slightly puffy and translucent lids; no swelling of the lips. The skin generally was harsh, especially the hands and feet. The hair dry; supraclavicular pads marked; temperature 96.5°; pulse 60; heart sounds weak, otherwise not remarkable; lungs and abdomen clear; knee-jerks present. Blood negative except for diminished hæmoglobin. No enlarged glands; no œdema of the legs; feet objectively very cold. November 17th, the daily amount of urine was about 40 ounces; specific gravity 1,015; an accident prevented the estimation of urea. November 24th, specific gravity 1,020. November 29th, specific gravity 1,025; albumen slightest possible trace; a few casts. December 6th, specific gravity 1,027; albumen slightest possible trace; an occasional hyaline cast. The patient reports a distinct increase in the flow of urine, but the amount has not again been measured. One grain of the thyroid extract twice daily was ordered, and November 29th four grains a day. November 29th, temperature 97.5°; less watering at eyes; sweat some yesterday after exertion. Some pain and tenderness on right elbow. Increased thyroid extract to six grains a day. December 6th, pulse 72; temperature 97.4°; skin about the same; color better; less sensitive to cold; eyes distinctly less watery; is less hoarse than for six months, and sang last Sunday for the first time during that period. The duration of treatment in this case has been very short; but its results confirm the diagnosis. I have learned to push the remedy cautiously.

Cases II, III and IV are unquestionably cases of myxœdema, and can be added to the rapidly lengthening list of cures. Dr. Kinnicutt³ collected 49 cases up to May 1st, treated by thyroid extract; and Dr. R. C. Cabot has kindly collected 68 cases published since May 1st. As before stated, two showed no gain under the treatment. Two of Dr. Murray's⁴ died suddenly while under treatment, the symptoms having markedly improved. One was known, the other suspected to have an unsound heart. Dr. Cabot has found two other fatal cases. In one diarrhœa set in after the first dose, and death was speedy. In the other,⁵ figured in Plate III, in Byrom Bramwell's "Atlas of Clinical Medicine," marked improvement in the myxœdematous symptoms had taken place. January 6, 1892, the patient had an attack of angina, took the last dose, and died seventeen days later. Myocarditis was found at the autopsy. In the 68 cases collected by Dr. Cabot the only other untoward symptoms which occurred often enough to make them especially suggestive were: faintness and headache in six cases, nausea and vomiting in four cases, pain in the back in four cases.

There has been so much written on this subject of late, and it is so prominently before the profession, that I shall not go into statistics or any general consideration of the disease and its symptoms; but there are several points illustrated by my cases to which I wish to ask your indulgent attention.

In the first place, we must recognize the fact, that, as in all other ailments, there are here differences of degree. Naturally the extreme cases were the first to be recognized, and to these alone does the description as now laid down in the text-books closely apply.

Total inactivity or loss of the gland is one thing; partial inactivity or loss another. It is highly probable that the latter does not necessarily lead to the former; at all events, a long period of years may elapse before the mild passes into the fully developed disease. The symptoms in Case III were of ten or twelve years' duration; and yet I at first crossed out myxœdema in my differential diagnosis. Now that our attention is awakened and we are on the lookout for cases, I am convinced that we shall find them to be pretty common. Case IV, the mildest I have seen, I am sure I should not have recognized a year ago, although I was then watching for cases. Case II illustrates the power of the remedy and the dangers of overdosage. Dr. Putnam and I decided on the initial dose in that case, as he had been giving that dose for some time to another, but an extreme case with great benefit and no untoward result. The anginoid attacks caused me great anxiety. I can now see that it was unwise to fail to appreciate therapeutically differences in degree and duration, but I did not see it then. It may be said in extenuation that knowledge of the safe dosage of the remedy was then very slight and that experience had to be gained. Similar anginoid attacks have been noticed by other observers, and constitute the most important untoward symptom likely to be encountered during treatment. Pains in the limbs and back have also been noticed in some cases, and were complained of by Case II before the appearance of the anginoid pain. They were also present in Case III, and the pain and tenderness of one elbow in Case IV may be of neuritic nature.

It seems probable that the use of the remedy must be persisted in through life, and that larger doses will be required during the cold than during the hot weather.

Diagnosis should seldom offer any special difficulty at present. Grave anæmias and Bright's disease are readily excluded, as a rule. I say, "as a rule"; for we must not forget Starr's⁶ case, which had been diagnosed as Bright's by eminent authorities and so treated for years. But the albumen and casts disappeared entirely under thyroid extract.

SECOND ATTACKS OF TYPHOID FEVER IN ADULTS, TWO CASES.¹

BY A. L. MASON, M.D.,
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OCCASIONALLY a patient with typhoid fever says that he has had it before; but on further inquiry this statement can rarely be verified, on account of the lapse of time and memory, and the absence of accurate data regarding the previous illness, the history, charts, etc. Therefore the two following cases, which came under my care during both the primary and the second attacks, with an interval of two years in each case, are recorded as being somewhat exceptional. In Case I, that of a nurse, it seems not improbable that the disease was conveyed to her directly by the patients she was nursing.

CASE I.—First Attack. Hospital nurse, aged twenty-four, after five days of prodromal malaise, September 7, 1890, was admitted to Dr. Rotch's service with typhoid fever. She came under my care October

³ Transactions of the Association of American Physicians, vol. viii, 1893, p. 332.

⁴ British Medical Journal, 1892, II, p. 450.

⁵ Edinburgh Medical Journal, May, 1893, p. 1014.

¹ From the forthcoming Medical and Surgical Report of the Boston City Hospital.

⁶ Transactions of Association of American Physicians, 1893.

1st, in the later stages of a typical attack, which had been characterized by much abdominal pain and tympany, and was attended by a relapse, as is shown by the appended chart. During convalescence the pulse was high, 100 to 112, and she remained in hospital sixty-five days. (See Chart 1.)

CASE I.—*Second Attack.* October 10, 1892, the same patient was admitted to my service on the sixteenth day of her second attack. On the 23d of August she had gone to the country to nurse a patient with typhoid fever, and, after remaining there for a month in constant attendance, she contracted the disease herself. I saw her a few days later at home, when the symptoms were general malaise, insomnia, bad headache, fever and diarrhœa, but the knowledge of her severe attack two years before led me to doubt whether she had typhoid fever a second time. On admission to the hospital, rose-spots were abundant, the spleen was enlarged, anorexia and vomiting were troublesome. The urine was albuminous. The disease ran a longer course than before, defervescence taking place at the end of the fifth week, and the pulse then falling to 80. (Chart 2.) She got up on the fifty-seventh day, but from the sixty-fourth to the seventy-ninth day convalescence was interrupted by a recurrence of febrile symptoms and severe pain in the right iliac fossa, requiring morphia for relief. She left the hospital on the ninetieth day. (Chart 3.)

CASE II.—*First Attack.* A male cook, aged twenty-one, entered the service of Dr. Rotch, September 22, 1890. He had been ill ten days and complained of the usual prodromal symptoms of typhoid; malaise, pains in the limbs, headache, and nose-bleed. The bowels were constipated. In the second week splenic enlargement and rose-spots were noticeable; later the abdomen was swollen and tender. The fever abated at the end of the third week. As the patient appeared to be entering upon his convalescence, however, a relapse occurred which delayed his recovery for another month, and he remained in the hospital until the sixty-fourth day. (Chart 4.)

CASE II.—*Second Attack.* March 19, 1892, the same patient re-entered my service with a history of malaise and debility for the previous three weeks. He had lost his appetite, slept badly, and felt chilly and feverish by turns. Eight days before admission he gave up and went to bed. Epistaxis had been frequent. In the second week the symptoms were bronchitis, abdominal pain, splenic enlargement, and an abundant eruption of rose-spots. Diarrhœa ensued, with tympany; epistaxis recurred, and during the third week typhoidal stupor was very marked, as was also sensory deafness. There was no otitis. In the fourth week a laryngitis began and lasted two weeks. The right submaxillary gland became swollen to the size of an hen's egg, red and tender, but subsided without suppuration. During convalescence there was a peripheral neuritis affecting the feet and legs, and the patient was not discharged until the sixtieth day of his illness. There was no membrane in the throat at any time, and the laryngitis, glandular swellings, and neuritis were thought to be post-typhoidal. (Chart 5.)

Remarks.—The rare recurrence of typhoid fever in persons who are protected by a previous attack has been pointed out by many writers, but there is some difference of opinion as to the degree of immunity which is thus conveyed.

Nathan Smith, in his "Medical and Surgical Me-

moirs," says: "My own personal experience is strongly in favor of the non-liability of the same individual to a second attack of typhus; for during the twenty-five years since I first attended patients in this disease, and in that time I have visited many hundreds, and have witnessed its prevalence several times in the same village, I have never known nor heard of its recurrence in the same person."

This accords with the researches of Gendron in his "Mémoire sur les épidémies des petites localités."² He mentions several instances of this immunity, among them the following: The village of Petit-Gênes had fifteen inhabitants, of whom twelve had typhoid fever. Of the three others two had had it before. Three years later, in a second epidemic, the disease attacked five persons only, who had come there since the previous outbreak.

Chomel, at the Hôtel Dieu, among one hundred and thirty typhoid patients, found no one who had previously had the disease.

On the other hand, Alonzo Clark, in his "Lectures on Fevers,"³ mentions two epidemics of typhoid as occurring in Richmond, Massachusetts, in which Dr. Jennings attended two patients with second attacks, of whom he had also taken care during their fevers two years before. Sixty persons were attacked in each epidemic, but no details of these cases are given.

Piedvache⁴ relates the case of a girl who had a severe attack at the age of ten, and a second one eight years later. Michel⁵ had met with three cases; and Paul,⁶ one in which a second attack occurred after three years.

Trousseau,⁷ with his long hospital experience, saw but one case at the Hôtel Dieu, where a woman under his care had typhoid four years after an attack of the same disease in the wards of Professor Rostan, where she had remained four months. Trousseau in his private practice also met with one case: a girl twelve years old took typhoid fever in a severe form. The illness lasted fifty-seven days. In the following year she had another characteristic attack fifty days in duration.

Liebermeister⁸ says that this disease confers a certain immunity, but not as complete as is the case with variola, measles and scarlet fever. He alludes to recurrent cases at the Basle Hospital, but gives no details.

Murchison (third edition, 1884) says: "It is generally believed that one attack of enteric fever confers an immunity from subsequent attacks." After recounting in brief the observations of Gendron, Piedvache, Bartlett, and others above-mentioned, he states that several cases had come under his notice in which two attacks had occurred in the same person after puberty, and that four similar cases were observed by Dr. William Budd (1859).

Strümpell's opinion (American edition, p. 4) is that "it does seem to be certain that the occurrence of typhoid fever gives very probable though not absolute immunity against any later new attack."

Pepper, in "The American Text-Book of Theory and Practice,"⁹ states that he has attended several patients through two characteristic attacks of typhoid

² Journal des Connaissances Médico Chirurgicales. Par M. Gendron, 1834.

³ New York Medical Record, vol. xiii, 1878.

⁴ Piedvache, p. 103, 1850.

⁵ Michel, p. 297, 1859.

⁶ Paul: L'Union Médicale, 1870, i, 587.

⁷ Trousseau, vol. iii, p. 50. Sydenham translation.

⁸ Ziemssen's Cyclopædia, vol. i, p. 75.

⁹ Ibid., vol. i, p. 165, 1893.

fever, and has had more than one apparently reliable account of three distinct attacks at intervals of several years. The same author says that a study of six hundred cases by Eichhorst showed the occurrence of a second attack twenty-eight times, or in 4.7 per cent.; and that recurrences are more common in men than in women, and milder than the original attacks.

Moore, of Dublin, in his recent work on "Eruptive and Continued Fevers,"¹⁰ gives a "Case of Recurrent Enteric Fever followed by Relapse," in full detail, with charts of both attacks, and also contributes a report of the same case to the *Dublin Journal of Medical Science*, April, 1892.

From the foregoing citations and cases, it appears probable that physicians who see many cases of typhoid fever may, in the course of years, meet with a few recurrent attacks in their own practice. Therefore I made inquiry on this point of most of my past and present colleagues at the City Hospital, who have all had exceptionally large experience in this disease. The mere statements of patients that they had had typhoid fever more than once were not regarded as sufficiently conclusive, but cases corroborated by records, charts, or the remembrance of professional observation, were sought for. None were found.

Dr. Robert T. Edes, who paid much attention to this disease, and whose paper on "The Cold Water Treatment of Typhoid Fever," by bathing, appeared in the *City Hospital Reports*, Second Series, 1877, replied to my inquiry as follows: "I do not think I ever saw a case of typhoid fever in a person who, to my knowledge, had had it some months or years before."

Dr. C. Ellery Stedman, whose published "Notes on Typhoid," based on an analysis of 1,188 cases at the City Hospital, are contained in the "Reports," Third Series, 1882, answered that he had "formed the opinion that one seldom had the fever, *really*, twice." He had no proofs of recurrent attacks, in the way of charts and records.

Dr. C. F. Folsom writes: "I have never seen recurrent typhoid fever which I knew to be such. A few patients stated that they were suffering from second or recurrent attacks."

Dr. T. M. Rotch says: "I do not recollect any cases of recurrent typhoid."

Replies of similar tenor were received from Drs. J. G. Blake, Geo. B. Shattuck, E. J. Forster, and other members of the hospital staff with long experience. In an analysis of 676 cases of typhoid admitted to the hospital in 1890 and 1891, after careful examination of the records, I found no recurrent cases.¹¹

Therefore the two instances recorded above, with their histories and charts, are the only ones I have been able to verify, as having occurred in this hospital, in which the same patient has been admitted twice for typhoid fever. One other case came within my own knowledge in which a recurrent attack was fatal after an interval of thirty years.

Although the negative results of such an inquiry must be to some degree inconclusive, and a few authenticated cases indicate the probability of a still greater number which fail of positive proof, I think it may be assumed that the immunity afforded by an attack of typhoid fever is as complete as in the case of the exanthemata, except, perhaps, small-pox, in which it is said

that less than one per cent. of recurrences occur,²¹ although Sir Thomas Watson states that a few instances are recorded of three attacks of this disease in the same person.¹⁸

A BACTERIOLOGICAL STUDY OF FOUR HUNDRED CASES OF INFLAMMATION OF THE THROAT, OCCURRING IN DIPHTHERIA AND SCARLET FEVER, WITH ESPECIAL REFERENCE TO PATHOGENESIS.¹

BY JOHN LOVETT MORSE, A.M., M.D.

(Concluded from No. 7, page 156.)

MIXED INFECTIONS.

The pseudo-membranous inflammations of the throat occurring in scarlet fever are always accompanied by cocci, usually streptococci. The presence of the Klebs-Löffler bacillus, means association with diphtheria as the result of a mixed infection. Janson (28) in seventeen cases of scarlet fever found streptococci alone or associated with other cocci. Baginsky (11) did not find the Klebs-Löffler bacillus in scarlet fever, and thinks that it disappears in cases of diphtheria when an eruption similar to the scarlatinal fever is developed and gives place to cocci. Park (13) found streptococci in seventeen cases of scarlet fever, and Sorenson (18) in thirteen cases of scarlatinal diphtheria found cocci and other organisms, but never Klebs-Löffler bacilli. Booker (19) has made a special study of the forms of cocci found in the scarlatinal pseudo-membranous angina, but does not find the Klebs-Löffler bacillus in them. Escherich and Bourges, however, have found them in the throat affections appearing in the course of scarlet fever.

In ninety-nine cases of scarlet fever with simultaneous pseudo-membranous inflammation of the throat, the following bacteria were found:

	Cases.
Klebs-Löffler bacilli alone	3
K. L. and streptococci	1
K. L. and staphylococci	10
K. L. and streptococci and staphylococci	9
Streptococci alone	4
Staphylococci alone	12
Streptococci and staphylococci	23
Streptococci, staphylococci and others	34
Other bacteria	3

That is, there were twenty-three cases of mixed infection, or nearly twenty-five per cent. Streptococci were present, alone or associated, in seventy-one cases, or in seventy-one per cent.

This tremendous proportion of cases of mixed infection can be accounted for in a number of ways. In the first place, the scarlet fever and diphtheria wards, although isolated from the rest of the hospital, are in charge of the same house-officers and visiting physicians. They are constantly going from one ward to another, and, although always wearing gowns in the wards and disinfecting their hands on leaving a ward, are probably responsible for a large number of the mixed forms. Various other persons, not directly connected with the care of the patients, also enter both

¹ A contribution, under direction of Dr. W. T. Councilman, from the Pathological Department to the forthcoming Medical and Surgical Report of the Boston City Hospital. Awarded one of the Lyman prizes for 1893.

¹² See Reynolds' System of Medicine, vol. 1, p. 139.

¹³ Watson's Principles and Practice of Physic, vol. ii, p. 784, 4th edition, 1857.

¹⁰ Moore, p. 351, Wm. Wood & Co., 1892.

¹¹ See Boston Medical and Surgical Journal, April 7 and 14, 1892.