabeth S. was discharged from hospital after 106 days' detention for scarlet fever. She was ill on her way home, the illness developing into diphtheria.
- (d) On March 23rd Jessie W. was discharged from hospital after 29 days' detention for diphtheria. She was sick on the way home, was ill all night, and the scarlet fever rash came out the next morning.

No doubt there are various reasons for these cases, but possibly the most important is the meeting of nurses at meals and on other occasions. The fact of such cases occurring and their investigation would likely throw considerable light on those cases of post-scarlatinal diphtheria and post-diphtheria scarlatina occurring in hospitals which are not due to the patient suffering from the two diseases on admission.

The remaining 212 secondary cases divided into three classes.

The remaining 212 secondary cases are those which chiefly concern this inquiry, to which attention has particularly to be directed. They are of themselves a composite group, and may be further sub-divided into three classes.

Class I.—Cases of a doubtful nature in which it is impossible to decide whether the infection was caused by the primary case or not.

These amount to 36.

Class II.—Cases in which it is impossible to dissociate infected clothing, &c., or house infection from personal infection. There are 17 of these.

Class III.—Cases which are probably due to personal infectivity of the primary case. These number 159.

RETURN CASES OF SCARLET FEVER

By placing these three classes together probably an exaggerated estimate is obtained of the number of return cases, while by taking the third class alone, which consists of cases in which the evidence is strong that they are true return cases, the number is likely to be somewhat under-estimated. In the one case the percentage of return cases on the total number of scarlet fever and diphtheria notified is 1·6, and on the discharges from hospital 2·2, while in the other case it is 1·1 and 1·6 respectively.

The number and percentage of primary cases giving rise to secondary cases.

Primary infective scarlet fever cases are more than twice as numerous as diphtheria cases.

and even for

Percentage of primary infective cases for each hospital.

If the primary cases, giving rise to the secondary cases, be considered from this point of view, then the three classes include 145 primary cases, which is equal to 1·3 on the discharges, while that class in which personal infection alone is the evident cause gives 111 cases, which is equal to 1·1 per cent. of the discharges. Of the 111 cases, 90 were scarlet fever and 21 diphtheria, which on the discharges of each is equal to 1·3 and ·5 per cent. respectively, that is, the scarlet fever cases which give rise to return cases are proportionately more than twice as numerous as diphtheria cases which give rise to diphtheria return cases. This favourable position of diphtheria is maintained notwithstanding the fact that diphtheria cases are retained in the hospital a much shorter period than those of scarlet fever, and though it has been proved that in many instances the diphtheria bacillus continues to be found in the throat of cases retained for a long period, and even for months while the patient remains in hospital.

The incidence, as shown by the percentage of the 111 primary cases on the several hospitals on the number discharged from each hospital, is as follows:—

South-Western.	Eastern.	South-Eastern.	Park.	Northern.	Western.	Fountain.	Gore Farm.	North-Western.	Brook.	North-Eastern.
0·5	0·6	0·8	0·9	1·0	1·1	1·1	1·2	1·2	1·3	1·3

The numbers dealt with are necessarily small on account of the short time during which the inquiry has continued, and they must, therefore, be accepted with a certain amount of caution, for, possibly, a longer period and larger numbers, such as 1,000 instead of 100, might show those hospitals which present the highest percentage in a much more favourable light. As the figures stand, the South-Western, the Eastern, the South-Eastern, and the Park send out by far the fewest primary cases that give rise to secondary cases. The Northern, Western, and Fountain occupy an intermediate position, and the North-Western, Gore Farm, the Brook, and the North-Eastern occupy a more unfavourable position. I have not entered into the cause of this variation, because, for the reasons given, it would be premature with the material that is available. Such an investigation requires a firmer basis. In the meantime it can only be said that the subject deserves attention. If an opinion may be hazarded on such slender data, it may be stated that the variation does not appear in any way to be connected with shorter detention of the patients in the hospitals concerned, for the Brook, North-Eastern, and the Western, which detain their patients the longest, do not occupy so good a

position as the Eastern and the Park, which detain their patients the shortest period, while Gore Farm and Winchmore Hill, the convalescent hospitals, contribute as large a percentage of primary cases giving rise to secondary cases as most of the other hospitals.

The condition of the primary infective cases.

The condition of the primary cases giving rise to infection and the circumstances under which infection takes place are now to be considered. Desquamation of the skin is usually considered to play an important part in the spreading of infection, but in this inquiry only 2·7 per cent. of the cases could be attributed to desquamation of the skin or eczematous eruptions. On the other hand discharges from mucous surfaces were frequent, 37·9 per cent. of the cases presented a discharge from the nose, 4·5 per cent. a sore nose, 12 per cent. a discharge from the nose and ears, 17·1 per cent. colds in the head with running at the nose, and 6·3 cold in the chest with expectoration. The colds in the head were frequently accompanied by an unhealthy condition of the throat and swollen glands. But apart from colds, 9 per cent. of the cases presented an unhealthy state of the throat and swollen glands, 2·7 per cent. of the cases appeared to be relapses, all being diphtheria, and 2·7 presented a perfectly healthy appearance, all being scarlet fever.

At least 80 per cent. of the primary infective cases connected with discharges from mucous membranes.

The remarkable fact in this analysis of the condition of the primary cases suspected of having caused secondary cases is that 80 per cent. had discharges from the mucous membranes chiefly of the respiratory tract, and 9 per cent. showed an unhealthy condition of the throat with corresponding secretion. The analysis for each disease is given in the following table:—

DISEASE.	Discharge from Nose.	Sore Nose.	Discharge from Nose and Ears.	Desquamation of Skin and Eczematous Eruption.	Unhealthy Throat and Swollen Glands.	Colds in Head.	Colds in Chests.	Relapse.	Healthy.	Other Causes.
Scarlet fever (90)	36	5	13	3	7	15	5	0	3	3
Diphtheria (21) ...	6	0	1	0	3	4	2	3	0	2
Total ...	42	5	14	3	10	19	7	3	3	5
Percentage ...	37·9	4·5	12·0	2·7	9·0	17·1	6·3	2·7	2·7	4·5

It will be seen that the discharges from the nose, both in scarlet fever and diphtheria, form a very large percentage of the cases that are probably infective. In scarlet fever the percentage is as much as 40, and in diphtheria 28.

The bacteriological test applied to diphtheria.

For scarlet fever no bacteriological test can as yet be applied as a test to gauge the accuracy of these results. It is different in diphtheria, though the presence or absence of diphtheria bacilli has even to be accepted with a certain amount of caution, for I have shown, in one instance at least, in these investigations that the presence of the diphtheria bacillus in the primary case was probably due to living in an infected home, and that which may occur in one instance may occur in others. There is also the fact that the examinations in this inquiry are necessarily made at least a

week or more after the primary case has returned home, and in all cases after diphtheria has occurred in the house. With these reservations borne in mind, it is interesting to note that of six primary cases of diphtheria with discharges from the nose, five of them were examined bacteriologically, and in four out of the five discharges the diphtheria bacillus was found; in three out of the four presenting colds in the head, there were diphtheria bacilli either in the throat or nose; while in the two which suffered with cold in the chest no bacilli could be found. The figures are small, and it is therefore with some hesitation that I use them; but so far as they go they favour the view that it is in the mucous discharges that the infectivity of diphtheria lies, and similarly it may be surmised that the infectivity of scarlet fever is in these discharges.

Warm baths in these cases do not remove the infection.

If these conclusions are correct, it must be apparent that baths given immediately before the patient is discharged, however effective they may be in removing the infection in other cases, are not and cannot be effective in the primary infective cases dealt with in this report.

Warm baths in these cases immediately before discharge from the hospital seem to be followed by injurious results.

In fact a warm bath immediately before discharge from the hospital and under the conditions which obtain in winter in this country has apparently, in the cases which I have investigated, especially in the more delicate and weakly children, aggravated or revived the infection. The warm baths and exposure to the vicissitudes of the weather have seemingly brought on a rhinitis or otorrhœa, which was cured or masked or in abeyance in hospital, or it has given the child a severe cold in the head or chest, with the likely result that the serous discharges provided favourable culture media for the revival of the virulence of dying or but slightly infective microbes. In the appendix

No. 3 there are numerous instances of this kind, and it will be noted that these discharges start, as a rule, a day after the arrival home of the child, who has been sent from hospital in good condition; one or two cases have ended in bronchopneumonia.

There is one instance I shall mention, because it points very clearly to the possibility of the revival of infection. It is a case of relapse.

A relapse probably due to cold.

Nellie T., aged $4\frac{1}{2}$ years, returned from hospital after 90 days' detention for diphtheria. The day was boisterous, and on her way home it came on to rain, and as she and her mother had to walk a long distance, Nellie got very wet. That night Nellie complained of her throat, which gradually got worse, and in eight days she was sent to one of the Board's infectious hospitals with another attack of diphtheria.

The primary infective cases are not those which have been discharged early from hospital.

Of the infective primary cases, it is not those which have been discharged early that form the majority. The diphtheria cases are detained a much shorter period as a rule than the scarlet fever cases, yet amongst the subject of this report 57 per cent. were detained over eight weeks. Of the scarlet fever cases, no fewer than 87 per cent. were detained in hospital eight weeks and over, of which 32 per cent. were detained eight weeks and under 10 weeks, 25 per cent. 10 weeks and under 12, 15 per cent. 12 weeks and under 15, and 13 per cent.

15 weeks and over. Of these latter, there were three over 18 weeks, one over 20 weeks, one as long as 21 weeks, and one over eight months.

**Examples
of long
detention.**

It will be useful to draw attention to the circumstances connected with some of the cases detained in hospital a long period :—

- (a) Charles W. was discharged from one of the convalescent hospitals after a detention of 147 days. His mother states that a day previous to his discharge he had some teeth drawn. The day he came out of hospital was cold and wet, and by the time he got home the gums on the side from which the teeth were drawn were much swollen. On the third day of his return he had ear-ache and a swollen face. His sister was attacked with scarlet fever five days after his return. Two explanations suggest themselves: either that the child was temporarily re-infected by instruments in an infectious hospital, or that he was not entirely free of infection, which was revived in potency by the condition of the mouth and exposure to the inclemency of the weather.
- (b) Leonard P. was discharged from one of the convalescent hospitals after a detention of 129 days. He was in a weak condition, and when seen was in bed ill. His mother thinks he caught cold after his return home: there was blood in his motions, and when his nose was blown there was a thick, yellowish discharge. He slept with his brother the first night, but being ill, was placed in a bed by himself the second night. His brother was attacked with scarlet fever on the fourth day.
- (c) Florence D. was discharged from one of the convalescent hospitals after a detention of 240 days, or over eight months. She suffered from otorrhœa while in hospital. Two days after return home she showed symptoms of cold in the chest, the otorrhœa again started, and within a few days her four sisters were attacked with scarlet fever.

**Instance of
infectivity
after eight
months'
detention.**

**Mere
duration of
detention
in hospital,
no standard
or guar-
antee as to
freedom of
infection.**

**The
discharge
from
mucous
membranes
on which
infection
has been
sown the
carriers
but not the
causal
agents of
infection.**

In this last case eight months' detention appears not to have been sufficient to free the child of infection, and the question arises if eight months are not sufficient, what period would be? The investigation has impressed me with the view that time alone is not the standard by which the duration of infection can be gauged, and that these and similar cases do not represent an infection belonging *per se* to the patient, but rather an infection attached to the surroundings and engrafted on the patient. This engrafting when effected appears particularly to acquire activity on the discharges, acute or chronic, of a mucous membrane which probably form suitable media for the growth of the causal micro-organisms. But further than acting as suitable media and carriers for any possible infection that may come in contact with them, the discharges do not appear to possess infectious properties of themselves. The cases are not sufficient to establish this view on a firm basis, but the following serve to strengthen this opinion:—

- (a) Annie A. was in hospital for 77 days, and was discharged from the convalescent hospital in a healthy condition. She had no complications during her illness. Twenty-six days after her return a case of scarlet fever occurred in the house, which appeared to

- have no connection with Annie. Ten days after this case was removed to hospital, and 36 days after Annie's return from the convalescent hospital, *she was affected with a thick yellowish discharge from the ear, which apparently was not infectious, as it did not affect the two young children she was sleeping with.*
- (b) Ellen and Amelia W. were detained in hospital 63 days. Amelia had a little blepharitis when in the convalescent hospital, but was quite well three weeks before she was sent home. Eleven days after her return the brother was attacked with scarlet fever, the history pointing to the source of infection being from another cause. *Eight days after Amelia's return she began to have a discharge from the nose, which continued profuse for 11 days; and though she slept with two other sisters, aged respectively 9 and 4 years, who had never had scarlet fever, neither was affected.* There were also four other brothers and sisters, none of whom were attacked.
- (c) Ernest M. was detained in hospital 78 days, having had no complications. Eleven days after his return a brother was affected, the cause of which appeared not to be due to Ernest. *Three days after the brother's removal to hospital Ernest had a discharge from the nose, which, though it continued for a few days, did not infect three other children in the family, aged 12, 10, and 3 years respectively.*
- (d) Israel B., aged 1 year, was detained in hospital 57 days. Nine days after his return there was a case of scarlet fever in the house in another family, and no connection could be traced to Israel. *Two days after the removal to hospital of the fresh case, Israel had a profuse discharge from his ear, which continued several days, and though he was nursed by his sisters, aged 8 and 10 years, and they slept in the same room with him, neither had scarlet fever.*

The discharges appear to be no longer carriers of infection after the primary case has been some time at home.

These instances appear to indicate that the discharge, when it comes on ten days or more after removal from an infectious hospital, possesses no active properties of infection.

This seems to be supported by the noticeable fact that, even in those cases in which the infection is most probably due to discharges from patients but recently returned from infectious hospitals, the infection is as a rule rapid and sharp, one or more of the family—in the majority of the cases only one—is infected almost at once, and though the discharge continues, as it sometimes does, and there are other susceptible children in the house and family, no more are attacked.

This would favour the view that the infectivity of the discharges was soon lost when at home, whereas in hospital they appear to retain it for very long periods. In those cases in which the diphtheria bacillus remains for a long period in the discharges of the throat, experiments might be made to ascertain whether removal of the patient from the ward and isolation in a non-infected room has any effect on the disappearance of the bacillus. The explanation of finding diphtheria bacilli so long after the acute attack in cases of diphtheria that have been detained in hospital for periods of four, five, and six months, may be residence in an infected ward. There is probably every now and then a re-infection, just as in the case of

nurses in whom the diphtheria bacillus has been found without producing in them an attack of diphtheria. The potentialities are there in the throat which, under favourable conditions, will produce diphtheria. In the nurse they are not connected with any previous sickness, and, according to this view, the diphtheria bacilli found in a patient in an infectious hospital need not necessarily be connected with the original illness of the patient. In this connection it may be noted that a number of the cases of scarlet fever admitted from Battersea during the time that diphtheria was particularly prevalent there had diphtheria bacilli in their throat. Even chronic discharges before admission to hospital for scarlet fever seem to take on infectivity when in hospital, and though the patient may be discharged in a perfectly healthy condition in every respect except the chronic discharge, yet the discharge acts as a carrier of infection. It was not within the scope of this inquiry to make a comparative biological examination of the dust, towels, &c., in the wards of the hospitals and convalescent hospitals, which would assist materially in determining this and other kindred questions; accordingly, in the absence of this information, it is necessary to fall back on what is already generally known. It has always to be borne in mind that the hospitals, when full of infectious cases, and even when only fairly full, are likely to have the objects or articles in the ward in an infective state. The sputum of the patients, the saliva, the discharges, the desquamating skin, attach themselves to the beds, floors, towels, clothes of the patient and nurses, &c. The infectious material alighting on these objects does not at once die, and when the room is swept, and the clothes shaken or brushed, the dust at times, at least not improbably, contains infective matter in an active condition. The organism of scarlet fever being unknown, we must take the diphtheria bacillus to illustrate this aspect of the question. It is known that this bacillus when dried will remain alive under the conditions I have mentioned. In support of this statement I shall quote a passage given by Weichselbaum, Professor of Pathology in Vienna, given in his recent book on Parasitologie, p. 195. He says:—

Articles in the wards of an infectious hospital likely to be infective.

“ Pure cultures of the diphtheria bacillus, dried on silk, have remained alive—

- (a) In a room, three to four weeks.
- (b) In a desiccator, five to ten weeks.
- (c) In desiccator, in the dark, 189 days.

Gelatine cultures in the dark have remained alive after 331 days. Dried membranes, nine to 14 weeks (Loeffler); three to five months (Roux); four months (Dr. Park).

The living bacilli have been found on towels, clothes, shoes, toys, and other objects belonging to a diphtheria patient, also on walls and floors of sick rooms.”

The small percentage of infective primary cases a splendid testimony to the administration of the hospitals.

That under such circumstances and difficulties to be overcome, only 1·3 per cent. of the patients discharged from hospital should be infective is the best eulogium on the splendid administration of the infectious hospitals of the Board.

Can this percentage be reduced? The question is, can this percentage be reduced, and, if so, in what manner? One thing is certain, it will not be reduced by sending more to the convalescent hospitals. They do not share any greater immunity from primary infective cases than the other hospitals, and if the cases are now sent there with the object of freeing them from infection, this object is not attained in a better degree than in the other infectious hospitals of the Board.

Convalescent hospitals do not reduce it. There are other reasons no doubt for the children being drafted to the convalescent hospitals, such as making room for the more acute cases, and giving the children the benefit of the country air, by allowing them to get out on the grounds of the hospital. This latter object is, however, considerably nullified in the winter, at a time when the pressure on the hospitals must be great. Nor is the percentage likely to be reduced by detaining the patient in the hospital for longer periods. Whatever other reasons there may be for long detention in hospitals, the information available is against its reducing the liability to personal infectivity, which a very small number of the patients discharged from an infectious hospital possesses.

Longer detention in hospital is not likely to reduce it.

The information, it must be confessed, is meagre, for the numbers dealt with in this report are small, and it is desirable that further investigation should be made in this direction. It is therefore with a certain amount of reserve that an opinion based on such evidence can be given, but the trend of that opinion is in favour of the view that the largest number of primary infective cases are among those who are detained in hospital the longest, and that nothing is gained from the point of view of securing freedom from infection by detaining cases in hospital, or in the convalescent homes for such long periods as is the practice in the Board's infectious hospitals. The percentage of infective cases on the discharges at several periods from the Board's nine infectious hospitals is as follows:—

Periods.		Scarlet Fever.	Diphtheria.
4 weeks and under	6 weeks	1.9	0.3
6 "	" 8 "	1.0	0.6
8 "	" 10 "	1.5	0.4
10 "	" 12 "	2.0	1.2
12 "	" 15 "	1.1	0.4
15 "	and over	2.5	0.0

For the convalescent hospitals I have only the figures of Gore Farm. For scarlet fever the figures stand as follows:—

Period of Detention.	Number of Discharges.	Number of Primary Infective Cases.	Percentage.
Under 2 weeks	2	0	0.0
2 weeks and under 4 weeks	45	0	0.0
4 " " 6 "	128	0	0.0
6 " " 8 "	247	0	0.0
8 " " 10 "	403	3	0.7
10 " " 12 "	390	4	1.0
12 " " 15 "	331	7	2.1
15 " and over	114	4	3.5

One case of scarlet fever complicated in hospital with diphtheria caused fresh cases of diphtheria on return home after having been at Gore Farm for 20 weeks.

There are differences in the average length of detention in the several hospitals of the Board, especially for scarlet fever. This may be seen by the following table, which gives the percentage of scarlet fever cases discharged at different periods:—

	Eastern.	South-Eastern.	North-Eastern.	Park.	Western.	North-Western.	Fountain.	South-Western.	Brook.
4 weeks and under 6 weeks	10.0	1.2	1.2	3.1	0.3	8.3	3.6	2.9	0.9
6 " " 8 "	35.5	29.0	22.1	34.0	4.4	29.6	16.2	25.7	3.7
8 " " 10 "	22.7	32.4	29.5	31.9	27.3	29.6	37.4	24.9	27.4
10 " " 12 "	13.8	18.1	17.3	15.9	28.7	18.6	22.5	19.1	27.4
12 " " 15 "	12.2	13.8	23.0	11.1	20.2	7.2	15.1	19.1	32.1
15 " and over ...	5.0	5.1	5.9	4.1	19.1	4.6	4.9	8.1	8.0
Percentage of primary Scarlet Fever infective cases ...	1.1	1.7	1.3	1.3	1.6	1.5	1.3	0.8	2.1

It will be seen that the Brook retains 40 per cent. of its scarlet fever cases for 12 weeks and over, and the Western 39 per cent. of its cases, yet they are not freer of primary scarlet fever infective cases than the Eastern and other hospitals which discharge their cases earlier. These figures would indicate that return cases are not due to premature discharge, are not to be lessened by long detention in hospital, and bear little relationship to the duration of treatment.

Part of the remedy probably lies in special classification and isolation of these particular cases combined with local treatment.

If it is the case, as indicated by the results of this inquiry, that in the vast majority of infectious cases the infection lies not so much in the skin as in the discharges from mucous membranes or eczematous patches or sores on the head and body, it is very likely that part of the remedy lies in special classification and isolation of these particular cases combined with local antiseptic treatment, and that the baths in these cases and in weakly children immediately before being sent home, especially in winter, should be omitted, and a bath the night previous to discharge be substituted. This would involve a discharge ward, in which these special cases would remain for the night in a non-infected bed preparatory to going home the next day. I am not prepared at the present stage of this inquiry to make this a special recommendation. There may be difficulties in the way which I have not foreseen, or there may be better means devised for accomplishing the same object, but I think it a very important matter to draw particular attention to the fact that, with local antiseptic treatment and transference to less infective wards, it is likely that these cases could be sent out as early as the ordinary cases, and that the warm baths and exposure to bad weather have an injurious effect on a child predisposed to a rhinitis, otorrhœa, or other scarlatinal complication. It is possible that local treatment alone accounts in some measure for the fewer return cases of diphtheria.

There are other questions connected with the classification of these cases into which it would be important to enter. One of these is whether the rhinitis and

otorrhœa occurring in infectious hospitals is propagable to other patients suffering from a mild form of disease, and whether septic or more severe types cannot in this way be produced. This, however, must lie over.

Precautions necessary at home. Another precaution might be applied at home. It is a very frequent occurrence, as will be seen in the appendix No. 3, for the child to sleep with brothers and sisters on the first night of its return home from hospital, and the close relations which this implies mean a certain amount of risk, which, under ordinary circumstances, need not be incurred, for it is, as Dr. Caiger says in one of his reports, an impossibility to sterilise a human being by passing him through a disinfector as one does his clothes; and accordingly, though the child has been placed under the best conditions to free him from infection, there is no absolute means of being certain beforehand that the freedom is complete, and therefore the placing of the child in bed with another is a severe and wholly unnecessary test, which should, under the circumstances, be avoided.

Medical Officer of Health should be notified as to discharge of patient, or printed instructions given to parents or guardians. It would therefore, I think, be well if the Medical Officer of Health of the district to which the child is about to be discharged was notified of the fact, for either he or his assistant could advise the parents or guardians as to the precautions to be taken. Failing this, I think it very desirable that every parent or guardian, on the discharge of the child, should be furnished with printed instructions as to not allowing it to sleep with other children for at least a fortnight. The instructions, in a minority of cases, would be disregarded, but I am satisfied, judging from my recent experience, that in the large majority of instances mothers or guardians would endeavour to give effect to them—in fact, I find it a general complaint that no warning was given them not to let the child sleep with others, or to kiss and fondle and use the same playthings. In regard to the infection, it appears to be a matter of dosage, and if the children sleep together the largest dose is received in the shortest time. In cases where the family live in one room, it would be an advantage for the child, on removal from the infectious ward, to be isolated a week or 10 days. In a case which I investigated for the Board, in which a child was sent home with a discharge from the nose, the parents, on my advice, sent the child to the grandmother's, where there were no children, until the discharge got better. The result was satisfactory.

The detention in hospital is much greater than the period of isolation at home. As regards the importance of duration of treatment in hospital, as affecting return cases, I have already stated that the results obtained indicate that long detention has no effect in reducing them. The detention in hospital is much greater than even the longest isolation at home. The cases occurring in houses after disinfection is completed are for scarlet fever .5 per cent. and for diphtheria 2.2 per cent. Possibly this low percentage is in part due to the fact that the susceptible people in the house are attacked before the house is disinfected. In one district in which information on this point has been kindly given me, the percentage of cases occurring after the removal of the first case was 29 per cent. for scarlet fever and 4.9 per cent. for diphtheria.

A comparison between the period of isolation of cases treated at home and that at hospital shows a very marked difference in their duration, as is seen by the following statement:—

	Scarlet Fever.		Diphtheria.	
	Hospital.	Home.	Hospital.	Home.
Under 2 weeks... ..	0·0	4·7	0·5	37·6
2 weeks and under 4 weeks... ..	0·2	16·5	5·2	44·8
4 „ „ 6 „ „ ..	2·8	33·5	11·2	12·6
6 „ „ 8 „ „ ..	19·2	31·1	32·4	2·9
8 „ „ 10 „ „ ..	24·9	7·5	18·9	0·4
10 „ „ 12 „ „ ..	19·3	1·0	12·2	0·0
12 „ „ 15 „ „ ..	17·9	0·0	10·0	0·0
15 weeks and over	6·7	0·0	4·9	0·0

The statement shows that, while 91 per cent. of the scarlet fever cases treated at home are isolated less than eight weeks, only 22 per cent. of those treated in hospital are discharged by this period, and 71 per cent. are detained for eight weeks and longer, extending to over 12 and 15 weeks, which apparently does not exist in home isolation; and that while 82 per cent. of the diphtheria cases treated at home are isolated less than four weeks, only 5 per cent. of those treated in hospital are discharged by this period, and 94 per cent. are detained four weeks and longer. The extremes are shown in the table, and I think there can be little doubt that, while 37 per cent. of the home isolation of diphtheria is under two weeks, and 57 per cent. of the scarlet fever cases is under six weeks, there is no lack of infectious material abroad to keep up the supplies of these diseases when seasons favour their prevalence. In diphtheria the percentage is probably somewhat higher than actually represents the facts, owing to its including a few fatal cases.

Period of isolation at home too short.

Period of detention in Metropolitan Asylums' hospitals too long.

On the other hand, from the point of view of infection, the isolation at the Board's infectious hospitals appears to be of unnecessary length in both diseases. No rigid rule can be fixed for all cases, for the presence of albuminuria and other complications will not permit of this; but I think it is a question for careful consideration whether there is anything gained by detaining the patient longer than is the general practice in infectious hospitals in other parts of the country, such as Aberdeen, Glasgow, Edinburgh, and Liverpool, in which the average duration of stay in hospital is at least a fortnight, and sometimes three weeks, less than in the Metropolitan Asylums Board's infectious hospitals.

Summary.

In conclusion, I shall briefly summarise the results of the inquiry as stated in this report:—

- (i.) That before investigation into causes the return cases were 339, giving a percentage of 3·4 on the total discharges from hospital, 3·8 per cent. being scarlet fever and 2·3 per cent. being diphtheria.

RETURN CASES OF SCARLET FEVER

- (ii.) That after inquiry it was found that 123 cases, or 36 per cent., were not return cases, or at least furnished no evidence in support of them being return cases; that 36, or 10 per cent., were cases of a doubtful nature, in which it was impossible to decide whether they were return cases or not; that 17, or 5 per cent., were cases in which it was impossible to dissociate infected clothing or house infection from personal infection; and that 159, or 47 per cent., were probably return cases, which gave on the total discharges a percentage of 1·6 instead of 3·4.
- (iii.) That there were 111 primary infective cases, a number which is equal to 1·1 per cent. on the total discharges, 1·3 being scarlet fever and ·5 being diphtheria.
- (iv.) That the percentage of the primary infective cases varies from ·5 to 1·3 in the different infectious hospitals of the Board.
- (v.) That 80 per cent. of the primary infective cases are connected with discharges from mucous membranes, the discharges from the nose in scarlet fever forming 40 per cent. of the cases and in diphtheria 28 per cent.
- (vi.) That warm baths immediately before the patient is sent out of hospital do not remove this infection, and that warm baths and exposure in the winter to the vicissitudes of the weather contribute to the increase of infection, and bring back rhinorrhœa and otorrhœa.
- (vii.) That mere duration of detention in hospital is no standard as to the limit of infection, and no guarantee that the patient shall be freed of infection, and that long detention in infective wards will not reduce the percentage of return cases.
- (viii.) That the discharges from mucous membranes on which infection has been sown are probably the carriers and not the causal agents of infections, and that local and antiseptic treatment combined with transference to less infective wards are likely to be more effective than long detention in reducing the percentage of return cases.
- (ix.) That the Medical Officer of Health should be notified as to discharge of patient from hospital, or printed instructions should be given to parent or guardian, in order that suitable precautions shall be taken in the home.
- (x.) That if more attention were paid by sanitary authorities to disinfection by steam of clothes, &c., as distinguished from bedding, the number of fresh cases arising in houses to which patients are discharged from the Board's hospitals would likely be reduced.
- (xi.) That a comparison between quarantine in hospital and quarantine at home shows that 91 per cent. of the scarlet fever cases treated at home were isolated less than eight weeks and 57 per cent. less than six weeks, and 82 per cent. of the diphtheria cases were isolated less than four weeks and 37 per cent. less than two weeks; while in hospital 71 per cent. of the scarlet fever cases were detained eight weeks and longer, extending to 12 and 15 weeks, and 94 per cent. of the diphtheria cases were detained four weeks and longer.

- (xii.) That the isolation at home is insufficient in duration as a rule, and that the isolation in hospital is, if anything, too long, and that return cases are not due to premature discharge.
- (xiii.) That a reduction in the duration of the detention of scarlet fever and diphtheria cases in hospital would likely tend to a greater control over the prevalence of scarlet fever and diphtheria in the Metropolis, as it would permit of a larger number being removed to hospital with the same accommodation as exists at present.

I have the honour to be, Sir,

Your obedient Servant,

W. J. SIMPSON, M.D., F.R.C.P.

T. DUNCOMBE MANN, Esq.,
Clerk to the Board.

A copy of this report was, by direction of the Hospitals Committee, sent to the medical superintendents of the Board's infectious hospitals, who furnished the following observations thereon, viz. :—

OBSERVATIONS OF THE MEDICAL SUPERINTENDENTS OF THE SEVERAL HOSPITALS UPON THE REPORT DATED 5TH JUNE, 1899, BY DR. W. J. SIMPSON, *RE* ALLEGED "RETURN CASES" OF SCARLET FEVER AND DIPHTHERIA ADMITTED TO THE BOARD'S HOSPITALS DURING THE SIX MONTHS ENDED THE 31ST MARCH, 1899.

(1.) **EASTERN HOSPITAL.**

8th July, 1899.

I beg to offer the following observations on Dr. Simpson's very valuable report on "return cases" of scarlet fever and diphtheria. I think I can put my remarks more clearly before you by taking the paragraphs in Dr. Simpson's summary (pp. 23-25) *seriatim*.

Paragraphs (i.) to (iii.) call for no remark.

Paragraph (iv.).—This refers to the table on p. 14, in which a comparison is made between the different hospitals. The percentage of primary infective cases will vary with the proportion of scarlet fever and diphtheria cases treated in the different hospitals. Dr. Simpson shows that a smaller proportion of "return cases" is associated with diphtheria than with scarlet fever. Therefore the hospitals in which the largest numbers of diphtheria patients are treated will have the smallest percentage of "return cases." Moreover the number of cases transferred to the convalescent hospitals will affect the proportion of "return cases" occurring in connection with the individual hospitals.

Paragraph (v.).—Dr. Simpson confirms what has long been suspected.

Paragraph (vi.).—I think the statement that the "warm baths immediately before the patient is sent out of hospital do not remove this infection" is, as regards scarlet fever, a little too sweeping. It is true they have not done so with respect to the particular cases investigated by Dr. Simpson. But Dr. Simpson has no figures dealing with scarlet fever patients who have been discharged without these

baths. Therefore how does he know that these baths have not prevented the occurrence of a larger number of "return cases" than have actually arisen?

I am, however, quite ready to agree with him with respect to the statement made in the last portion of this paragraph, which relates to the effects of warm baths and exposure to the weather. From personal inquiries made in a few cases, I believe that ill effects have occasionally followed, both with regard to the health of the patient himself and the renewal of infection.

In the cases of a few weakly children, I have, as a matter of fact, carried out Dr. Simpson's suggestions, and have given the final bath the afternoon before the day of discharge, the patient after the bath being placed for the night in an isolation ward. Most of the cases I have so treated have been sent straight back to general or children's hospitals; and so far no instance of scarlet fever or diphtheria having been imported into the wards of these hospitals by these patients has been brought to my notice. I am therefore quite prepared to advise that Dr. Simpson's suggestion as to the transference of patients about to be discharged to less infective wards (see *paragraph* viii.) should be more extensively carried out. But the provision of these less infective wards means either the reduction in the number of beds for acute cases or the erection of new buildings.

The above remarks on this paragraph refer chiefly to scarlet fever. With regard to diphtheria, I believe the warm bath immediately before discharge to be quite unnecessary. As a matter of fact, in consequence of the very inadequate accommodation for discharging patients at this hospital, this bath has (since the increase in the number of beds for diphtheria) been given the night before the patient's discharge, and the patient has been discharged almost directly from the ward in which he has been during his stay in the hospital. He is not dressed in his clean clothes in the ward, but in a room (formerly used as a nurses' sitting room) adjoining it. I gather from Dr. Simpson's report that the number of "return cases" of diphtheria is trivial, so that the practice I have been compelled to adopt has had no ill effects.

Paragraph (vii).—On the whole I agree with what Dr. Simpson says in this paragraph; but with him I think the figures are so small that the results of the comparisons shown in the tables on pp. 20 and 21 must be accepted with great caution. Dr. Simpson appears to have overlooked the fact that the cases detained for long periods are just those cases which are thought to be infectious because they are the subjects of some complication, especially a discharge from the nose or ear, on which account they have not been sent out of hospital at an earlier date. Dr. Simpson does not show that if they were to be discharged earlier they would give rise to fewer "return cases" than they do. It is, indeed, quite possible that they would give rise to more.

I may add that both Dr. Neech, of Atherton (vide *Lancet* for 25th September, 1897), and Dr. Millard, of Birmingham (vide *British Medical Journal* for 3rd September, 1898), in valuable reports made by them on the subject of "return cases," came to the opposite conclusion with respect to the relation between duration of stay in hospital and occurrence of "return cases" to that arrived at by Dr. Simpson.

Paragraph (viii).—Here again I think that Dr. Simpson's idea that the discharges act as carriers and not as causal agents of infection is not supported by

a sufficient body of evidence. Dr. Millard gives instances in illustration of the very opposite idea. However, this is a minor point.

With respect to the suggestion that local and antiseptic treatment will have the effect of rendering the mucous membranes less infective, from my experience (especially with regard to the bacillus of diphtheria) I should say that in chronic cases such as Dr. Simpson alludes to this has little, if any, good effect. By applying antiseptics in strengths sufficient to destroy the germ of the disease the mucous membranes are damaged. And I am of the opinion that many a chronic discharge is actually kept up by local and antiseptic treatment.

Paragraph (ix.).—I quite agree with the suggestion that parents should be told to take precautions after the patient's return home. I have long carried out this suggestion with respect to cases I have discharged while they have still been suffering from complications, and, to the best of my knowledge, with good results in that these patients do not seem to have given rise to "return cases." In most of the "return cases" that I have personally inquired about, the "return case" has been caused by a patient in whom the discharge from the nose or ear having ceased in the hospital has recurred soon after the patient's return home.

I think it would be much better to give a printed notice to the parents on the patient's discharge, in the same manner as is at present done with the warning against diphtheritic paralysis; then it will be certain that the parent is warned before the patient's arrival home. To give notice to the Medical Officer of Health and leave him to warn the parents seems to be a complicated arrangement, and one likely to lead to delay in the delivery of the notice.

Paragraphs (x.) and (xi.).—These do not call for comment.

Paragraph (xii.).—*Vide* remarks upon *paragraph (vii.).*

Paragraph (xiii.).—It is quite a question whether the setting apart, out of the existing accommodation, of isolation beds for patients about to be discharged would not go a considerable way towards counterbalancing the gain due to the shorter detention of patients in hospital.

(Signed) E. W. GOODALL,
Medical Superintendent.

(2.) NORTH-EASTERN HOSPITAL.

4th July, 1899.

I beg to submit the following observations upon Dr. Simpson's report. To render them as brief as possible I have confined myself to criticising certain portions of the report with which I am unable to agree:—

(1.) The table on p. 14 showing the total incidence of return cases for the various hospitals is, for the purpose of comparison, not only misleading but really quite valueless. In it scarlet fever and diphtheria are mixed together, which cannot be right, because the latter disease necessarily lowers the total percentage of "return" cases for both. It is very unfair to hospitals like the North-Eastern and Gore Farm, which only take in scarlet fever. This point is proved by comparing the table on p. 14 with that on p. 21 which shows the percentage of "return" cases for scarlet fever alone. In this latter table the position of certain of the hospitals will be found to be very different.

(2.) A most important matter, not mentioned in the report, is the kind of

patients transferred from the acute to the convalescent hospitals. If one hospital sends cases with nasal and ear discharge to the Northern or Gore Farm, it will naturally have fewer "return" cases than one which transfers only those patients who are free from any complication, for the one gets rid of while the other keeps the very patients which give rise to the great majority of "return" cases. This will also help to explain the variations in the tables on pp. 14 and 21.

(3.) On p. 20 Dr. Simpson says that the percentage of "return" cases "will not be reduced by sending more to the convalescent hospitals." Here again comes in the need for information with regard to the kind of cases which are transferred. If the convalescent institutions are saddled with a large number of patients suffering from nasal and ear discharge they cannot avoid having "return" cases. A just comparison between the different institutions could only be made by drawing up a table showing the condition of *all* patients on discharge. We should then be able to compare the percentage of "return" cases for each hospital with the percentage of patients that it sent out with nasal or ear discharge.

(4.) Pp. 20, 21. Dr. Simpson urges against the detaining of patients for a long time in hospital that when at length they do go out some of them still give rise to "return" cases. On this point both Dr. Simpson's figures and conclusions are opposed to those given by Dr. Millard, medical superintendent of the Birmingham City Hospital, in his paper on "return" cases published in the *British Medical Journal*, 3rd September, 1898.

(5.) With regard to the summary of conclusions:—

- (vi.) There are objections to a warm bath immediately before discharge at certain seasons of the year, but I do not think it would be wise to discontinue it unless patients are discharged into a non-infected ward the day before they leave the hospital.
- (viii.) At the North-Eastern Hospital nasal and ear discharges are always treated antiseptically, and patients after being up for a few days go from an acute into a convalescent ward. Yet we have "return" cases, as do also the convalescent hospitals.
- (ix.) I do not see the necessity for informing the Medical Officer of Health when each patient is discharged, though he might be informed when a case with nasal or ear discharge is sent home. I have urged more than once that certain instructions should be printed on the scarlet fever discharge notices.

(Signed) HERBERT CUFF,
Medical Superintendent.

(3.) NORTH-WESTERN HOSPITAL.

5th July, 1899.

Adverting to your letter of the 23rd ult., *re* Dr. Simpson's report on "return cases" of scarlet fever, I venture to make the following observations thereon:—

(1.) From the limited number of cases investigated it is questionable whether the inferences arrived at are trustworthy, and would not be considerably modified, in some particulars, if the orbit of the inquiry were enlarged.

(2.) Much profit would be gained if sanitary inspectors were to give more instruction to the people that come under their observation, particularly as regards

the object and value of disinfection, endeavouring at the same time to ascertain that every single article of clothing and bedding belonging to a person attacked with an infectious disease is purified. The process, as now adopted (if statements made are reliable), is, in effect, probably useless, and it would seem that ventilation and good honest washing are factors in every-day disinfection not uncommonly lost sight of or but little impressed.

(3.) That children do contract diseases other than that for which they have been admitted is a fact beyond dispute, and will, I fear to think, always continue, that is, so long as different classes of zymotic disorders are treated in the same hospital and the inter-communication of staff and others continues, as it necessarily must do. Even if the practice existing were changed, difficulties of the same character must arise by reason of the accidental introduction of disease, that is to say, by a wrong diagnosis having been made, as also through conveyance by friends and relatives of those dangerously ill coming from tainted habitations, with, perhaps, cases of disease there, not compulsorily notifiable, but highly infectious, to wit, measles. To the theory of aërial transmission from ward to ward I am not a convert, no unequivocal evidence of this having as yet come under my observation.

(4.) It is not difficult to understand that a greater number of return cases in connection with scarlet fever are brought in evidence as compared with diphtheria, since in the former it is now and then practically impossible to clear up satisfactorily otorrhœa and rhinorrhœa; as regards the former, it is well known that it may continue, not for weeks only, but months and years, resisting all and every known treatment, whereas in diphtheria these complications are less frequent, and often enough a simple throat affection comes under notice which can be treated and finally pronounced, with absolute certainty, to be free from infection in a short time.

(5.) Some explanation seems needed as regards the table on p. 14, which shows so wide a difference between the South-Western, North-Eastern, Brook, and other hospitals referred to.

(6.) The time of detention should, I conclude, vary with the class of case sent to the convalescent hospital, thus, if all the chronic patients were transferred, then a reasonable probability would exist that there would be none, or very few, return cases from the acute hospitals.

(7.) It would be interesting to have a comparison of the complications at the South-Western, North-Eastern, and other hospitals respectively, inasmuch as, if mucous discharges are the main causes of return cases, one would expect to find most of these complications in the institutions coming under the last six divisions of the table on p. 14.

(8.) Later views seem to point out that too much attention is paid to the desquamation of discharged patients, and too little to otorrhœa, and other mucous discharges. The former is well commented on in the annual report (1898) of the medical officer of the Local Government Board, as follows:—

Return cases of scarlet fever.

The administrative difficulties created by the occurrence of return cases of scarlet fever are well known, and Dr. Klein has commenced an investigation of certain pathological points which arise in connection with them. The first part of the inquiry has involved a bacteriological study of the desquamating skin of persons at various

stages of convalescence. At no stage of the peeling process after scarlet fever has he detected in the cuticle any microbe which could be thought as having concern in spreading the disease.

If such conclusion be generally accepted, a universal change would be thereby effected. I have long thought that far too much importance has been attached to loose skin, but painfully aware of the fact that an infinitesimal portion has not infrequently been the origin of much trouble and implied inculcation.

(9.) To put a stop to the existing arrangements relative to the bathing of discharged patients deserves full consideration, it being both unnecessary and very undesirable when carried out immediately preceding the departure of the person from the hospital.

The supplemented rules as appear in the manual of regulations involve an amount of vigilance, precaution, and time which, it is feared, is not adhered to strictly in their entirety, and would probably have but little effect in reducing the number of return cases if they were. They are as under:—

Paragraph 30.—In addition to any bathing rules prescribed by the medical superintendent, the following are to be observed:—Scarlet fever patients to be undressed in the bathroom and thoroughly bathed and cleansed; particular attention to be paid to the feet and head. The head is to be well lathered, and shampooed twice, and, if possible, the patient is then to have a shower bath, except in the case of young children, who must be well sponged. In drying the patient care must be taken to thoroughly dry the hair, and in the case of female patients, with long hair, it may be necessary that they should sit by the fire in the dressing room to complete the process. No patient is to leave the dressing room whose hair is not thoroughly dry.

Dr. Simpson's observations on this matter, I consider, are very practical and to the point, illustrating some of the many ill effects that may arise in consequence.

(10.) Instead of decreasing the time of detention in hospital, it would, to my mind, be better to keep chronic cases longer if possible, choosing such for the convalescent hospitals where the infectious environment is minimised by extra air, space, ventilation, &c.

(11.) That otorrhœa and rhinorrhœa are propagable, and very important for consideration, is proven by the fact that, given a case of either kind, not infrequently it is communicated, not only to patients in immediate contiguity with the one affected, but to others in remote parts of the ward.

(12.) With regard to advice being given on the discharge of patients, the following extract from my annual report of 1893 shows that the point has already been considered, and the recommendations might, I think, with advantage have been acted upon as a whole and not in part only:—

As scarlet fever is communicable from person to person or through the agency of persons and by clothing, &c., it follows that when upon the return of a patient from hospital another of the same family is attacked shortly afterwards, one or other of these factors is held responsible; and what more natural than that the recently-discharged patient should be selected more than the clothing, carefully folded, perhaps wrapped up and carefully laid by, or on account of its delicacy of structure or original cost, omitted to be given over to the sanitary authorities at the time of disinfection? Only a fractional percentage of such cases have arisen during the year, but to reduce this still further, I suggested that a warning card should be sent out with each discharged patient, setting forth the desirability of isolating the patient for a short time and prohibiting the use of a bed with another person. With regard also to

diphtheria patients in whom paralysis does not present itself sometimes for weeks after convalescence is apparently established, I also recommended that the prominent symptoms should be brought under the notice of the friends in a similar way in order that means might at once be taken to arrest or treat the approaching trouble.

These suggestions, although meeting with your approval, did not receive the acquiescence of another committee of the Board, except so far as referred to the latter suggestion.

(Signed) WM. GAYTON,
Medical Superintendent.

(4.) WESTERN HOSPITAL.

12th July, 1899.

With reference to the report of Dr. W. J. Simpson on alleged return cases of scarlet fever and diphtheria admitted to the Board's hospitals during the six months ended 31st March last, I have to make the following observations.

The report is in my opinion a very interesting and valuable one, the evidence adduced tending to confirm the view that a considerable percentage of cases alleged to be "return" cases are really coincidental, and to strengthen the belief as to the connection of a majority of "return" cases with discharges from mucous membranes, and as to the probable non-infectivity of the later desquamation of scarlet fever.

The investigation can, however, be regarded as only a partial test in consequence of the small number of cases dealt with, owing to the short period of time covered by the inquiry. The figures given in the report and the conclusions based thereon should therefore not be accepted without reservation. This remark especially applies to the table on p. 21, which shows for each hospital the percentage of cases of scarlet fever discharged at different periods, and in which it may not have been possible to take into account (1) the percentage of convalescents transferred from each hospital; (2) the class of cases transferred—*i.e.*, whether complicated or otherwise; and (3) the number of cases at each hospital which suffered from superadded infectious disease—factors which materially affect the average duration of detention. The units of which the table is made up are consequently of unequal value, and render untrustworthy a comparison between the acute hospitals in regard to length of detention of cases and percentage of return cases.

I am in accord with Dr. Simpson in the belief that warm baths given immediately prior to discharge are not free from objection, especially in winter, but it is possible that they may have had a share in the prevention of return cases, for they are of undoubted value in the removal of infection from the skin and scalp. It is also possible that in some cases the cold taken after discharge may have been due to inadequate clothing or unfavourable environment at home.

A segregation ward in which patients could sleep after the final bath on the night preceding their discharge would probably conduce to the prevention of colds. For the provision of such a ward an additional building, or, if one of the present ward buildings were utilised for the purpose, a reduction in the accommodation, would be necessary.

Whatever suggested departure from established custom the Managers may deem it wise to adopt with regard to the discharge of patients, it would seem expedient, in view of the impossibility of determining when a patient is absolutely

free from infection, that printed instructions should be given to the relations or guardians of discharged scarlet fever patients with the view to precautions being taken at home in cases in which such instructions can be given practical effect to.

(Signed) R. M. BRUCE,
Medical Superintendent.

(5.) SOUTH-WESTERN HOSPITAL.

5th July, 1899.

I regard the above report as a masterly summary of the results obtained in a carefully-conceived and critically-conducted investigation into what is a very difficult question. The report, from its completeness, may be regarded as unique, and is of distinct value to the medical officers responsible for the discharge of persons recently recovered from infectious diseases, inasmuch as it furnishes definite statistical evidence confirming them in what, I think, is the general belief in respect to the really important factors which are concerned in the production of "return" cases.

It is much to be regretted, however, that the figures are not larger, and that the period embraced by the investigation was not more prolonged.

This is especially true in respect to any attempt to institute a comparison between the results at the different hospitals; for as Dr. Simpson says, "probably a larger period and larger numbers might show those hospitals which present the highest percentage in a much more favourable light."

There are, moreover, certain fallacies which cannot but vitiate any such comparisons, whatever may be the numbers taken. For instance, if it be the practice of one of the medical superintendents to transfer to the convalescent hospital those patients who are suffering from a mucous discharge, it means that the convalescent hospital relieves the acute hospital of the responsibility in connection with the discharge of those patients which Dr. Simpson shows to be productive of 80 per cent. of the "return" cases.

It is therefore obviously unfair to compare the acute hospital either with the convalescent or with another acute hospital at which a different practice obtains when estimating the proportionate incidence of "return" cases.

I am unable to agree with Dr. Simpson's suggestion that possibly the most important explanation of the infection of certain patients during their stay in hospital is to be found in the mixing of the nurses during their meals and on other occasions. The experience at this hospital, where, until the year 1895, the nurses working in the scarlet fever and diphtheria wards had entirely separate rooms both for meals and recreation, and that gained at Winchmore Hill during the 18 months prior to the reception of diphtheria, is entirely opposed to the suggestion.

I believe the presence of unrecognised cases in the wards to be the real and a sufficient explanation of the second infection.

In respect to the brief summary of the results of the inquiry with which Dr. Simpson concludes his report—

Nos. i. to iv. are numerical statements of observed facts, and therefore require no comment.

No. v. shows that 80 per cent. of the primary infective cases are dependent

upon discharges from some mucous surface. This is very important, as it confirms by direct statistical evidence what was previously a matter of speculation.

No. vi.—That warm baths given immediately before the patient was sent out of hospital were inoperative in removing this source of infection must certainly be conceded, and that during the winter months they may in some cases have actually been concerned in bringing back an infective mucous discharge I am prepared to admit; but whether the warm baths which *were* given were valueless in preventing infection through the skin and hair is by no means equally certain.

No. vii.—That mere duration of detention in hospital is no criterion of a patient's infectivity is no doubt true within limits, and it is quite possible that the period of isolation we insist upon is sometimes of unnecessary length.

No. viii.—The transference of cases with mucous discharges to a less infected ward would soon result in an increase of its infectivity, and unless each case were placed in a disinfected ward by itself, the precaution would be of little practical value.

In my experience the adoption of local and antiseptic treatment often tends not only to increase the discharge, but to prolong its duration.

No. ix.—The proposal to furnish the parent, on a patient's discharge from hospital, with printed instructions as to the adoption of suitable precautions in the home is well worthy of consideration.

As a result of reading Dr. Simpson's report I feel less impressed with the necessity of detaining a patient on account of protracted desquamation after scarlet fever, and I shall feel more satisfied in omitting the final bath in the case of diphtheria when by reason either of the delicacy of the child or the inclemency of the weather such course appears to be indicated.

In Dr. Simpson's report the Managers are in possession of a document of exceptional value, and I cannot refrain from acknowledging the courtesy which has characterised Dr. Simpson's relations with the medical staff of the hospitals during the course of his investigations.

(Signed) F. FOORD CAIGER,
Medical Superintendent.

(6.) FOUNTAIN HOSPITAL.

19th July, 1899.

In compliance with your request, I submit herewith, for the consideration of the Hospitals Committee, the following brief observations upon Dr. Simpson's report.

(1.) The table given on p. 14, representing the comparative incidence of return cases at the different hospitals of the Board, is open to the objection that in no two hospitals is the proportion of scarlet fever and diphtheria exactly alike. But the report shows that the incidence of primary cases is 1·3 for scarlet fever and 0·5 for diphtheria. Therefore a table showing merely the total incidence without regard to the diseases received at the several hospitals appears to be valueless.

(2.) The table on p. 15 proves that discharges from the nose and ears form a large percentage of the primary cases. This is in accordance with the views which have long been held by medical officers of the Board.

With regard to desquamation of the skin, there is no evidence to prove that it

is not infectious. It would be too much to expect a statement of this kind until the virus of scarlet fever has been discovered. But in the absence of such knowledge I do not think it would be safe, as a general rule, to discharge patients undergoing desquamation due to the disease.

(3.) With regard to the duration of the detention of patients in hospital, if Dr. Simpson's observations on this question, on pp. 20-21, lead to the conclusion that prolonged treatment in hospital in certain cases does not tend to lessen the liability to return cases, I am not able to agree with it.

It is perhaps desirable to state for the information of the committee that the number of cases given in the report and stated to have, after discharge, certain sequelæ of scarlet fever and diphtheria, such as discharges from the ears and nose, is only a small percentage of those which suffer from these sequelæ whilst in hospital. The large majority have permanently recovered under treatment, in many cases after prolonged detention in hospital. In my experience, patients with unhealthy conditions of the throat and nose ought to be detained in hospital until the discharges have ceased, and until the mucous membranes have assumed a healthy character.

(4.) The question of special classification for particular cases, in my opinion, is a doubtful expedient. The cases in question (see p. 21) are those which are specially selected for transfer to country hospitals, where the conditions for recovery are more favourable than in a ward set aside for them in town hospitals. Yet transfer to the country, as Dr. Simpson shows, does not lessen the liability to return cases. Moreover, segregation wards for both sexes and for both diseases (scarlet fever and diphtheria) would necessitate a considerable reduction in the accommodation for acute cases in town hospitals.

(5.) I cordially agree with Dr. Simpson that a discharge ward, in which special cases might sleep in a non-infected bed and be bathed there the night before they return to their homes, would tend to diminish the liability to return cases. In this case it would be possible to dispense with the final bath immediately prior to discharge, a measure not altogether free from objection, especially in winter.

(6.) I am also in favour of the suggestion that the parents, on the discharge of a patient, should be furnished with printed instructions as to keeping the discharged patient away from other children. In the case of diphtheria, a notice to this effect has been ordered by the Managers to be given to the parents when they attend at the hospital, and the same practice, in my opinion, should be adopted in the case of scarlet fever.

If this were done, there would be no occasion to trouble the Medical Officer of Health, as suggested by Dr. Simpson.

(Signed) C. E. MATTHEWS,
Medical Superintendent.

(7.) SOUTH-EASTERN HOSPITAL.

4th July, 1899.

I have carefully read the report by Dr. Simpson on return cases, and in obedience to your instructions offer the following observations thereon:—

The report contains a vast number of facts carefully observed and worked out in detail, and is therefore a very valuable contribution to the study of a somewhat

obscure subject; and Dr. Simpson's opinions, being based on the study of such an extensive mass of material, deserve careful consideration. In certain points he confirms opinions which many besides myself have previously held, though on less ample evidence. Thus the innocuousness of desquamation to the extent present in many discharged patients and the great risk of infectivity of mucous discharges is emphasised by Dr. Simpson (p. 15), and has been brought out by most previous observers. (Cf. Mr. Ford's Report, M. A. B. Reports, 1895, pp. 55-6.)

While not agreeing with Dr. Simpson in all details, I will confine my further remarks to such of his suggestions as have a practical bearing, and only criticise the theoretical portion of his report where necessary to corroborate my views on practice.

Dr. Simpson avoids as a rule making practical recommendations, but his conclusions are stated in such a form (in the summary to his report, pp. 23-25) that from several of them a practical recommendation is an immediate corollary. I will deal with the suggestions in order.

(1.) *Section vi.*—"Warm baths immediately before the patients are sent out of hospital do not remove this infection (*i.e.*, that from the mucous membranes), &c. . . contribute to the increase of infection and bring back rhinorrhœa and otorrhœa."

It is generally held, and Dr. Simpson does not attack the opinion, that a bath removes other infections, so that I cannot consent, in scarlet fever at any rate, to entirely dispense with the bath.

That the bath immediately before discharge on a cold day is not advisable in the interests of the patient himself is obvious, but admitting the advisability of the bath in order to get rid of one mode of carrying infection, the only other plan is to bathe the patients the day previously and send them to a non-infected ward.

To utilise one of the present wards for this purpose would of course reduce the accommodation available for treatment of cases.

I should be very glad to adopt this plan, as I am sure it would be better for the patients themselves, and if, as Dr. Simpson contends, there would also be less risk of return cases, it is worth the Managers' earnest consideration whether the reduction of accommodation would not be justified.

This plan was tried for some time at the North-Eastern Hospital, but unfortunately there is no evidence to show whether it had any influence on the number of return cases.

(2.) *Section viii.*—"In all cases at this hospital of mucous discharges which are probably infectious, local antiseptic treatment is applied. Many obstinate cases have received such treatment for months and yet on discharge have proved infective. I am doubtful whether any good result will follow transference to less infective wards. According to Dr. Simpson, transference to a convalescent hospital has no such effect, and at the South-Eastern Hospital all wards are equally infected.

I had opportunities at the North-Eastern Hospital of observing acute and convalescent wards within the same hospital, but my experience did not lead me to believe that the latter were to any marked extent less infective than the former.

I suggest that the Managers try as an experiment the isolation of such cases in a separate house, one patient to each room. Such a house might be within the grounds of one of their country hospitals, provided it be kept as far as possible from communication with the rest of the hospital. But if the difficulties as to

conveyance could be got over, it would be better to have such a house quite apart from any hospital, say at the seaside.

The facts given in Dr. Simpson's report suggest that the herding of large numbers of patients together in hospital wards is responsible for the prolonged duration of infection, and that the substitution of an ordinary house for a hospital and separate rooms for large wards would result in a more rapid disappearance of infectivity. Against the expense of such a scheme might be set the expense at present incurred by the detention of this class of patients for 12 or 15 weeks or more.

(3.) *Section ix.*—I strongly endorse Dr. Simpson's recommendation, that "printed instructions should be given to parents or guardians in order that suitable precautions shall be taken in the house." I do not advise that notice of each discharge be sent to the Medical Officer of Health.

(4.) *Section xii.*—"That isolation in hospital is if anything too long." This idea is frequently referred to throughout the report, and, though Dr. Simpson nowhere states it clearly, the whole drift of his report leads one to suppose that prolonged detention by itself is a cause of greater infectivity of the patients on their discharge. Many of his tables will by most readers be taken to prove that a patient who might be discharged with safety after six weeks will very likely take home infection if detained in hospital for 12. He nowhere mentions that the greater infectivity of 12 and 15 week cases is easily and rationally explained by the fact that these cases include all the patients with obstinate mucous discharges; in fact, the majority of these patients are detained so long *because they show signs of infectivity.*

That some desquamating cases could be discharged earlier without risk I fully believe, and Dr. Simpson's report will strengthen my opinion upon this point. But that an earlier discharge of patients with mucous discharges would lead to fewer return cases I cannot admit. The question of isolating such cases has been discussed above.

In conclusion, I would remind the Managers that the task of deciding whether a patient is free from infection is in some cases a very anxious one. I therefore hope that the whole of the facts that have been ascertained by Dr. Simpson may be made available for the future guidance of the Board's medical superintendents.

(Signed) F. M. TURNER,
Medical Superintendent.

(8.) PARK HOSPITAL.

1st July, 1899.

In reply to your letter of the 23rd June, I have to acknowledge the receipt of the copy of Dr. Simpson's report, and offer the following observations on that report:—

(a) The report is of great value. I concur generally with its conclusions and recommendations. I regard it as a help, especially as to the earlier discharge of patients.

(b) The period covered by the report is the less favourable half of the year. In the summer months the number of return cases is fewer than in the winter.

It should be remembered that a running from the nose is common during cold weather, and that a large number of children go home with such a discharge, and also with otorrhœa, without infecting anybody else.

(c) It is desirable that investigation be made in all such cases. Probably the Medical Officers of Health are most favourably placed to make it. I approve of the recommendations about printed advice being given to relatives on discharge (but preferably by the Medical Officer of Health), and about the Medical Officer of Health being informed of all patients leaving hospital.

(d) The numbers dealt with in the report are so small that the comparative statistics of different hospitals should not be published for general information.

(e) The attention of the other Medical Officers of Health should be directed to Dr. Dudfield's experience as related on p. 12, for probably to this cause (insanitary conditions at home) more than to any other is to be attributed the failure of isolation in controlling the prevalence of diphtheria and scarlet fever.

(f) I advocate the discontinuance of the bath on discharge for diphtheria patients, and the establishment of a discharge ward for scarlet fever.

(g) I think it would be wise to send children home in conveyances in inclement weather. The more general use of the discharge cab for delicate children would probably result in a much shorter stay in hospital for these patients.

(h) I approve of the special classification, isolation, &c., referred to on p. 21, and would like to be allowed to carry it out experimentally.

(Signed) R. A. BIRDWOOD,
Medical Superintendent.

(9.) BROOK HOSPITAL.

19th July, 1899.

It will be convenient to consider first the conclusions formulated at the end of the report.

Conclusion v.—This tends to support an opinion which I have long held, that discharges from mucous membranes are likely, under certain conditions, to prove a source of infection to others. Hence the expediency of detaining the patients in hospital till such discharges are cured.

Conclusion vi.—If warm baths, followed immediately after by exposure to cold and wet, are prejudicial in inducing nasal discharges after the patients' return home, this would affect especially the patients discharged from the Brook Hospital during the autumn and winter months (October—March), bearing in mind the exposed position of the hospital and its distance from the patients' homes.

Therefore it might be desirable, if the practice of giving bath immediately before discharge is to be continued, to send all patients of, say, seven years and under home in a conveyance during the autumn and winter months.

But too much importance is, perhaps, attached in the report to the prejudicial influence of the bath given before discharge. Many of the discharges from the mucous membranes arising soon after the patient's return home are probably due to the altered conditions in respect of clothing, ventilation, &c., &c., at the patient's home, compared with the conditions obtaining at the hospital.

Conclusion viii.—It might be desirable to make trial at, say, one or two hospitals of isolating all scarlet fever patients fit for discharge for a week in

uninfected rooms, in order to ascertain the effect of such a practice in the incidence of return cases.

Conclusion ix.—If printed instructions similar to those issued to relatives of diphtheria patients are to be issued for scarlet fever, such instructions should be handed to the relatives when they fetch the patients from the hospitals. It is needless to notify the Medical Officer of Health of the patient's discharge.

Conclusion x.—I quite concur with this conclusion. A table might, however, have profitably been included in the report, showing the relative efficiency of the disinfection carried out in the various districts with the percentage of "return" cases in each case.

Conclusions xi. and xii.—I do not admit that the detention at hospital is too long, having regard to the orders of the Local Government Board *re* discharge of patients (Local Government Board Order, 10th February, 1895, Article 14).

DIPHTHERIA.—No data are given in the report as to the length of detention at the individual hospitals, nor as to the proportion of primary infective cases of diphtheria discharged from the individual hospitals. Facts on these points should, I think, have been given, in a table similar to that given for scarlet fever on p. 21.

Dr. Simpson says that diphtheria patients should not be detained so long in hospital. Does he suggest that they should be discharged while diphtheria bacilli are present in the fauces or nose? The practice as to bacteriological examination of diphtheria patients before discharge varies at different hospitals. At some bacteriological examination is made, at others not. Here bacteriological examination is made in all cases, and a number of patients are detained for a considerable time who, in the absence of a bacteriological examination, would be discharged. It would have been instructive to have compared the incidence of "return" cases of diphtheria at the different hospitals in view of this difference in practice. But the report throws no light on this point.

SCARLET FEVER.—When comparing the incidence of primary infective cases at the several hospitals, p. 14, he fails to note the fact that at some of the hospitals no diphtheria is treated, and that at others the proportion of diphtheria patients to scarlet fever patients varies considerably. Hence the very misleading nature of the table on p. 14, where, in estimating the percentage of primary infective cases at the different hospitals, no regard is had to these facts. Inasmuch as the percentage of primary infective cases is in the case of scarlet fever 1·3 and in the case of diphtheria 0·5, it is obvious that the conclusions drawn from the table will be erroneous, because a comparison is there made between a series of facts which are not comparable.

From the data given in the table on p. 21 Dr. Simpson draws the conclusion that because the Brook and Western Hospitals detain 40 and 39 per cent. of the scarlet cases respectively 12 weeks and over, and as the percentage of primary infective cases at these two hospitals is not less than that at the other hospitals, therefore long detention in hospital does not lessen the incidence of return cases. Has he ascertained whether or not the cases detained over 12 weeks in these two hospitals do actually include an undue proportion of primary infective cases? The appendices to the report not having been sent me, I am not in possession of the facts bearing on this point.

In estimating the percentage of primary infective cases and the length of detention of cases at different hospitals, Dr. Simpson has not taken into consideration the possible difference in practice that obtains at the various acute hospitals in sending to the convalescent hospitals or retaining at the acute hospitals cases of rhinorrhœa and otorrhœa. If the practice varies, and I believe that it does, it follows that a hospital sending a relatively small number of such cases to the convalescent hospitals would show a relatively larger number of cases detained 12 weeks and over, compared with a hospital at which the practice is to send these cases to convalescent hospital. Inasmuch as these cases with chronic discharges are, on Dr. Simpson's showing, the cases likely to be the carriers of infection to others, it would follow that the hospitals retaining a relatively large percentage of cases of rhinorrhœa and otorrhœa would show a larger percentage of primary infective cases than hospitals from which the majority of such cases is sent to the convalescent hospitals.

But apart from these considerations, if Dr. Simpson's contention be correct, that return cases are not lessened by long detention in hospital, one would expect that the percentage of primary infective cases at the hospital which detains the smallest percentage of cases 12 weeks and over (*i.e.*, North-Western, 11 per cent.) would not have a larger number of primary infective cases than, say, the South-Western, at which 27 per cent. of the patients are detained 12 weeks and over. But, as a matter of fact, the percentage of primary infective cases at the North-Western Hospital is 1.5, while at the South-Western it is 0.8, that is, more than double.

It may be interesting to point out here that Dr. C. K. Millard, medical superintendent of the Birmingham Fever Hospital, in an article on "return" cases published in the *British Medical Journal*, 3rd September, 1898, showed that of 4,810 cases of scarlet fever discharged, 148, or 3 per cent., were "infecting" cases within four weeks of discharge, a much higher percentage than is shown at the Board's hospitals in Dr. Simpson's report.

The average duration of detention of all cases in hospital at Birmingham was 8.5 weeks, and of the "infecting" cases 8.3 weeks. Sixty-nine per cent. of the "infecting" cases were detained in hospital under nine weeks and 31 per cent. over nine weeks. These figures show a very direct relation between "premature" discharge and incidence of return cases. Dr. Millard's observations extended over a period of two and a half years.

It appears to me that, having regard to the difficulties incident to the investigation of so important and intricate a subject as that of the incidence of "return" cases, the inquiry should have covered a period of at least 12 consecutive months, preferably two years, if conclusions of any real value were to have been derived from the evidence obtained.

While recognising the merits of the report, which embraces so small a number of cases and extends over so limited a period of time, I do not think that the data contained in the report justify many of the conclusions formulated by Dr. Simpson.

In estimating the percentage of primary infective cases of scarlet fever and the length of detention at the various hospitals, he fails to take into consideration the difference in practice that obtains at the various hospitals in regard to transferring to the convalescent hospitals or in retaining at the acute hospitals patients with rhinorrhœa and otorrhœa.

While asserting that the detention of cases in the Metropolitan Asylums Board hospitals is, at least, a fortnight and sometimes three weeks longer than is the case in provincial hospitals at Aberdeen, Glasgow, Edinburgh, and Liverpool, he gives no facts as to incidence of "return" cases at these hospitals. This appears to me to be an important omission.

As regards scarlet fever, Dr. Millard's experience at Birmingham shows a much larger proportion of primary infective cases, associated with a shorter period of detention, than obtains at the Asylums Board hospitals, a result directly opposed to the conclusions formulated by Dr. Simpson.

(Signed) JOHN MACCOMBIE,
Medical Superintendent.

(10.) NORTHERN HOSPITAL.

25th July, 1899.

In compliance with your request, I submit the following observations upon Dr. Simpson's report *re* "return" cases.

The main facts elicited by Dr. Simpson's investigations are—

(1.) That, for the period referred to, 1.1 per cent. of the total discharges have, as far as can be ascertained, given rise to secondary cases.

(2.) That of the number apparently conveying infection, 80 per cent. have shown evidence of discharges from mucous surfaces.

The first fact appears to me to be very satisfactory; the second agrees with observations I have made in my investigation of "return" cases.

We have long been aware of the importance of securing a freedom of patients from those discharges and all unhealthy condition of mucous membranes before they return to their homes.

The report is of value in strengthening our hands in insisting upon the importance of the point.

While fully recognising the industry and skill expended by Dr. Simpson in the compilation of his report, I am unable to agree with many of his deductions. Most of these are expressed in the summary on pp. 23-25.

This summary consists of two parts—

1. Statement of fact, contained in clauses i., ii., iii., iv., v., x., and xi.
2. Expression of opinion, in clauses vi., vii., viii., ix., xii., and xiii.

The latter are open to criticism.

They refer to three subjects—

- (1.) The warm bath (clause vi.).
- (2.) Information and advice *re* patients on discharge (clause ix.).
- (3.) Duration of detention (clauses vii., viii., xii., xiii.).

(1.) The warm bath on discharge has, in my opinion, its risks, and may be a source of danger of cold and more or less serious lung conditions, but I am not aware of any evidence justifying the assertion that it "contributes to the increase of infection."

(2.) The notification of the Medical Officer of Health appears to me to be quite unnecessary in addition to advice given by printed instructions given to parents or guardians. The work of adequately examining all the discharged patients would

be enormous, and, as is shown by Dr. Simpson, would have been unnecessary in 98·9 per cent. of these cases, even if it had been of use in any number of the remaining 1·1 per cent.

(3.) The argument as to the excessive detention of patients appears to me fallacious. What is proved by Dr. Simpson is that 1·1 per cent. of the cases were *not detained long enough* (for they conveyed infection to their homes). But this is no indication to my mind that the remaining 98·9 per cent., or any part of them, were detained too long. Many of the patients whose stay in hospital is protracted are detained on account of those very conditions which Dr. Simpson finds to be the main source of danger. Is it suggested that the danger would be diminished if they were discharged sooner—that is, if a larger number were discharged with those conditions uncured? The convalescent hospitals are stated to be no more successful than the acute hospitals in “freeing patients from infection,” but a knowledge of the circumstances would anticipate this fact, for it is to the convalescent hospitals that the cases of prolonged infectivity are, very rightly and properly, sent from the acute hospitals.

An absence of these and many other considerations renders the table of comparative incidence of return cases quite valueless. In concluding this brief criticism of this very interesting report, I should like to say that it is not my opinion that “the meeting of nurses at meals and on other occasions” is a factor of importance—in my experience, of any importance—in the occurrence of post-scarlatinal diphtheria or post-diphtheria scarlatina.

(Signed) F. N. HUME,
Medical Superintendent.

(11.) GORE FARM HOSPITAL.

18th July, 1899.

I beg to submit my observations on the report by Dr. Simpson upon “return” fever cases.

In the first place, I wish to observe that this subject is surrounded by many difficulties which render investigation most complex.

Before dealing with the conclusions drawn by Dr. Simpson in his report, I wish first to draw attention to a few points in the body of his report.

I wish to draw attention to a tabular statement on p. 14, which shows the incidence of 111 primary cases on the numbers discharged from each hospital. In the paragraph immediately prior to this tabular statement it is stated, that of 111 primary cases, 90 were scarlet fever and 21 diphtheria, or a percentage on the discharged of 1·3 for scarlet fever and 0·5 for diphtheria.

It follows, according to this, that those hospitals which deal with only scarlet fever ought to have a higher return rate than those hospitals which deal with both scarlet fever and diphtheria, inasmuch as scarlet fever produces nearly three times as many primary infective cases as diphtheria, *e.g.*, Gore Farm Hospital and North-Eastern Hospital, which admit only cases of scarlet fever. Again it follows, in a less degree, that an hospital which treats more diphtheria patients than scarlet fever patients should have a lower return rate than an hospital which treats more scarlet fever than diphtheria cases.

In fact, no deductions can be drawn from this tabular statement, inasmuch as the proportionate number of infective cases of scarlet fever and of diphtheria is very different, and the proportionate number of scarlet fever and diphtheria patients discharged is not the same at all or nearly all the Managers' hospitals, *e.g.*, if all the cases discharged from one hospital were scarlet fever, then, according to the report, the average percentage number of primary infective cases would be 1·3 per cent., but, were half of the discharges cases of diphtheria and the other half cases of scarlet fever, the average percentage number of primary infective cases would be 0·9.

In the last paragraph of p. 14, an indirect comparison is made between the hospitals, inasmuch as the various hospitals are arranged in three groups, and the last group is mentioned as occupying a more unfavourable position than the other hospitals. This group consists of the North-Western, Gore Farm, Brook, and North-Eastern. Now, the Gore Farm and the North-Eastern admit only scarlet fever cases; and the North-Western and the Brook have a high proportion of scarlet fever beds, when compared with the proportion of diphtheria beds. It has already been shown in the report that scarlet fever produces nearly three times as many primary infective cases as diphtheria. There are other conditions not dealt with in the report which markedly affect the incidence of return cases, both at the acute and convalescent hospital, which I will deal with later, but I have now pointed out sufficient to show that the table, though correct in its actual figures, is absolutely erroneous as a comparative measure, and no deductions, direct or indirect, can be drawn from it as it now stands.

On p. 20, first paragraph, the following statement is made concerning primary infective cases which produce the return cases. I quote the statement: "The question is, can this percentage be reduced, and, if so, in what manner? One thing is certain, it will not be reduced by sending more to the convalescent hospitals." I have carefully perused the report, but I can find nothing to justify this statement.

I regret that the figures from the Northern Hospital are not shown in the report, and I can only deal with this statement from the figures given for Gore Farm Hospital. On p. 14 it is stated that there were 90 primary infective cases of scarlet fever, which, on the discharges, is equal to 1·3 per cent. Now, there were 18 primary infective cases of scarlet fever discharged from the Gore Farm Hospital out of 1,660 discharges during the six months in question, *vide* p. 20, second table, and this works out to a percentage of 1·08. Now, for scarlet fever cases the percentage was 1·3, while at Gore Farm Hospital the percentage was 1·08, or, in other words, the Gore Farm Hospital was ·22 less than the average of all the hospitals. In drawing the above deduction concerning the convalescent hospitals, a most important point has utterly escaped observation, and I may say that this point, which I am about to draw attention to, also affects the acute hospitals. The point is, are the cases sent to the convalescent hospital the same average type of case as those retained for discharge at the acute hospital? The cases sent to Gore Farm Hospital include a considerable number of cases which suffer from affections of the nose, and these are the cases which are so productive of the return case; they also include a considerable number of cases with affections of the ear and skin. Now, as far as this point is concerned, the question arises, do

the convalescent hospitals suffer a comparative disadvantage in the type of cases they have to deal with? This, I think, is a matter for inquiry, and one cannot dogmatise until inquiry has been made as to the actual facts.

I consider it desirable, while on this subject, to draw attention to the question from the point of view of the acute hospitals. If a fair comparison is to be made between the various hospitals as to the number of primary infective cases discharged from each, I submit that, for purposes of comparison, the type of case at each hospital must be somewhat similar, and that this similarity must considerably depend on the sort of cases transferred to the convalescent hospital. The question thus arises, does each hospital transfer a similar type of case to the convalescent hospital? I submit that as far as the transfer of scarlet fever cases to Gore Farm Hospital occurred, the various hospitals concerned did not by any means send what might be called a similar type of case, *e.g.*, the percentage on admission at the Gore Farm who suffered from affections of the nose and ears varied from 6·89 from one acute hospital to 2·49 from another. I do not consider that the figures are sufficiently numerous to draw any valuable deductions from, but it is interesting to note that the hospital which sent 6·89 per cent. of these cases to Gore Farm shows the smallest percentage of primary infective cases discharged, and further, that the hospital which sent only 2·49 per cent. of these cases shows the highest percentage of primary infective cases discharged.

As to whether it is desirable to send this class of case to the convalescent hospital is a matter on which opinions differ. There is little doubt that such cases are greatly improved by sending them to the convalescent hospital, but there are other considerations which I cannot go into here.

With regard to the table on p. 21, and the deduction drawn from it, that return cases are not lessened by long detention in hospital, I wish to point out that the figures shown in the table do not justify such a conclusion. The following tabular statement is taken from the figures therein, and I add the figures of Gore Farm taken from p. 20:—

Hospital.	Percentage of patients detained 12 weeks and over.	Total percentage of return cases.
Brook	40·1	2·1
Western	39·3	1·6
North-Eastern	28·9	1·3
South-Western	27·2	0·8
Gore Farm	26·7	1·08
Fountain	20·0	1·3
South-Eastern	18·9	1·7
Eastern	17·2	1·1
Park	15·2	1·3
North-Western	11·8	1·5

This table shows that the South-Western, with the smallest percentage of return cases, detained 27·2 per cent. of its cases 12 weeks and over, whereas the South-Eastern, with a percentage of return cases next to the highest, detained only 18·9 per cent. of its cases 12 weeks and over, and further, the North-Western,

which detained its cases the shortest time of all, yet showed a high rate of return cases—in fact, the fourth highest.

I will now deal with several of the conclusions on pp. 23-25.

v.—This coincides with the view I have long held.

vi.—In the first place I wish to point out that the influence of home conditions may have had something to do with the bringing back of rhinorrhœa and otorrhœa.

Although baths do not remove this special infection, yet that does not show that the baths do not remove infection in other respects. The result of giving up the bath would be difficult to foretell, and I would not advise such a course in the face of the resulting possibilities; however, that there is a certain danger of the patients contracting colds, &c., after their bath is indisputable. This might be minimised by sending patients home in an ambulance, thus avoiding cold and wet as far as possible.

vii.—It is obvious that mere duration of detention in hospital is no standard as to the limit of infection, this being a matter which depends upon the nature and course of the disease which the patient suffers from. The statement that long detention in infective wards will not reduce the percentage of return cases is open to question, and the converse does not hold good.

viii.—It is a much-disputed point as to whether transference to less infected wards is likely to reduce the number of return cases. This has been tried, but probably it would be necessary to carry such a system on for a considerable length of time before any definite conclusion could be arrived at. The patients in a convalescent hospital are residing in less infected wards than they are while at an acute hospital; but this is, of course, only to a limited degree.

ix.—I am of the opinion that it would be advisable to notify the Medical Officer of Health when patients are discharged.

xii.—The statement "that return cases are not due to premature discharge" does not appear to me to be justified, inasmuch as the material upon which the report is based is not large enough; and it is further to be borne in mind, that the cases discharged comparatively early are uncomplicated cases such as are unlikely to produce return cases, while, on the other hand, the cases that are detained for a long time are usually detained simply because they are considered likely cases to produce return cases.

(Signed) FREDERIC THOMSON,
Medical Superintendent.

The foregoing observations were sent to Dr. Simpson, who furnished a report thereon, viz.:—

MEMORANDUM BY DR. W. J. R. SIMPSON WITH REFERENCE TO THE OBSERVATIONS OF THE SEVERAL HOSPITAL MEDICAL SUPERINTENDENTS UPON HIS REPORT, DATED 5TH JUNE, 1899, *RE* ALLEGED "RETURN" FEVER CASES, &c.

In the superintendents' very valuable criticism of my report there are certain fundamental points of agreement and disagreement which it is necessary to touch upon.

The points of agreement are—

- (1) That the warm bath immediately before discharge in winter is likely to be injurious.
- (2) That a printed circular should be given to parents or guardians to warn against the child being put in the same bed with others.
- (3) That discharges from the nose and ears and mucous membranes are the usual sources of infection.
- (4) That the investigation is not nearly on sufficiently large a scale to clear up the many important practical questions involved.

I hope it will be understood that I do not advocate the discontinuance of the bath, but that in winter it should not be given immediately before discharge.

The points of disagreement resolve themselves mainly into the duration which a patient should be detained in hospital.

I was asked to ascertain if the return cases were due to premature discharge from hospital. From inquiry I was able to answer "No." On the contrary, it seemed to me that the patients were kept in the hospital too long. Instances of infection were given after four, five, and eight months' detention in hospital, and I came to the conclusion that mere detention does not free of infection.

The cause of our disagreement is, I think, that we look at the infection from two different points of view. We both agree that the infection is in the discharge, but from this point our views diverge. The superintendents—at least, those who have expressed an opinion—evidently think that the infection is the secretion itself. That is the view I also held before I began this investigation. If this view is correct, there is no other remedy to be applied in the case of patients with discharges than to keep them in hospital or convalescent hospital until the discharge has completely and permanently healed. According to this view, the case sent out in an infective state after eight months' detention was prematurely discharged. As Dr. Gayton points out on p. 29, some otorrhœas continue for years, so that the patient, under this view, should be kept in for that time.

It was only at a late stage in the investigation that my views, which were similar at first to the above, began to undergo modification. I have placed these later views tentatively in the report, though, in the summary, owing to the necessity of conciseness, they may appear more decided, for I agree with the superintendents that the basis is not sufficiently strong to dogmatise upon. The investigation has impressed upon me the probability that the infection of a chronic mucous discharge is not due to the secretion itself, but is due to the micro-organisms of the disease being accidentally engrafted on to the secretion from the patient living in an infected place. If the secretion dries up, there is no longer the medium on which the micro-organisms can engraft themselves, so that the patient becomes non-infective; but if the discharge continues, then it depends whether the patient remains in an infective ward, subject now and again to accidental re-infection, or whether the patient lives in a non-infective atmosphere, as to how long the infection will remain. In the latter case it seems to lose the infection in a short time.

My reasons for thinking that the secretion *per se* is not infectious, but has been rendered infective by accidental contamination, are:—

- (i.) That the ward itself is in an infective state.

- (ii.) That the infection does not continue long when the patient returns home, though the discharge continues.
- (iii.) That when there is a recurrence of the discharge some time after the return home of the patient from hospital, the patient is not infective.
- (iv.) That as stated by Dr. Birdwood, a large number of children with otorrhœas and discharge from the nose go home without infecting anybody else.

I think (ii.), (iii.), and (iv.) point to the probability that the secretion itself is not infective. Although this is the position I have been led to, not on the statistical evidence but on the facts observed, I say in the report, and am quite at one with the superintendents on this point, that the cases are not sufficiently numerous or the evidence sufficiently strong to justify full acceptance, but there is sufficient to indicate that further inquiry ought to be made in this direction. If this view is correct, there is another method of freeing the patient from infection other than keeping him or her in hospital until the discharge is permanently healed. In India I would place the patient in a tent. As this is impossible here, I would isolate the patient in the manner suggested by Dr. Turner—treat antiseptically, and send out after a fortnight. This, of course, only refers to cases of otorrhœa and nasal discharge. An experiment might be made in this direction, and further facts ought to be collected. In any future investigation, the very important points raised by the superintendents would have to be included in the inquiry to give it the completeness it requires, and the further question would have to be examined as to whether the present classification of patients has any influence on the number of cases of aural and nasal discharges occurring in hospital.

Dr. Gayton appears to think that otorrhœa and rhinorrhœa are propagable. If this were proved by careful investigation, these cases could be reduced in numbers, and thus, indirectly, the duration of detention in hospital could be reduced, even following out the general view that the secretion *per se* is infective, and not, as I am inclined to think from the present state of the inquiry, that the secretion or discharge is only the carrier of the infection derived from an accidental contamination in an infective or crowded ward.

(Signed) W. J. SIMPSON, M.D., F.R.C.P.

7th November, 1899.

14, Gloucester Place, Portman Square,
17th November, 1899.

SIR,

I have the honour to forward for the purpose of incorporation with my report Table A and Table B, which give the figures and ratios relating to the numbers and duration of detention of cases of scarlet fever in different hospitals and to the isolation in the hospitals and at home. In Table B it will be noted that a number of corrections have been made on the table at p. 23. This is due to the insertion of some figures which were inadvertently omitted in the original report. The corrections, however, do not alter in any way the general bearing of the table.

I have the honour to be,

Your obedient Servant,

(Signed) W. J. SIMPSON, M.D., F.R.C.P.

T. DUNCOMBE MANN, Esq.,

Clerk to the Metropolitan Asylums Board.

TABLE A.

Number and duration of detention of cases of Scarlet Fever in different hospitals discharged during the six months from October, 1898, to March, 1899.

Time of Detention.	South-Eastern.	North-Eastern.	Park.	Western.	North-Western.	Fountain.	Eastern.	Brook.	South-Western.
Under 2 weeks	0	0	0	0	1	0	1	0	0
2 weeks and under 4 weeks	0	3	1	0	5	0	0	0	0
4 ,, ,, 6 ,,	3	8	9	1	32	16	18	5	10
6 ,, ,, 8 ,,	67	142	98	13	115	72	64	20	89
8 ,, ,, 10 ,,	75	190	92	80	114	166	41	145	86
10 ,, ,, 12 ,,	42	112	46	83	71	100	25	146	66
12 ,, ,, 15 ,,	32	149	32	59	28	67	22	170	66
15 ,, and over	12	38	10	56	18	22	9	43	28
	231	642	288	292	384	443	180	529	345

TABLE B.

Corrected tabular statement of figures and percentages, comparing the duration of detention in the nine Metropolitan Asylums Board's hospitals and the period of isolation at home.

	SCARLET FEVER.				DIPHTHERIA.			
	HOSPITALS.		HOME.		HOSPITAL.		HOME.	
	No.	Per-centage.	No.	Per-centage.	No.	Per-centage.	No.	Per-centage.
Under 2 weeks... ..	2	0.0	22	4.5	14	0.5	153	37.6
2 weeks and under 4 weeks ...	11	0.3	77	16.5	95	3.9	181	44.8
4 ,, ,, 6 ,, ...	102	3.0	169	36.4	543	20.5	51	12.6
6 ,, ,, 8 ,, ...	680	20.3	157	33.7	835	35.3	12	2.9
8 ,, ,, 10 ,, ...	989	29.6	35	7.5	479	18.1	5	1.2
10 ,, ,, 12 ,, ...	691	20.3	5	1.0	307	11.6	2	0.4
12 ,, ,, 15 ,, ...	625	18.9	0	0.0	253	9.5	0	0.0
15 ,, and over	236	7.0	0	0.0	122	3.9	0	0.0
	3 334	—	465	—	2 648	—	404	—

NOTE.—The period of isolation at home, being determined as that period between the notification of the illness and the date of disinfection of the house after the recovery of the patient, does not possess the same exact accuracy as the period of isolation in hospital. The error, however, is after all very small, and the figures show a very striking contrast, the importance of which is only slightly lessened by the comparatively small numbers dealt with in the home figures.

At the instance of the Hospitals Committee, who had all the foregoing reports and papers under their consideration, the Royal College of Physicians were furnished with copies of all the documents, and they were informed that, "looking at the importance of the subject and to the bearings it has upon the administration of the large infectious hospitals under the Asylums Board's control, the central Hospitals Committee would greatly value the expression by the College of an opinion as to whether, and if so, under what conditions, the present period of detention in hospital could consistently with public safety be shortened."

In reply to this communication, the Royal College furnished the Asylums Board with the following copy report as the result of their inquiries by their Fever Hospital Committee:—

ROYAL COLLEGE OF PHYSICIANS.—COPY REPORT OF FEVER HOSPITAL COMMITTEE.

19th July, 1900.

Committee appointed by the college, 9th April, 1900, to consider a communication of 6th February from the Hospitals Committee of the Metropolitan Asylums Board, with reference to cases of diphtheria and scarlet fever, alleged to prove sources of infection on returning home.

MEMBERS OF THE COMMITTEE.

The President.

Dr. Pye Smith. Dr. J. H. Bridges. Dr. Sidney Phillips. Dr. W. J. Simpson.
Dr. Caiger.

1. The committee have carefully considered Dr. Simpson's report and the documents referring thereto, for the purpose of expressing an opinion as to whether, and if so, under what conditions, the present period of detention of patients in the hospitals of the Metropolitan Asylums Board could consistently with public safety be shortened.

2. The committee are impressed with the small percentage of those cases which, on investigation, were found to have given rise to fresh infection, viz., 1.1 per cent. on the total cases discharged from hospital of diphtheria and scarlet fever taken together. They also note that of these no fewer than 80 per cent. were suffering from some mucous discharge, either during their stay in hospital or shortly subsequent to their return home.

3. The total number of return cases of diphtheria was 21, equal to a percentage of .5 on the cases of diphtheria discharged. With reference to the length of detention after diphtheria, the committee are of opinion that this can only be left to the discretion of the several medical superintendents. The importance of the question of return cases mainly turns on the length of detention of scarlet fever cases, which are more numerous than those of diphtheria. The proportion of the return cases in diphtheria is small, viz., .5 per cent. of the patients discharged after suffering from that disease; and apart from the difficulty which is occasionally experienced in respect to the recognition of the specific bacillus, a difference of opinion exists as to the practicability of regulating a patient's detention by bacteriological examination alone.

4. The total number of return cases of scarlet fever was 90, giving a percentage of 1.3 of the total number discharged. In endeavouring to arrive at a definite conclusion as to the necessary length of detention in scarlet fever, there are two points on which elucidation is required:

The degree of infectivity attaching to—

- (a) The desquamation of the skin.
- (b) Any mucous discharge occurring during convalescence.

In respect of the infectivity of the later desquamation of the skin in scarlet fever, it is to be observed in Dr. Simpson's investigation that in only 2.7 per cent. was there any reason to suspect desquamation of the skin as the cause of secondary infection. The relatively high degree of infectivity of the mucous discharges as compared with the later desquamation of the skin in scarlet fever, as shown in the report, is one which is obtaining an increasing support among those of the profession who have had much to do with infectious diseases. It would suggest that possibly too much importance has been hitherto attached to the infectivity of the skin during the later weeks of scarlatinal convalescence. The committee have communicated with the authorities of many hospitals in other large cities in this country, in America, and in Germany, and have ascertained that the period of detention insisted on is of somewhat shorter duration than is practised in those of the Metropolitan Asylums Board. Unfortunately, no corresponding record of the incidence of return cases is available for comparison with that recently obtained for the Metropolitan Asylums Board.

In respect to the infectivity of the mucous discharges, the question raised by the Managers of the Metropolitan Asylums Board is of the highest importance, for on its solution depends the practice which it would be advisable to adopt. If it can be proved that the discharge after a time constitutes simply the vehicle, as suggested by Dr. Simpson, and is not in its nature infective, as is usually believed, it is obvious that the practice of removing the patient from an infective environment for a short period before return to his home is one which should be adopted. But on this point the committee are unable to express a decided opinion with the evidence at present available.

5. In order to arrive at a satisfactory conclusion, the committee are of opinion that information should be obtained as to whether—

- (a) The mucous discharges in themselves are infectious from patient to patient.
- (b) Their infectivity quickly dies out on removal of the patient to an uninfected environment.

And further, in order to place the inquiry on a firmer basis than at present, that the investigation should extend over a longer period than six months, so that not only all seasons of the year may be included in the scope of the investigations, but that the data available should be more numerous. The committee are of opinion that there is not sufficient evidence at present before them to enable them to lay down any definite period of time as necessary for the detention of patients recovering from scarlet fever. With the object of obtaining further evidence the committee recommend—

- (i.) That in each hospital a couple of wards identical in respect to cubic space per bed, &c., should be set aside and administered on a different principle, the sex of the children being the same, and the age as far as possible; that in one ward the cases subject to mucous discharges from nose or ear be rigorously excluded; that immediately on the appearance of any such discharge the patient should be removed; and that all nozzles of syringes should be kept in antiseptic solutions. In the other ward no special attention should be paid to these discharges other than that hitherto adopted. The incidence of either rhinorrhœa or otorrhœa should be compared. Cases of "septic scarlet fever" should be excluded from both.
- (ii.) That, if possible, in certain hospitals, with the approval of the medical superintendents, two or more rooms previously disinfected, be reserved for the isolation after six or eight weeks' detention, of single patients who are suffering from rhinorrhœa or otorrhœa, but whose desquamation is completed. Each patient so secluded should be kept for 10 days or a fortnight before returning home. During this period of detention the affected parts should be regularly irrigated or syringed with some reliable antiseptic, and great care should be taken that the nozzle of the apparatus be kept in a germicidal solution. On the expiration of the quarantine the patient should be sent home whether the discharge has ceased or not, and the room should be disinfected prior to the reception of another patient. The subsequent history of the case should be investigated.
- (iii.) That the inquiry into the facts connected with the incidence of return cases at the Managers' hospitals should be continued for a further period of 12 months, and that the scope of the inquiry should include the history of the cases discharged under the conditions mentioned.

(Signed) W. S. CHURCH, *President.*

The medical superintendents of the several hospitals have been authorised, provided the efficiency of their hospitals is in no way impaired, to carry out the suggestions contained in recommendations (i.) and (ii.).

As regards recommendation (iii.), the Hospitals Committee have in contemplation arrangements for the continuance of the investigation for a further period.

In the meantime, the Metropolitan Asylums Board publish these papers in the belief that they will be found of value by all interested in the important questions arising out of the isolation of the infectious sick.

HEAD OFFICE OF THE BOARD,
EMBANKMENT, E.C.,
January, 1901.