Relapse of typhoid fever especially with reference to the temperature / by J. Pearson Irvine.

~~Path~~ Typhoid, diphtheria, cholera

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WITH REFERENCE TO THE TEMPERATURE

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BY

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WITH TEMPERATURE CHARTS.

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PREFACE

Most of what is found in this book was contributed to the 'Medical Times and Gazette' during the year 1879. The work is a republication of papers which have been revised in an attempt to reduce them to something like order.

My heartiest thanks are due to my colleagues at Charing Cross Hospital, Drs. Pollock, Silver, and Green, for the chances they have given me of renewing a study which commenced several years ago. Many of the cases recorded were under the care of the gentlemen named.

I thank also the Medical Registrars and the Resident Medical Officers for much valuable assistance.

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CONTENTS

RELAPSE OF TYPHOID FEVER

CHAPTER I

INTRODUCTION

It is important to understand what is meant by the term relapse in typhoid or enteric fever. "Relapse of typhoid" and "relapsing fever" are regarded by many as synonymous terms, but of course indicate totally distinct diseases. Typhoid fever may, in fact, "relapse," as may pneumonia, and even typhus (on rare occasions), and be still as easily distinguished from relapsing fever as either of the diseases mentioned. It is exceedingly difficult to define relapse of typhoid fever, though one may have a clear clinical notion of its nature; and it is well known that relapse is very often most difficult of separation from those conditions known as "recrudescences," from complications lingering after

the primary disease has ended, and from sequelæ of the primary disease.

Relapse in typhoid fever has been defined as a "recurrence of the original attack, with all the phenomena of that attack." But this is not an accurate definition, for relapse differs in many respects from the primary disease; and oftentimes a second relapse differs from a first, and a third from a second, without our being able to explain the cause of such differences after the most careful clinical examinations. I will not attempt a more decided definition than that usually given, but rely on the subjoined cases to prove what has just been written. Relapse, of course, bears a strong resemblance to primary attacks, and we should not be justified in diagnosing relapse except through this resemblance; but, at the same time, I maintain that the points of difference are sufficiently striking. In all the cases of relapse which are recorded in subsequent pages, typhoid stools of typical kind were met with, and in almost all a typical eruption.

These things are of importance, because, after the termination of a primary attack of typhoid fever, irregular rises of temperature, accompanied by more or less severe general symptoms, are not uncommon; and these, in the absence of any recognisable complication or sequelæ, have at times led to the suspicion of true relapse. In them we have instances of "false relapses," which are technically described as

"recrudescences;" but the regularity of the temperature in true relapse—rather than the eruption, stools, &c., which may not be typical either in primary disease, relapse, or recrudescence—as compared with those uncertain elevations of fever which are common in the convalescent stage of any acute specific disease which can leave a sequela, readily distinguishes relapse from recrudescence. The term, "recrudescence," is a most useful term, but it is open to this objection: that the elevation of temperature with which it is attended is due to mere accidents, and not to a true return of the original disease. In no disease more than in typhoid fever do the consequent lesions linger longer; and any interruption in the natural healing of these lesions must modify the temperature. It is thus that some "recrudescences" are brought about, and a familiarity with them can only be attained at the bedside, because, more than all other acute specific diseases, typhoid fever presents itself in unwritten variety—in variety so great, and so anomalous that many, well acquainted with it, believe that it will ultimately be subdivided.

As regards recrudescence, it is stated by the best authorities (Dr. Murchison amongst others) that it may be distinguished from relapse in typhoid, because there is a clear interval of apyrexia between the latter and the primary attack. To this view exception must be taken, for in some of the cases of

relapse recorded below, the interval of apyrexia was not appreciable even by hours, and in others relapse supervened on relapse—a fact which has been noted by other observers. Again, "recrudescence" was met with after an interval of several days' apyrexia; and in a third group recrudescence (a false relapse) and true relapse were mixed up in the most striking manner.*

And, furthermore, it is a fact that relapse may be interrupted by relapse—a fact, which the more one inquires into the nature of the disease at the bedside the more one must appreciate. A patient, for example, has a primary attack of typhoid; then begins with relapse, goes through it for several days, when suddenly there comes a new invasion of fever, which runs (after interrupting the relapse) an almost typical course of relapse. At the bedside it is of the greatest importance to remember the possibility of such "INTERCURRENCY" in typhoid relapses. Complications, of course, may modify typhoid at any stage, and must not be forgotten any more than relapse, recrudescence, intercurrent relapses, or the well-known sequelæ of the disease; all can cause many variations in the fever.

Relapse in typhoid is as interesting as it is im-

* So-called "recrudescences" are very probably often instances of relapse of irregular type; and possibly, though "typhoid," as we now understand it, may ultimately be subdivided, many anomalies may be reduced and classified as varieties of relapse, complications, or sequelæ of enteric fever.

portant, and demands more careful consideration than has been given to it either in text-books of medicine or in special treatises. It is far from being uncommon under ordinary conditions; it is, in fact, common amongst hospital patients whose primary fever is watched with constant precautionary measures; and one cannot wonder, therefore, that in uncertain primary cases, cases impossible of diagnosis or likely to be confounded with other diseases, relapse should be a very frequent sequel. These circumstances justify the necessity of its more careful clinical recognition, and thermometric observations can alone teach us with certainty its onset or existence, and the course the fever may take.

It should be remembered that relapse in out-patient practice (and in outside practice generally) yields frequently the first proof that we are dealing with typhoid—especially in those eminently obscure cases in which persons "walk through" their primary attack, and suffer so little inconvenience, comparatively speaking, that their malady is regarded with indifference, and is described by such unsatisfactory and indefinite terms as debility, cold, diarrhœa, constipation, dyspepsia, and so on. These cases, when diagnosed, are known in clinical medicine as "ambulatory typhoid;" and it would be difficult to find a better designation for them. No physician can have attended to out-patient work for any length of

time without meeting with instances of this form of the disease, and, I venture to add, without meeting with occasional relapses in these instances, to the clearing up of doubts as to the true nature of the mischief he has been dealing with. The same may be said of the busy practitioner; and I am strongly of opinion that relapse in typhoid fever is much more common than is usually supposed, and this view has been strengthened by the cases of ambulatory typhoid with relapse which I have come across in the out-patient room of Charing Cross Hospital, during a number of autumnal epidemics of the disease.

The extent in which typhoid prevails is undoubtedly under-estimated, for not only must many cases be passed by because of their mild degree, but the disease itself is often forgotten, because of the prominent nature of its complications. "Anomalous" forms of typhoid fever are frequently mild cases obscured by pulmonary or other complication. Clearly, if this be the case in the primary disease there is additional danger of difficulty in relapses. And relapses are, I venture to believe, over and over again set down as primary attacks, and a confusion hence arises, not only as to the duration, but the course of relapses in this disease. I do not pretend for a moment that all the difficulties are solved by the cases reported below, but do think that they will help to clear up some of the discrepancies

met with amongst writers and observers of distinction.

And while asserting that primary relapse is common in typhoid fever, I would add that second relapses are not uncommon, and that third and fourth relapses may be met with. I quote some examples, and could considerably increase the list were it necessary. Late relapses are often unnoticed for two reasons: first, because the thermometer has not been used regularly in convalescence, and, secondly, because when it has been used with fair regularity the low levels of the temperature (though pyrexial) have not suggested the notion of relapse in the minds of observers. In the papers which I published in the 'Medical Times and Gazette' in 1879, frequent allusions were made to the fact that the course of temperature rather than its degree was, except in rare cases, our best means of diagnosis and our best guide in treatment, and to this view I most strongly adhere. It has been stated that primary typhoid may run its course without the least fever; of such cases I have no experience, but am certain that relapse is met with in which, though fever occurs, it is remarkably insignificant. It is in such cases that the regular use of the thermometer is especially valuable, for in them general symptoms may fail us, and the hand prove inadequate, while a daily thermometric chart* shows us

* Where the thermometer has been used at least thrice a day.

typhoid curvatures of a typical kind, whose value is more important diagnostically than the height the fever may attain.

The frequency of second and further relapses has not received the attention it deserves. Dr Murchison says :—"Stewart, Trousseau, Wunderlich, and Maclagan, have pointed out rare cases in which there was a second relapse, or even a third relapse," and adds that he has met with two examples in his own practice. Dr Murchison must, therefore, have considered second relapses as very rare, and it is with all deference that I venture to assert that second and third relapses are not so uncommon as one might suppose. Late relapses have also been passed by because they have been confounded with primary attacks, and because a confusion has arisen between them and "suspected" pyæmia, congestion of lungs, and various other conditions which may happen to exist, and are made to explain the "extraordinary" rises of temperature which so frequently follow an attack of primary typhoid. There are good reasons, therefore, for maintaining that the unabated employment of the thermometer during "apyrexial" periods of typhoid attacks has an almost exceptional diagnostic value.

Under such circumstances it is difficult to overestimate the value of temperature as a clinical guide during apparent convalescence of typhoid fever. Relapses repeating themselves over and over again,

frequently in a mild form, yet with a dangerous local lesion in existence, may be most obscure, and to clear away the obscurity the thermometer is again and again the only efficient agent. Casual observations guide us or warn us ; daily observations, when possible, make not only our diagnosis, but our prognosis and treatment, scientifically exact. When a single relapse occurs typhoid fever may be prolonged twenty or thirty days, and when there is a number of relapses the prolongation may be extended to upwards of a hundred days, without any complication. During this lengthened period the local lesions continue, varying with the stage of disease, and yet may give no evidences of their presence except those yielded by the thermometer, For in "mild" relapse, as in ambulatory typhoid, the patient may complain of nothing but a sense of weariness and hunger, and under ordinary circumstance all of us might be led astray in our treatment of this disease. The thermometer becomes in such cases an exact guide of therapeutic measures, and thus helps us to achieve one of the objects of medicine—the direction of disease by the employment of proper remedies and by the avoidance of useless or dangerous interference. So even casual or occasional observations of temperature in convalescence from enteric fever have their therapeutical value, for they frequently teach us to be cautious in our treatment of patients who *linger* in their "convales-

cence " after primary typhoid—it may be for weeks or perhaps for months.

It is asserted by many continental writers that relapse of typhoid occurs after *months* of freedom from all fever. The mere fact of such assertion establishes the value of the repeated use of the thermometer during the convalescence of typhoid patients. In these long postponed relapses may there not have been intermediate relapses, whose mildness caused them to be neglected and passed by unobserved? The occurrence of obscure relapse is, I venture to repeat, a clinical fact. One asks, therefore, Was the thermometer used or neglected during the real or apparent apyrexial intervals preceding these deferred relapses? Protracted apyrexial (?) intervals require far more careful investigation than has been given to them, because mild relapses run their course not infrequently in the obscure manner which characterises mild primary typhoid. In both cases the steady use of the thermometer can alone accurately determine the nature and process of the disease. Such steady use will help to interpret the variety of views held by different observers in regard to the " after fevers " of typhoid, for I do not hesitate to repeat that in books and at the bedside (which is of more importance) sequelæ, complications, relapses, recrudescences, &c., are mixed up in the most uncertain manner. The obscurities in the natural history of that disease

which we call typhoid or enteric fever are still numerous, and if the cases and temperature charts which will be given help to clear away any of these the purposes of these papers will be satisfied.*

But relapse has in most cases a marked resemblance to the original attack, and in most cases one or other of the typical signs of typhoid are met with. The stools are typhoid in their character, and mostly a typical eruption, if carefully looked for, is found. Relapse is as much a disease of contagion—no matter where that contagion comes from—as is the primary fever, but I am not prepared to discuss the bearings of typhoid-relapse on contagion, though I am of opinion that they must be very suggestive to those well acquainted with the facts and theories of infection. It is difficult to say why relapse does occur in typhoid, and still more difficult to say why in some instances it is met with even in the third or fourth degree. Very probably the explanation will be found in the decided and characteristic local lesions of the primary disease in Peyer's patches, which in ordinary and uncomplicated cases persist after the cessation of the febrile period, and compel

* The value of the thermometer in obscure cases is particularly well shown by a case under the care of my friend Dr Silver, at the time these pages were written. A young girl in Charing Cross Hospital had a relapse of typhoid, and on the fifth day of relapse the temperature rose to 105° Fahr., but her general condition scarcely deviated from that of ordinary convalescence.

the physician to watch his patient's condition for a long time, after the disease appears to have ended, with the daily care and precaution taken during the height of the fever.

Liebermeister, in 'Ziemssen's Cyclopædia,' asserts that relapse of typhoid fever is most common after severe attacks; but this is a dangerous view clinically, and should not be advanced unless determined beyond all question. It is a view disputed by many English physicians, and, with all deference to foreign opinions, I am convinced that the cautious practitioner should take the side of our own observers on this point. In ambulatory typhoid, which owes its obscurity to its mildness, relapse is not uncommon, and is very likely due to the fact that the primary disease has been little regarded, and convalescence left to take its own course.* Dr. Maclagan thinks relapse is seen only in those cases where constipation has accompanied the primary attack, and that the healthy glands are affected by sloughs thrown off from those diseased by the primary fever. And if it be true, as advanced above, that enteric fever of obscure type is not infrequently followed by

* I have allowed this sentence to stand as originally written, but am anxious to explain that I do not believe that want of care during convalescence from typhoid fever, *causes* relapses. But such want of care aggravates relapse when it occurs. This important subject is considered in later chapters, and clearly want of care in diet, &c., might cause recrudescences or sequelæ, and interfere with the favorable course of existing complications.

relapse, and that the true nature of the disease is often declared with certainty by the accident of relapse, the views of Dr. Maclagan demand the fullest consideration, for the obscure cases are most often obscure because of the absence of diarrhœa in them, and the impossibility of determining the nature of the evacuations. I am speaking, of course, in particular of ambulatory typhoid, which is, though apparently mild, sometimes so severe in its local lesions as to prove fatal—and suddenly fatal—by perforation of the ulcers in the intestines. But, on the other hand, in some of the cases which I report, relapse followed where diarrhœa had been a decided and dangerous symptom. There yet remains, in all directions, much uncertainty in regard to the peculiar disease called typhoid fever.

Most writers insist that relapses have usually a shorter duration than primary attacks. Dr Murchison, in his classical work on Fevers, puts their mean duration at fifteen days, relying on fifty-three instances. The apyrexial interval in these averaged eleven days, and in seven cases only did relapse last from eighteen to twenty-one days. Liebermeister found that out of a hundred and eleven cases of typhoid-relapse observed at Basle, thirty-seven lasted longer than the original attack, that six had the same duration as, and that sixty-eight had a shorter duration than, the primary dis-

ease.* I regret that I have not been able to meet with and study the original reports of the Basle-epidemic. The majority of cases of relapse had a shorter duration than primary attacks, but the fact that exactly one third of relapses had a longer duration is very remarkable. Was the longer duration due to complications, intercurrent relapses, recrudescences, &c.? There is considerable diversity of fact and opinion on the duration of relapse; and the same may be said, for that matter, of the duration of the primary fever. Herein I find an excuse for adding some examples of the disease to medical literature, especially as the average duration of primary relapses in my series closely approximated to twenty-one days, and the relapses were under the observation of several physicians.

I shall submit temperature charts of most of the cases on which my opinions are founded, and will add examples of accidental recrudescence, so that true relapse charts may be compared with these. I postpone further general remarks until I have submitted the cases. The charts of true relapse, I think, will declare a fixed consecutiveness in the nature of the fever, and thus be as valuable as charts of primary typhoid. In all the examples of relapse to be recorded undoubted evidences of typhoid fever were found,

* 'Ziemssen's Cyclopædia,' vol. i, p. 191 (American Translation).

though, for the sake of brevity, particulars are frequently cut out in the general description of each case.

But though the cases are briefly recorded, and no lengthy account is given of the general symptoms, nothing bearing on the temperature is omitted. That is to say, care has been taken to watch for modifications of temperature caused by accidents, complications, or treatment, and these, when discovered, have been particularly alluded to in the description of the cases. Nor has any choice of cases been made. The series was, indeed, published in, I fear, too haphazard a fashion; but this fault may possibly add to any value it may possess when presented in a collected form. An attempt has been made at a classification of the cases recorded, but such classification must necessarily be in many respects unsatisfactory. In the series will be found examples of simple relapses—single, double, triple, and quadruple—of irregular single, double, triple, and quadruple relapses; of the so-called intercurrent relapses; of recrudescences, simple or complicated; and of a variety of irregular attacks, which make the difficulties of classification far greater the more one enters into its study and consideration.

The fatal instances of relapse must also claim especial notice. The difficulties, which the "after fevers" of typhoid present, have been, still are, and

must be for some time to come, a source of perplexity to the clinician. I give some facts in the hope that they may help to diminish these difficulties.

CHAPTER II

SINGLE RELAPSES OF TYPHOID FEVER: THEIR TEMPERATURES AND MODIFICATIONS BY COMPLICATIONS

THE moment one begins to consider the simplest forms in which typhoid-relapse is met with the difficulty of an accurate subdivision of cases presents itself. In the narratives of cases I shall dwell chiefly on the course of the fever, but cannot at times avoid allusion to points which are, so to speak, "outside" the temperature.* Special examples also sometimes demand special remarks, so that the burthen of general conclusions may not be increased by repeated reference to special cases.

The first instances submitted are those in which a single relapse occurred, and I have attempted to group in this chapter the simplest forms. But straightforward relapse is quite as rare as straightforward primary disease; so in many cases reported under the head of simple and single primary relapse deviations from a typical standard must be expected. The cases described in this chapter are, in the main, really "simple" single relapses. Irregularities

* It is very necessary to understand that in all these cases the "temperature" was regarded only as one means of diagnosis, and that other symptoms or signs were considered.

occur in some, and though slight demand notice, and such notice has been given to them. The most simple form of relapse may be modified by what may be termed a normal complication, as in the primary disease; and when such complication has interfered with the temperature the fact should be particularly noted. I am obliged to repeat myself in urging that it should never be forgotten that each case of typhoid-relapse has clinically individual as well as general bearings.

In most of the cases of relapse the thermometer was used as often as six times in the twenty-four hours, and in several cases regularly every two hours; but usually the morning and evening heights (nine o'clock) have been given. In some of the subjoined charts the fever of intermediate hours is noted, and will be described in the text. Reference to the charts themselves will readily show the variations, which I have thought it worth while to record. The temperatures were taken in the axilla.

I quote, then, first of all, certain well-marked examples of simple relapse in typhoid. Some of these were observed by me more than ten years ago, and, suggested further inquiry into the nature of relapse. The first case is one of these; the temperature was taken regularly and carefully, and perhaps the chart is none the less valuable because the true nature of the fever was a matter of doubt until comparison was made with subsequent cases.

A simple relapse is recognised without much difficulty in cases where the primary disease has been under observation. After an apyrexial interval of some days (speaking generally) the fever is renewed unexpectedly and suddenly. The temperature begins to rise, and continues to rise with little intermission, until it reaches its height on the fifth day of relapse; from the fifth day to the eighth or ninth day it is steady, but shows a slight inclination downwards; on the eighth or ninth day it falls suddenly several degrees, possibly to subnormal levels; from such levels it ascends even to former heights, but this rise in simple cases is, so to speak, ephemeral. Fever persists to the fifteenth day, when in the simple cases a rapid, though intermittent, fall continues to the twenty-first day of disease, at which time convalescence commences, and goes on with remarkable rapidity in many cases.

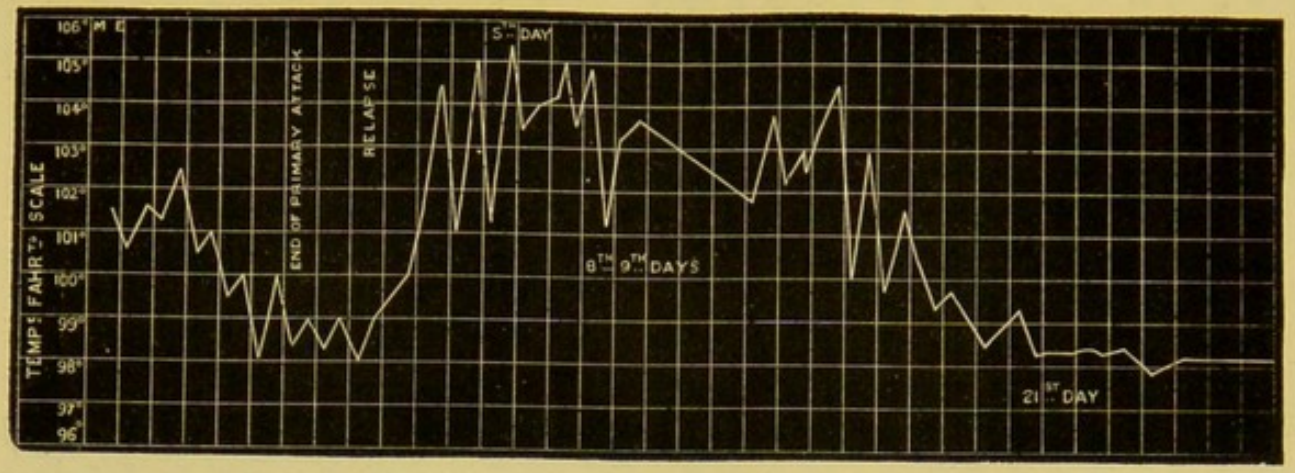
Some of the following examples illustrate what has been written as to the general course of simple relapse in typhoid fever.

Case 1. *Single relapse of typhoid fever, lasting twenty-one days.*—E. D—, a female, aged 20, was admitted into hospital in the fourth week of an attack of typhoid fever. To the end of this fourth week her temperature fell rapidly, and reached the subnormal. Then convalescence commenced; but after only two days of apyrexia, during which the temperature continued subnormal, a relapse set in, and from subnormal the temperature ran up without intermission to 104·4° Fahr. on the third evening of relapse, and on the fifth evening to 105·4° Fahr., there having occurred deep falls, but not below 101°

Fahr., on the mornings of the fourth and fifth days. From the fifth day the temperature remained high, with a slight downward tendency, to the eighth day, when there was a fall from 104·8° Fahr. to 101·2° Fahr. The fever rose again, but not to previous levels, and its general tendency henceforward was to fall to subnormal by the twenty-first day of the relapse. Sudden exacerbations were met with on the thirteenth and fifteenth days, and on the latter day a new typhoid eruption was observed, with diarrhœa of typhoid character. The patient was very ill at this time, but the temperature very quickly abated, and became normal on the twenty-first day of the relapse, when permanent convalescence was established. The woman had not a single bad symptom afterwards, and was restored to health with remarkable rapidity.

Case 2. *Single relapse of typhoid fever, lasting twenty-one days, preceded by a premonitory recrudescence.*—A woman, aged about thirty, was first under observation during the later days of an attack of typhoid fever, and it was suspected from the history that she was then suffering from relapse rather than from a primary attack. However, this doubtful attack ended, the temperature remaining after its termination subnormal to the third day. There was then a rise of temperature from 98·2° Fahr. to 99·8° Fahr., which warned one of the possibility of relapse. The fever abated, but on the fifth day of convalescence a true relapse began, and the temperature ran up from 98·2° Fahr. to 101·7° Fahr. on the third day, and with little remission to 104·6° Fahr. on the fifth day of the attack. This was the highest level reached during the disease. An immediate tendency to fall followed, but on the seventh day came the most decided remission, for on the morning of this day the temperature had gone down to 98·8° Fahr. There was no diarrhœa, and no accident or treatment to explain this fall of six degrees. But on the following days diarrhœa was severe and dangerous, and, as will be seen from the chart, the temperature varied remarkably. There was, however, a tendency to its fall, though deep curves were regarded as suspicious of danger. On the tenth and eleventh days there was a new accession of fever of moderate extent, but this fever was more continuous than previously, and diarrhœa had ceased. The temperature abated gradually, day by day, and on the twenty-first day of the attack it was subnormal. Convalescence was at once established, and the patient recovered without a single drawback.*

* This case is admitted amongst those of simple primary relapse,



CASE 1. RELAPSE OF TYPHOID (a female, aged 20).—Primary attack ended about twenty-eighth day. Apyrexial interval two days only. Thermometer gave the first indications of relapse. In relapse, highest temperature reached on the fifth day. Quick rise of temperature at onset of relapse; from 98° Fahr. to 104·4° Fahr. (nearly six degrees and a half) by the third day. Decided fall on the eighth day. Exacerbation of temperature on thirteenth day (*vide* text). Termination of fever on twenty-first day of relapse,

Case 3. *Single (?) relapse of typhoid fever lasting sixteen days.*—A male, 21 years of age, was admitted into Charing Cross Hospital (under the care of Dr. Pollock) during an attack of typhoid fever. The history of his disease was obscure, but, sixteen days after his admission, fever had entirely gone, and convalescence started. During this convalescent period the temperature was all but always subnormal for six days, when relapse set in, and the temperature ran up rapidly to 104° Fahr. on the fifth day of the relapse. Until the ninth day it remained at about the same level (103·6° to 103·8° Fahr.), and on this day it fell—suddenly, so to speak—three degrees. There was another exacerbation on the tenth day to nearly 103° Fahr., but the temperature at once abated, and on the sixteenth day of the relapse it reached the subnormal, and continued subnormal for several days, during which the patient entered on a rapid convalescence. In this case constipation was decided throughout, and there was much probability that the patient when admitted was suffering from relapse following ambulatory typhoid rather than from a primary enteric fever. The general course of the disease was exceedingly favorable; the stools were typhoid in character, but there was scarcely any diarrhœa, and the eruption was, though characteristic, not abundant. I do not give the chart in this case because it so much resembles those already published.

Case 4. *Single relapse of typhoid fever following severe primary attack; apyrexial interval eight days; duration of relapse twenty-one days.*—Is an excellent illustration of the value of frequent use of the thermometer in typhoid relapse. A female, aged 28, was admitted into Charing Cross Hospital in 1877, during the fourth week of an attack of typhoid fever of considerable severity, though diarrhœa was not a prominent symptom. There was, however, no constipation. The temperature of this patient was taken regularly every four hours, and any extraordinary variations are noted in the appended chart. The primary attack ended about the twenty-eighth day, and for eight days afterwards the temperature did not ascend beyond 97·5° Fahr. except on one occasion, when the height reached was not febrile. Relapse set in quite suddenly, and could not be explained. The temperature from 97·5° Fahr. ran up without intermission to 103·5° Fahr. on the third evening—six degrees in forty-eight hours. A sudden fall then occurred—to 99° Fahr. on the fourth morning (4

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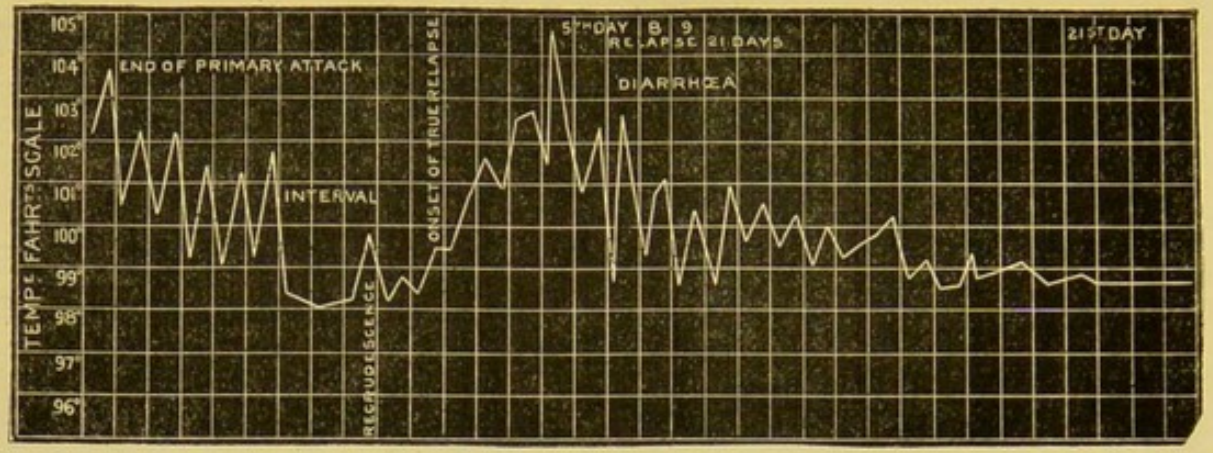
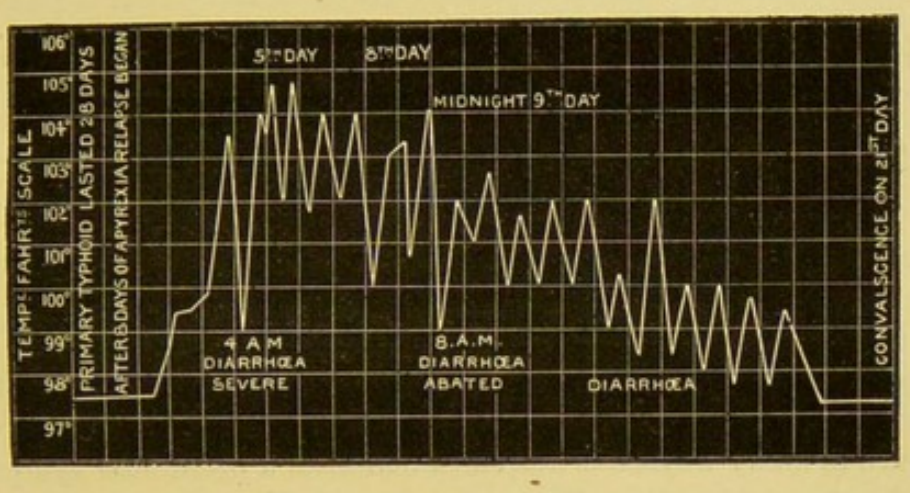
but the doubt as regards previous relapse and the occurrence of a recrudescence shows the difficulty of subdividing cases.



CASE 2. RELAPSE OF TYPHOID (a female, aged 30).—On the third day after primary attack, recrudescence occurred. On the fifth day true relapse began. Temperature reached its height (104·6° Fahr.) on the fifth day of relapse; on the seventh morning it had fallen six degrees. Decided new accession of fever on the tenth day, from which the temperature gradually fell to normal on the twenty-first day.

a.m.), but this was associated with a severe diarrhœa, and was an accidental remission, for on the fifth morning (at 4 a.m.) the temperature was 105° Fahr., at 9 a.m. 102° Fahr., and at midday 104° Fahr. At midnight (fifth and sixth days) it was 104·6° Fahr. The highest level reached (on the fifth morning at 4 o'clock) is, unfortunately, not recorded in the engraving. On the sixth and seventh days there was a somewhat similar temperature-curve to that of the fifth day, but there was a distinct tendency to fall, though only repeated use of the thermometer could have discovered it. On the seventh night the temperature went down four degrees, and reached 100° Fahr. on the eighth morning. It at once rose again, and in the evening was 103° Fahr; but with the ninth morning came a remission like that of the previous day, yet at midnight of this ninth day the temperature was 104° Fahr., and the patient was dangerously ill. From midnight the thermometer was used carefully, and gave hopes of the patient's recovery, for at 8 a.m. of the tenth day it marked only 99° Fahr., a fall of five degrees having occurred during eight hours about the very time when we hoped for such a fall. Diarrhœa had abated, and other dangerous symptoms disappeared during the tenth day. There was a new exacerbation of fever, but the temperature did not reach previous levels, and day by day showed a tendency to gradual fall. On the sixteenth day there was an unexpected rise, which was followed by an attack of diarrhœa, but with this exception the temperature went down, and reached a subnormal level on the twenty-first day of the relapse. As I have said, diarrhœa was occasionally decided during this attack, and constipation was never met with. The patient was very seriously ill during the first few days, and when the temperature fell—with diarrhœa—on the fourth morning there were many general indications of danger. This diarrhœa interrupted the rise of temperature, but did not check it.

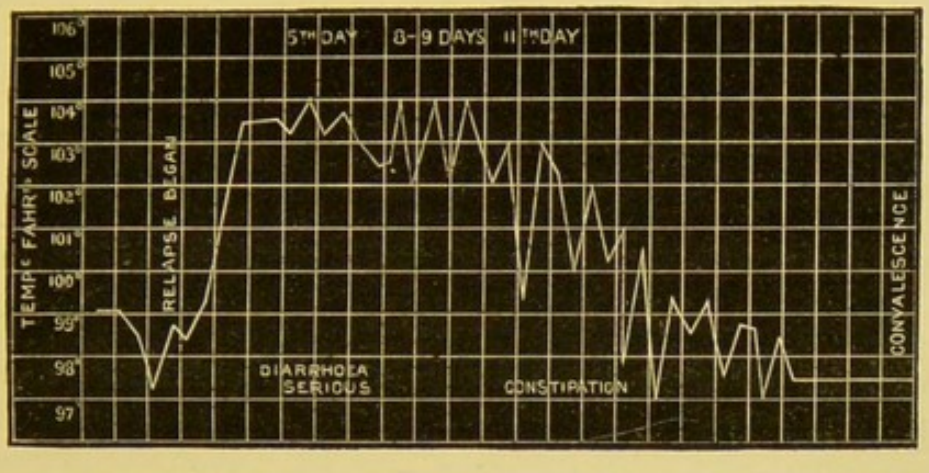
On the fifth day the thermometer marked the highest levels, and this case, like many others, says plainly that the thermometer is invaluable in prognosis when its records are balanced by consideration of all available means of clinical examination. It was almost possible to divide the relapse in this case into three periods—(1) From the first to the fifth



CASE 4. PRIMARY RELAPSE OF TYPHOID (a female, aged 28).—Primary disease lasted twenty-eight days. Relapse set in after eight days of subnormal temperatures. On first day of relapse temperature was 97·5° Fahr.; at 4 a.m. on the fifth morning it was 105° Fahr. From midnight of the ninth day began a sudden fall—from 104° Fahr. to 99° Fahr. at 8 a.m. New accession of fever followed. Then there was a distinct daily fall to the end of the disease on the twenty-first day, when convalescence began with subnormal temperatures. (*Vide* text).

day; (2) from the fifth to the tenth day; and (3) from the tenth to the twenty-first day, when the relapse ended. Temperature reached its height on the fifth day, and remained high to the ninth and tenth days, when a marked remission indicated the termination of the second period. The third period began with renewed elevation of temperature, followed by daily falls to the subnormal, on the twenty-first day of the relapse.

Case 5. *Single relapse of typhoid, lasting twenty-one days; recrudescences during convalescence.*—This patient, a male, aged 17, was admitted into Charing Cross Hospital in July, 1878, under Dr. Silver's care, and in his absence was in my charge. When admitted he was near the end of his primary attack, the history of which was obscure in many ways, but diarrhœa had been a prominent symptom —at least, occasionally. There was scarcely an appreciable interval between the ending of the primary disease and the onset of relapse. For a few hours only the temperature was subnormal, and it suddenly ran up from 97·2° Fahr., with little interruption, to 104° Fahr., on the fifth evening. On the third evening it was 103·5° Fahr. To the tenth day the fever continued high, being at midday on the eighth, ninth, and tenth days 104° Fahr. During this time, diarrhœa of typhoid kind and typhoid spots were decided, the patient being seriously ill. But a critical fall of the temperature began on the tenth afternoon, and early on the twelfth morning the level was only 99·4° Fahr. On the same evening (nine p.m.) it was again 103° Fahr., but henceforward there was a continuous daily fall, and though evening exacerbations were considerable on the sixteenth day the temperature was only 97° Fahr. It rose the same day to 99·5° Fahr., and it was only on the twenty-first day that subnormal levels became permanent for some days, there having occurred no intestinal trouble after the eleventh day of the relapse. Recrudescences, which are not given in the chart, were met with in this case, in which, after intervals of apyrexia, the temperature rose on two occasions for two or three days.



CASE 5. PRIMARY RELAPSE OF TYPHOID, WITH RECRUDESCENCES (a male, aged 17).—In relapse, temperature rose almost uninterruptedly from subnormal to 104° Fahr. on the fifth day, and reached the same level to the tenth day. Diarrhœa during this period. Fall of nearly five degrees to twelfth morning, and abatement of dangerous symptoms. Relapse ended on the twenty-first day. During convalescence, recrudescences occurred, which are not given in the engraving. (*Vide* text.)

Compare this chart with the first relapse in Case 16.

The somewhat irregular course of the true relapse had been suggestive of danger in spite of very decided symptoms, and during the boy's convalescence his diet was carefully watched. The fact that recrudescences occurred, notwithstanding all care, possibly proves that the irregularity in the relapse-temperature was due to the extent of the local intestinal lesions. Nothing, however, could be found to explain recrudescences, nor did they seem to interfere with the patient's convalescence. It is only fair to assume that dietetic treatment obviated danger which the thermometer alone indicated.

Case 6. *Single relapse, lasting twenty-one days.*—A male, aged 12, was a typical example of relapse, and I do not think it necessary to reproduce the chart. The primary attack lasted a month, and relapse occurred five days after its termination. In this relapse, which was mild, the temperature reached its height (with little remissions) on the fifth day from subnormal or the first day of relapse. A perceptible daily fall then began, but not till the ninth day was the fall decided. Then followed an exacerbation or new febrile stage, which ended on the twenty-first day, and had the same characters as the first case with which I commenced these papers. Diarrhœa was never marked, and sometimes constipation required careful doses of castor oil. The patient recovered.

Case 7. *Single relapse, lasting twenty-one days.*—A female, aged 20, passed through relapse of typhoid, simple in kind, and not needing much description. She was under my care in the absence of Dr Green. Relapse set in five days after the ending of the primary attack, and passed through stages almost identical with those of the first case quoted. The relapse lasted twenty-one days. The highest temperature was reached on the fifth day, and there was a critical fall on the eighth and ninth days. A rise followed, as in other cases, of

regular course; and the disease, in fact, was so normal that I do not think it necessary to reproduce the chart.

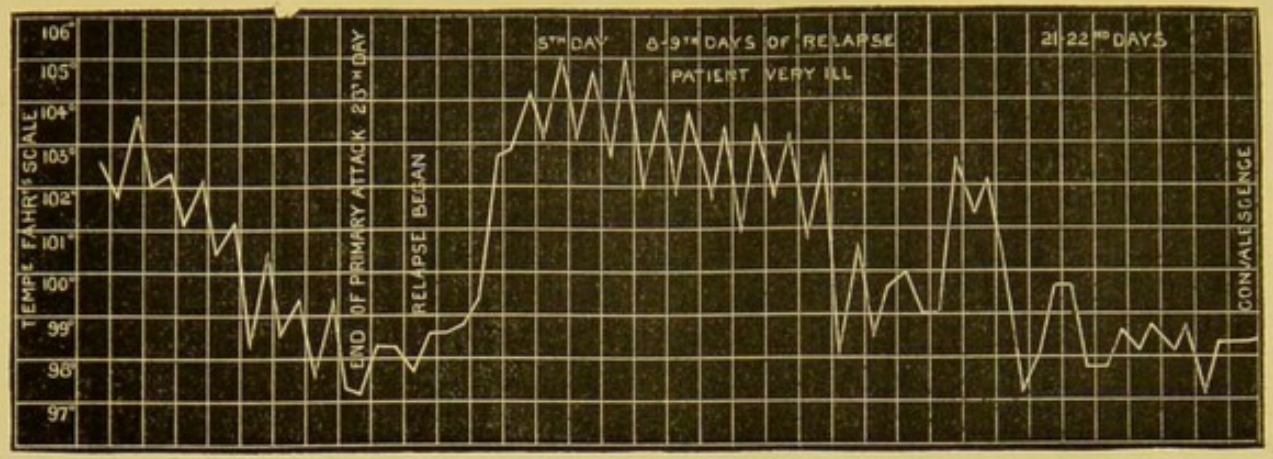
Case 8. *Single relapse, lasting twenty-two days; severe symptoms associated with irregularities of fever.*—A male, aged 23, was admitted into Charing Cross Hospital in July, 1878, under the care of Dr Silver. He was suffering from a primary attack of typhoid fever, which ended favorably after about twenty-eight days' duration. But relapse occurred, and through it the patient was under my care in the absence of my colleague. For two days after the end of the original attack the temperature averaged 97·6° Fahr. Relapse then began, and it rose rapidly to 102·6° Fahr. on the third evening, and to 105° Fahr. at 9 p.m. of the fifth day. On the sixth and seventh evenings almost equal levels were reached—in fact, on the latter evening a temperature exceeding 105° Fahr. was noted. The patient was very dangerously ill from the fifth to the seventh day. He had constant tremor and restlessness, low delirium, picking of the bed-clothes, subsultus tendinum, and a hard dry tongue, with sordes on it and on the teeth. He had, moreover, the sallow complexion of blood poisoning. Thus, a temperature reaching a fifth-day level on the two following days was attended by the gravest symptoms, which day and night provoked much anxiety. The patient was assiduously watched by Mr Wickers, house-physician at the time, and owed his life to a judicious administration of stimulants. On the eighth morning there was a more considerable remission of fever than any previously met with, and, in spite of the violent general symptoms, this was looked upon as of favorable omen. From the seventh to the thirteenth day the temperature went down but slowly; thus, on the eighth evening it was 103·8° Fahr., and on the thirteenth 102·8° Fahr. The fall, though small, was day by day steady, and so far favorable; but not until the thirteenth and fourteenth days came the *decided* fall, which we daily had been looking for. Up to the thirteenth day the bad symptoms mentioned prevailed, and *coma-vigil* at times was added to these. There was also either incontinence or retention of urine, and frequently the motions were passed unconsciously; but usually there was constipation rather than diarrhœa. The pulse was almost always "trickling" in character, and as high as 150, and the vital powers gave little hope of ultimate recovery. But the temperature was not wholly unfavorable, and on the thirteenth evening came the delayed fall. From 102·8° Fahr. at 9 p.m. the temperature fell rapidly to 98·2° Fahr. (four degrees and a half)

at nine o'clock of the fourteenth morning. It rose again, but moderately only; though on the seventeeth day there was an exacerbation to 102·6° Fahr., and a return of bad symptoms. An immediate fall succeeded, and the relapse, as well as the whole disease, ended with subnormal temperature on the twenty-first day of the relapse. After the fall on the fourteenth morning the patient was constantly drowsy, and his restlessness ended in sleep, from which he awoke convalescent.

This case was of interest in many ways. Opium was given in large quantities to check a dangerous and prostrating restlessness, but did not succeed. It did no harm, however. Chloroform was then inhaled until drowsiness was produced and muscular excitement diminished. The results were excellent. The patient enjoyed a continuous sleep of some hours' duration, and awoke evidently refreshed. The chloroform was given by Mr Wickers during one of the worst nights the patient had, and it was afterwards repeated with success, and, by securing rest, was one means of the patient's recovery. Chloroform inhalations were ventured upon because there was little bronchial catarrh.

Case 9. *Single relapse of typhoid, lasting twenty-one days; patient admitted for operation for cleft palate.*—A female, aged 19, was admitted into Charing Cross Hospital on July 22nd, 1878, that she might be operated upon for cleft palate. Three days afterwards this operation was done, and the temperature, taken before the operation, was normal. After the surgical interference there was of course a degree of fever, but this was insignificant, and the patient did well until twelve days after admission, when what proved a typhoid temperature began.

The temperature on the first day of this typhoid attack was only 98·3° Fahr. Then it ran up with scarcely appreciable remissions to

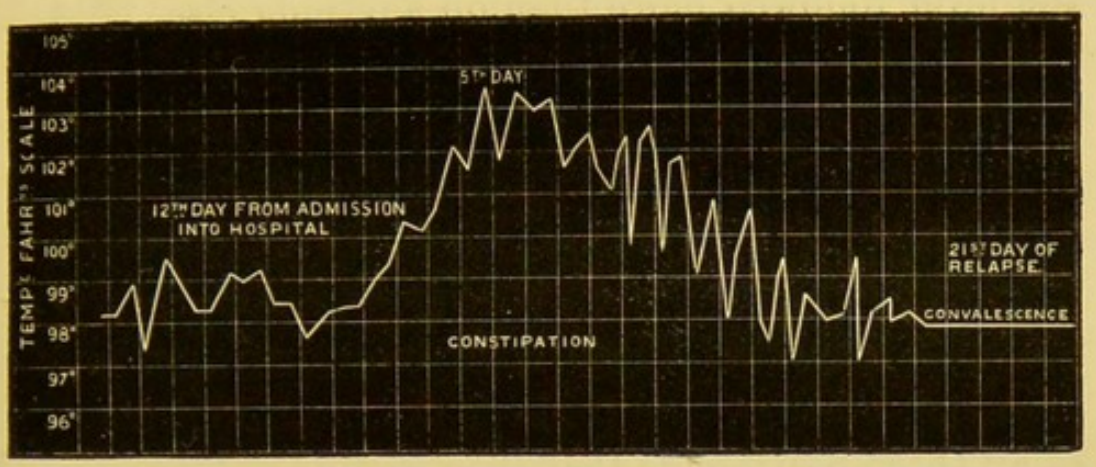


CASE 8. RELAPSE OF TYPHOID FEVER (a male, aged 23).—Primary attack lasted a month, and was followed by two days' apyrexia. Relapse then began; from 97·6° Fahr. temperature ran up to 105° Fahr. on the fifth day. Patient was dangerously ill. Temperature then fell slightly, but on the eighth and ninth days there was a somewhat more marked fall. Not, however, till the thirteenth day was there a decided fall (from 102·8° Fahr. to 99° Fahr. on the fourteenth morning). Relapse lasted twenty-two days. Case shows that irregularities of temperature are as indicative of danger as hyperpyrexia. (*Vide* text.)

Compare this chart with that of Case 5 and that of Case 16.

103·5° Fahr. on the fifth day. An almost uninterrupted rise through five days was strikingly suggestive of typhoid relapse, and though constipation was throughout the attack a leading symptom, other symptoms plainly pointed to typhoid fever as the cause of the temperature. On the sixth and seventh days the fever did not abate, but on the ninth day there was a most decided remission. The temperature in the morning of this day was only 99·8° Fahr.; it rose again, but without stability; deep daily curves were met with, but the downward tendency was never interrupted, and on the twenty-first day the temperature became normal, and continued normal or subnormal until the patient's discharge.

I have not the slightest hesitation in saying that this typhoid attack was an example of relapse, and that the patient had passed through a primary attack of typhoid shortly before admission into hospital. The cleft palate and the operation for cleft palate influenced the typhoid temperature in no way whatever. I believe the case was one of pure and simple relapse, and the thermometer was the leading power in pointing out the same. Let the reader be good enough to compare the chart of this case with some of those already published; such comparison must convince him of the truth of the views I advance. It may very properly be urged that the patient contracted typhoid fever in hospital, and that the attack which is described as relapse was really primary disease. But the facts are against this view; on it the patient must have taken contagion almost at the moment of admission. Our practical knowledge is fortunately evidence against frequent "catching" of typhoid in our general hos-



CASE 9. RELAPSE OF TYPHOID FEVER IN A PATIENT ADMITTED FOR CLEFT PALATE (a female, aged 19).—Was operated upon for cleft palate three days after admission (temperature 98·3° Fahr.). Temperature rose for a few days irregularly. On the twelfth day of admission a typhoid temperature began, which reached its height on the fifth day (103·6° Fahr.). The rise was almost uninterrupted. On the ninth day of attack the fever abated to 99·8° Fahr.; then rose, but afterwards descended with decreasing evening exacerbations to normal on the twenty-first day. Convalescence then commenced, and patient was discharged after being in hospital fifty-seven days. (*Vide* text.)

pitals, though of course cases do occur. This is not the place to discuss the contagion question, and in support of the view that relapse of typhoid fever rather than primary typhoid was the true source of mischief, I rely on the characteristic course which the fever followed more than on anything else.

Such cases as this and others already reported are open to many doubts, but are all the more suggestive of inquiry. One case (9) raises the question of the occurrence of mild relapse and of the effect of surgical operations on such relapses. And all the examples reported above have each an important practical bearing, and perhaps the most important of all these bearings is that they remind us how easy it is to confound relapse with primary disease. The cases, too, I venture to think, show that insignificant complications may vary the course of relapse, not only as regards its temperature-curves, but as regards its general symptoms. They show, also, that the disease is variable apart from appreciable complications. A number of other clinical lessons is learned from simple relapses, but it is unnecessary to dwell further upon these in this place. Each chart has been left in great measure to speak for itself, though comparison of the series in this chapter with subsequent examples of the disease is very desirable.

These cases appear to be very suggestive of further inquiry into the course of ordinary typhoid fever. They may be described as examples of mild relapse,

though of course the degree of mildness varied considerably, and sometimes "severe relapse" would be a more exact descriptive term than "mild relapse." In all the cases reported, with a single exception, the relapses lasted twenty-one days, and in all the temperature was the first indication of relapse, and reached its height on the fifth day of relapse. In one case which lasted only sixteen days the inference was strong that the observer was dealing with double and not with primary relapse.

It is impossible to avoid repetition in the report and description of such cases as are given in this work. They show the nature of mild relapse, of moderately severe relapse, and of the difficulty of distinguishing between relapse and primary disease; they prove that typhoid-relapse may vary considerably, though no appreciable complication is there to explain varieties; that so-called "recrudescences" have a general value and a special premonitory value (as in Cases 2 and 7); and that existing complications—even the fact of a surgical operation likely to be followed by some fever—might lead one widely astray. In Case 9 the proofs of typhoid-relapse were almost entirely thermometric, and, in fact, it would be difficult to conceive how mistakes could be completely avoided in a case supposed to be altogether surgical, such as this, had not the temperature been taken with care and regularity. We all know how easy it is to pass by peculiar stools

and a few roseolous spots in patients on whom has been performed an operation which is more or less likely to raise the temperature. That the temperature may vary in relapse without appreciable cause is a fact which may be well considered; and comparison of the obscure temperatures in some of the cases reported below with temperatures clearly traceable to complications will yield considerable clinical information.

The difficulty of separating primary typhoid from relapse, and first relapse from second relapse, is much greater than one might suppose. The importance of such separation is as great as its difficulty, and perhaps the cases recorded in this chapter and cases to be subsequently recorded have a value in this direction.

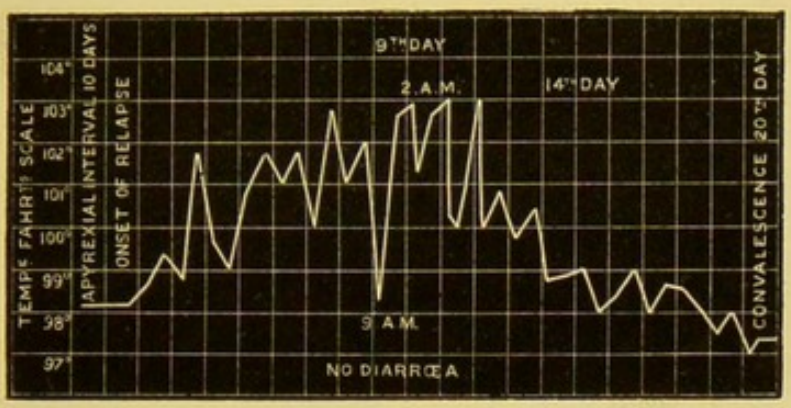
CHAPTER III

IRREGULAR AND COMPLICATED SINGLE RELAPSES—RELAPSES COMPLICATED BY SEPTICÆMIA (?) AND BY PNEUMONIA OR PLEURISY.

The cases classified under the above heading demand careful consideration. They are suggestive of the necessity of uninterrupted observation of the temperature in typhoid fever during supposed apyrexial periods. Irregularities and complications vary the fever in a most extraordinary manner, and it is often difficult to determine how far varieties are due to relapse, sequelæ, or complications. The fact is that typhoid fever remains a puzzling disease, and the more one studies its intricacies the more conscious must he become of the necessity of caution at the bedside. I venture to report the subjoined cases in the belief that they may be of some service in overcoming some of the clinician's difficulties. I repeat myself here again, but, as I experienced difficulties in these cases, it is plainly a duty to acknowledge them.

Case 10. *Single relapse of typhoid fever with irregular temperature, due possibly to septicæmia; relapse lasted twenty days.*—A female, aged 21, was admitted into hospital in January, 1878. She was suffering from typhoid fever, which had reached the third week. The attack was one of considerable severity, but unattended by diarrhœa, and terminated, after at least four weeks' duration, with deep daily curves in the last few days. For ten days afterwards the temperature every day approached 99° Fahr., but the patient was, to all appearances, quite convalescent, and occasionally the temperature was subnormal. Constipation was very marked during these ten days, at the end of which relapse commenced. On the morning of the first day of this relapse the temperature was 98·2° Fahr., in the evening 99·5° Fahr., and on the second evening 101·7° Fahr. On the third day the temperature fell to 99° Fahr., but it rose again, and on the fifth day was 101·8° Fahr. On the sixth morning it was only 100° Fahr.; but on the same evening 102·6° Fahr. Constipation still persisted, the pulse was 120, and the patient was seriously ill. The curve from the sixth day to the ninth is worthy of notice (*vide* chart). On the eighth morning at nine o'clock the temperature had sunk to 98·5° Fahr., but it immediately rose, and at two o'clock of the ninth morning had reached 103° Fahr. On the tenth and eleventh mornings it rose to the same level; but from this time it sank rapidly, rarely rising above 100° Fahr., and passing into the subnormal on the ninteenth day of the relapse. From first to last there was constipation, which was not interfered with except occasionally. Such stools as were passed had the typhoid characteristics. The patient made a good recovery.

I quote this case and publish its chart because it is instructive, in two directions particularly. The temperature was never very high, but it was irregular and uncertain, and therefore indicative of danger; it was marked by tendency to deep daily fluctuations, and in this way resembles some cases of typhoid which are followed, not by relapse, but by a more dangerous condition—suppuration of the mesenteric glands, for example, and consequent septicæmia. I



Case 10. Relapse of Typhoid with Irregular Temperature (a female, aged 21).—Admitted in the third week of primary attack, which was severe, and ended about twenty-eighth day. An apyrexial interval of ten days followed, during which constipation was obstinate. Relapse began, the temperature on first day being 98·2° Fahr., and on the fifth day only 101·8° Fahr. On the sixth evening temperature was 102·6° Fahr. Patient was at this time severely ill, and on the eighth morning temperature was only 98·5° Fahr., but on the ninth (2 a.m.) 103° Fahr. On the tenth and eleventh days the same occurred. Thenceforward temperature sank, and became subnormal on the nineteenth day of relapse. Constipation prevailed from first to last.

think the chart will be of value when compared with some illustrative of pyæmic changes following typhoid*

CASE 11. *Single relapse of typhoid following a severe primary attack; apyrexial interval irregular, and fever of relapse irregular, though not high; relapse lasted twenty-one days.*—A female, aged 48. This case illustrates the obscurity in which relapse is frequently involved, and how widely different relapse and primary disease may be. The patient passed through an attack of primary typhoid of great and continuous severity, and this attack ended about the thirtieth day of disease. She was under the care of Dr Green in Charing Cross Hospital, and treatment, modified from day to day, especially in regard to the employment of stimulants, was of the greatest value. I shall not dwell at any length on the temperature of the primary disease, though its chart is most valuable for comparison; but the temperature succeeding the primary fever is of importance. The patient was admitted on September 2nd, 1878—the thirteenth day of disease. Her fever was then nearly 105° Fahr., and this high level was approached during the next ten days. Then the temperature descended satisfactorily, and on the thirtieth day of disease it became subnormal. But evidences of mischief were not wanting, and a fluctuating temperature, though low *(vide* chart), was looked upon with suspicion. Yet on the thirtieth day of the disease the chief evil seemed at an end. A relapse, however, occurred, and was mild in all respects. For two days after the termination of the primary attack the temperature was normal or subnormal, and the patient's condition for the first time was satisfactory. Relapse set in irregularly, with severe diarrhœa, but as soon as the fever was fairly developed its course was tolerably regular. The temperature reached its greatest height (102·2° Fahr.) on the fifth day of the relapse. From this date it fell to the eighth day; then it rose temporarily, as if with a new accession of fever (but not above 100·6° Fahr.); and afterwards there was a gradual remission to the twenty-first day of relapse, when the patient was convalescent.

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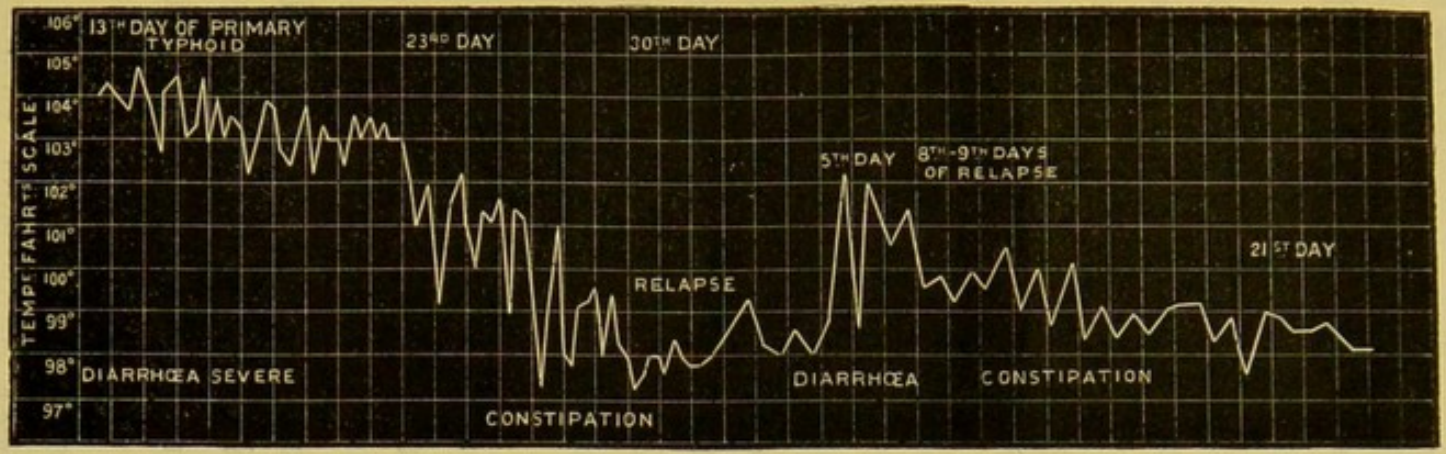
* Taking the whole chart, this case bears a close resemblance to those already reported. Its daily irregularities induced me to place it in this chapter, but, of course, no fine distinctions can be drawn.



CASE 11. MILD RELAPSE OF TYPHOID FOLLOWING SEVERE PRIMARY DISEASE (a female, aged 48). —Admitted on the thirteenth day of primary typhoid. Temperature for ten days afterwards remained between 104° and 105° Fahr. Diarrhœa severe. The fever then abated rapidly, and about the thirtieth day the attack was ended. Relapse set in very irregularly after a two-days' interval of apyrexia. Height of fever reached on fifth day (102·2° Fahr.), and after-course of fever was in accordance with regular mild cases. The relapse lasted about twenty-one days. There was a decided fall of temperature on the eighth and ninth days, then a slight accession of fever. Diarrhœa was considerable at first, then constipation. Compare relapse-temperature with that of primary disease. (*Vide* text.)

The relapse was irregular in many respects ; and irregularity makes it all the more valuable for comparison in a series of cases. The patient had scarcely any bad symptoms during relapse, and the irregularity only continued through the early days of the fever. But that there were dangers is certain from what we know of other cases. It is of interest to compare this "mild" relapse with the severe primary attack. The woman was admitted with all the marked symptoms of typhoid fever ;—abdominal pains and tenderness in the right iliac region, typical spots and diarrhœa, and the general appearances of severe typhoid. A week after admission (twentieth day of the primary attack) the patient had involuntary evacuations, subsultus tendinum, and dangerous hypostatic pneumonia. The course of the fever was in correspondence with the general symptoms. In the mild relapse the same fact was met with, and it is well worth while to compare the primary attack and the relapse. Such comparison (or rather contrast) shows that the mildest relapse may follow the severest primary attack ; and the practical teaching is this : that the occurrence of relapse under any circumstances must warn us to be cautious in dietetic and other treatment. In this instance it is impossible not to believe that the condition of the intestines was dangerous, though all dangerous manifestations had ceased except those given by the thermemeter. Mild relapses are as

instructive as the severe, as I have already said. Mild relapses are, in fact, more instructive in some directions than severe attacks. They recall to our minds the dangers of ambulatory typhoid, and perhaps prove the value of the thermometer as a diagnostic and therapeutical agent better than any other phase of typhoid fever. The thermometer shows us that the after-fever has a certain periodicity; it warns us that, though our patient does not seem to be very ill, his slight fever (in mild cases) is not a temporary accident, but indicative of a return of disease, with new ulcerations of Peyer's patches, which demand the most careful and anxious treatment. I am convinced that recognition of relapse has very frequently saved life.*

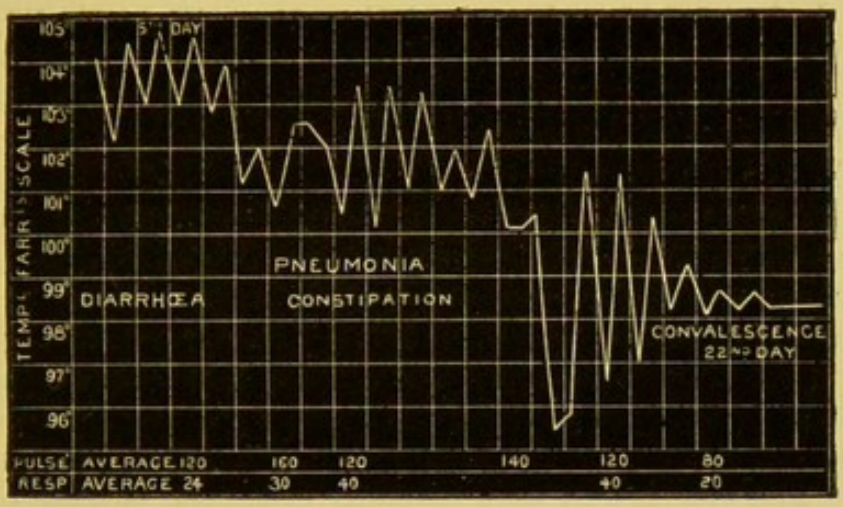
Case 12. *Single relapse of typhoid complicated with pneumonia; relapse terminated on the twenty-second day.*—A female, aged twenty-six, suffered from primary relapse of typhoid fever, and during the attack was a patient in Charing Cross Hospital. The temperature in this relapse reached its height on the fifth day (104·8° Fahr.), and on the sixth and seventh days it was above 104° Fahr. Diarrhœa was a grave symptom almost from the onset of relapse, but no extraordinary rise or fall of temperature could be traced to it. From the eighth day the temperature went down satisfactorily, for on the seventh evening it was 103·9° Fahr., and on the ninth morning only 100·6° Fahr., the fall being steadily progressive. Diarrhœa continued, and there was some hæmorrhage from the bowel, but the regular fall of the temperature was deemed most favorable, notwith-

* Relapse in this case would most likely have remained unobserved had not the thermometer been used with diligence and regularity. A comparison of the charts of primary disease and relapse is very instructive. The relapse certainly had not "all the phenomena and the course" of the primary disease.

standing the diarrhœa and hæmorrhage. The temperature immediately exacerbated, as one would expect in the most favorable cases; but, in this instance, it was irregular, because an attack of pneumonia set in. The pneumonia was well marked, and with its onset the bowels became constipated. From the ninth to the fifteenth day this complication kept the temperature high, and gave to the chart a characteristic variation met with under like circumstances in most of the acute specific diseases. The attack of pneumonia ruled the relapse-temperature from the ninth day, and its crisis was quite typical, for on the fifteenth day of relapse, and the sixth day of pneumonia, the temperature was 102·4° Fahr., and then it fell with such rapidity that on the seventeenth morning of relapse (and eighth of the pneumonia) it was down to 95·4° Fahr. Afterwards it fluctuated in the manner seen at the end of many attacks of primary typhoid, but the relapse ended on the twenty-second day in spite of the pneumonia complicating it, and was followed by uninterrupted convalescence.

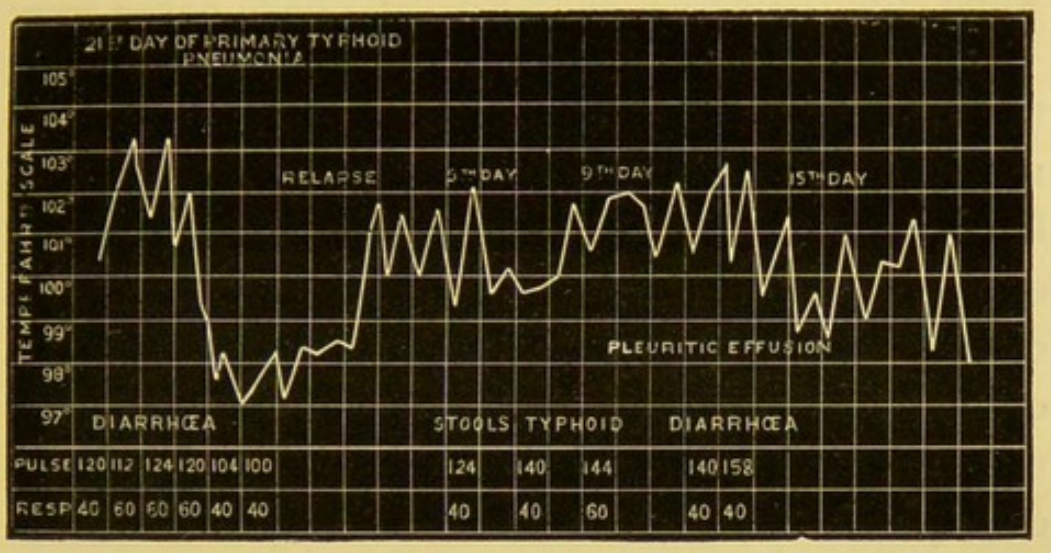
Thus, an acute complication in a favorable relapse modified the fever, but did not prolong its duration. The patient made a good recovery.

Case 13. *Single relapse, obscured by an attack of pneumonia and acute pleurisy with effusion; relapse lasted twenty-one days.*—A boy, aged 8, was admitted into Charing Cross Hospital in March, 1879, under the care of Dr. Pollock. He had a history of illness lasting at least three weeks, the symptoms of which illness were indefinite, but diarrhœa was one of them. A few days before admission the child had a severe rigor, and shortly afterwards became very short of breath, was very hot, and troubled with a hacking cough. The fact was he had an attack of croupous pneumonia, which seemed to be his only mischief when he came into hospital. When examined on admission by Mr. Rowbotham, the resident medical officer, the physical signs of pneumonia were typically decided, and the general symptoms were in agreement. The pulse-respiration ratio was almost as two to one, and there was an abundant crop of herpes on the lips. The lower lobe of the left lung was the part affected. Typhoid fever was also suspected, chiefly because of the indefinite nature of the three weeks' illness on which an attack of true croupous pneumonia had supervened. Typhoid was, however, a matter of sus-



CASE 12. RELAPSE OF TYPHOID COMPLICATED WITH PNEUMONIA (a female, aged 26).—On the fifth day of relapse temperature was 104·8° Fahr., and on the sixth and seventh above 104° Fahr. On the ninth morning temperature was only 100·6° Fahr. Pneumonia then set in, and kept the temperature high for six days. The relapse ended on the twenty-second day, the complication not prolonging its duration. (*Vide* text.)

picion only, for there were no spots, and though there was diarrhœa, the stools were not typhoid, and there was no abdominal tenderness. The temperature on admission was 100·4° Fahr., and the patient was at that time, as the course of the disease proved, at the beginning of a fourth week of typhoid, and in the latter half of a pneumonic attack. On the third day in hospital, at 2 p.m., the temperature was 103·2° Fahr. The fever thence abated with critical significance, and on the fifth morning after admission (twenty-seventh of disease) it was as low as 97·6° Fahr., and in the evening only 97° Fahr., so that in forty-eight hours the temperature ran down nearly six and a half degrees—a fall very characteristic of the termination of a favorable croupous pneumonia. The patient did well for two days, and his temperature was mostly subnormal, but he was not "convalescent." His diarrhœa abated, and yet, on the third day from the end of the crisis of pneumonia, the temperature began to rise. A relapse of pneumonia was suspected, and very properly, though the physical signs did not present any decided change. The relapse was one of typhoid fever in reality, on whose first day the temperature was 98·6° Fahr., on the second evening, 101·8° Fahr., and on the fifth night 102·2° Fahr. On the third and fourth days diarrhœa recurred, and the stools were, for the first time in hospital, typhoid in character. The evacuations were carefully examined, because of previous suspicions, and because the course of the fever pointed to relapse of typhoid rather than relapse of pneumonia. On the sixth and seventh days the temperature was only about 100° Fahr., but on the eighth it rose to 101·8° Fahr., on the tenth it was 102° Fahr., and diarrhœa of typhoid character was unequivocal. To the fourteenth day the temperature remained comparatively high (102·5° Fahr.), but there was never any great degree of fever. Diarrhœa continued, the patient was dangerously ill, his pulse and respirations being unsatisfactory. On the twelfth day his pulse was about 160 in the morning, and his respirations about 40, and his condition generally did not suggest a favorable termination of his attack. There were no evidences of an extension of the pneumonia, but distinct signs of effusion at the left base. The child, however, did well, and from the fourteenth day the temperature declared a tendency to fall. The relapse lasted twenty-one days, and in the last three days there was an approach to the deep curves met with in the last week of primary typhoid. It is not necessary to dwell on the progress of the pneumonia; it followed a course met with over and over again when it is simple and uncomplicated.



CASE 13. RELAPSE OF TYPHOID FOLLOWING A PRIMARY ATTACK, OBSCURED BY ACUTE PNEUMONIA (a male, aged 8).—Patient had an obscure history, Had been ill at least three weeks, but on admission seemed to be suffering only from acute pneumonia. Physical signs and general symptoms proved the existence of pneumonia, which ended with a critical defervescence. The primary disease was suspected—typhoid fever; relapse of typhoid justified the suspicion. This relapse ran a decided and yet somewhat irregular course. The temperature will be found in the chart. Typhoid stools were met with during the relapse, and determined the nature of the whole disease. Relapse of typhoid lasted twenty-one days. (For details, *vide* chart and text).

This case is of great interest; its doubtful character when first it was observed is even more instructive than the certainties which were afterwards developed. The child had a typical pneumonia when admitted—one more typical I have never seen—and he had nothing to indicate typhoid further than a vague history of *malaise* preceding the pneumonic onset. Thus, this case bears out what I have already advanced, that typhoid fever is often obscured until declared by its complications or the occurrence of relapse. I ask comparison of the chart of this case with that of Case 12, in which pneumonia of similar character occurred during a relapse of typhoid fever. Had the thermometer not been used it would have been absolutely impossible to trace the natural history of disease in this case; certainly we might have determined the presence of pneumonia and of typhoid fever, but of their relationships, stages, and sequelæ, no scientific account could have been given. Such an example as this is of unquestionable value in the discussion of the duration of typhoid fever. The thermometer used as an adjunct in clinical observation helped to explain the nature of the disease, and then to explain its prolonged duration. So, again, the thermometer was of value in pointing out dangers in the typhoid relapse. The temperature, apart from the pneumonic or pleuritic influences, was irregular, and therefore of bad omen. It is unnecessary, after

what I have written of other cases, to dwell on the significance of irregularity of fever in typhoid relapse. I will simply say that in this case such irregularity occurred; and that though the temperature was never high, the patient was by all observers during his relapse considered to be most dangerously ill. The boy recovered, but his complications kept him back for several weeks. He had also after-relapses, and I regret that I cannot give their temperature charts.

These irregular cases have a teaching which it is impossible to ignore. The temperature in Case 10 fluctuated in an irregular manner, and yet when the whole chart of relapse is viewed there could be little doubt of the nature of the disease. But during irregular febrile periods the patient was dangerously ill. And Case 11 is an excellent example of the value of individual cases. It teaches us that relapse in typhoid fever may be readily passed by, and that the height of fever is by no means always a measure of the gravity of the disease. This latter point is of so great practical importance that I again run the risk of blame for repeating myself, and again and again would say that the occurrence of relapse with fever, comparatively slight and yet with dangerous local lesions, has not received its due recognition.*

* I have seen a case quite recently which bears greatly on these points. A young lady had ambulatory-typhoid; after an interval

In Case 12 pneumonia complicated a relapse and kept up the temperature for several days. The fall of fever is best adjudged by the chart appended—a chart which illustrates completely the value of an exact determination of complications in such a disease as typhoid fever attended by relapses. And the last example in this chapter (Case 13) bears out what has been written. Pneumonia complicated a primary attack of typhoid and left behind a pleurisy which modified a relapse to a marked degree. An examination of the chart will save me a repetition of its clinical history. The above irregular or complicated cases of typhoid relapse have, perhaps, some value in our investigation of the course typhoid fever may take.

she began with relapse of the mildest form, and died suddenly of perforation.

CHAPTER IV

CASES IN WHICH TWO OR MORE RELAPSES OCCURRED WITH OR WITHOUT COMPLICATIONS

Double or triple relapses of typhoid fever may be as simple as primary relapse, but when a case relapses several times extraordinary clinical difficulties must arise, especially if this or that relapse be in any way complicated. In such a chapter as this one ought to attempt to clear away difficulties rather than to increase them, and I am convinced that the moment the practitioner becomes alive to the fact that "many" relapses may occur in typhoid fever, his interest in the disease will be greatly increased. One, two, three, and even four relapses may take place; each or all may be mixed up with any of the complications of a primary attack, and become most valuable clinical studies, and demand the most careful therapeutical interference.

Cases in many respects similar to those given in this chapter have been met with during periods when typhoid fever has been greatly prevalent. But the interpretation of such cases is never

easy, for they present a combination of difficulties which depend upon repeated relapses, all possible complications, and those uncertainties which are always met with in typhoid fever, even when it presents itself in its most simple guise. But so-called difficult cases teach us even more than so-called simple cases, supposing we have a fair knowledge of the disease in question; and I do not hesitate to say that the examples recorded in this chapter have a more valuable clinical bearing than any given in previous pages.

The very first case recorded below shows, though it is an example of uncomplicated double relapse, how great is the difficulty of the physician to determine the stage of typhoid fever when first presented to him. This was a hospital case, and therefore had everything in its favour as far as diagnosis is concerned, because it was under constant observation. The general public (and even the profession sometimes) forget the immense difficulties of diagnosing acute specific diseases in darkened rooms and under conditions where it is alike impossible to make a proper examination of patients, and to obtain a satisfactory history. The practitioner who, perhaps by his own errors, has learned to be generous to others, will be ready to concede that it is often impossible to detect typhoid fever, that its existence may be confounded with typhus, or even with far widely separated

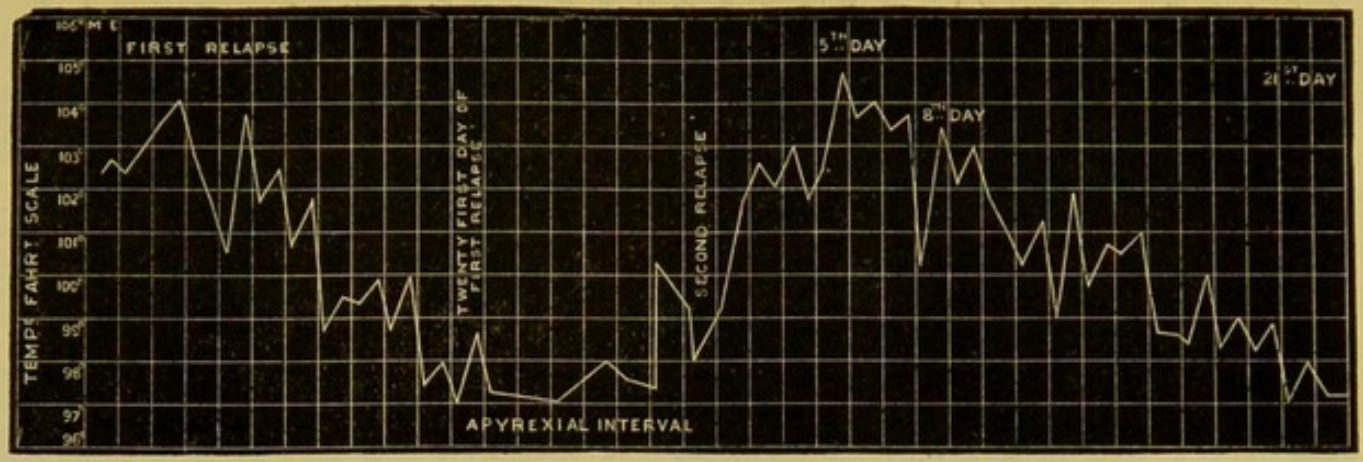
diseases, and that when typhoid is plainly the disease its stage is most difficult of determination. These are facts which many have experienced, and without further remarks, I report several cases bearing upon them. The first case, as has been said, is one of "simple double relapse."

CASE 14. *Double relapse of typhoid fever, each relapse lasting about twenty-one days; recrudescence between the relapses.*—A female, aged 20, was admitted during a first relapse of typhoid fever. There was no question that she was suffering from relapse, though it was, of course, difficult to determine the exact day of its onset. Diarrhœa had been the first symptom, and set in during convalescence from an "obscure" illness, which the history indicated must have been an attack of typhoid fever. The patient at the time of admission had reached probably the ninth day of relapse, and her temperature did not rise above 102·4° Fahr.—that is to say, it was comparatively low on this day of the disease. It rose after admission into hospital for two days (104° Fahr. on the eleventh evening), and then fell, with a single exacerbation on the fourteenth day, to subnormal on the twentieth day of the attack. In such a case the variations in the temperature after the patient's admission into hospital, it should be remembered, might be due in part to the change in the surroundings. With the beginning of subnormal temperatures came convalescence, and the patient went on well for five days; then the temperature ran up from 97·4° Fahr. to 100·2° Fahr.; but this was but a temporary recrudescence, and lasted only a day. On the seventh day of convalescence the temperature was normal, and then a true second relapse began, in which the temperature rose uninterruptedly from 98° Fahr. to 102·8° Fahr. on the third day, and with slight daily remissions to 104·6° Fahr. on the evening of the fifth day of this relapse. It remained high, with slight morning remissions, to the eighth day, when it fell very quickly nearly four degrees, and this fall was attended or followed by a general improvement in the patient's condition. The fever again increased to 103·2° Fahr.; but this was but a temporary rise, and, as the chart shows, there was afterwards a downward tendency, so that the temperature became subnormal on the twenty-first day of the relapse. Afterwards there was a rapid convalescence. The two relapses in this case had a marked

similarity; and neither accident nor treatment interfered with their course.

CASE 15. *Double relapse of typhoid fever; each relapse terminated about the twenty-first day.*—A male, aged 18, was admitted into Charing Cross Hospital while suffering from typhoid fever, which appeared to terminate on the thirtieth day of the disease. But relapse followed almost immediately, and in it the temperature reached its height on the fifth day, from which time there were slight daily remissions to the eighth day, when a marked fall occurred, and continued to the eleventh morning (98° Fahr.). The temperature again rose, but never to previous levels, and did not become normal until the twenty-first day of the relapse. The temperature was then subnormal (usually 97° Fahr.) for five days, when there began another febrile attack which lasted twenty days. This attack was very mild, for the temperature never exceeded 101·4° Fahr. on the fifth day, and, though it was certainly relapse, would have been passed by had the thermometer been neglected. Even occasional observations of the temperature would have been of little avail; but a regular daily chart showed a disease very similar in its course and stages to those previously described, but differing in its extreme mildness and slightness of fever. The case is of value in this respect: it proves the obscurity of true relapse in some instances, and the necessity of caution in the dietary of patients in whom the least fever lingers after an attack of typhoid. Had the patient been left to himself he would have worked and "walked" probably through the greater part of the second relapse. (The chart of this case is not engraved).

The cases just quoted are examples of the simple course relapses often take; but I now report an instance of triple relapse which is striking in its simplicity, and I venture to think is bound to attract the reader's attention. Had the thermometer not been used during apyrexial intervals, as well as during stages of fever, the clinician might easily have put a false interpretation on the course of the disease.



CASE 14. DOUBLE RELAPSE OF TYPHOID (a female admitted during a first relapse).—Temperature was low on the ninth day and sank to subnormal by the twentieth day, and remained subnormal for five days. On the fifth day of subnormal temperature there was a temporary recrudescence. On the seventh day a second relapse began, and the temperature rose nearly eight degrees by the fifth day. There was a decided fall on the eighth day, and fever terminated on the twenty-first day. It should be noted that a premonitary recrudescence occurred in this case.

Case 16. *Triple relapse of typhoid fever.*—This case is in many respects the most interesting of the whole series. In it three relapses occurred, each clearly defined and separated from the other by distinct intervals of apyrexia lasting several days. The patient was a male, aged 24, and was under the care of Dr Pollock in Charing Cross Hospital. He was admitted in October, 1877, and eight days afterwards his primary attack of typhoid, which had lasted four weeks, seemed to be at an end. The temperature became subnormal, but did not remain so, for within twenty-four hours it rose suddenly and quickly, and by the third afternoon of what proved to be relapse was 104·6° Fahr. It had risen from 97° Fahr.—nearly eight degrees—without remission. The pulse was never above 120, and usually about 100; the bowels were constipated. There was a remission of the temperature on the fifth morning, but on the fifth evening it was again 104·6° Fahr., and it fluctuated for the next five days between 104° Fahr. and 103° Fahr., with a slight tendency to daily defervescence. It did not fall on the eighth and ninth days, as in more favorable cases, and on the tenth evening was as high as 104·7° Fahr. The patient during these days was as ill as he could be; he had a weak and frequent pulse, was troubled with vomiting, and was only kept alive by stimulants. He passed two or three typhoid stools daily, and had a typhoid eruption. One could not but contrast this dangerous case with others of favourable omen, in which the temperature fell at the very time when here it remained persistently high. On the twelfth evening the temperature had a favorable fall, and on the morning of the fourteenth day was only 101° Fahr. For the two following days it exacerbated, but on the sixteenth evening fell decidedly, and gradually descended to subnormal on the twenty-first day of relapse. On the sixteenth day the patient was exceedingly low, and his stimulants were increased, with the best results. Constipation was marked at this time, and simple enemata were given. On the twenty-first day convalescence began, and for about seven days temperature was subnormal. Then came a *second relapse.* During the apyrexial interval constipation persisted. Relapse set in suddenly, and the only warning was given by the thermometer. On the first day the temperature was 98° Fahr., and on the fifth day 104° Fahr. The patient looked ill, but not seriously ill. He had no diarrhœa; on the contrary, constipation was still obstinate. From the fifth to the seventh the temperature fell decidedly, and on the morning of the seventh day was only 100·2° Fahr. But the evening temperature remained high to the tenth day (103·6° Fahr.), and the patient,

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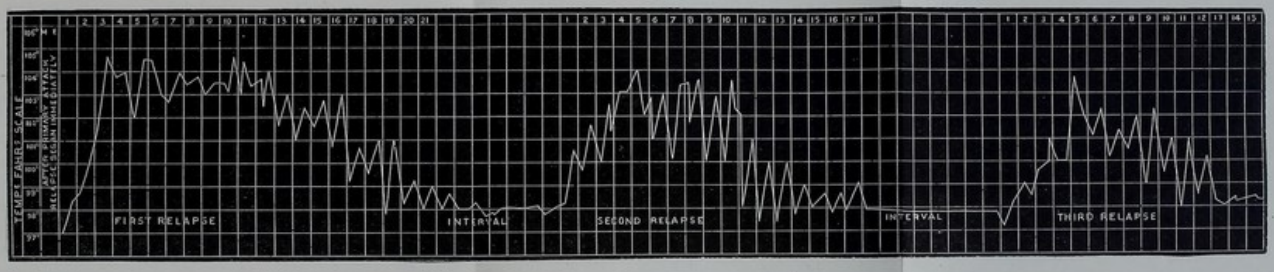


Case 16. Three Relases of Typhoid (a male, aged 24). All the relapses observed in hospital, and separated from one another by distinct periods of apyrexia. *First relapse* set in at end of primary disease, which had lasted a month. Temperature went up from 97° Fahr. to 104·6° Fahr. by third day of relapse. On the fifth day it was 104·6° Fahr., and it approached this level daily to the twelfth evening, the man being very ill. On the thirteenth day a fall came of critical import, and continued to the twenty-first day of relapse. Then for seven days the temperature was subnormal. A *second relapse* occurred, in which fever rose rapidly, and reached its height on the fifth day (104° Fahr.) But up to the tenth day the temperature daily approached this level, and the patient was very ill. A critical fall came, and on the eighteenth day this relapse was at an end. For subsequent eight days temperature was subnormal. A *third relapse*, however, commenced, in which highest temperature was reached on the fifth day. Thenceforward temperature tended downwards; on the eighth and ninth days fall most decided. Fever ended on the fourteenth day. Permanent convalescence then began, and patient rapidly recovered without a bad symptom after an illness lasting one hundred days. (In the chart, as published, the fever of the *primary attack* is not given. *Vide* text).

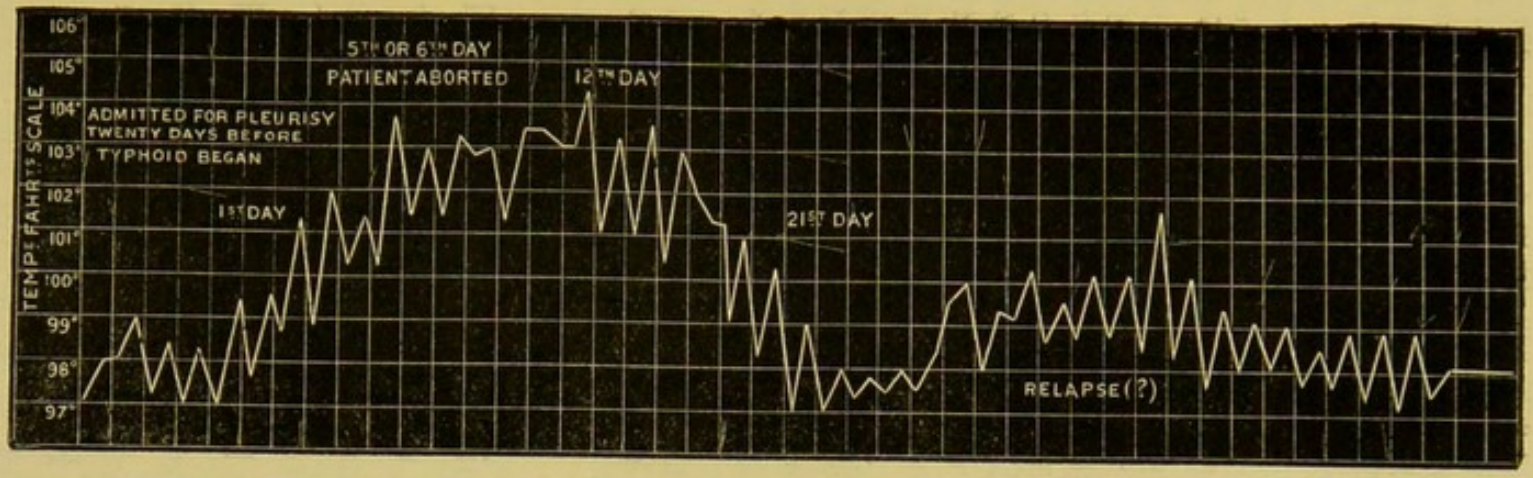
judging from general symptoms, was not free from danger. On the tenth evening a "critical" fall began, and went on to the following morning, when the temperature was but 98° Fahr., a fall of nearly *six degrees* having occurred in less than twelve hours. A slight rise followed, but only to 101° Fahr., and day by day the temperature fell, and became subnormal on the eighteenth day of relapse. For the succeeding eight days convalescence seemed established, and the patient craved for food, the temperature continuing subnormal and constipation being decided. Then came a *third relapse*, as well marked as its predecessors, for from 97·4° Fahr. on the first day of the relapse the temperature rose with little remission to 103·8° Fahr. on the fifth day—that is, nearly six and a half degrees. It may be said in this relapse that from the fifth morning there was a distinct downward tendency to the end of the attack, but the relapse has a marked similarity with the first and second, and with those met with in other cases. As in many favorable instances, there was no tendency at any hour from the fifth to the tenth day to the elevation of temperature reached on the fifth day, and the patient day by day seemed to improve, the general symptoms being comparatively insignificant. On the ninth morning there was a considerable fall to 99° Fahr., and though the temperature on the same evening rose to 102·3° Fahr., the daily fall afterwards showed permanent tendencies. The third stage of the relapse began, but cut short; from the tenth day the temperature went down, and on the *fourteenth* day became subnormal, where it remained for many days, during which an uninterrupted convalescence was entered upon.

The patient recovered without further troubles after an illness which had lasted about one hundred days. It is unnecessary to dwell on the remarkable interest of this case. The relapses (three in number) are distinctly separated from one another by apyrexial periods of apparent convalescence, and they ran a course identical in kind, except as regards duration. They lasted twenty-one, eighteen, and fourteen days respectively; in each the highest tem-

perature was reached on the fifth day; in the first two the temperature remained high from the fifth to the tenth or twelfth days, and the patient during this stage was dangerously ill; in the third relapse the temperature fell during this time, and there were less evidences of danger. During these relapses one or more of the special signs of typhoid—such as rash, stools, &c.—were met with; constipation prevailed rather than diarrhœa. There was never any jaundice, and the primary attack was one of typical typhoid fever; and I would ask critical consideration of the case. It is one of the most remarkable I have met with, and at the same time one which presented the most decided proof of its "typhoid" nature.

The next case is given exactly as it appeared in the 'Medical Times and Gazette.' It has many points of interest, but is of special value as showing the effects of complications and the occasional obscurity of relapses.

CASE 17. *Double relapse of typhoid, complicated with pleuritic effusion.*—A married woman, aged 23, was admitted into Charing Cross Hospital on May 13th, 1878. She was then suffering from right pleurisy with effusion, and was about three months gone in the family-way. Subsequently she had distinct signs and symptoms of typhoid fever, and during this attack she aborted. Many questions, therefore, arose: whether the patient had suffered from typhoid before admission, and pleurisy was a sequela of the same; whether she had contracted typhoid in the hospital; and, in either case, how far pleurisy and the occurrence of abortion modified a typhoid temperature. For



CASE 17. MILD RELAPSE OF TYPHOID FOLLOWING SEVERE PRIMARY DISEASE (a married woman, aged 23 years).—Patient admitted for pleurisy, with effusion, for which paracentesis was performed. Twenty days after admission an attack of typhoid set in, and five days afterwards patient aborted. In the typhoid attack the temperature did not abate until the twelfth day. From this day it fell, and on the twenty-first day reached the normal, and continued normal for two or three days. A relapse then set in; its temperatures were comparatively low as well as irregular, and the new fever lasted about eighteen days. (For many points of interest, *vide* text.)

five weeks before admission the patient had not been well, and she ascribed her original illness to a cold caught in a washhouse. Her chief symptoms at first were languor and sleepiness, some cough and expectoration. Then suddenly, a week before admission, she was seized with stabbing pains in the right side, and her account of what occurred during this week plainly pointed to pleurisy or to pleuro-pneumonia. She was never constantly confined to bed before admission, but *struggled* to do her household work. The patient's previous history is somewhat important. She had been married five years, and miscarried five months after marriage, but was the mother of two living children. Cough was no recent symptom with her; she had suffered frequently from it, and it returned with her present pregnancy. On May 15th (two days after admission) a note of her condition was recorded. There were at this time distinct signs of pleurisy with effusion on the right side, and *paracentesis thoracis* was done with great benefit to the patient. Several ounces of serous fluid were drawn off, and many bad symptoms shortly disappeared, the patient going on well to June 1st, when, about twenty days after admission, her case assumed a new aspect. The temperature began to rise, symptoms at variance with convalescence from pleurisy appeared, and in a few days it was clear that the patient was suffering from typhoid fever. On June 7th she aborted. It is unnecessary to follow her general symptoms henceforward, but a study of the temperature chart is of great value, and to it I ask attention.

The patient was admitted on May 13th, and was suffering from pleurisy with effusion. On May 15th *paracentesis thoracis* was done, and the temperature, though irregular, only once reached 99° Fahr. until June 1st. Then there began a typical typhoid rise, which needs but few remarks. On the morning of June 2nd (twenty-second day of admission) the temperature was 97° Fahr. Thence it rose with daily remissions to 103·8° Fahr. on the sixth day (June 7th). There was afterwards no decided fall

for many days, though of course daily remissions occurred. On the twelfth day of an undoubted typhoid attack the temperature reached 104·4° Fahr. On the thirteenth morning it was down to 101° Fahr., but it was not until the sixteenth day that a decided downward tendency was declared. From this date it sank satisfactorily, and on the twenty-first morning of the fever the temperature was subnormal (97·4° Fahr.). Typhoid stools had been passed about thrice daily. In attempts to bring down the temperature, quinine, ice-water sponging, and stimulants were employed freely. Quinine was continued, and for three days the temperature was normal or subnormal. On the twenty-fourth day from beginning of fever the temperature again rose, and it fluctuated irregularly for about eighteen days, the heights reached being insignificant (the highest 101·8° Fahr.). During this time the bowels were constipated, and simple enemata were occasionally used. The patient, though often very ill during the second fever, made a rapid convalescence, and was discharged on August 2nd, 1878, she having been eighty-two days in hospital.

As already said, many questions are raised, and many of an argumentative kind outside the purposes of these papers. I shall not discuss the cause of the primary pleurisy, nor the question whether the initial symptoms of disease which so much resemble those of ambulatory typhoid were really due

to typhoid. In hospital for the first twenty days the patient had no symptoms of typhoid, but had distinct signs of pleurisy with effusion. Then an undoubted typhoid began. This attack—whether primary or relapse—ran a course of twenty-one days, and the temperatures during its progress were not like those of ordinary relapse; but did the complication modify the fever? I confess that I am unable to answer many of these questions, and all the more because if this patient suffered in hospital from a primary attack of typhoid, she must have contracted it in hospital, either by the food or water she took, or by contact, not with typhoid patients, but with those nursing or watching typhoid patients. This is not the place to argue these points; they are mentioned as proving what a multitude of issues a single case may raise.

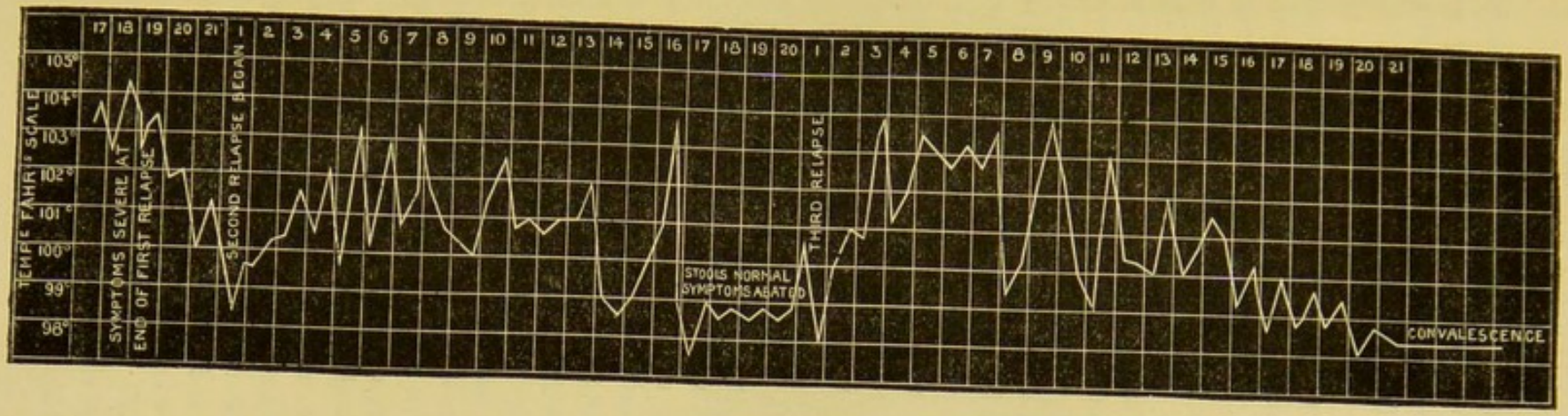
Admitting that the first fever met with in hospital ended on the twenty-first day, whether relapse or primary typhoid, we come to the second accession of fever. To what was this due? To pleurisy, to relapse, to recrudescence, or some unknown accident? The woman aborted during the first attack in hospital; did some pelvic mischief remain, and was this the cause of the new and irregular pyrexia? It is beyond all doubt that all these questions often force themselves on the practitioner's mind, and demand careful consideration, for treatment is guided to the salvation of the patient by an

exact diagnosis in such cases: In this particular example the new rise of temperature was ascribed to a mild relapse, or to what is termed recrudescence by many writers. I venture to think one should most earnestly object to the use of this term in such cases, for it does not convey the fact that possibly the intestinal lesions are in them more decided than in earlier stages of the fever. I am strongly of opinion that this patient had typhoid before admission, that she had pleurisy as one of its complications, that the typhoid relapsed in hospital and was obscured by the pleurisy, and that a second (mild) relapse occurred.

Case 18. *Triple relapse of typhoid fever; temperature irregular, but duration of each relapse about twenty days; apyrexial periods irregular, like the relapses.*—A married woman, about thirty years of age, first came under notice at the end of a severe and *undoubted* relapse of typhoid fever. On the second day after her admission, which was the eighteenth day of relapse, her temperature was 104·2° Fahr., and therefore high at this stage of the disease, and her general condition was very unfavorable. But on the twenty-first day of this relapse she was free from fever, and convalescence was expected; yet scarcely twenty-four hours elapsed before a second relapse set in, with all the appearances of primary typhoid fever. The temperature ran up with little interruption from 98·4° Fahr. to 101·6° Fahr. on the third day; and on the fifth day of the relapse it reached 103·4° Fahr., at which level (or near it) it continued to the eighth day, when it fell from 103·4° Fahr. to 100° Fahr. on the evening of the ninth day. It rose again on the tenth day from 100° Fahr. to 102·5° Fahr., and thence sank progressively to the twentieth day of the attack, there having occurred, however, through the fifteenth and sixteenth days a sudden rise from 96° Fahr. to 103·8° Fahr., followed by a sudden fall of great extent (to 97·6° Fahr.), during which the patient's state was critical, for there was a return of diarrhœa with typhoid stools, with new typhoid spots, and severe general symptoms—circumscribed flushing

of the cheeks, a rapid pulse, tremor, and delirium. It is important to note the temperature in cases of relapse at or about the fifteenth day. In this particular relapse, however, the symptoms completely abated on the twentieth day, though the temperature for the last few days daily approached to 99° Fahr. Again the patient seemed safe, but her convalescence was ephemeral. Immediately, almost, a third relapse began, and the temperature on the third evening was 104° Fahr.; on the fifth morning it was 103·5° Fahr., but the evening temperature was not noted. It remained high to the seventh day (103·6° Fahr.), but on the eighth morning came a decided fall (from 103·6° to 99·4° Fahr.), followed by a rise on the ninth evening to 104° Fahr. A deep remission (to 99° Fahr.) succeeded on the tenth day, and a new accession of fever on the eleventh (to 103° Fahr.), from which day the temperature sank gradually, reaching a subnormal level on the twenty-first day of the relapse. The disease had afterwards a favorable course, and the patient quickly recovered from her long illness.

It should be particularly remarked that the steep temporary curves noted on the fifteenth and sixteenth days of the second relapse, and on the tenth and eleventh days of the third relapse were accompanied, even when the temperature was low, by severe symptoms and indications of great danger. The patient was of a temperament which readily predisposes to delirium, and this was a common though varying symptom. Each attack was more severe than the temperatures (as far as height goes) would indicate, but severity seemed to be associated with irregularities in the fever-chart rather than with particular levels. The rapidity with which the woman recovered after so protracted an illness was remarkable.



CASE 18. THREE RELAPSES OF TYPHOID (a female, aged 30, married).—Admitted during *first* relapse, which ended on the twenty-first day. A *second* relapse set in at once, in which temperature reached its height on the fifth day. On the eighth and ninth days it fell from 103·4° Fahr. to 100° Fahr.; it thence sank progressively to the twentieth day. An exacerbation occurred on the fifteenth day. A *third* relapse began, in which the fever rose rapidly to the third day, and thence to the fifth day. On the tenth day came a deep remission, followed by a rise, from which the temperature gradually reached subnormal levels by the twenty-first day of this third relapse. (*Vide* text.)

Case 19. *Irregular triple relapse; duration of relapses about twenty days; apyrexial intervals irregular, and interrupted by so-called recrudescences.*—A female, aged 27, was admitted into Charing Cross Hospital (under the care of Dr. Pollock) in July, 1877. She was suffering from typhoid fever, and her history indicated that the attack at the time of admission was a primary relapse, for she gave an account of a febrile disease lasting about a month, from which she appeared to be recovering for several days when she again fell ill. She was admitted on the ninth day of this second illness, and on the evening of this day her temperature was only 99·6° Fahr. It rose on the tenth day to 102° Fahr., and thence sank irregularly, but on the twenty-first morning became subnormal, and continued below 97° Fahr. for ten days, with all the evidence of convalescence. Then a warning recrudescence occurred; the temperature rose from 96·5° Fahr. to 100·4° Fahr. within a few hours, but fell again immediately to 96·8° Fahr. Then a second relapse began, and ran a somewhat typical course, though in it the temperature was never high. The fever did not reach its height until the sixth day. In the first twenty-four hours of relapse it ran up three degrees from 96·8° Fahr. to 99·8° Fahr. On the fifth day the temperature was only 100° Fahr.; but, as may well be supposed in so mild a case, the thermometer was not used with regularity, so that, though the case is of general value, reliance cannot be placed on the heights reached on particular days. On the sixth evening the temperature was 101·8° Fahr., and thenceforward tended to descend to the tenth day, on the evening of which it was only 99·8° Fahr. A rise followed, and on the twelfth evening the temperature was 102·4° Fahr. In following days it fell with little interruption, and on the twentieth day of this relapse became subnormal. The temperature was therefore throughout never high, and yet from the sixth to the twelfth days, during which the fever did not abate, the patient was evidently not free from danger. The relapse ended, and for nine days the temperature never reached normal levels—it was, in fact, during this time always below 97° Fahr., and usually about 96·2° Fahr. But a third relapse set in during what seemed a permanent convalescence. A warning recrudescence occurred again. The temperature rose from 96·3° Fahr. to normal, and fell at once to 96·6° almost immediately; and as immediately, a true relapse (a third relapse) began, in which the temperature ran up from 96·6° Fahr. to 100·6° Fahr. on the fifth day. There was a rise, therefore, of four degrees during this period, and not until the eighth day did there come a decided

[*To face page* 66.

CASE 19. THREE RELAPSES OF TYPHOID FEVER (a female, aged 27).—Patient was admitted during a first relapse, which ended on the twenty-first day. After nine days of apyrexia came a temporary recrudescence. Then a second relapse occurred, which may with value be contrasted with other cases. A third relapse was met with. Compare the low temperatures in these relapses with others recorded. This case seems to be an excellent illustration of the clinical difficulties we meet with in determining between sequelæ and relapses. Very probably unhealed ulcers of former attacks gave to after-relapses their irregularity of temperature, and yet the general course of the fever of relapse was such to enable a diagnosis to be made by frequent employment of the thermometer. (For particulars, *vide* text.)

tendency to fall. On the ninth morning the temperature was only 97·8° Fahr., but on the tenth evening it was 100·4° Fahr. This new accession of fever was comparatively slight, and on the twelfth evening the temperature was only 97° Fahr.; and thenceforward to the twenty-first day of the relapse the temperature exhibited modified curves of those met with in the fourth week of primary typhoid.

The temperatures were never high in this case, which is an exceedingly good illustration of what we meet with in "ambulatory typhoid" with mild relapses, and had not the thermometer been used daily I do not see how relapse could have been diagnosed. As may well be supposed, the general evidences of typhoid were often insignificant—as in ambulatory cases—but typhoid stools were occasionally passed, and suspicious spots were met with. Constipation was, however, a prominent symptom throughout, and continued during the patient's complete convalescence. Yet we cannot doubt that Peyer's patches were more or less affected in each attack, and probably, in the absence of other explanations, recrudescences which were met with after the third relapse were due to mischief in them, though this mischief had lost its specific character.

These examples prove most conclusively the difficulties of diagnosis, in cases varied by repeated relapses, complications, and sequelæ. But at the same time they show the great assistance the thermometer gives us in such difficulties. I will not, in this place, dwell further on individual cases reported in this chapter; it must be clear that the

regular reports of temperatures were the only exact means of determining the certain or probable nature of the mischief met with. The cases are, in short, so striking that they require no further special attention than has already been given to them.

CHAPTER V

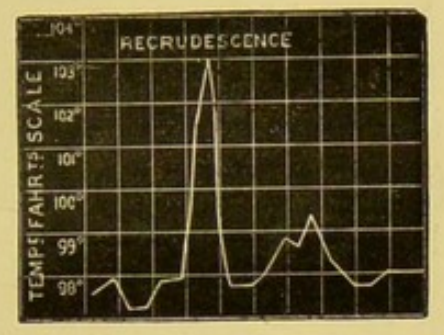
EXAMPLES OF RECRUDESCENCE, OF INTERCURRENT ATTACKS, OF VARIOUS IRREGULAR RELAPSES OF TYPHOID FEVER, AND OF CONDITIONS LIKELY TO BE CONFOUNDED WITH RELAPSE OF TYPHOID FEVER, ETC.

It is only too clear that typhoid-relapses may present themselves in a variety of forms, and that irregularities of all kinds may confuse the physician. To some of these irregularities this chapter will be devoted, but the reader will not forget that in previous chapters instances of irregularity have been pointedly mentioned. Let us take, for example, some cases of so-called recrudescence. It is not necessary to inquire again into the meanings applied to this word, but in the account of the following cases we should not forget the accidental recrudescent rises of temperature met with in cases recorded in previous pages. An attempt to summarise typhoid fever and its relapses is one of exceeding difficulty, and I must admit that any endeavours I have made at classification of varieties of this Protean disease are unsatisfactory.

The following cases are of moment and of interest by way of comparison. The first example quoted is one of "recrudescence."

CASE 20. *An example of recrudescence, and of obscure complications illustrating the difficulty of determining the course of typhoid in its later stages.*—A boy, aged 14, passed very favorably through an attack of typhoid fever, under the care of Dr Silver, in Charing Cross Hospital. Convalescence commenced, and at the end of its first week the temperature was as low as 97·2° Fahr., and the general condition was satisfactory. Then quite suddenly the temperature ran up, and in four-and-twenty hours stood at 103° Fahr. Relapse was suspected, and an appropriate treatment adopted, but the temperature as suddenly remitted, in twelve hours falling from 103° Fahr. to 97·6° Fahr. It remained subnormal throughout the same day, and was not followed by an evening exacerbation—facts which, I believe, were sufficient to exclude regular relapse. Before the temperature ran up the patient had been seen by his friends, and there was every reason to believe that he had been supplied with objectionable food, which, though not capable of exciting relapse, might excite dangerous sequelæ, and even cause death. On these points I shall offer some observations later on.

The temperature during succeeding days did not remain subnormal, and for several days, indeed, it fluctuated irregularly, and was indicative of an obscure complication, which required dietary care quite as much as true relapse. It is hardly too much to say that a febrile temperature of an irregular type, during convalescence from typhoid fever, demands, because of its obscure nature, even more attention than those decided relapse temperatures which have been recorded. Uncertainty is bound to provoke caution, and in typhoid fever should induce us to err on the safe side as regards diet.



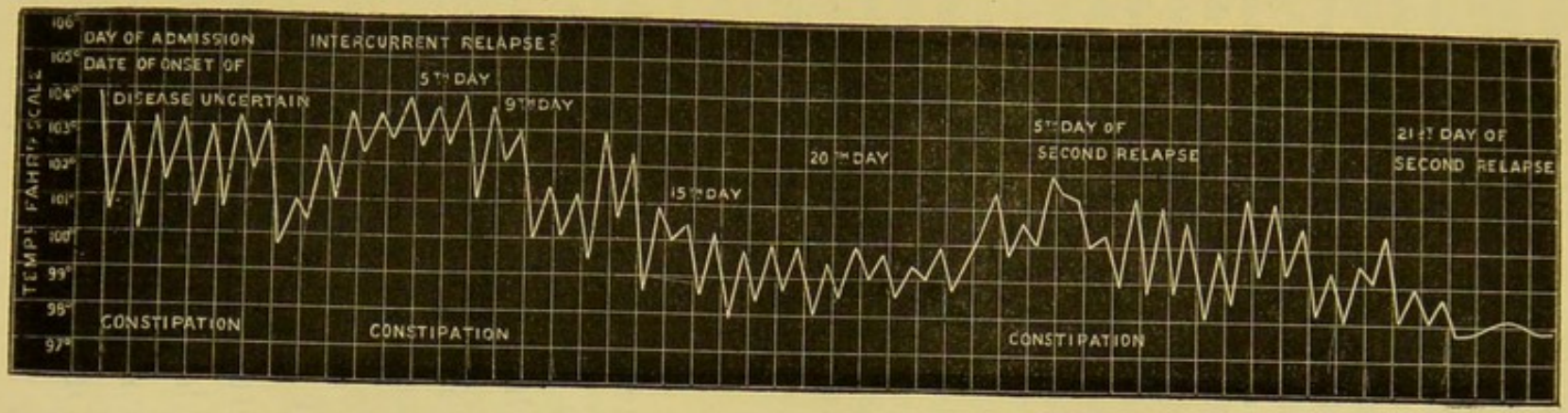
CASE 20. RECRUDESCENCE AFTER TYPHOID FEVER (a male, aged 14).—Primary attack ended favorably, and for several days the temperature continued subnormal—mostly below 98° Fahr. It suddenly rose from this level in the evening to 103° Fahr. on the following afternoon—five degrees in less than eighteen hours. It fell as suddenly to 97·6° Fahr. on the next morning—five degrees and a half in less than twelve hours. The temperature remained subnormal on the same day, and relapse was excluded; and after-rises indicated accident rather than relapse. (*Vide* text).

* It is quite possible that this elevation of temperature was but a part of an otherwise mild relapse.

The patient did well and had no true relapse, but the extraordinary temperature of 103° Fahr., though it must be possible of explanation, could not, in our present state of knowledge, be determined.

The following cases show how variable is the course of the fever, and how difficult it is to discriminate between recrudescences, second relapses, and irregularities, from certain or uncertain causes. The first case (Case 21), gives us a chart illustrative of many difficulties. But in its difficulties are found its teachings.

Case 21. *Intercurrent and secondary relapse of typhoid fever, very irregular throughout, yet determinable to a certain extent by the regular use of the thermometer.*—A female, aged 11 years. This child was admitted into Charing Cross Hospital on July 29th, 1878, and though no history to be depended upon could be obtained there was not the least doubt that she was suffering from typhoid fever. It was surmised that she was in the fourth week of an attack of this disease, and a mixture containing dilute hydrochloric acid was prescribed. On the evening of admission the temperature was a little below 104° Fahr., and for the following six days it every evening exceeded 103° Fahr., though there were daily deep remissions. The temperature-curves in many respects resembled those of a typical fourth week in typhoid, and during the time the bowels were constipated. On the eighth morning after admission the temperature was 99·8° Fahr., and constipation persisted. On this day a relapse set in, and nothing but the thermometer could have proved its occurrence. The temperature ran up from 99·8° Fahr. to 104° Fahr. on the fifth day, but, as will be seen from an examination of the chart, the morning remissions during these five days greatly resembled those met with in primary and uncomplicated typhoid fever. On the fifth, sixth, and seventh days of relapse the temperature was about 104° Fahr., and the patient's condition was far from satisfactory; but a fall occurred on the eighth day, and on the tenth morning the temperature was



CASE 21. INTERCURRENT AND SECOND RELAPSE OF TYPHOID FEVER (a female, aged 11).—In the fourth week of primary attack an intercurrent relapse began. Temperature rose from 99·8° Fahr. to 104° Fahr. on the fifth day, and remained at about 104° Fahr. for three days, with bad symptoms. Fall on ninth evening to 100° Fahr., followed by new accession of fever to fifteenth day, and gradual fall to twentieth day of relapse. Then a four days' interval, in which temperature approached 100° Fahr.; after which occurred a second relapse marked by much irregularity of fever. (*Vide* text.)

only 100° Fahr. Constipation still continued; and from the tenth day to the fifteenth was another exacerbation of temperature. However, on the twentieth day the temperature was only 98° Fahr., and the disease seemed to be at an end. There was nothing in the general condition of the patient which indicated the probability of further relapse, but for four days the temperature daily approached 100° Fahr., and though this slight degree of fever did not point to danger, it proved that the disease was not at an end.

Another relapse, in fact, set in, and its highest temperature (102° Fahr.) was reached on the fifth day. On the eighth morning the temperature was only 99° Fahr., and on the eleventh morning only 98° Fahr. But the fever of this relapse did not terminate until the twenty-first day, and was irregular in many respects, from first to last, as will be seen by an examination of the appended chart. The patient afterwards made a good recovery. The case is of interest in many directions. I venture to think that the first relapse was of the intercurrent kind, and that the slight pyrexia which persisted after it for four days was due to irregular progress of the intestinal lesions. Such irregular progress probably influenced the temperature of the second relapse; and here again irregularity rather than high temperatures pointed to possible dangers and directed the treatment.

The later temperature in this case would be wholly ascribed to changes in the ulcers of Peyer's patches by most observers. Gangrenous sequelæ are especially supposed to keep up the temperature during convalescence. This case has a value which I did not at first fully appreciate, but after a consideration of its clinical history and of its chart, would advance the view that when intercurrent relapse ended it left behind sufficient local lesion to make the immediate period of convalescence still pyrexial, that a second relapse then occurred, mild in kind but irregular (and therefore dangerous), because relapse with new

affection of glands was complicated with sequelæ in the shape of imperfect progress of glands, ulcerated by the primary and intercurrent attacks.

Case 22. *Irregular relapse, which might readily be confounded with so-called recrudescence.*—A boy, aged 10 years, was admitted on June 8th, 1878, and was one of the several brothers who suffered from typhoid fever. The beginning of his illness was obscure, as often happens in typhoid cases, but when first seen he had been suffering from diarrhœa for a fortnight at least. He was doing well when brought to the hospital. Shortly after admission he began to complain of abdominal pains, but no spots could be found, nor was there any diarrhœa. His temperature on the day of admission was 101·4° Fahr., but next morning it was only 96·4° Fahr., and his typhoid attack was to all appearances at an end. For eight days the temperature was normal or subnormal, but there were irregular fluctuations not common in convalescence from typhoid. On the tenth day from admission a new fever began, and from 96·2° the temperature ran up, with slight intermissions, to 103·6° Fahr. on the fourth evening (more than seven degrees). There was no diarrhœa, the bowels being moved only on the first day of this exacerbation. A grain of quinine was given every four hours, and on the next evening the temperature was only 99° Fahr. On the eighth morning the temperature was as low as 96·6° Fahr.; and though there was a new accession of fever, the disease terminated in an uninterrupted convalescence. There was always a tendency to constipation, but such stools as were passed had the true typhoid characters. The relapse was irregular as regards temperature (and possibly quinine had much to do with this), but lasted about twenty-one days.* The boy was doing so well at the end of twenty-one days that no further records of his temperature were kept. He was fifty-five days in hospital.

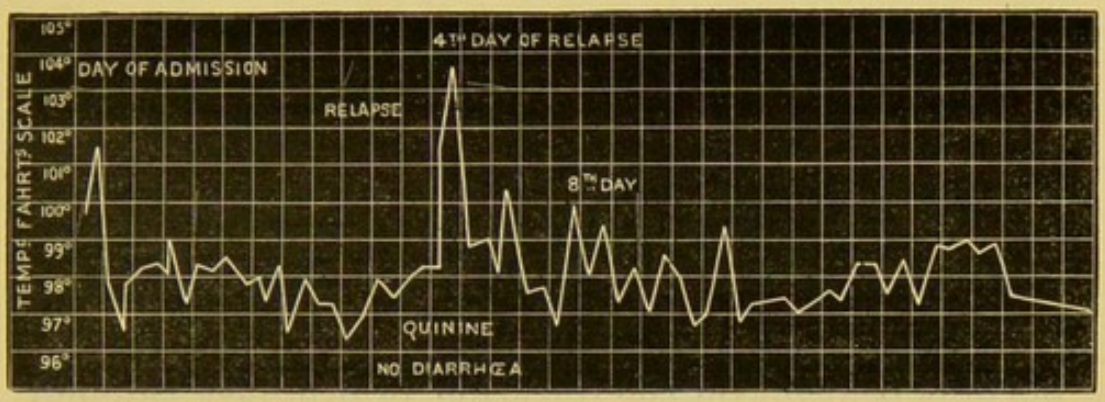
By way of contrast and comparison, "mild" cases of relapse become exceedingly valuable. Their irregularities are often more difficult of explanation

* The case is reprinted as it appeared in the 'Medical Times and Gazette,' but the amount of quinine given could not have materially modified the temperature.

than those of severe cases. In this particular instance there was absolutely nothing except the temperature which could serve as a certain guide to the clinician. It furnished a chart which, taken with others, showed that the patient was suffering from relapse, and not from any accidental complication. I do not regard this case, after careful examination, as an example of "recrudescence;" and the more perfect our knowledge of the after-fevers of typhoid becomes the more shall we be convinced that "recrudescence" is but an abortion, so to speak, of relapse. This is a question of great practical importance. In this patient's case, if it was one of relapse, there must have been a constant source of danger for weeks, though to all appearances he was doing well. The thermometer revealed these hidden dangers and guided the treatment.

Case 23. *Intercurrent relapse of simple type.*—A female, aged 16, was admitted into Charing Cross Hospital in the midst of an attack of typhoid fever. Her symptoms were beyond all question, but the day of illness was very obscure. Friends supposed her illness to have lasted about eleven days. Almost from the first day of admission her temperature fell, progressively sinking to 99·5° Fahr. on the tenth day of admission. It did not reach normal levels on this day, and the patient had not the signs of commencing convalescence. But there were no complications as far as could be ascertained, and without any danger, except that which could be ascribed to relapse (intercurrent?). The temperature rose rapidly. Relapse most certainly occurred at this stage of the primary disease.

The temperature on the third evening of the relapse was 103·6° Fahr., and on the fifth 104·2° Fahr. There were morning remissions from the third to the fifth days; but the degrees of remission corresponded with the daily evening increase of the fever.

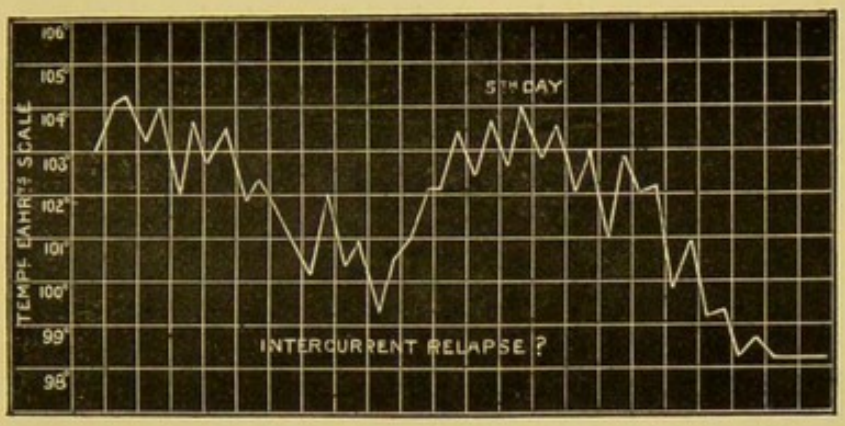


Case 22. Recrudescence or Relapse (?).—The patient, a boy, aged 10, was admitted for typhoid fever of uncertain duration. For eight days after admission he had normal or subnormal temperatures, but the curve was very irregular. A new fever set in ten days after admission; and from 96·2° Fahr. the temperature ran up to 103·6° Fahr. on the fourth evening. On the eighth morning the temperature was down to 96·6° Fahr., and a new accession of fever terminated in uninterrupted convalescence.

Thus, the elevation of temperature in the fourth week of the disease was characteristic of relapse; and, as the primary attack had not ended when such elevation set in, it is only right to suggest that it was the consequence of an intercurrent relapse. There was no complication to explain the new fever, which ran a short but somewhat typical course. On its eighth day came a decided fall of temperature (101° Fahr.); and from the eighth evening the temperature, being then 102·8° Fahr., ran down almost continuously to the thirteenth day, when it became subnormal, and the patient entered upon a rapid convalescence, during the early days of which there was decided apyrexia. Thus, the whole attack lasted (as far as could be determined) about thirty-five days, and the interrupting relapse about fourteen days.

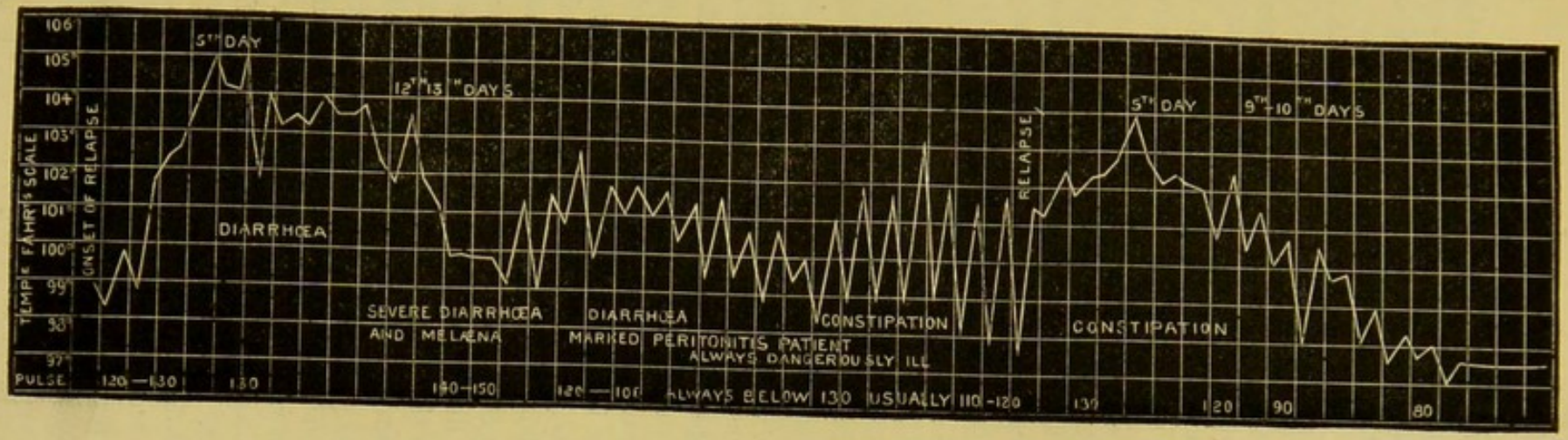
It is clear that it would be clinically incorrect to describe the case as one of primary typhoid fever lasting thirty-five days. Such instances have a most important bearing on the duration of ordinary typhoid fever, for whether they are examples of simple relapse or of intercurrent relapse, they teach this lesson—that relapse may prolong inordinately a typhoid attack, and its effects be obscure unless the thermometer is regularly employed. A proper study of relapse may help to explain the extraordinary differences of opinion held as to the duration of typhoid fever; and if once the fact of intercurrent relapse is recognised, such differences become simple of explanation. In this case, again, I would rather suggest than assert, for the uncertainties of typhoid continually remind me that we have much to learn respecting this disease and diseases classified with it.

Case 24. *Relapses and complications of typhoid fever; patient was*



CASE 23. INTERCURRENT RELAPSE (?) OF TYPHOID (a male, aged 16.—Patient was admitted during an attack of typhoid. On the twenty-second day (?) of disease the temperature was 99·4° Fahr. At this time relapse occurred; the temperature rose suddenly, and reached on the fifth day 104·2° Fahr. On the eighth day it fell decidedly, but rose again, only to descend rapidly to the subnormal on the fourteenth day of the relapse and thirty-fifth of the whole disease, when convalescence commenced. Was the new fever which began on the twenty-second day the result of an intercurrent relapse ? (*Vide* text.)

febrile for nearly one hundred days, the fever varying remarkably; the thermometer, used frequently and regularly, determined the exact progress of the disease.—A female, aged 23, was a nurse in Charing Cross Hospital, and her case is especially interesting because it was watched from almost the very beginning of the typhoid attack, and throughout it she was under careful treatment and observation in a hospital ward. She occupied one of Dr. Pollock's beds, and, for a time, during my colleague's holiday, was under my care in the autumn of 1877. The case affords a most interesting study; the patient's illness, in spite of hospital care given from the beginning, was prolonged; her primary attack was complicated, and relapse of typhoid happened, though every known outside influence was assiduously and diligently guarded against. After a prolonged pyrexia the patient, however, recovered. She passed safely through many critical epochs met with in typhoid fever with relapse, and any one who observed the severity of her disease could not but appreciate the value of exact observation as indicative of lines of treatment. Her primary attack was very severe, but ended favorably—to all appearances—about the thirtieth day. During this primary typhoid she was watched by Dr. Pollock, and after many dangerous days it ended, and she began what seemed to be a decided convalescence, during which for two days her temperature was subnormal, and for the next three days not above normal. But on the fifth day of convalescence relapse began. The temperature ran up from this day almost continuously to 105° Fahr. on the fifth evening—that is to say, through nearly eight degrees. It fell on the seventh morning to below 102° Fahr., which was regarded as of favorable omen, especially as there was no diarrhœa or hæmorrhage to explain this fall. But the fever increased afterwards, and was never below 103° Fahr., and usually approached 104° Fahr., until the twelfth day, when a decided fall set in. Before this fall occurred the patient was dangerously ill; a protracted high temperature was accompanied by serious symptoms (delirium, semi-stupor, subsultus, and a rapid pulse). A decided fall was in fact delayed; and even when the fall came, diarrhœa and melæna continued, and were indicative of danger. The temperature went down from 103·4° Fahr. on the twelfth day to 99·2° Fahr. on the sixteenth day, and in itself was favorable, but both it and the general condition of the patient warned us that relapse had not terminated. The temperature did not, in what seemed an end of the relapse, reach the normal level, much less the subnormal, as occurs in most cases. This fact in itself was enough to call for caution on the part of the



CASE 24. RELAPSES OF TYPHOID FEVER, WITH COMPLICATIONS (a female, aged 23).—The primary attack lasted thirty days. After five days of apyrexia, relapse began, in which the temperature ran up from 98·4° Fahr. to 105° Fahr. on the fifth day. High temperatures continued to the twelfth day, and the patient was dangerously ill. On the sixteenth day the temperature was only 99·2° Fahr. It at once rose, and fever continued to the thirty-third day of this relapse. Then another relapse set in, which was typical in kind but of short duration. On the sixteenth day of this relapse the temperature became subnormal, and afterwards the patient rapidly recovered without a bad symptom, though she had been more or less febrile for nearly ninety days. (*Vide* text.)

observer; but in this case many circumstances indicated mischief in spite of—or rather in proof of the value of—the fall in the temperature, for there occurred evidence of intestinal mischief, and during the fall of the temperature the patient was delirious, and her pulse was 150, feeble, and running in character. On the sixteenth morning of this relapse the temperature was only 99·2° Fahr., but it did not continue its descent. On the contrary, the fever again increased, and for several days fluctuated between 102° Fahr. and 103° Fahr. (The higher levels were but occasional, and are not recorded in the engraved chart.) From the sixteenth day the temperature rose to the eighteenth day (from 99·2° Fahr. to 102·6° Fahr.), and thenceforward descended to the twenty-fifth day, on the morning of which it was only 98·4° Fahr., and therefore subnormal. For seven days afterwards there was an accession of fever, which resembled in its characters that often met with in the fourth week of primary typhoid, and seemed to be ending in convalescence after thirty-two days of relapse; but observation of the case had made every one cautious as regards prognosis. The first relapse had immediately followed a primary attack of dangerous severity, had been curiously complicated, and shown distinct evidences of peritonitis—not met with in the original attack—and it was probable that this peritonitis prolonged the relapse. Diarrhœa was also in excess at times, but during the last seven days of relapse the bowels were constipated. It is likely that the relapse was prolonged by complications, such as peritonitis, and its irregular course due to these. The practical point, is that here, as in other cases, irregularity of the disease, as indicated by the thermometer, never failed to be followed by dangerous symptoms. The thermometer was, in fact, a constant source of warning. For example, tremor was most troublesome during the latter half of this relapse, and indicated deep and progressive ulceration of the intestines. It was during the third and fourth week that most anxiety was aroused, though the temperatures never reached the level of the first week. At the end of the thirty-second day of relapse the patient, as has been said, seemed to be beginning her convalescence, but straightway another relapse occurred. There was, properly speaking, no apyrexial interval, but the relapse was typical to a certain extent. The temperature ran up from 97·6° Fahr. on the thirty-second day of the complicated relapse, to 104° Fahr. on the fifth of the second relapse, and this with but little intermission. The highest level was reached on this-day, and thenceforward, though the temperature fluctuated considerably, it had a

decided downward tendency, which culminated on the eighth day, from which the fall continued to the tenth day, when it reached 98° Fahr. The fever again increased (100·8° Fahr.) on the eleventh day, then fell rapidly, and on the sixteenth and seventeenth days the patient began a permanent convalescence.

This exceedingly interesting case is valuable in many directions. Its chart differs greatly from those given; how much of this difference was due to complication, and how much to irregular relapses and recrudescences? The second relapse, as narrated above, and recorded in the chart, may have been an example of what is known as intercurrent relapse; that it was unquestionably a true relapse there can be no doubt. It is well worth while to compare the temperatures of this relapse with those of the first fortnight of the primary relapse; the remarkable similarity of the courses suggests a similarity of causes.

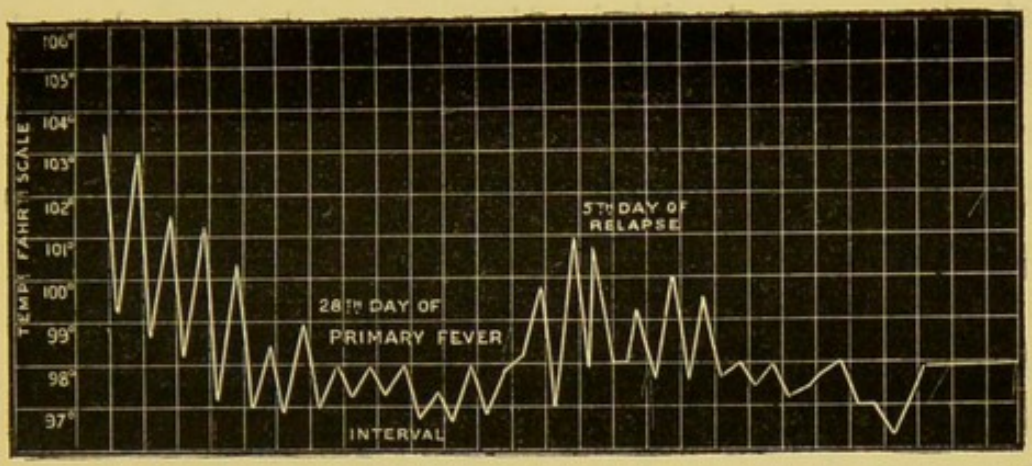
Case 25. *Relapse of typhoid, associated possibly with septicæmia; irregular interval and irregular relapse, followed by protracted convalescence.*—A youth, aged 17, was admitted into Charing Cross Hospital in August, 1878. He was suffering from a moderately severe attack of typhoid, which ended on the twenty-eighth day. He had occasional diarrhœa during the last week of the attack, but convalescence commenced very favorably, and for four days the temperature was subnormal. Then without apparent reason it began to rise, and though it never reached any great height, its course led to the suspicion of a relapse. On the first morning the temperature was 96·6° Fahr., and on the third evening only 99·6°. The bowels were constipated. On the fourth and fifth evenings the temperature was 101° Fahr., and typhoid stools were passed. The fever had been irregular to this time, and the patient appeared very ill. Deep daily remissions had occurred, and were met with on subsequent days, though the temperature went down from the fifth day and the

attack was at end about the tenth day. The temperature was afterwards very irregular, and, though not high, fluctuated as if some septicæmic condition had been set up. Possibly a second relapse occurred, modified by the lesions of previous attacks, and in this respect, as well as in the brevity of the relapse, whose chart is engraved, the case is of interest. The patient recovered after a very tedious illness.

Case 26. *Recrudescence and relapse of typhoid fever.*—This patient a male, aged 34, was admitted towards the end of an attack of typhoid fever in September, 1878. At the time of admission the bronchial symptoms very greatly preponderated. The patient had suffered from abdominal pains, but had walked through his illness up to the time of admission. The date of onset of his disease could not be determined, but it was probable that when admitted he was in the third week of an attack of typhoid fever. His temperature chart is given.

On the evening following admission the temperature was 103° Fahr., and it fluctuated for the next seven or eight days with uncertainty, but on the tenth evening of admission was down to 98° Fahr. During these ten days there was a typhoid evacuation once or twice daily, and the patient made most excellent progress. No medicines calculated to modify the temperature were given, and a careful diet was of course observed.

For five days after the termination of the primary attack the temperature was mostly subnormal. Typhoid stools were, however, passed during this time, and on the sixth day the temperature went up from 97° Fahr. to 101·4° Fahr. (four degrees and a half in twenty-four hours); but it fell to 97·2° Fahr. on the following morning. This exacerbation might fairly be described as "recrudescence," which ended in twenty-four hours, and for the five following days the temperature, though irregular, was subnormal. Then it began to rise, and not in the manner of relapses. This rise will be best understood by an examination of the chart, given on the next page. For three days there were increasing elevations of temperature with regular morning remissions, and then that the temperature began to assume a more decided type. In fact, true relapse set in, and from 97·6° Fahr. on the first day the temperature reached 103·8° Fahr. on the fifth day. There was a decided remission (to 98° Fahr.) on the third morning, but a general view of the chart will indicate when relapse commenced, and what course it ran. The patient had no diarrhœa, but was severely ill, and had well-marked

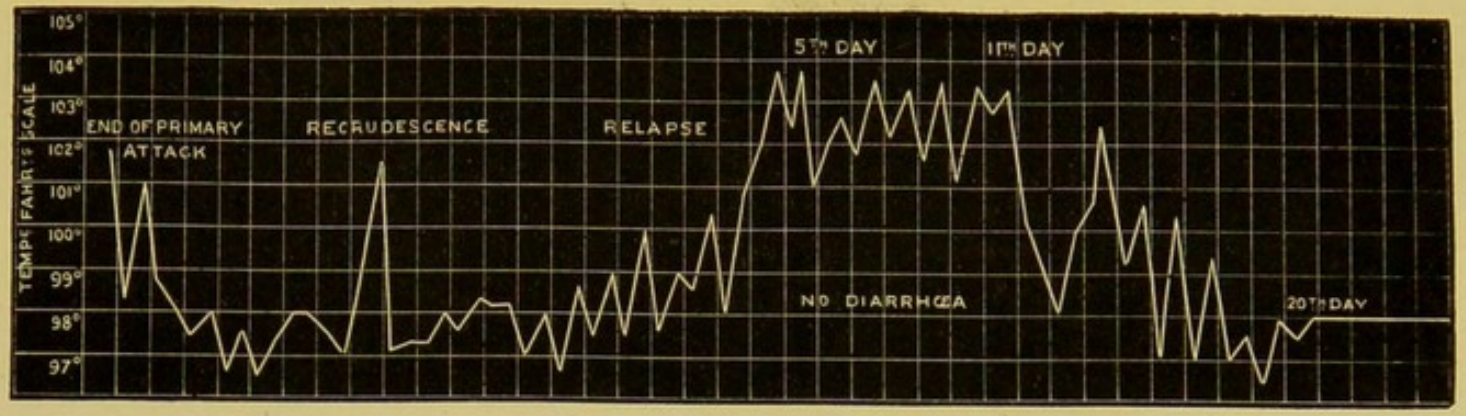


CASE 25. RELAPSE OF TYPHOID (a youth, aged 17).—Admitted during primary attack, which lasted twenty-eight days. Relapse set in after four days' apyrexial interval. The temperature was irregular during relapse, and the relapse itself of short duration. Irregular temperatures followed for many days, and it was doubtful how far the fever was due to relapse and how far to septicæmic conditions. (*Vide* text).

typhoid eruption. From the fifth day to the twelfth the fever did not abate; there was no decided fall on the eighth or ninth day. The case was viewed unfavorably, but on the twelfth day the temperature ran down and reached 98° Fahr. on the thirteenth morning of the attack. There was a new accession of fever (102·5° Fahr.) on the fourteenth morning, but next day there was an abatement, and about the twentieth day of relapse the patient began a favorable convalescence.

In this case it is interesting to note that typhoid stools were met with in the apyrexial interval, and that apyrexial temperatures were unsteady; that a recrudescence interrupted the interval, and that the true relapse was distinctly preceded by uncertain elevations of temperature; that the relapse was irregular in its course, in that the temperature persisted from the fifth to the twelfth days without any marked fall, and that during this time there were many indications of danger. Very possibly the irregular interval and its recrudescences were but the result of lesions left by the primary attack; and just as possibly the relapse was modified by the persistence of these lesions. At any rate, such a case as this bears strong evidence in favour of careful dietetic treatment of typhoid convalescents, for though diet may not obviate relapse, it must certainly modify its course.*

* In this case it is probable that ulcers remaining unhealed modified the temperature of the interval, and possibly caused recrudescence. It is a curious fact that fresh "inflammatory" processes in parts are often followed by curative processes; and in the recollection of the small mortality in typhoid-relapse, one should not forget this fact.

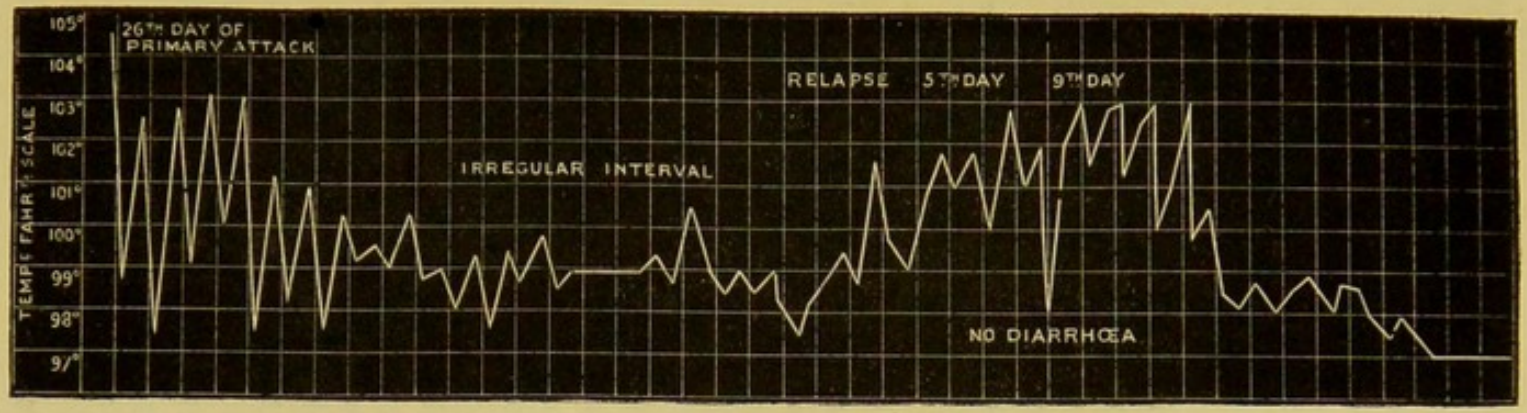


CASE 26. RECRUDESCENCE AND RELAPSE OF TYPHOID (a male, aged 34).—Admitted during primary attack, which ended about twenty-eighth day. In interval between this and relapse a recrudescence occurred. Relapse set in irregularly. Its highest temperature was reached on fifth day (104° Fahr.). For six days afterwards the temperature daily approached this level, and the patient was in constant danger. It suddenly fell to 98° Fahr. on the thirteenth morning. A new rise occurred, but not an abnormal one, and on the twentieth day the attack was ended.

Case 27. *Relapse of irregular type; primary attack prolonged; relapse complicated with recrudescences, sequelæ, and ordinary complications.*—This patient, a female, aged 37, was admitted during an attack of primary typhoid fever on January 8th, 1878. Her symptoms were well marked, and in the fourth week of her illness the deep daily intermissions of temperature were exceedingly characteristic. The primary attack was very severe, for on the twentieth day (two days after admission) the temperature was 105·8° Fahr. On the twenty-third day of this attack the temperature was only 98° Fahr., but immediately rose, and for several days fluctuated—as happens in most cases of typhoid fever. The deep daily remissions are given in the appended chart (see next page), and it was not until the fortieth day of disease that the temperature became stable. During the latter days of this period the thermometer was the only certain means of observation. The patient had symptoms of general febrile sufferings, but no diarrhœa and no eruption.

For ten days after the termination of a prolonged primary attack the temperature was day by day all but stationary. It reached each day 99° Fahr., and once 100·6° Fahr.—a height which was ascribed to "recrudescence." However, a true relapse set in, and ran a somewhat irregular course. The last weeks of the primary attack were irregular, the interval between that attack and relapse was irregular, and relapse itself followed an irregular course. This relapse began unexpectedly, and was not ascompanied by diarrhœa, though a typhoid stool was passed at least once in every twenty-four hours. The relapse set in when the temperature was only 97·6° Fahr., and on the third evening the height reached was 101·6° Fahr. A fall followed, and then came a rise—on the fifth day to 101·8° Fahr., and on the seventh to nearly 103° Fahr. The patient was most seriously ill, but on the ninth morning the temperature was 98° Fahr., having fallen in forty-eight hours, with but little interruption, nearly five degrees. The fever ran up again to 103° Fahr. on the ninth evening, and for four following evenings reached this level. Then on the fifteenth day a permanent fall began, and on the twenty-first day of relapse an uninterrupted convalescence commenced. In this, as in the preceding cases, no treatment was followed with the intention of modifying the temperature. Stimulants were given, and a careful diet observed.

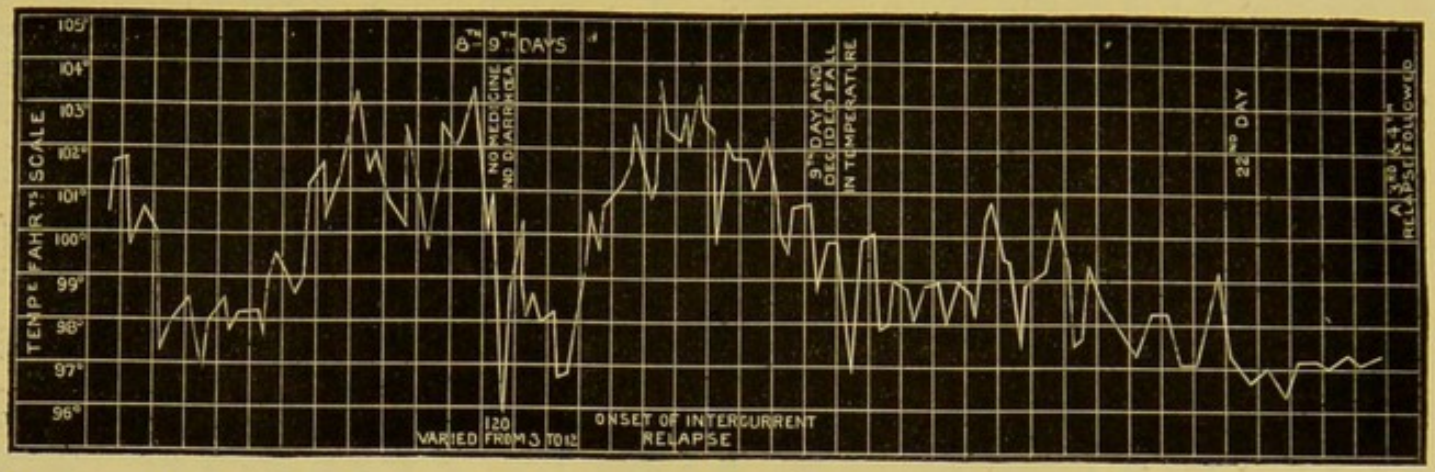
This case is possibly one of those in which the primary ulcers healed imperfectly, and, by their



CASE 27. RELAPSE OF TYPHOID FEVER, WITH MARKED IRREGULAR INTERVAL (a female, aged 34).—Admitted about eighteenth day of a severe primary attack, which was prolonged to the fortieth day. An interval of ten days followed, during which there was no true apyrexia. Relapse then set in, preceded by "recrudescence," and was irregular, as had been the primary attack and the interval. The temperature reached its height on the seventh day, but fell on the ninth day (98° Fahr.). A new rise followed, and the relapse ended favorably on the twenty-firs day. (*Vide* text.)

septic condition, made interval and relapse alike irregular.

Case 28. *Example of "intercurrent" attack, occurring during the progress of a relapse, and of subsequent relapses, even to the fourth degree.*—A male, aged 18, was admitted into the hospital at the end of the fourth week of primary typhoid. On the evening of admission his temperature was nearly 102° Fahr., but it fell rapidly, and on the fourth morning was subnormal (96·8° Fahr.). This was satisfactory enough, but such temperature was ephemeral, for almost at once a relapse began. During the primary disease the bowels, as a rule, had been constipated, and this was the case also during the relapses. Reference to the chart will show the suddenness with which the first relapse set in. From 98·6° Fahr. on the day after the subnormal level mentioned, the temperature ran up with slight remissions to 103·4° Fahr. on the fifth morning, so that in little more than five days the rise was all but seven degrees. On the fifth and sixth days of relapse the fever was irregular. On the seventh morning the temperature was only 99·8° Fahr., but it at once ascended, and on the eighth evening was 103·5° Fahr. From this date a remarkable fall occurred —to 95·8° Fahr. on the afternoon of the ninth day. Thus in eighteen hours the fever abated *nearly eight degrees*, and this though there was no diarrhœa, and no medicines (except stimulants) were being administered. The pulse averaged about 120, and the respirations were during this fall remarkably infrequent. The general condition was very bad, and hæmorrhage, which did not evidence itself in the evacuations, was suspected. The extremely low temperature (95·8° Fahr.) was reached at 2 p.m. of the ninth day, and an immediate rise followed, and reached 100·4° Fahr. on the morning of the tenth day, but on the eleventh morning the temperature was only 96·8° Fahr. At this stage began what I have ventured to think was intercurrent relapse, in which the fever followed a remarkably typical course. From 96·8 Fahr. the temperature ascended to 102·5° Fahr. on the third day, and to 103·6° Fahr. on the fifth day of the second or concurrent relapse. Thenceforward it tended to fall, the fall culminating on the tenth morning, when it was scarcely 97° Fahr. As in almost all the relapses hitherto recorded, another rise set in, and the fever was continued to the twenty-second day, though on only two occasions was the height reached above 100° Fahr. The intercurrent attack lasted, therefore, about twenty-one days. No treatment was employed likely to modify the fever, nor did any complica-



CASE 28. RELAPSE OF TYPHOID WITH INTERCURRENT RELAPSE; FOUR RELAPSES MET WITH (a male, aged 18).—The temperature during the days given in the chart was taken every four hours, and each day's record begins with the height reached at 4 a.m., and ends with 8 p.m. level. Various intervening heights are alluded to in the text. In the *first relapse* temperature reached its height on the fifth day; it was irregular afterwards. On the eighth evening the temperature was 103·4° Fahr.; on the ninth day, at 2 p.m., only 95·8° Fahr. On the eleventh day *intercurrent relapse* began, ran a course very like simple relapse, and lasted twenty-one days. A third relapse (lasting fifteen days) and a fourth (lasting twenty-one days) succeeded, with distinct subnormal intervals. The patient then convalesced rapidly after a disease lasting sixteen weeks. (*Vide* text.)

tion or accident affect it. It is most instructive to compare the first relapse and the intercurrent or second relapse in this case; the temperature-curves for the first ten days have a remarkable similarity, and this in itself justifies to a certain extent the opinion that the first relapse was interrupted (amongst other things, perhaps) by the onset of a concurrent relapse. But a small experience of such cases teaches caution in one's assertions and opinions, and I feel bound to suggest rather than to assert, more especially as I cannot quote definite facts and opinions of other observers. But one cannot doubt that on the eleventh day of the first relapse a typical second relapse set in; and were the portion of the chart which records the fever of this relapse cut off and considered separately, we might with confidence say that we had before us a chart of relapse of typhoid fever. This case did not end with the second relapse, for the latter, after a six days' apyrexial interval, was followed by a new fever, which lasted fifteen days. This fever was always moderate, but its tenor certainly indicated a third relapse. It ended with subnormal temperature which lasted seven days, and then, without any apparent cause, a new fever came on, and lasted twenty-one days. Unfortunately, the temperature, being but slightly febrile, was taken only twice a day; yet with the whole chart before us we could not hesitate to declare that a fourth relapse had occurred. What but relapse could have caused a febrile attack of twenty-one days' duration, and of a regular character? Certainly not recrudescence; and as certainly no complication—in fact, there was no complication. Had the thermometer not been used day by day, and comparisons drawn, all the conclusion possible would have been that convalescence, for some vague reason, was "retarded." As it is difficult to include in general remarks special considerations of individual cases, I have ventured here (and elsewhere) to dwell upon some of them. Here was an instance in which four relapses occurred; without the thermometer they could not have been determined, and I do not think the case by any means exceptional. (I regret that the charts of the latter relapses have not been engraved.)

The cases recorded in this chapter illustrate the doubts and difficulties which disturb the study of tpyhoid fever. Relapses, recrudescences, intercurrent attacks, and complications, become mixed up

and may lead to great confusion of diagnosis; in fact, may make it impossible to say, not only whether we are dealing with relapse or complication of typhoid, but whether we are dealing with typhoid at all.

These cases have, however, strong attractions, and I repeat that they are of greater importance clinically, and possibly pathologically, than more simple cases. It would be useless to attempt any summary of them in this place; but I must ask the attention to the fact that relapse, recrudescence, intercurrent attacks, and ordinary complications, may be met with in the same patient. And I must add that the fact has been neglected by authors, and is very commonly passed by at the bedside.

It is not necessary to dwell on the value of the thermometer in cases of typhoid-relapse with irregular fever. There is but one phenomenon to which allusion need be made—the occurrence of pyæmic or septicæmic states after an attack of primary typhoid. It is the case that elevations of temperature during "convalescence" from typhoid fever are, because no complication can be found, ascribed to a gangrenous change in Peyer's patches, and to consequent blood-poisoning. But the cases reported in this chapter prove that "strange rises" in temperature are not always due to protracted ulceration of Peyer's glands. The temperature of "intervals" is our best means of determining how extensive is

the local lesion left by the primary typhoid attack. And some of the cases reported show that the regular use of the thermometer "in intervals" is as of much value as its use in primary disease or in relapses.

I have said that the above cases are illustrative of difficulties and doubts in the study of typhoid-relapse. The relapse in the first case was irregular, and though the temperature never reached any height, the patient was often dangerously ill. In the second case the primary attack ended favorably, but the temperature repeatedly excited suspicions that something was wrong. A recrudescence occurred, the temperature, though low, fluctuated irregularly, and finally relapse set in. It is not necessary to follow the course of this relapse again, but it is worth while to examine the third case for the sake of comparison or contrast with it. In this third case an irregular interval followed the primary attacks, and an irregular relapse followed the interval. After what has been written in this and former papers, it is needless to dwell on the indications that the thermometer gave in these irregular cases.

The difficulties which are caused by complications, whose true nature is beyond our diagnosis, appeared in the above cases, and, above all, that difficulty which we set down to pyæmic or septicæmic changes. It is impossible and out of place to discuss such changes in these papers, though they are most intimately associated with typhoid fever and its

relapses. In the cases recorded above pyæmic or septicæmic conditions played probably an important part; they modified the temperature towards the end of the primary attacks, delayed convalescence, and modified the "intervals" and the course of the relapses themselves. Such examples enforce the lesson that typhoid fever and its relapses often simulate poisoned-blood states dependent on other causes, and that care in the use of the thermometer is a most important help in the solution of such clinical difficulties.

CHAPTER VI

CASES OF FATAL RELAPSE

Death during relapse is far from being common, and therefore any examples of it deserve especial attention. I quote in this chapter two cases in which death undoubtedly happened during relapse, and a third fatal case whose nature is more uncertain.

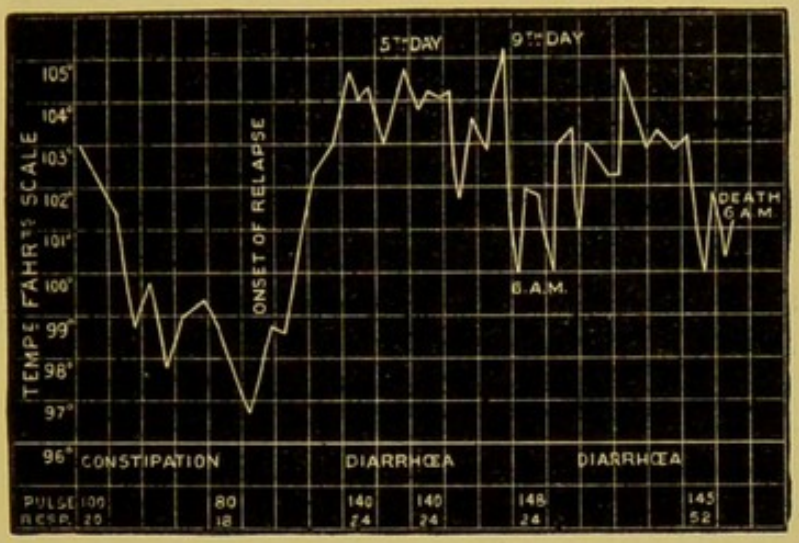
I admit this third case because it, at any rate, illustrates the difficulty of determining whether we are dealing with relapse or primary attacks.

In all the examples the temperature was taken with both care and regularity, and the charts are of value in many directions, even though they stood alone, while, taken with those of the relapses already recorded, their teaching seems to be very decided. A casual comparison of the charts is enough to indicate the fact that irregularity of temperature is always dangerous in typhoid fever, and that hyperpyrexia is not more indicative of danger than irregularity, even when the degree of fever is comparatively slight.

Case 29. *Fatal relapse of typhoid ; rapid and almost uninterrupted rise of temperature from first to fourth day of relapse ; irregular temperature-curves afterwards, and death on sixteenth day.*—A male, aged 21, was admitted into Charing Cross Hospital in November, 1878. He was then supposed to be in the first week of an attack of typhoid, and at the time of admission his temperature was 104° Fahr. The fever continued for twenty-one days in hospital, and then seemed to be at an end (fourth week of the disease). The defervescence during the last few days will be found in the chart below. The temperature became subnormal ; the patient seemed to be doing exceedingly well ; his pulse and respiration were satisfactory ; his tongue was clean ; he craved for food, and there was no diarrhœa—in a word, there was every promise of speedy convalescence, when, without any warning except that given by the thermometer, a relapse set in. The temperature was 96·6° Fahr. on the twenty-first morning of admission. It immediately began to rise (relapse), and on the fourth morning was 104·6° Fahr. ; on the fifth it had fallen to 103° Fahr., but in the evening was 104·7° Fahr. The occurrence of relapse of severe character was beyond question ; the patient was evidently dangerously ill, and his pulse averaged 140. And to the eight day there was every need to give a grave prognosis, the temperature each day persisting at about 104° Fahr., and at 3 p.m. of the eighth day reaching 105·2° Fahr. A very bad view was taken of the case, but a fall of fever then set in, and at 6 a.m. of the ninth day the temperature was only 100° Fahr. ; it had gone down five degrees in fifteen hours. This was certainly favorable, but at 9 a.m. the thermometer marked a level of 102° Fahr. On the tenth morning the temperature was once more only 100° Fahr., but the fever was "unsteady" and indefinite, and therefore (I maintain) indicative of danger. It rose also from the tenth day in a manner which pointed to danger, and on the twelfth reached 104·8° Fahr. It fell from this date, and on the afternoon of the fourteenth day was as low as 100° Fahr., but the pulse was 144, and the respirations 52. On the fifteenth morning of relapse the patient died very suddenly, the temperature taken shortly before death being only 101·2° Fahr. He was completely conscious at this time, and immediate dissolution was not expected. Death occurred to all appearances from syncope ; the patient attempted to raise himself, and fell back dead, at about 6 a.m. of the fifteenth day. On post-mortem examination the heart was found to be flabby and its ventricles were dilated, but no perforation of the intestine could be discovered. The examination, in

my absence, was made by Dr Robert Smith, the Medical Registrar, and his excellent report states that Peyer's patches were affected as in ordinary cases of typhoid fever, and that there was nothing in the intestine to separate by morbid appearances relapse from primary attacks.

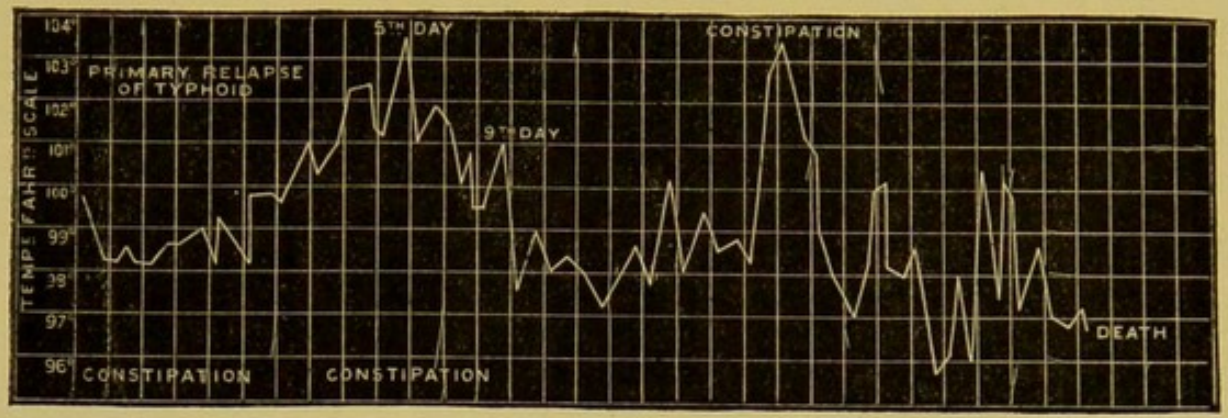
The interest of this case is great. The condition was from the first unfavorable, and, with the whole temperature chart before us, its teachings are very evident, especially when we compare and contrast it with those previously given. From the fourth to the eighth day high temperatures prevailed, and on the eighth evening the fever (105° Fahr.) exceeded that of the fifth day. On the ninth morning came a satisfactory fall, but the succeeding exacerbations was too continuous, so that on the twelfth morning the temperature was 104·8° Fahr; on the thirteenth and fourteenth days also the temperature was high. It then fell, and on the day before death was only 100° Fahr., and at the time of death 101·2° Fahr. The irregular course of the fever was indicative of danger, and it is interesting to note that this irregularity was not alone in grave prognostications. The patient was during these irregular days restless and anxious; his movements were fitful and disturbed by fine or coarse tremor; his pupils were dilated, and his eyes had a glassy look; his cheeks showed a characteristic circumscribed flushing; his tongue was deeply furrowed along the centre, and dry and fleshy along the edges, and his pulse was comparatively slow; and in spite of the restlessness there



CASE 29. FATAL RELAPSE OF TYPHOID FEVER (a male, aged 21). —Primary disease terminated at the end of the fourth week by rapid and almost uninterrupted defervescence. The temperature on the last day was 96·6° Fahr. Relapse set in suddenly on the same day, and on the fourth day the temperature was 104·6° Fahr., and on the fifth 104·7° Fahr.; it rose, therefore, rapidly more than eight degrees. It fluctuated irregularly to the eighth afternoon, when it was 105·2° Fahr. Thence it fell to 100° Fahr. on the ninth morning, to rise again to 104·8° Fahr. on the twelfth morning. It fell again, and on the fourteenth evening was 100° Fahr. The patient died suddenly at 6 a.m. of the fifteenth day, the temperature shortly before death being 101·2° Fahr. No case more than this proves the prognostic value of careful records of the temperature. (*Vide* text).

was a constant dangerous tendency to coma-vigil. With the fall of the temperature to 100° Fahr. (the day before death) the respirations increased to 52, and the pulse rose to 145, and indicated failing heart-power. So the irregularities of the fever, as accurately measured by the thermometer, confirmed the teachings of danger which the unaided hand and eye had detected.

Case 30. *Fatal case of typhoid relapse; intercurrency interrupted; course of relapse; temperature very unstable; death on the twenty-fifth day of primary relapse, temperature shortly before death being below* 97° *Fahr.*—A male, aged 20, was admitted into Charing Cross Hospital on June 6th, 1878. He was suffering from typhoid fever, and was one of a family of nine, seven of whom had been attacked by this disease. The cause was attributed by the mother to "foul smells" from a privy adjacent to the house, and some neighbours who had suffered agreed with her on this point. The patient on admission was very ill; and on the morrow his temperature was 104·2° Fahr. But the fever abated in a gradual and satisfactory manner; and on the sixth day after admission (day of disease uncertain) the temperature was only 98·4° Fahr. (June 11). Two days before there had been diarrhœa with typhoid stools; and so severe was the diarrhœa that an opiate enema was deemed necessary and given. For eight days afterwards (June 11 to 19) the temperature oscillated between 98° Fahr. and 99·5° Fahr., diarrhœa ceased, but pains occurred in the abdomen requiring poultices for their relief. On June 21 the temperature began to rise, and a grain of sulphate of quinine was given every four hours. But the fever daily increased; for a true relapse commenced on June 23rd, during the time the man was taking six grains of quinine daily. On the first day of relapse the temperature was 98·4° Fahr.; then came a comparatively steady rise to 103·5° Fahr. on the evening of the fifth day. On the sixth day of relapse the temperature sank so that in the evening it was only 101° Fahr., and this fall was continued on the following days. On the eighth evening the temperature was 101° Fahr., and on the ninth morning 97·6° Fahr. Constipation was so decided as to need a simple enema.



CASE 30. COMPLICATED CASE OF TYPHOID-RELAPSE (a male, aged 20).—Admitted towards end of primary attack, which ended favorably. The temperature during apparent convalescence was irregular, and suspicious of danger for about ten days. Then a true relapse set in, the fever of which reached its height on the fifth day. Thence the temperature fell, but particularly on the ninth day (99° Fahr.). Shortly afterwards *intercurrent relapse* began, and on its fifth day the temperature was 103·5° Fahr. A sudden descent followed to 97° Fahr.; then came an irregular rise and an irregular fall. Patient died on the twenty-fifth day of his complicated primary relapse. Irregularity of temperature in this case requires careful consideration. (*Vide* text for particulars.)

The after course of the temperature in this case is exceedingly interesting. On the eleventh day of the true relapse the temperature was 97·2° Fahr., and next day a new rise commenced. Was it due to intercurrent relapse? On the fifth day of this new rise the temperature ran up rapidly to 103·4° Fahr., and was accompanied by pains and tenderness over the abdomen and the left leg. Next evening the temperature was down to 98° Fahr. (more than five degrees in twenty-four hours), and during this sudden fall there were only two evacuations, and these contained no blood. The patient still complained of abdominal pains and had a troublesome hiccough. Fomentations containing Tinct. Opii were applied to the abdomen and the left leg. The temperature continued its fall the next day to as low as 97° Fahr. Brandy was prescribed in half-ounce doses every hour, and ether inhalations to check the hiccough. On July 12th (eighth day of the intercurrent relapse, or nineteenth of interrupted relapse) the temperature was 100° Fahr., but next morning only 98° Fahr. It fell for two days, in fact, and reached 95·8° Fahr., then exacerbated in the most irregular manner—in a manner quite sufficient to indicate serious complications. A reference to the chart will be more instructive than any further words. The patient died, his temperature shortly before death being below 97° Fahr. His prostration for some time was very marked, and champagne was given as well as brandy; and the day before death (temperature about 97° Fahr.) a note was made of the hopeless condition of the patient. On post-mortem examination typhoid changes were found in the intestines, and in addition suppuration of the mesenteric glands on the right side of the abdomen. There were also evidences of a recent general peritonitis, but perforation of the intestine had not occurred.*

This case is most instructive. I do not know how anything but the regular use of the thermometer, taken of course with all other methods of examination, could explain it. I venture to think that the case is an example of relapse of typhoid interrupted by intercurrent relapse, and complicated by suppuration of mesenteric glands and peritonitis,

* Many of the typhoid ulcers had partially healed.

the complications causing the death of the patient. It is also exceedingly probable that the mesenteric mischief came on during the primary attack, and kept the temperature above the normal during the interval between the end of that attack and the onset of relapse. From first to last the fever was irregular in type, irregular in the interval before the relapse, irregular in the interruption of the relapse by an intercurrent attack, and irregular in the course of the latter. No case could better illustrate the value of the thermometer. I have not described the general post-mortem appearances, because they are such as are usually met with in persons who have died of typhoid.

This case is so suggestive of the difficulties which arise from combined complication and relapse that I think it deserves individual attention. I repeat that in all probability the cause of death was due to the primary attack, that lesions remained after the termination of that attack, to be aggravated by new accessions of fever, which were possibly independent of them and yet modified by them. I have seen several cases exceedingly like the one reported.

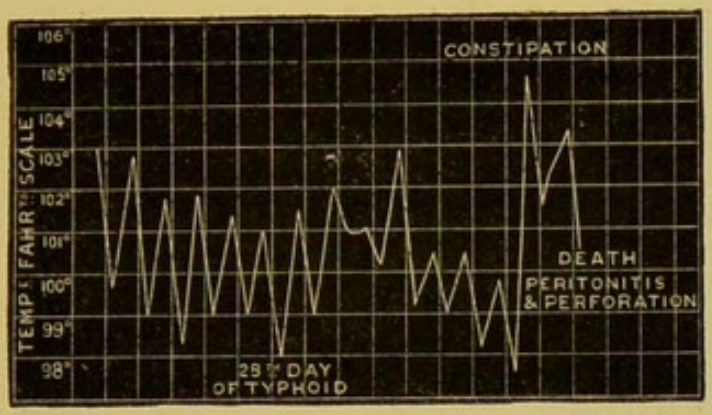
The occurrence of septicæmia in this case demands consideration ; for while the septicæmia modified the fever of relapse and of intercurrent relapse, it did not overbalance it. I mean that, in looking carefully over the chart of the case, one might fairly say that it was one of typhoid-relapse with intercurrent relapse,

in which the course of disease had been interfered with by complications, and probably by a complication usually attended by irregular temperatures. I am strongly of opinion that peri-typhlitic abscesses with all their dangerous sequelæ, and many examples of pelvic cellulitis, are traceable to the sequelæ of typhoid fever, and that relapse of this disease and sequelæ occur so obscurely that the most careful must be frequently deceived.

The next case is one which recommends itself by doubts as to its exact nature. It is an example of the uncertainties which surround the progress of "convalescence in typhoid fever."

Case 31. *Fatal relapse (doubtful case); death on thirty-eighth day of illness.*—A male, aged 21, a travelling tinker, was admitted into Charing Cross Hospital on May 24th, 1878, and had then undoubted symptoms of typhoid. His account of his disease was necessarily uncertain, and I quote the case by way of comparison rather than as an undoubted instance of relapse. The man died of his disease, and it is interesting to examine his case with the fatal or dangerous relapses already recorded. At the time of admission he had been for ten days seriously ill, and for a week suffering from offensive diarrhœa, occasional vomiting, weariness, headache, and downright prostration. He ascribed his illness to bad smells arising from an ill-regulated drainage-pipe immediately beneath the window of the room he slept in, and knew of no possible source of contagion from another individual. His manner of life was of course not calculated to fit him to meet an acute disease, but he was not a dissipated man.

When admitted his temperature was 102·5° Fahr., and on the same evening 104° Fahr. On the next evening it was again 104° Fahr., and on the third evening after admission 103° Fahr. Afterwards the temperature subsided, with daily evening remissions, and with large curves such as are met with in the last week of typhoid, and on the twenty-eighth day of the fever (?) the temperature was only



CASE 31. CASE OF FATAL RELAPSE (?) (a male, aged 21).—Admitted at beginning of third week of typhoid. On the twenty-eighth day the temperature was 98° Fahr.; then came a rise of temperature to 102·8° Fahr. on the fourth day (thirty-second of disease); followed by a fall to eighth morning, 97·6° Fahr. (thirty-sixth day of disease). A sudden elevation on this day to 104·8° Fahr. (in twelve hours about seven degrees). The temperature then fell to 100·4° Fahr. on the tenth morning (thirty-eighth day of disease), when the patient died of perforation of bowel. Doubts as to whether relapse occurred. (*Vide* text).

98° Fahr. The patient had shown symptoms of danger. His pulse had averaged no more than 104, and his respirations about 36, but he had frequently been delirious, and could not sleep because of an annoying cough. He had complained also of thirst out of proportion to his fever, and of sore throat. There had been also alarming perspirations without explainable cause. Diarrhœa was absent, but the typhoid eruption was marked enough to justify a diagnosis. The patient was taking a mixture containing hydrochloric acid as its chief ingredient.

The course of the temperature from the twenty-eighth day (?) of the attack to the fatal termination is worthy of careful inquiry. The temperature ran up (with marked daily remissions (from 98° Fahr. to 103° Fahr. on the fourth evening. Thence it fell daily to 97·8° Fahr. on the eighth morning of the new accession of fever. The patient at this time was taking six grains of quinine daily, and his bowels required simple enemata. The same day the temperature suddenly rose from 97·8° Fahr. to 104·6° Fahr., this elevation of nearly seven degrees occurring in less than twelve hours. There were signs of peritonitis at this time. The temperature abated, and on the tenth day from the twenty-eighth of the primary attack it descended rapidly to 100·4° Fahr., when the patient died in the forenoon (twenty-one days after his admission into hospital). It is quite possible that the second period of fever in this case was due to relapse modified by lesions lingering after the primary disease. Post-mortem were found peritonitis and perforation of the intestines. The conditions were in no way unusual and require no detailed description.

The cases given in this chapter require no general summary. They speak for themselves, and each has its individualities. I simply repeat that they have a value of high degree when compared with others reported in this volume. They are "exceptional" in many respects, and few in number; it seems best, therefore, to ask for each a separate study.

CHAPTER VII

GENERAL CONCLUSIONS AND REMARKS

It would be easy to add other cases of typhoid-relapse to the series given, but perhaps sufficient have been recorded to illustrate the value of the thermometer, and to prove how various may be the conditions setting in after the termination of primary typhoid, and yet how possible it is to determine their nature, at least within certain limits. The more exact and practical our knowledge of these becomes the more probable is it that they will be gradually circumscribed and reduced to fewer headings. The similarity which runs through many of the cases given is not more remarkable or more instructive than the varieties met with. The great majority of the charts shows that there is a typical standard as regards typhoid-relapse, to which all favorable cases closely—and the worst cases more or less—approximate, and that deviations from this standard throughout, or at particular times, are most valuable in clinical significance.

Instances have been given of—

1. Single relapse of simple nature.
2. Relapses either irregular or complicated.
3. Double, triple, and quadruple relapses.
4. Recrudescences, intercurrent relapses, and cases likely to be confounded with relapse.
5. Fatal relapses, simple or complicated.

In this attempt at a classification of the cases, it must be remembered that the variety of typhoid-relapse makes classification difficult. The cases illustrate complicated dangerous relapses, irregular recrudescences, and doubtful cases of typhoid.

Thirty-one patients have furnished these examples, which include at least forty-six cases of relapse. I propose to give only a general analysis of the cases, believing that my statistics are too few and indefinite for the determination of minute questions. Many of the points raised in these papers have not been touched upon by previous writers, and I feel considerable difficulty in dealing with them. I venture to think, however, that a careful use of the thermometer and a careful examination of its records, will be an all-powerful means of clearing up difficulties, not only in typhoid-relapse, but in primary typhoid. A variety of questions is suggested by the cases recorded, questions by no means easy to answer. The many aspects the cases presented are briefly summarised above, and these must show the difficulties alluded to. Relapses, complications, and

recrudescences in typhoid fever, have received no special study, as far as I know, and one must therefore approach their consideration with modesty and caution. Any array of figures from a single observer is never unattended by danger, and I hesitate to urge on the profession compilations which depend on the cases reported above.

We are bound to admit that relapse in typhoid fever is far more common than is usually supposed. Relapses are constantly confounded with accidental complications, and their true nature, in consequence, is continually misunderstood. I do not hesitate to say that in hospital practice such misunderstanding arises; and if this view be correct, can one be surprised that, in the extraordinary difficulties of outside practice, oversights are exceedingly common? In private practice the medical man is frequently constrained to give an opinion under the most difficult circumstances, and there would be cause for wonder if mistakes were not frequently made. Primary typhoid is most difficult of diagnosis from many diseases, when the physician has only the chance of casual inquiry; and relapse following an obscure illness, for whose particulars we have to depend entirely on the history given by the patient, must necessarily be over and over again confounded with other diseases. The "typical" evidences of typhoid are not always forthcoming, either in primary attacks or in relapse; and I am on this

account more bold in submitting to the consideration of physicians the charts of temperature which have been published in the 'Medical Times and Gazette.'

It is of importance, clinically and pathologically, to determine the probable duration of the apyrexial interval between primary attacks of typhoid and relapses. In twenty-nine of the relapses recorded above, out of a total of forty-six, this interval could be determined with complete accuracy. In seventeen cases of the forty-six the patients were first observed during relapse, or the onset of relapse was modified by accidental complications or by so-called recrudescences, and in consequence they are not admitted to determine the average of intervals. These cases, however, have a special value, for they confirm what more regularly observed cases teach; that at the apparent termination of a distinct febrile attack, whether it be primary or whether it be a relapse, care should be taken in the diet of the patient, not because mistakes excite relapse, but because, if relapse occur, they may aggravate its severity.

The twenty-nine relapses mentioned were divided amongst twenty-three patients, three of whom had each three relapses. The average duration of the interval was a fraction over five days; in three instances the duration was ten days, and in four there was no appreciable interval, at least no interval extending over twenty-four hours. It would

be useless to give an array of figures compiled from the cases quoted, but as the average interval of five days is scarcely half that met with by Dr Murchison, I am bound to attempt an explanation of this great contrast. Dr Murchison found that the average duration of the interval between relapse and primary typhoid was eleven days, and he took his average from fifty-three observations. But he does not state whether he is dealing with simple uncomplicated relapses, with complicated relapses, or with recrudescences, which materially alter the duration of the so-called interval. It strikes me that numerous conditions may lead to strange variations of the apyrexial interval, and though I shall attempt a discussion of some of these later on, I feel, the more I study the temperatures following primary typhoid, the difficulties which surround an inquiry into them. There seems to be no certainty in regard to the interval, and this very fact warns the physician to be continually on his guard. I might quote the three instances in each of which three relapses occurred. In these cases the intervals were (the figures meaning days)—

Case I.	3	0	6
„ II.	10	3	9
„ III.	10	7	8

and such cases show quite clearly the fallacy of *statistics*, especially when they are taken with the whole of the cases which I have reported.

But our uncertain knowledge as to intervals between typhoid attacks and its relapses only increases our anxiety, and teaches us to watch such intervals with growing care. No definite rule can be laid down even in cases where there is (so far as we can determine) complete freedom from complications. It has been asserted by writers of eminence that typhoid-relapse never occurs without a clear apyrexial interval between it and the primary disease. With this view I cannot coincide, for in four of the twenty-nine intervals observed in hospital, the abeyance of fever was less than twenty-four hours—an abeyance which occurs over and over again during an ordinary typhoid attack. I think I am not wrong in stating that Dr Murchison gave his authority to this view, and I submit a consideration of my cases with all deference. The intercurrent attacks are proof positive that a clear apyrexial interval may be wanting in typhoid-relapse, and the occurrence of intercurrent attacks is admitted by all clinicians. Many continental physicians believe that relapse of typhoid may set in, not only days or weeks after the termination of the primary disease, but even months afterwards. But I cannot agree with such views, and am convinced that in many of these cases of deferred relapse, a careful daily observation of the temperature would have shown that the patients were the victims of repeated relapses—possibly exceedingly mild, but still determinable by

the thermometer—and that the sharp fever of a final relapse was really the third or fourth in a series of relapses. The possibility of numerous relapses in typhoid fever has been passed by, and in consequence the occurrence of a first relapse months after the termination of the primary disease has been insisted upon. I feel bound to say that in reading the literature of the subject of relapses in typhoid I have not been able to ascertain that the writers sufficiently appreciated the possibility of repeated relapses either with or without complications, and I would ask attention again to some of my examples, and especially to Case 16, where three relapses were met with—each separated from its fellow by distinct apyrexial intervals, and each following a typical course. In this case complications were absent, and the disease, so to speak, ran its own course.

The temperature during the interval between typhoid fever and its relapses is well worthy of consideration. The so-called intervals may be long or short—they vary immensely—but a daily interpretation of the thermometric levels in these intervals is of the utmost importance. In almost all the cases of uncomplicated typhoid the temperature was during the "intervals" normal both morning, noon, and night, and oftentimes subnormal—below 98° Fahr. This is a valuable clinical fact, because most of the acute specific diseases end in subnormal temperatures, and any unexpected rises, which cannot be

explained, should guard us against the contingency of relapse. The irregular elevations of temperature during some "intervals" I shall dwell upon afterwards. I am convinced that the proper study of the "interval-temperature" is of the utmost practical value, and it is for this reason that I have written upon it at considerable length. An examination of the doubtful interval periods will afford additional proof of the therapeutic value of studying carefully the temperature during the days following an attack of typhoid fever.

The subject of intercurrent relapses is best postponed to later stages of this paper; and it seems wise here to consider some others of the broader questions touching typhoid-relapse. Is a patient who has suffered from one relapse likely to have a second relapse? Does relapse in fact predispose to relapse; and does the apyrexia, which follows relapse, demand even more attention than that following primary typhoid fever? Liebermeister has considered these questions; and, relying on a large number of observations at Basle, he positively states that relapse does not predispose to relapse. I am not in a position to refute or affirm Liebermeister's views, for the more I study the cases I have given the more certain I become of the possibility of fallacies in regard to statistics. No hard and fast line shall be drawn in these papers; and I refuse to be bound down, in our present state of knowledge,

by a series of figures which attempts to reduce the study of disease to mathematical certainties. In many continental schools such attempts are most boldly ventured upon; and though we may disagree with both arguments and conclusions, we must benefit by anything which forces us to take an all-round view of disease, be it in typhoid fever, relapse of typhoid fever, or any other disease.

Speaking generally, I would say that if a patient suffers one relapse, a second relapse should be looked for and guarded against. Of thirty-one patients in my series, ten had a first relapse, and at least five had a third relapse, while in one case a fourth relapse occurred.

The interval ended, relapse sets in. What are its general characters, its duration, and most critical periods as regards temperature? Many other questions suggest themselves, and have, indeed, been casually considered in the reports I have given.

The uncertain duration of "intervals" has been dwelt upon; and we may at once say that the duration of relapses is also uncertain. Accidents and intercurrent relapses especially cause modifications; but taking twenty-nine instances of relapse out of the above series—instances observed from first to last, and where complications could be positively excluded, and where treatment, though it may have helped to carry patients through their illness, was never directed to "cutting their disease short"—

the average duration of relapse was about twenty to twenty-one days. Dr Murchison found the average duration of relapse, as I have said, about fifteen days; and I am sorry that I have not been able to find a full record of this eminent physician's cases. It seems to me most essential that in considering duration of relapse—just as in primary typhoid—the fact of frequent complications should never be lost sight of; and on this account many instances are excluded from my series in an attempt to make an approximative estimate of the duration of typhoid-relapse as determined by the temperature of the body. And though remembering that such observers as Sir William Jenner, Dr Murchison, and others are not quite agreed as to the duration of ordinary and uncomplicated primary typhoid, I submit with confidence the following opinion—that a relapse of typhoid fever will more nearly approximate to twenty-one days' duration the more simple it is. Some relapses do not last twenty-one day, and some last more than this number of days. For some appear to be cut short at particular stages, others seem to be prolonged inordinately by outside circumstances. In all acute specific diseases we meet with similar phenomena, and it is only an acquaintance with the usual course of events which helps us to avert mischief—nay, even catastrophes. Variety prevails in primary typhoid, its relapses and its surroundings, in typhus, in small-pox, and scarlet

fever; all these diseases are apt to be confounded, not only amongst themselves, but with entirely separate diseases; and he is a wise physician indeed who makes no mistakes in the midst of the various complicities. We are bound, in considering the duration of typhoid-relapse, as judged by its temperature in particular, to remember the clinical difficulties alluded to; but I am persuaded that the careful use of the thermometer enables us to clear up many doubts (looking merely at duration of disease).

It is almost certain that, where two or more relapses of typhoid occur in a patient, the later relapses are, if no accident happens, shorter than the preceding ones. This is in accordance with the opinion given, that primary relapse lasts about twenty or twenty-one days, while a first typhoid attack continues through twenty-eight days. Here, again, I would say that the exact duration of an uncomplicated simple primary attack of typhoid fever has exercised the minds of the most able clinicians; and am bold enough to readventure the statement that confusion of relapses with primary disease has greatly increased the differences of opinion which prevails as to the duration of primary typhoid. The duration of relapse is, of course, most materially affected by accidents; death may occur in any stage; an intercurrent relapse may appear to prolong it, as may any complication—for

example, pneumonia, the occurrence of abortion, or the slow healing of old intestinal ulcers. Let us consider the course of relapse of typhoid fever which follows a "typical" progress, and is not hampered by complications, intercurrency, or other difficulties. In the great majority of the cases recorded above there was, as has been pointed out, a clear, though often a small, interval between primary disease and relapse. Without going into statistics it may be said that the cases prove that, as a general rule, the interval which precedes a relapse is marked by subnormal temperatures. It would be tedious to quote particular cases, for examination of the charts must more readily than pages of text convince the reader on this point.

The question is, How does relapse, as judged by the thermometer in particular, declare itself? In most cases the recurrence of the disease is characterised by an unexpected and a continuous elevation of temperature. The fever begins suddenly, and though remissions may occur daily, it increases until it reaches its height on the fifth evening of relapse. The remissions are of little diagnostic importance (so far as relapse, considered alone, is concerned), for we should never forget that lesions left by the original disease may modify not only temperature, but the general symptoms met with in relapse. Remembering these facts, I think it useless to attempt any definite account of the daily remissions

met with in many cases of typhoid relapse. But I most positively maintain that, where complications are absent from first to last, the highest temperature in relapse is met with on the fifth day.* From this day the temperature maintains nearly the same level (with morning remissions varying in degree) until the eighth or ninth day, when it falls decidedly and, beyond all doubt, critically. I am certain that it is, diagnostically and prognostically, most important to observe from hour to hour the temperature in relapse during its eighth and ninth days. My charts support this view, and to them I must refer in confirmation of what is advanced. The fall on the eighth or ninth day of disease has struck me as being of most favorable omen, and the fatal cases by the absence of this fall will bear out, if examined carefully, the truth of the observation. On the eighth or ninth day the temperature may be found six degrees, or even more, below its previous level, or its fall may be less decided—not more than two or three degrees. But in the absence of hæmorrhages or other accidents, which speak for themselves, I look upon it as a most valuable and favorable prognostic indication.

This critical fall simply marks a stage of the disease, and not its termination. A rise of temperature

* And even when there are "complications" calculated to modify the morning and evening curves, a careful examination of the charts will show that the primary mischief declares its influence on the fever in a manner which cannot be misunderstood."

always follows—as in every instance recorded—so unmistakably as to prove that the eighth and ninth days' temperature in typhoid-relapse has a critical significance. From the ninth day a third stage of the disease begins with a new accession of fever, as examination of many of the charts will show. But in favorable cases these accessions have characters which may be viewed with satisfaction. On the tenth day, for example, the temperature may almost run up to previous levels; but afterwards there are gradual daily remission of fever—great or small, but constant—until the disease is at an end. In dealing with Case 7 I have dwelt upon these three stages met with in typhoid-relapse. The third stage is, like others, most difficult of description, and again, I depend more on the charts which are published than on words. An examination of the charts must show that from the day on which the temperature attains its height in the third stage there will be, in cases going on well, a gradual fall of temperature both morning and night—in short, a steady abatement of fever, which ends in subnormal level on or about the twenty-first day of relapse. I am so much impressed with the temperature-curves as indicative of three stages in typhoid relapse (possibly empirical stages, but still of much practical value) that I ask the reader's careful consideration of these stages. It is most difficult to satisfy one's self and others as to the course typhoid fever and its relapses pursue.

I admit, nay urge, the difficulties met with in a consideration of the clinical history of typhoid fever and its sequences.

But I agree with Wunderlich, whose observations on the acute specific diseases gave to him a well-earned reputation, that relapses of typhoid fever teach us more than primary attacks of the disease. Wunderlich regarded relapses as typical examples of enteric or typhoid fever. At the time when he made his observations with the thermometer, only a small minority of the profession understood what was meant by typhoid-relapse. The confusion of diseases was added to the confusion of names; the great generalisations, established in this country especially by Sir William Jenner, were but little appreciated or understood (as happens fortunately for the progress of scientific and clinical medicine in almost all its branches); the occurrence of typhoid relapse was scarcely taught, and if taught, only incidentally; and most able physicians *referred* to the chances of relapses of enteric fever, but did not insist on their frequency, much less on the occurrence of two, three, or four relapses in a single case. I have proved by temperature charts that even a fourth relapse may occur in typhoid fever, and am emboldened to ask a consideration of these charts. The work which Wunderlich has done in typhoid and other specific diseases claims the greatest praise, but I venture to think that this distinguished observer

has not considered all the simple sequelæ of typhoid fever and their especial bearings on the occurrence of relapse, which I maintain is so common. I am strongly of opinion that sequelæ and relapse in this disease have been, and are still, confounded—not occasionally, but regularly, in both hospital and general practice.

The assertion that three stages are met with must mean, of course, that critical periods should be looked for. I have said enough to show that, in my experience, it is most important to note particularly the temperature on the fifth day of relapse, on the eighth or ninth day, on the fifteenth day, and on the twenty-first day of the disease. I repeat that these days in the disease are to a certain extent critical, and in support of the opinion I ask attention to the cases recorded—attention to them in general, and not in particular.

The stages of typhoid-relapse are no more certain than those of other acute specific diseases. The difficulties of variety constantly present themselves, and the more constantly the more the course of the acute specific diseases is studied. The "accidents" of relapse are probably more numerous than those of the primary disease; but the careful use of the thermometer is one of the best safeguards against mistakes from such accidents.

These accidents are exceedingly frequent, and as important as they are frequent; they have been

alluded to in the consideration of individual cases, and I shall now dwell upon them as briefly as possible. But I desire especially to allude to recrudescences and intercurrent relapses before considering particular complications. Relapse, as has been said, may set in during relapse—may interrupt it, in fact—and may cause much doubt. Several examples have been recorded in these papers. "Intercurrent relapse" is obscure and uncertain, but that it can modify the temperature of ordinary typhoid or of ordinary relapse is beyond question, and its clinical significance is of great value to the physician who has to guide a typhoid-fever patient through a variety of dangers. The chart of Case 28 affords an excellent illustration of intercurrent relapse.

I have reported at least three examples of Intercurrent Relapse, and in all, as the term *intercurrent* would imply, there was no interval between the primary disease and relapse. Intercurrent attacks, in fact, interrupt the disease and have a specific character, because they run a course very similar to that of ordinary typhoid relapse. In Cases 21, 23, and 28, undoubted illustrations of intercurrent relapse are presented. These relapses ran a more or less typical course, after interrupting the disease midway, as it were, the manner of their onset, and the rapid elevation of temperature to the fifth day indicating intercurrency rather than complications which could be excluded by careful examination.

One intercurrent relapse lasted about fifteen days, and two about twenty-one days, the general symptoms being in all those of ordinary typhoid relapse. But these intercurrent attacks add greatly to the difficulties which the clinician meets with in his study and treatment of typhoid. It is clear that, occurring as they do in the midst of an ordinary attack, they must mislead the physician sometimes in spite of all his care. I ask reference to Chart 28; in this case the temperature during a primary relapse was on the eighth evening 103·4° Fahr., and on the ninth evening down to 96° Fahr. Irregularity of fever was the rule for the next two days, when an intercurrent relapse set in, and ran so characteristic a course that it is not necessary to dwell on it again. The intercurrent relapse lasted twenty-one days, and if intercurrency had not been recognised, it would have seemed that the relapse which it interrupted had gone on for at least thirty-two or thirty-three days. In Case 23 the intercurrent attack was much milder, but its chart is typical enough. Intercurrency in Case 21 is equally undoubted; it came on during typhoid of unknown duration, and followed a course which aided the diagnosis, if such aid were needed. I cannot here dwell at length on these three charts, however anxious to do so; they prove that typhoid or its ordinary relapses may be prolonged strangely unless the fact of intercurrency is remembered, and that if

intercurrent attacks are recognised they help us vastly in the prognosis and treatment of our cases.

And here I must again speak of the so-called Recrudescences. These simulate relapse and all kinds of complications; indeed, sudden rises of temperature during a typhoid convalescence are frequently most puzzling. But I believe that the temperatures ascribed to "recrudescence" are often simply accidental; they are not due to any new disease, but to the local intestinal lesions which have been disturbed by various causes—errors in diet, for example. Thus, the elevated temperatures in these cases convey a warning, and that warning is not neglected by the intelligent physician who remembers that the mischief of typhoid fever does not end with the termination of fever and the almost too apparent convalescence of the patient. Recrudescence shows no regularity; in it the temperature runs up suddenly, and as suddenly falls. We can find no objective explanation of the unexpected changes, and at once fall back on the view that local intestinal lesions remain unhealed, from some cause or other have become irritated, and have excited the temporary fever. "Recrudescences" are really but ordinary sequelæ of typhoid fever, and the same term might fairly be applied to uncertain accidents met with at the end of other acute diseases. Many examples of recrudescence appear in the charts; but the best is afforded by Case 20, in which during con-

valescence the temperature rose from subnormal level more than five degrees, and sank again to the same level within thirty-six hours. Similar accidental elevations and sudden falls undoubtedly occur without apparent reason during ordinary typhoid fever.

And now we come to accidental variations of temperature which can be ascribed to true complications. As has been said, complications are during the actual febrile period perhaps more common in relapse than in primary attacks. Nor can we wonder thereat, insomuch as the patient is reduced by a long pyrexia, and has a system deteriorated by what may be fairly described as a protracted blood-poisoning. A patient in such a condition is prone to pneumonia of low type, to pleurisy, to hepatic and renal disturbances, and to gastro-intestinal mischief; his long period of fever has necessarily weakened his heart; and it is plain that, directly and indirectly, his nervous power must be greatly reduced. So, in relapse of typhoid fever, we expect accidents and complications, and I am convinced that it is this expectation which has made the mortality of relapses far less than that of the primary attacks. And in this fact lies the greatest of all reasons for the careful study of temperature after the apparent termination of an ordinary attack of typhoid fever. Pneumonia and the other diseases mentioned are of course common complications in most acute specific

diseases, and examples of their occurrence in typhoid-relapse have been given. The clinical point is to discover them, and thus explain irregularities of fever which without such explanation would be of the gravest import. In Case 16 (*vide* chart) is given an excellent illustration of this fact. In Case 20 greater difficulties are manifested; pneumonia occurred at the end of primary typhoid, and the typhoid relapsed after a short interval. The relapse in this case was modified by the pneumonia, which had not cleared up, and as it progressed relapse increased the lung troubles. The patient had, in fact, pleurisy with effusion; the temperature of relapse was, therefore, not typical in all respects, and the variations of temperature led to considerable variation in the treatment of the patient, who finally recovered. Such a case is by no means uncommon in primary typhoid; but its lessons are valuable. We meet with persons suffering from pneumonia or pleurisy secondary to typhoid, and may go far astray if we fail to recognise the disease on which they are contingent.

The fatal cases illustrate the value of exact observation with the thermometer. They are but few in number, and an examination of their charts will show how strangely the temperature varied from that of more favorable cases. During the progress of many relapses anxiety was, of course, often aroused, and, whenever there was a deviation from

the typical stages, signs of danger invariably succeeded the warnings of the thermometer. Perhaps it is not out of place to point out particular examples of this important clinical fact. In Case 4, where relapse followed relapse almost without intermission, and there was an almost continuous pyrexia lasting seven or eight weeks, the dangerous days were associated with extraordinary variations in the temperature—with departures from normal standards. In the third stage of the second relapse a sudden fall and a sudden rise on the sixteenth day were followed by alarming symptoms—a rapid and feeble pulse, circumscribed flushing of the cheeks, subsultus, typhoid stools, and a new crop of typhoid eruption. In Case 8 the danger of the first relapse was very great between the eighth and eleventh days, during which the temperature had not the characteristic fall; and though the fall shortly afterwards occurred, it was associated with severe diarrhœa and hæmorrhage from the bowels, which of course gave the warning that the fall should not be considered so satisfactory as that of more natural cases. The fall was delayed, and it is not unfair to suppose that the violent symptoms which attended it explain the delay, for these symptoms were those of deep and dangerous ulceration of the intestines, This view is sustained by the after-course of the disease; the fever did not fall in the third week, for there were daily increasing exacerbations, and,

though the temperature did not reach great levels, these irregular exacerbations were always accompanied by severe general symptoms. The second relapse in this case is a marked contrast to the first; it was favorable throughout almost (though in the first stage there was hyperpyrexia). The second stage ran away into the third, and from the fifth day to the end of the disease there was a daily descent to subnormal temperature. This relapse was, however, severe; but the course the temperature took was regarded as of favorable prognosis, and, in spite of the patient's long-continued and irregular fever, at the end of the second relapse she entered on a rapid convalescence, which was not interrupted by a single bad symptom.

Such a case as this is more instructive, clinically especially, than typical cases; and others of the series enhance its value. In the brief description of Case 13, allusion was made to the severity of the symptoms. The patient was for some time as ill as he could well be, and I remember no case in which there was more need to give an unfavorable prognosis; but the temperature guarded that prognosis, for it fell on the eighth day, though only in small degree. The fall, however, occurred; and though the second stage was prolonged to the thirteenth day, the absence of irregular rises during this stage made us hopeful, in spite of the excessively severe general symptoms. A decided fall came on the thirteenth

day of the relapse, but the patient was prostrated almost in the last degree; and had the thermometer not been used, and its teachings compared with those of other cases, everything would have pointed to a fatal issue. Even the most cultivated "tactus eruditus" could scarcely have given results so accurate as the thermometer, but though the hand is less accurate than the thermometer, it should none the less be thoroughly trained to determine, as far as possible, the "temperature of the skin," so that we may not, in the possession of instruments, lose those tactile powers which have proved so valuable in all ages and epochs of medicine. For other cases with bearings similar to those I have just quoted, reference is asked to the series, a careful examination of which indicates what temperatures are valuable in the prognosis of unfavorable cases. In any instance of relapse of typhoid a temperature on any day after the fifth day which exceeds or even equals the temperature of that is a bad sign; and all the more, of course, is a continuation of fever as high as that of the fifth day, or approaching it without evening remissions through a prolonged second stage, evidence of danger. It is not necessary to dwell with more detail on the signs of danger which the thermometer gives. The general course of the fever in relapse demands every attention, and there is no disease in which comparison of one day's pyrexia with preceding degrees is

more valuable, especially because the vast majority of cases are under careful observation from their onset to their end—a fact which perhaps explains the comparatively small mortality in relapses of typhoid.

The number of cases which terminate favorably is remarkable, for relapses occur in persons pulled down by long periods of fever; and it is but fair to claim for medicine a therapeutical triumph in the success with which it meets relapses of typhoid. The cases being under observation from their beginning, various so-called "trifling" methods of treatment are adopted, of whose value none but the medical man is aware; errors of diet and mischievous remedies are alike avoided; officious friends and their nostrums are carefully guarded against; the thermometer, used diligently, keeps the physician on the alert, and forewarns and arms him against complications—so that the patient is safely piloted through the dangers of his disease. And when one relapse has been passed through, the physician who remembers the possibility (or even probability) of a second relapse can do even more for the good of his patient. He relies on the thermometer as his chief guide, and avoids errors into which he might otherwise be led.

It is clear that relapse differs very greatly from primary attacks. It is asserted by all authorities that the temperature of relapse rises to its highest level more quickly than in the primary disease; and

this is true, but it would be more correct (judging by the instances given) to say that there are not in relapse the typical evening exacerbations and morning remissions met with for the first few days in the ordinary fever. The rise in relapse, in the great majority of cases, is to the fifth day all but uninterrupted, and where great interruptions occur there are accidents enough to account for them. The maximum evening temperature is reached by the fifth day, as occurs in primary typhoid;* but afterwards the curve presents a decided contrast to that of the latter, in which to the twelfth day the fever remains high, though with a maximum scarcely so high as on the fourth to sixth days. Wunderlich has gone so far as to declare that we may exclude typhoid if the temperature on any day between the eighth and eleventh be below 104° Fahr.; and a fall at the end of the first week, he also thinks, excludes it. Of course he is speaking generally, and would be the first to admit exceptions to these rules of exclusion. However, an exactly opposite general rule must be laid down for cases of relapse, in which, if normal in their course, a fall about the eighth day occurs, and temperatures far lower than 104° Fahr. are met with in the interval mentioned by Wunderlich. These important differences between primary typhoid

* Most observers fix the third day as that of highest temperature in relapse. I ask attention to the charts in regard to this point.

and its relapse should always be borne in mind, and particularly because many patients suffering from relapse are, when first seen by the physician, considered to be the victims of a primary attack of typhoid. In these cases the thermometer is of the first importance, for it helps us to determine with accuracy the imperfect previous histories which typhoid patients so frequently furnish. In out-patient practice all are, as I have said, familiar with instances of an "ambulatory" typhoid where the disease is so "trivial" that the patients resent the assertion that they are suffering from a dangerous disease. During the epidemic, for example, of typhoid in London, in the autumn of 1877, I had in one week two out-patients of this class. They persisted in walking through their primary attacks, which lasted, as nearly as could be determined by observations made twice a week, twenty-eight days. In both relapse set in a few days after the end of the primary disease, and ran a course of from twenty to twenty-one days. The patients refused admission to hospital and persisted in attending as out-patients; but recognising at last the gravity of their illness, gave up work, and were strict in their diet. Thermometric observations of these cases were, of course, but occasional; they had, however, a special value in many directions, and the termination of their relapses about the end of the third week was prognosticated. As has been already urged, we

should, in all attempts to determine the nature of primary typhoid and its relapses, not forget that the former is very often completely obscure and disregarded by the patient, and, in fact, that many cases of typhoid would escape notice did not relapse set in. The second stage in relapse, as compared with that of the primary attack, is cut short, and the same is true of the third stages. In relapse this stage is marked by decided fall of the temperatnre to the normal, and there is no *fourth week* in which deep curves prove the end of ordinary attacks of primary typhoid. The absence of those exacerbations and remissions met with at the end of typhoid fever, in the cases of relapse, was striking; but in many charts of mild (primary) typhoid, which are given by several authorities, this absence is met with. In some, indeed, the whole temperature-curve so exactly resembles that of normal relapse, and is in such contrast to that of normal primary typhoid, that it is quite possible that they were relapse-charts, and that the primary attack had been obscured. Wunderlich gives one chart illustrative of "mild" typhoid, which, after examination of relapse-charts, one would be inclined to think was an example of relapse. At any rate, even in the attempts to determine the normal duration of primary typhoid, we should rely on no cases which are not beyond all question primary; and the fact that the duration of normal first attacks is not satis-

factorily settled, if we judge by the various authorities, teaches us to be cautious against confounding primary and other attacks of typhoid. For example, Dr Murchison has seen roseolous spots in a mild typhoid as late as the sixtieth day, while Sir William Jenner has never seen them after the thirtieth day, except in cases of relapse. It is not necessary to dwell on the conclusions to be drawn from the observations of authorities so eminent; they clearly show that our most able clinicians hold different views as to the duration of primary typhoid; and no one can wonder, therefore, that relapse remains a difficult question, and one full of the greatest interest.

There is one other point to which cases of relapse call attention. Can they help to settle the question of the duration of the incubatory period of typhoid? The series of cases recorded give nothing definite in this direction, but they are suggestive. Many physicians are of opinion that if a person suffers a relapse of typhoid he owes that relapse to a new contagion, even though the "return" sets in immediately after the termination of the primary attack, as was the case in many of the instances of relapse detailed. On this view we must suppose that primary typhoid and incubation of relapse co-exist—in fact, run together for several days. I venture to think that relapse is due to the primary contagion, and in the great majority of cases relapse sets in within a

short period after the termination of previous attack. But it is difficult to believe that a recurrence of a typhoid attack weeks, or even months, after a patient's convalescence, is due to the primary cause of disease. Instances of such "relapses" have been given by continental observers, but they are, to say the least, rare in this country, in which typhoid fever is the most common acute specific disease amongst its adult population. As has been already said, it is by no means certain that these are not cases of multiple relapse similar to many examples given above, for unless the thermometer is used with daily regularity, intermediate relapses may be very readily passed by.

One word as to the therapeutical value of diagnosing obscure relapse. I repeat that the thermometer enables us to guard against mischievous treatment, and that it may claim to be frequently our chief guide in dieting patients for days and weeks after the apparent termination of typhoid fever. If the thermometer declares a recurrence of fever resembling relapse—nay, in the least suspicious of relapse—it is clearly one's duty to be as careful in the dietetic management of the patient as in the primary disease. Mild and severe cases should know no distinction in this respect, for in both there are local lesions, which errors increase, with fatal results. And it should be ever remembered that high temperature is not the only evidence of danger

and of the necessity for care. Cases 26 and 2 afford illustrations; relapses occurred, and throughout the fever was slight, but a great mistake would have been made had low fever led one to regard the disease lightly. The teachings of ambulatory typhoid fever are but repeated by mild cases of relapse, and in the persuasion that ambulatory typhoid is one of the most dangerous forms of the disease (for reasons known to all), perhaps I may again crave indulgence for dwelling on the need of careful consideration of "post-typhoid" temperatures, and of absolute typhoid dietary when these temperatures are in the least significant of the occurrence of relapse.

INDEX

A.

C.

O.

P.

Q.

R.

S.

T.

U.

V.

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