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ORIGINAL ARTICLES.

THE PERIOD OF INCUBATION IN TYPHOID, WITH
NOTES OF TWO CASES UNDER ANTISEPTIC
TREATMENT. ✓

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(With Two Temperature Charts.)

HITHERTO the period of incubation in typhoid fever has been matter of conjecture based upon analogy. The purpose of this paper is to record two cases of typhoid which were under daily observation for some time before the commencement of the typhoid illness, and which afford tolerably definite evidence regarding the period of incubation. At the same time they illustrate the efficacy of the new treatment by salol, in combination with chlorodyne and lac bismuth, in arresting the course of the disease, and preventing the ulceration of the intestinal glands. Both patients were sent into the hospital as typhoid, but were found to be suffering from only a chest affection which subsided in a few days. Thereafter, as the charts of temperature show, there was no evidence of fever for some time—in one case for ten, and in the other for fourteen days—when the temperature rose suddenly, and the symptoms of typhoid developed. Both patients contracted typhoid in the hospital in a rather singular and unusual way,

which enables me to define with reasonable certainty the limits of the incubation period.

CASE I. The following gives a condensed report of my notes:—

J. G., aged 8, admitted 10th August, 1893. Been ill about fourteen days.

Temperature on admission, 100°. Evening temperature, 101.2°.

11th August, 1893.—Pulse, 96. No stool, no spots, no iliac tenderness. Tongue furred. Pupils dilated. Some cough, with bronchitis over back of both lungs. To have enema and hot water bag to back.

Morning temperature, 99.2°. Evening temperature, 101.4°.

12th August.—Pulse, 84. One stool after enema, formed. Tongue dirty. Had a restless night.

Morning temperature, 98.6°. Evening temperature, 97.8°.

13th August.—Pulse, 96. No stool. Tongue furred. Pupils dilated. No spots. No iliac tenderness. To have enema.

Morning temperature, 98.2°. Evening temperature, 98°.

Thereafter, as the chart shows, the temperature remained normal until the evening of the 21st, when it was 99.4°. On the 22nd the morning temperature was 99.6°, and the evening temperature 99.8°.

23rd August.—Pulse, 120. No stool. Had a restless night, and this morning vomited a large quantity of greenish matter. To have castor oil.

Morning temperature, 102°. Evening temperature, 102°.

(As it turned out, the rise of temperature and the restless night on the 22nd marked the beginning of typhoid.)

24th August.—Pulse, 120. One stool, constipated. Had a restless night. No vomiting. No spots. Repeat oil.

Morning temperature, 102.4°. Evening temperature, 102.8°.

25th August.—Pulse, 120. Two stools after oil, the last rather pea-soupy in character. Tongue furred. Abdomen distended, with iliac gurgling. Chest normal. Had a restless night.

Evening temperature, 6. 103.4°. 9. 104°. 12. 103.4°.

26th August.—Pulse, 108. Two stools, loose. Had a restless night. Tongue furred. Pupils normal.

Morning temp., 3. 103.8° 6. 102.0° 9. 99.6° 12. 101.2°

Evening temp., 3. 102.2° 6. 103.2° 9. 103.4° 12. 103.0°

27th August.—Pulse, 112. No stool. Tongue furred. Abdomen swollen, but not tender. No spots.

Morning temp., 3. 100·0° 6. 100·4° 9. 99·6° 12. 100·4°
 Evening temp., 3. 100·4° 6. 101·4° 9. 103·2° 12. 100·4°

Give mist. salol, 1 dr. every two hours.¹

28th August.—Pulse, 96, weak. No stool. Abdomen swollen, not tender. Tongue furred. Pupils dilated.

Morning temp., 3. 98·8° 6. 97·4° 9. 97·6° 12. 97·2°
 Evening temp., 3. 98·0° 6. 103·4° 9. 104·4° 12. 101·8°

Reduce mist. salol to 1 dr. every four hours.

29th August.—Pulse, 96, weak. One stool after enema, loose and dark. To have brandy.

Morning temp., 3. 100·6° 6. 102·4° 9. 100·0° 12. 99·6°
 Evening temp., 3. 101·4° 6. 103·4° 9. 103·6° 12. 100·4°

30th August.—Pulse, 108. No stool. Tongue dirty. No delirium, but occasional moaning in sleep.

Morning temp., 3. 101·6° 6. 101·6° 9. 99·8° 12. 98·4°
 Evening temp., 3. 99·0° 6. 103·2° 9. 103·4° 12. 103·2°

31st August.—Pulse, 112. No stool. No delirium, but moans in sleep. Three isolated rose spots on abdomen. Urine smoky. Increase brandy. (First appearance of the typhoid spots between the tenth and eleventh day.)

Morning temp., 3. 100·4° 6. 99·6° 9. 100° 12. 99·2°
 Evening temp., 3. 101·4° 6. 100·2° 9. 101° 12. 100·4°

1st September.—Pulse, 108. One stool after enema, semi-solid and dark. No delirium. Urine slightly smoky.

Morning temp., 3. 101° 6. 100° 9. 98·8° 12. 98·6°
 Evening temp., 3. 99·4° 6. 102° 9. 102·4° 12. 101·4°

2nd September.—Pulse, 96. No stool. Tongue moist. No delirium.

Morning temp., 3. 101·8° 6. 99·8° 9. 99·8° 12. 98·4°
 Evening temp., 3. 98·2° 6. 101·6° 9. 101·8° 12. 101·4°

3rd September.—Pulse, 96. One stool, after enema, slight and constipated. No delirium. Slept well.

Morning temp., 3. 101·4° 6. 99·2° 9. 98·4° 12. 98·6°
 Evening temp., 3. 100·4° 6. 100·2° 9. 98·6° 12. 99·8°

¹ R.—Pulv. salol, 160 grs.
 Chlorodyne (B.P.), 160 minims.
 Lac bismuth (Syme's), 2 oz.
 Aq., ad 8 oz.

Sig.—For adults, 10 drs. every two hours; between 6 and 14 years, 2 drs. every two hours; under 6 years of age, 1 dr. every two hours.

4th September.—Pulse, 96. One stool, after enema, formed, and of greyish colour. Tongue moist. Reduce mist. salol to 1 dr. every six hours.

Morning temp., 3.	100·2°	6. 98·8°	9. 98·4°	12. 97·4°
Evening temp., 3.	97·6°	6. 99·4°	9. 99·4°	12. 99·2°

5th September.—Pulse, 72. No stool.

Morning temp., 3.	98·0°	6. 98·8°	9. 97·2°	12. 97·6°
Evening temp., 3.	97·4°	6. 97·4°	9. 98·6°	12. 97·8°

The typhoid began with rise of temperature on the evening of 21st August and on 5th September, being the fifteenth day of illness; the course of the disease is completely and permanently arrested.

6th September.—

Morning temp., 3.	97·4°	6. 97·2°	9. 98·4°	12. 98·0°
Evening temp., 3.	97·6°	6. 97·0°	9. 97·0°	12. 97·4°

7th September.—

Morning temp., 3.	97·2°	6. 98·0°	9. 97·4°	12. 97·2°
Evening temp., 3.	97·2°	6. 97·0°	9. 97·4°	12. 97·0°

Thereafter, as the chart shows, the temperature remained below normal until 20th September, when it regained the normal line, and so continued until the patient was discharged cured on 13th October.

The salol was stopped on 13th September.

CASE II.—J. M., aged 5, admitted 24th April, 1894. Illness began on the 20th. Sent in as typhoid. Temperature on admission, 103·8°.

Evening temp., 6.	102·2°	9. 104·2°	12. 103·0°
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25th April.—Pulse, 120. No stool. Tongue furred. No spots. Has pneumonia of lower half of left lung, with wheezing bronchitis over whole of chest.

Morning temp., 3.	103·6°	6. 103·4°	9. 103·6°	12. 103·6°
Evening temp., 3.	102·0°	6. 103·8°	9. 103·2°	12. 103·4°

To have jacket poultices round chest, and small doses (2½ grs.) of salol tabloids every two hours, with the view of lowering the temperature, and inducing perspiration.

It is not necessary to occupy space by giving notes of the daily progress of the chest affection. Reference to the chart will show that the temperature, which was regularly taken every three hours until 26th June, subsided to normal on

2nd May, and that on the 3rd, 4th, and 5th, the evening temperature was slightly above the normal line. From 5th May until 20th May at 9 P.M. there was no evidence of fever. The following is the temperature for 21st May:—

Morning temp., 3.	98·0°	6.	98·2°	9.	98·8°	12.	97·6°
Evening temp., 3.	97·4°	6.	98·0°	9.	102·0°	12.	102·4°

21st May, at 9 P.M., marks the commencement of what proved to be an attack of typhoid fever.

22nd May.—

Morning temp., 3.	101·4°	6.	101·2°	9.	100·0°	12.	100·6°
Evening temp., 3.	103·4°	6.	104·4°	9.	103·6°	12.	102·4°

At 9 P.M., exactly twenty-four hours after the onset of fever, in view of the sustained high temperature without obvious cause, I suspected, from previous experience, this might prove to be another case of typhoid contracted in hospital, and therefore ordered *mist. salol*, 1 dr., every four hours.

23rd May.—Pulse, 96. One stool, after enema, semi-solid, and light in colour. No pain. No spots. No cough. No delirium. Face highly flushed.

Morning temp., 3.	102·4°	6.	102·0°	9.	103·2°	12.	102·0°
Evening temp., 3.	104·4°	6.	105·0°	9.	100·0°	12.	105·0°

2 P.M., increase *mist. salol* to 1 dr. every two hours.

24th May.—Pulse, 120. No stool. Tongue furred. Had a restless night. Chest normal. Two doubtful spots on abdomen.

Morning temp., 3.	101·2°	6.	103·0°	9.	101·0°	12.	103·6°
Evening temp., 3.	103·6°	6.	103·0°	9.	102·6°	12.	103·2°

25th May.—Pulse, 120. Two stools, one after enema, and one during night, both loose, lumpy, and dark. Tongue furred. Abdomen distended, not tender. No delirium. Slept fairly well. Perspiring about face and head.

Morning temp., 3.	102·2°	6.	101·8°	9.	102·0°	12.	102·0°
Evening temp., 3.	103·0°	6.	102·6°	9.	103·8°	12.	103·4°

26th May.—Pulse, 120. Three stools, without enema, all liquid, with dark and light matter mixed. Muttering in sleep, and often crying out. No perspiration. Abdomen swollen. One doubtful fresh spot.

Morning temp., 3.	103·0°	6.	102·6°	9.	103·2°	12.	102·6°
Evening temp., 3.	103·4°	6.	103·4°	9.	103·0°	12.	102·6°

To have small doses of brandy.

27th May.—Pulse, 120. Eight stools, all loose and greenish, and each stool preceded by pain. Muttering talk in sleep. Tongue skinning. Abdomen swollen. No vomiting. No perspiration. The doubtful spots have disappeared.

Morning temp., 3. 103·4° 6. 103·2° 9. 101·4° 12. 103·6°
 Evening temp., 3. 103·6° 6. 102·8° 9. 103·6° 12. 102·6°

Increase brandy, and give one-fourth lead and opium pill every four hours. Hot cloths to abdomen.

28th May.—Pulse, 112. Two stools. Loose and green. Tongue clean, and dry in centre. Slept fairly well, with some muttering talk. Abdomen less swollen and softer. Vomited four times. No perspiration. Urine clear, straw colour.

29th May.—Pulse, 112. Two stools, without enema, loose, dark, mixed with light specks; no green matter. Tongue clean and moist. Slept better, less muttering talk. Abdomen still slightly swollen. Several doubtful spots. Slight perspiration about face and head. Reduce pills to a quarter every six hours.

Morning temp., 3. 102·0° 6. 102·2° 9. 100·6° 12. 100·2°
 Evening temp., 3. 100·8° 6. 101·8° 9. 102·2° 12. 102·4°

30th May.—Pulse, 108. Two stools, without enema, dark, with light specks mixed. Slept well. Slight perspiration.

Morning temp., 3. 101·0° 6. 100·8° 9. 100·2° 12. 100·2°
 Evening temp., 3. 100·8° 6. 100·6° 9. 100·2° 12. 101·6°

31st May.—Pulse, 108. No stool. Tongue clean. Abdomen much reduced. Slept well. No talking. Skin moist all night.

Morning temp., 3. 100·4° 6. 101·4° 9. 100·6° 12. 101·6°
 Evening temp., 3. 100·2° 6. 100·2° 9. 101·2° 12. 102·2°

1st June.—Pulse, 108. One stool, without enema, semi-solid and dark. Slept well. Tongue clean and moist. No delirium. Skin moist. Abdomen soft, and not tender. Reduce mist salol to 1 dr. every four hours.

Morning temp., 3. 101·0° 6. 100·6° 9. 99·6° 12. 99·8°
 Evening temp., 3. 99·6° 6. 101·6° 9. 102·0° 12. 101·6°

2nd June.—Pulse, 108. No stool. Had a restless night. Free perspiration about head. Increase brandy to 3 oz.

Morning temp., 3. 102·0° 6. 101·2° 9. 99·0° 12. 102·6°
 Evening temp., 3. 104·0° 6. 104·0° 9. 104·2° 12. 101·2°

3rd June.—Pulse, 112. Two stools, one before and one after enema; the first constipated and dark; the second

formed, with some slimy matter. Slept fairly well. No delirium. Free perspiration for two hours during night. Six isolated rose-spots on upper part of thighs, and two on abdomen. Omit lead and opium pill.

Morning temp., 3.	99·8°	6.	98·8°	9.	102·6°	12.	103·4°
Evening temp., 3.	101·8°	6.	101·0°	9.	102·2°	12.	102·8°

4th June.—Pulse, 108. One stool, without enema, slight and green. Tongue clean and moist. Slept fairly well. Three fresh rose-spots, one on abdomen, and two on right thigh. Yesterday's spots fading a little. Distinct tenderness over spot midway between umbilicus and edge of liver. Give a quarter lead and opium pill every four hours.

Morning temp., 3.	101·6°	6.	100·0°	9.	99·2°	12.	98·6°
Evening temp., 3.	98·6°	6.	98·2°	9.	98·2°	12.	98·6°

5th June.—Pulse, 96. No stool. Spots faded, all but two on right thigh, and one on abdomen. Slept well all night. Tenderness referred to in last note continues, but easier. Free perspiration more or less constant.

Morning temp., 3.	97·2°	6.	98·2°	9.	97·2°	12.	97·6°
Evening temp., 3.	98·2°	6.	99·6°	9.	99·8°	12.	98·2°

Had no salol since 2 P.M. on the 4th. Stopped because of low temperature and general coldness.

This is the fifteenth day of the typhoid illness, and the course of the disease is completely and permanently arrested.

6th June.—Pulse, 84. One stool, after enema, formed and dark, with some slimy matter. Slept well. No delirium.

Morning temp., 3.	97·2°	6.	96·8°	9.	97·2°	12.	97·4°
Evening temp., 3.	97·4°	6.	98·6°	9.	99·4°	12.	98·4°

7th June.—Pulse, 96. No stool. Slept well all night.

Morning temp., 3.	97·6°	6.	97·0°	9.	97·4°	12.	97·6°
Evening temp., 3.	97·4°	6.	97·0°	9.	97·6°	12.	97·4°

On 8th June the lead and opium pills were reduced to one-fourth every six hours, and on the 12th were stopped. From 7th June onwards to the 26th the temperature was taken every three hours, and was always below normal. On the 26th it regained the normal line, and so continued until the patient was discharged cured on 13th July.

Remarks.—The singular efficacy of this method of treatment in typhoid fever, which I discovered in September, 1892, and have since applied in 142 cases of typhoid, the manner in which the salol administration produces and maintains anti-

sepsis of the intestinal canal, thereby suppressing the specific typhoid poison, and the precautions to be observed in directing the treatment, have been fully stated in my papers on the subject, published in November, 1892, and February, 1894.

It is not, therefore, necessary to repeat those particulars here. But the two cases herein recorded present several points worthy of consideration.

It does not often happen that one gets daily observations of a patient before, during, and after the course of typhoid fever. In the first case we have the morning and evening temperature for eleven days before the typhoid began, and in the second we have the temperature taken every three hours for about four weeks before the typhoid began. In both patients the high temperature caused by the chest affection soon subsided, followed in the one case by nine days, and in the other by nearly three weeks of low temperature. During the interval both patients were quite well, taking nourishment freely, and putting on flesh. In both patients all the symptoms of typhoid developed, and in both the course of the disease was completely and permanently arrested on the fifteenth day of illness. I am aware that certain ill-defined febrile disorders, frequently called gastric or typhoid, do occasionally abort at some indefinite time, either by chance or treatment. But I maintain that, in the observation and treatment of perfectly clear and unmistakable typhoid fever, the evidence afforded by such febrile disorders is not relevant. Intestinal catarrh and such like may suddenly subside, but the real genuine typhoid fever does not abort. On the contrary, until I applied this new treatment, it ran its usual dangerous course until the patient or the disease became exhausted. To regard the arrestment of typhoid by antiseptic treatment as a coincidence or a casual abortion of fever is to ignore evidence; because, from September, 1892, until this date, excluding all the cases (14) still under treatment, I have had 142 typhoid patients—not pseudo-typhoid, but the real disease—under this method of treatment; and I state, without doubt or hesitation, that in every case of uncomplicated typhoid coming under the treatment before the tenth day of illness, the course of the disease was arrested on the fifteenth day of illness, precisely as in the two cases above recorded. The same means applied to similar conditions has always produced, and is at this moment producing, precisely the same result—viz., arrestment of the disease on the fifteenth day of illness.

It will be observed that in the first case the treatment was

begun on the seventh day of illness, and in the second exactly twenty-four hours after the commencement of typhoid; yet in both alike the arrestment of the disease occurred exactly on the fifteenth day of illness. I have had many opportunities of beginning the treatment on every day of illness from the third to the ninth inclusive (here I am referring solely to uncomplicated typhoid before the tenth day), and in all the arrestment of the disease occurred on the fifteenth day. I cannot suggest any reasonable explanation why this treatment, when begun on the seventh, eighth, or ninth day of illness, should arrest the course of the disease exactly on the same day as when it is begun at an earlier stage.

I observe that in a large proportion of cases the first crop of typhoid spots generally appears on the front of the abdomen and chest on the seventh, eighth, or ninth day of illness. But occasionally, when there is not a single spot on the front of the trunk, perfectly characteristic typhoid spots may be found on the buttocks, on the upper part of the thighs, and on the back, followed in a few days by the appearance of similar spots on the front of the abdomen and chest. For two or three days after the arrestment of the disease, a few stray spots may occasionally appear, but not later.

In the second case there was pretty severe diarrhoea on the sixth, seventh, and eighth day of illness, the stools being liquid and mostly of a greenish colour. In cases of typhoid coming under this treatment at an early stage liquid stools are of rare occurrence, and are always associated with congestion of the descending colon or of the duodenum. When the latter is congested, the stools are mixed with greenish matter, and there is deep-seated tenderness at a spot midway between the umbilicus and liver. In that greenish diarrhoea of typhoid, which greatly influences the temperature, I find small and frequent doses of the lead and opium pill to be an excellent remedy, at the same time steadily persevering with the antiseptic treatment.

How did those two patients contract typhoid in a well-equipped hospital? As a matter of fact, there was a third patient who also contracted the disease in hospital, but unfortunately I have not in my possession a full record of the case.

For a long time the manner in which those three patients contracted the disease was an insoluble puzzle. I may state at once that all ordinary methods were simply impossible, because the wards are perfectly constructed and ventilated,

the walls coated with Keene's cement, the floors of polished oak set in asphalt on concrete. Each patient has 2,000 cubic feet of air-space and 12 square feet of floor space, and every article on the beds and the towels, &c., used by the patients came through Lyon's disinfectant and the laundry before being used. Every bed is made up with fresh clean straw, and the excreta from all patients are promptly and carefully attended to. The arrangements of bathrooms and water-closets are perfect; besides, the two patients reported in this paper never left their beds until they were convalescent from typhoid. Judging by ordinary experience the contraction of typhoid in such wards, and under such watchful care, seemed impossible. But the new method of treatment introduced an element of danger which was not at first recognised. Under the antiseptic treatment, from the combination of salol with chlorodyne and lac bismuth, the bowels are liable to become obstinately constipated. Hence it is necessary in most cases to give an enema of warm water and soap every second day. As it happened, the nurse used the same enema syringe for giving an enema to the patients in the wards, some of whom suffered from typhoid fever, whilst others, including the three patients above referred to, suffered from various diseases. In that way the specific typhoid virus in the lower bowel of the typhoid patients became attached to the nozzle of the syringe, and thereby was introduced to the bowel of the neighbouring patients. I suppose the contraction of typhoid in that singular manner is unprecedented. I took precautions forthwith which will effectually prevent a repetition of such an extraordinary accident.

Referring to the charts of temperature, it is obvious there was a considerable interval in each case, during which there was no evidence of fever. In each case there was, when admitted, clear evidence of a febrile chest disorder, which ran its course without any indication of typhoid. Thereafter, convalescence made daily progress until the rise of temperature indicated the commencement of typhoid. To suppose that those two patients contracted typhoid infection from an unknown source before their admission to hospital, and that it remained latent and incubating throughout the time of the chest disorder and also of the subsequent convalescence, appears to me a far-fetched and unreasonable theory, more especially in view of the discovery of a vehicle or channel whereby the typhoid virus might be directly transmitted from a known source of infection. Assuming, then, that the typhoid infection was directly transmitted on the nozzle of

the enema syringe, and thereby obtained access to the rectum, let us consider the dates to ascertain the time which elapsed between the lodgment of the virus and the first manifestation of the typhoid disease.

The first patient had an enema on 11th August, and another on 13th August, and no more. She had castor oil on 15th August, and again on the 16th, and that was all the medical treatment until 23rd August, when she got oil again. Therefore the infection was received either on the 11th or 13th of August, and as the first rise of temperature, being the commencement of the typhoid attack, occurred on 22nd August, the period of incubation could not be more than eleven, nor less than nine days.

The second case does not afford such definite evidence, because from the time of his admission, 24th April, onwards, until the rise of temperature on the evening of 21st May, the bowels were regularly moved by means of enemata. Referring to the chart, I am inclined to think the period up to 5th May may be excluded, because it is not probable that during the prevalence of the high temperature which then existed, the patient could contract a fresh specific fever. Therefore the probable period of incubation in this case was not more than sixteen days, but may have been less, how much less I cannot say.

The evidence in the first case is, I think, so clear and conclusive, there having been only two enemata on recorded dates, that, unless fresh evidence be forthcoming, I must hold the proved incubation period to be from nine to eleven days.

Reference to the charts shows that the subsidence of temperature on the fifteenth day of illness was permanent, and not a temporary effect, such as may be produced by antipyretics. In my opinion, the permanent subsidence of temperature, taken along with the total suppression of every sign or symptom of typhoid, indicates the prevention of ulceration of the intestinal glands by means of antiseptics of the canal. I hold that ulceration in typhoid cannot exist without exhibiting some sign of its presence.

From my daily observations of the effects of this new treatment, extending over two years, I am convinced the intestinal glands in typhoid begin to slough, or are on the verge of sloughing, on the tenth day of illness. Hence the importance of beginning the treatment at an early stage, with the view of preventing ulceration. That this treatment, when begun at an early stage of the disease, is capable of effectually preventing intestinal ulceration has long been my firm con-

viction. That conviction, based upon clinical observation, has recently been strengthened by pathological evidence recorded in the July number of this *Journal*.

In administering this treatment, a little experience and careful observation will soon show that it is necessary to distinguish between cases coming under treatment before and after the tenth day of illness, and also between cases of typhoid, pure and simple, and typhoid complicated by inflammatory lesions. Since September, 1892, I have had, in all, 142 typhoid patients under the new treatment, of whom 50 were cases of uncomplicated typhoid before the tenth day, in all of whom the disease was completely and permanently arrested on the fifteenth day of illness; 32 were uncomplicated typhoid after the tenth day of illness, all of whom rapidly recovered; in all, 82 cases of uncomplicated typhoid without a single death. Then I had 7 cases coming under treatment before the tenth day, in whom inflammatory complications developed after admission, 1 of whom died; 19 cases before the tenth day, with complications at time of admission, 5 of whom died; and 34 cases coming under treatment after the tenth day, with complications at time of admission, 9 of whom died. In the latter class, many of the cases were sent in at a late stage of the disease, with inflammatory complications almost certain to prove fatal, and, in fact, several died a few days after admission. The remedial value of any treatment cannot be judged by its effect upon patients in a moribund condition.

Of all the specific fevers, typhoid most frequently causes inflammatory lesions in various organs of the body, and this because of its seat of development, the intestinal glands, being so intimately related to the lymphatic system. The ulceration of those glands, and the absorption of noxious matter therefrom, leads to most dangerous inflammatory complications, chiefly in or near the ilio-cæcal region, the peritoneum, the descending colon, the pancreas and spleen, the duodenum (very frequently), the mesenteric glands, the lungs, and the parotid glands; more rarely in the kidneys and bladder. Such inflammatory lesions must necessarily affect the course of illness and of the temperature, and so when this treatment is begun at an early stage, without the temperature subsiding on the fifteenth day, careful examination will generally discover the seat of the lesion, which causes the variation from the usual result.

Hitherto, all treatment of typhoid has been applied to cope with and ameliorate the most prominent and dangerous

symptoms, because no remedial agent was known capable of arresting and curing the disease itself. This new antiseptic treatment applies effectual remedial agents, whereby the specific typhoid poison is destroyed and suppressed in its seat of development, and so the course of the disease is completely and permanently arrested, and the patient cured several weeks earlier than was ever before possible. Henceforth, the physicians who treat typhoid by the old and ineffectual methods will be like unto men going into battle with bows and arrows.

ON A RECENT VISIT TO THE CENTRAL INSTITUTE
OF GYMNASTICS, STOCKHOLM.¹

BY W. F. SOMERVILLE, M.A., B.Sc., M.D.

MR. PRESIDENT AND GENTLEMEN,—I had the honour some time ago of giving to the members of this Society a demonstration of Mr. Roth's method of treating lateral spinal curvature. This form of treatment I have been practising for several years. The various exercises recommended by him I have found of great service, not merely in the treatment of spinal deformity and defective chest development, but also in cases of anæmia and mal-nutrition—more especially where these occur in children and young adults. Of late this department of medical treatment has demanded my special attention to such an extent that, in the spring of this year, I deemed it advisable to increase my knowledge of the subject by visiting Stockholm, at present the centre of medical gymnastics.

Before commencing to describe a little of what I was permitted to see at the Central Institute there, let me say that for a holiday no finer country could be found than Sweden, and no fairer city in its way than Stockholm. One misses the mountains, glaciers, waterfalls, and fiords of Norway; but the eye of the tourist, on the other hand, is refreshed by the sight of forests and countless lakes, and by a city surrounded by canals and arms of the sea, and having in its vicinity scenery of surpassing beauty.

The Swedish School of Gymnastics was founded by the

¹ Read at a meeting of the Medico-Chirurgical Society on 12th October, when a demonstration also was given of the methods of treatment practised in the Institute.