

The Thermometer

in

Disease



Its application, variations, and value
as an aid in Diagnosis, Prognosis,
and Treatment.

With especial reference to certain cases
occurring in the Medical wards of
Kings College Hospital, London, during
portions of the years 1864, 65:

by

Franklin Gould B.A., L.R.C.P. (Eng), M.R.C.S. &c.,

1866

Introduction

During the winter of 1864-65 many facilities were afforded me, whilst holding the position of Clinical clerk to one of the Physicians attached to the Medical wards of Kings College Hospital, London, of studying the use and practice of the Thermometer in its relation to various diseases, to which the human frame is subject, and also of collecting many facts and data, the more interesting of which it will be my object to point out in the course of the following pages. It is my intention in the present paper, to aim, more especially, the recording of facts, and the statement of the most palpable deductions, rather than the broaching of theories on a subject, which even with the writings in view, of such men as

Wunderlich, Ringer, Atken &c appears still up to the present time, not yet sufficiently investigated for us to deduce any very sound conclusions therefrom.

Although keeping the above object in view, I shall nevertheless be obliged to refer occasionally, to the writings of the authors mentioned, the more so, since in certain instances, the experience gained at the Hospital in which these investigations were carried on, do not entirely bear out the statements of some of them.

It will also be advisable to make a few observations on the kind of Thermometer most applicable, and on its method of use; also on the ordinary temperatures of the body in health.

I have accordingly divided my remarks under the following heads:—

- I. A description of the Thermometer.
- II. The temperature of the body in health.
- III. The temperature of the body in disease
(with reports of cases)
- IV. A few remarks on its aid in Diagnosis,
Prognosis, and Treatment, with special
reference to the reported cases.

Before proceeding further, I feel it my duty to express the obligation I am under both to Dr. Powles the House Physician, and to Mr. Kelly the Assistant House Physician of the Hospital during the time these investigations were carried on, (viz winter of 1864-65); acting under whom, I as clin: clerk was but as the pen in the hands of a writer, and who, moreover, from their residence in the Hospital were enabled more thoroughly than myself, to

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work at the subject. Without the assistance of these gentlemen, it would have been impossible for me, to have given so finished a report of the cases quoted, notwithstanding that very many of them came under my immediate care as clerk.

The Thermometer.

This instrument may be of various shapes and sizes; some are in the habit of using one, which has its lower portion as far as three inches, bent at almost a right angle; this kind appears however to possess no advantages that are not counterbalanced by the fact, that different axillae require different curves of adaptation in the instrument.

A better kind is the straight one, which is about 12 or 14 inches long, and about a $\frac{1}{4}$ of an inch in diameter; this may be obtained graduated into degrees and fifths, and ranging from 85° — 115°

below of course it expands out into a bulbous portion containing the mercury. There should be a small column of mercury in the upper portion of the tube, about an inch in length, & which should be separated by a small bubble of air from the remainder; on applying heat to the bulb, the main column rises until it meets the smaller one which it pushes on before it; when ~~the~~ thermometer is withdrawn, the main column sinks down leaving the small one to mark out the degree of temperature obtained. On placing ~~the~~ the forefinger of the right hand on the bulb, & grasping the thermometer with the same hand, in such a way that the stem lies along the under surface of the wrist and forearm, and giving a jerking swinging motion to the limb, the small registering column may be readily caused

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to descend, and thus the thermometer is in readiness for future investigations.

In using the thermometer at the bedside it is best to place the instrument in the axilla, not only on account of its being most convenient to the patient and the medical man himself, but also on account of most other observers having used the same part, the facility of comparison being thus increased.

There are a few important points in the use of the thermometer at the bed-side to be attended to, ~~being~~ ^{viz}:-

1st The smaller upper column of mercury, should always be below 90° , before the thermometer is placed in the axilla; a temperature of 106° has been observed, when the patient was not nearly so high as this, merely by neglecting this point.

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2^{ndly} The instrument should be left in the axilla for at least five minutes, to ensure registering the greatest height of temperature of the patient under investigation; if the medical man be in a hurry he may warm the instrument with his hand (previous to introducing it into the axilla) up to 95° if he be sure that the temperature is not lower than that.

3rd. It is as well to use the same instrument with each patient, and all the thermometers in use should be corrected by a standard one.

4^{thly} Wunderlich recommends that the temperature should be taken at least twice a day, viz - between seven & nine in the morning, & five and seven in the evening; according to the observations made, however, in Kings College Hospital, about nine o'clock in the morning and

nine o'clock at night would seem to be the best times. For example the temperature of a man in ward V (June 1865) labouring under Phthisis was taken for four consecutive days at the following hours, and with the following results: —

June 15		June 16		June 17		June 18	
12 noon	$103 \frac{2}{5}$	6 a.m.	$103 \frac{2}{5}$	6 a.m.	101	6 a.m.	$100 \frac{4}{5}$
5.30 p.m.	$103 \frac{2}{5}$	9 a.m.	$101 \frac{3}{5}$	9 a.m.	103	9 a.m.	102
9 p.m.	$102 \frac{3}{5}$	12 noon	100	12 noon	101	12 noon	$100 \frac{4}{5}$
12 night	$101 \frac{2}{5}$	6 p.m.	101	3 p.m.	$100 \frac{2}{5}$	9 p.m.	100
		9 p.m.	$101 \frac{4}{5}$	6 p.m.	$100 \frac{4}{5}$		
		12 night	102	9 p.m.	$99 \frac{4}{5}$		

The observations taken on the 15th & 16th were made when the man was very feverish; those of the 17th & 18th bear out more clearly what has been stated, the extreme of temperature in the morning being most marked at 9 o'clock, & that of the evening pretty much at the same hour, supposing an

average were struck. In any case the observations should be conducted at the same hours each day, whatever those may be, otherwise considerable differences will be noted, and fallacies will ensue.

5^{thly} Great care should be taken, that there be no article of clothing between the bulb and the axilla, otherwise the registered temperature would be incorrect.

6th The patient should not be exposed previous to the taking the temperature; otherwise a difference of from 1° - 2° F. may be found.

7. The greatest care should be taken that the bulb of the instrument is in immediate contact with the walls of the axilla, and not thrust too far in, so as to project behind.

8. Each observation should be put down on

Disease

Date of Disca

Temperature

60

[illegible]

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Temperature

a form for the purpose, along with the respiration and the pulse.

A table more especially adapted for Hospital use is such an one as may be seen in the succeeding pages. This form was somewhat hastily drawn up, and transferred, by myself, to stone, from whence a few hundred copies were struck off on to stiff paper, and one of them suspended in a light pasteboard frame over the beds of such patients as were under observation. As might be expected after the constant use of these tables for several months many little points requiring alteration or modification were detected, and some of these alterations will be seen introduced into many of the tables used in this paper. I think, however, I may safely say, that as a rule, in large Hospitals or Infirmaries

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where it may be desired to ascertain the temperature of a large number of patients for a consecutive period, the more simple the tables used, are, the more accurate will be the observations recorded. It frequently happens that one of the clerks and not the House Physician is occasionally called upon to ascertain the temperature of a patient, and in all cases it is the clerk's duty in the morning observation at least, to fill in the pulse and respiration. Hence a simple and uncomplicated table will be more likely to command the attentions of such clerks as do not happen to possess the skill, enthusiasm, and assiduity of a hard working House Physician.

The table is so arranged as to comprise a range of temperature from 96° - 108° F. (a temperature of from 95° - 107° F would be better)

Spaces are indicated for the morning & evening heights of temperature, and also for the date of month, pulse, respiration, and date of disease.

The different heights are best recorded by means of large dots, which may be connected with one another by dotted or ruled lines.

II. The Temperature in Health

I shall only make a few very cursory remarks on this subject.

The vital actions which are unceasingly in operation within the frame of man, demand a certain temperature, a material deviation from which cannot occur without some corresponding change in their economy. This temperature may be generally stated at $98^{\circ} F$, though this is liable to a slight variation, according to age, place, temperature

of air, exercise, &c.

Thus the temperature of a new-born child has been stated at 100°F ; that of infant life between 4 months and 6 years at 98.9°F , and that of adult life at 98°F , the latter still remaining as the average temperature of old age.

Again the temperature beneath the tongue, will be found perceptibly higher than that in the axilla, and that in the axilla higher than that under the sole of the foot.

The temperature of the air apparently but little influences that of the body, the additional clothing in winter, and the diminished clothing in summer, probably compensating for the variations which might occur under other circumstances.

Active exercise may cause a rise of ~~#~~ at least one degree, whereas passive exercise, such as riding in an open carriage &c, and passion may have the effect of lowering the temperature to the same amount.

Lastly with respect to diurnal variation, I may state that Dr Agle of St Georges Hospital, who has been paying considerable attention to this subject, has kindly communicated to me the following general conclusion that he has arrived at, viz:— That in health there is a gradual rise of temperature of the body from early morning until late in the afternoon, at which time there commences a more rapid fall, so that the temperature at bed time is again almost as low as that noticed at rising.

This conclusion of Dr Agles is confirmed by the following observations made at my own Hospital.

<u>Time of day</u>	<u>Temp: under tongue</u>	<u>Temp: of air</u>
7 a. m	98.5° F	49° F
9 a. m	98.4°	53°
11 a. m	98.4°	53°
2 p. m	98.7°	55°
4 p. m	98.9°	55°
5 p. m	98.7°	55°
6.30 p. m	98.3°	57°
7.30 p. m	98.7°	56°
11 p. m	98.1°	64°
1 a. m	98.6°	60°

III The Temperature in Disease

As usually the variations of temperature in health are very slight, the occurrence of a difference of 1° or 2° F would lead one to suspect some abnormal condition.

In disease the temperature may keep below the

normal range, as in Diabetes mellitus, or it may keep continuously in advance of it, as in Phthisis. Whilst in cases of hemiplegia the temperature of the affected side will generally be found lower than that of the sound side.

At the commencement of acute diseases the temperature is usually highest in the ~~noon~~ ~~ing~~ evening, but as a return to convalescence approaches, it will be found highest in the morning, hence in all cases evening declension is a favorable sign.

There does not seem to be any proportion between the amount of urea excreted and the temperature; for while, in Diabetes, where large quantities of urea are being removed from the system, the temperature is low, ⁱⁿ ~~the~~ a case of Acute Phthisis in which also the urea was in-

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-creased, the temperature continued very high.

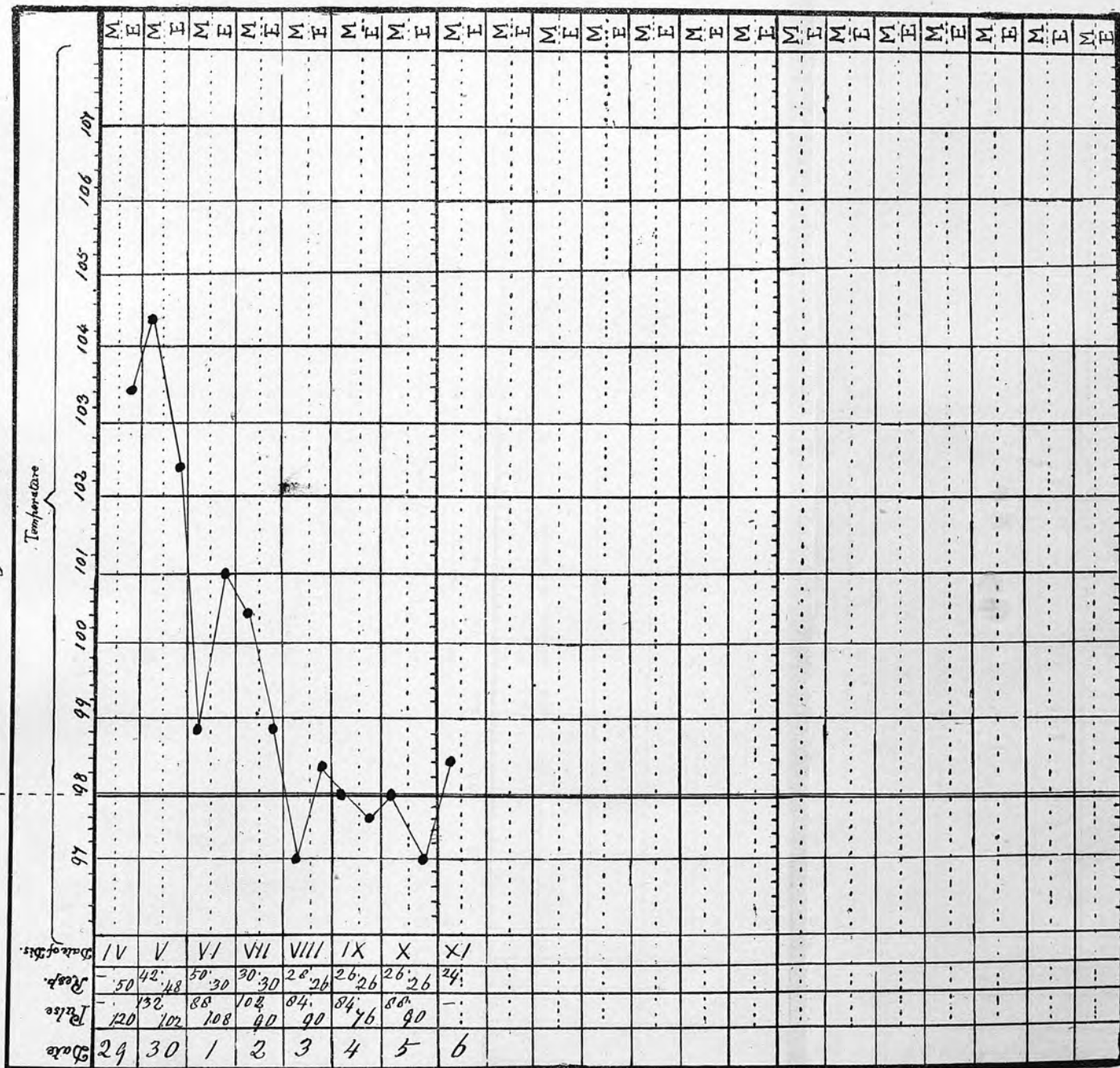
But between the pulse and the temperature, there is a general relation, and also between the respirations and the temperature. Thus when the temperature is high both the pulse and respirations are considerably increased; but the ^{cow} reverse of this is not necessarily the case, for in debility in convalescence & from Pneumonia, the pulse is often found to maintain its speed, although the temperature may have returned to its normal height; the thermometer is here of considerable use in prognosis.

The following tables are all from Hospital cases, and are supposed to ^{afford} ~~represent~~ the most typical of the various diseases which they represent.

The periods for taking the temperature in the cases recorded in the following pages were, as a rule, between 10 & 12 in the morning & 9 & 10 in the evening.

Half Normal Temperature

Name *Horace Creve* Age *12* Disease *Febricula*



Nov: 1865 Dec: 1865

Convalescent

Frank Gould del. at Wash.

Temperature

Febricula

This, the simplest form of fever, is characterised by the short time required to attain the highest temperature of the individual case; the temperature as speedily, if not more so, ~~go~~ returning to the normal height.

Thus in the case of the little boy here given, the temperature on the 4th day of the disease was more than 5° , and on the 5th day more than 6° , above the normal level, but on the 6th day it had actually fallen below the normal level, a retrocession of more than 7° ; and although a slight reaction took place the same evening, still after that it returned to, & kept about the normal level. In no other febrile diseases will you find

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such a rapid rise, and equally rapid defer-
escence. The pulse and respiration, it will
be seen, declined with the fall of temperature
but not in so marked a degree. In these
cases of febricula, the fall of temperature is
also accompanied by a decided increase in
the flow of urine, which previously is scanty
and high coloured.

Slight cases of Pneumonia resemble Febricula
in the sudden fall of temperature, but whereas
in Febricula it rises again after deferescence,
in Pneumonia it keeps down. This is well seen
in Peckham's case (vide Pneumonia).

I may here say, once for all, that in this disease,
as in others I could have furnished more tables;
but I have purposely restricted myself to
giving in the great majority of cases, two
picked and typical cases, the one illustrating
a mild, the other a severe form of the
disease.

Erysipelas

The course of the temperature in this affection in its simplest form is very like ^{that in} febricula; it differs however in taking a little longer to attain its greatest height, and in not having so marked a reaction after having ^{returned to} ~~reached~~ the normal level. The commencement of defervescence varies from the 5th to the 7th day. In severe or in complicated cases, the temperature continues high, or should it fall, fails to reach the normal level, and constantly vacillates; never however again reaching the maximum height. In simple cases 48 hours will usually suffice for a return to the normal standard, whereas in severe or complicated cases, the temperature may continue to rise & fall for one or even two weeks.

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In the event of the formation of abscesses, or where the disease is of a severe or protracted character, the oscillation of temperature will be well marked.

The first case given to illustrate the temperature in this disease is that of —

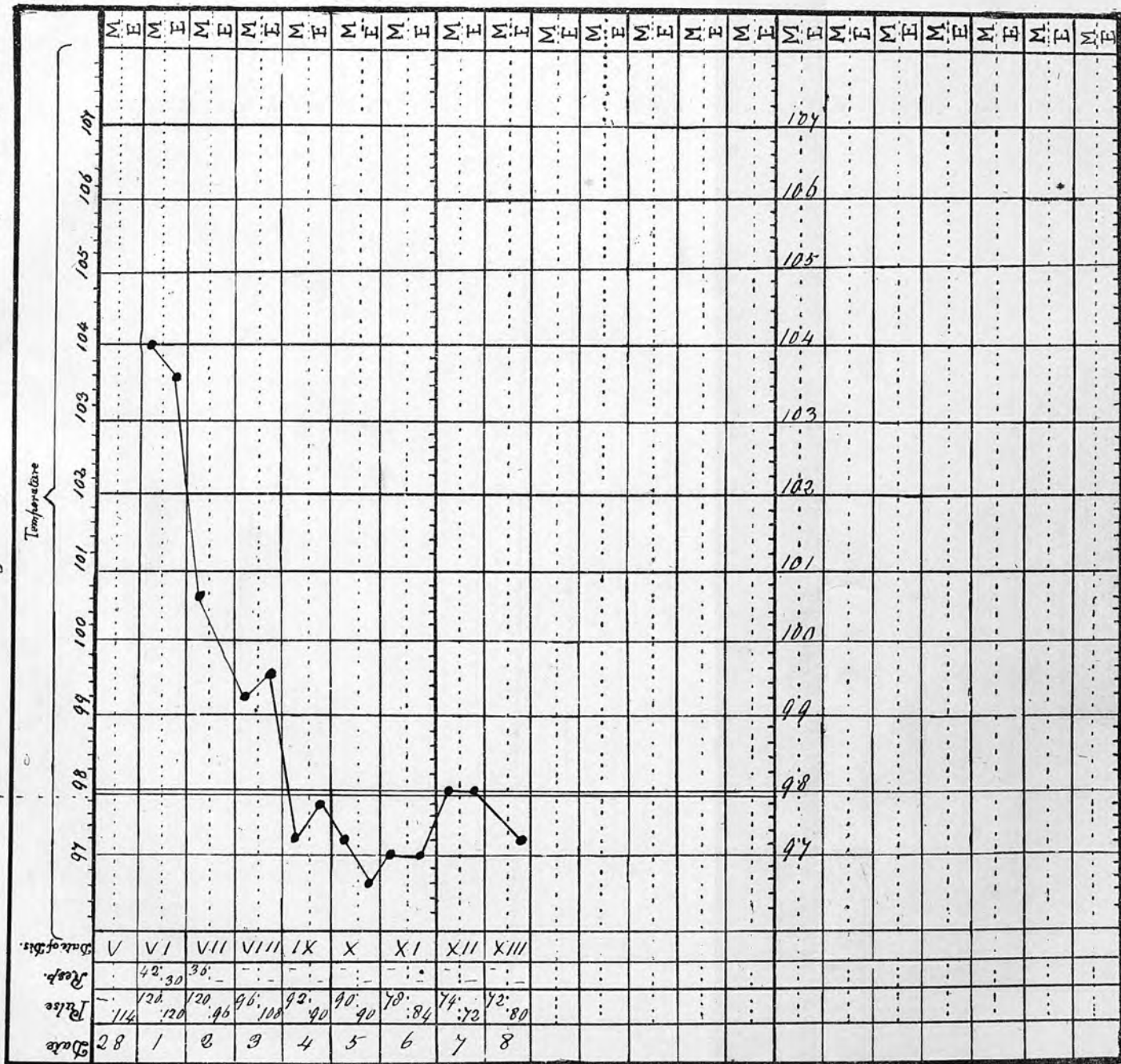
Maria Lylvester *et. 39.* — A married woman; has generally enjoyed good health. On Feb 23rd/65 was seized with shivering & headache, followed the same evening by sickness & pains in the back. On Feb 26th noticed that the right ear was red and painful; this was followed by an extension of the redness accompanied by swelling over the whole of the right side of the face. On Feb 28 was admitted into K.C. H. Ward IV under Dr Garrod with erysipelas of right side of face; the right eye was closed, & there were a few vesicles.

line of normal
temperature

Name Maria Sylvester Age 39 Disease Erysipelas of face

Feb 4 March. 1865

m = 12 noon. E = 9 p.m.



Frank Gould del. at Wash.

Temperature

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over the right cheek and forehead; throat sore;
tongue furred and white; skin hot & dry.

March 1st. Rt side of face, forehead, & pt of left cheek
now red and swollen; vesicles filled with a clear
fluid to be seen on nose & forehead; both eyelids
very edematous; redness bounded by a distinct
elevated margin; does not invade the neck or
scalp, and disappears on pressure; patient complains
of much pain & itching; throat very sore; tongue
coated and dry; Pulse 120; resp. 42. Urine sp. gr 1016
contains a trace of albumen ($\frac{1}{15}$).

March 2nd. Delirious during the night; increase of
redness & vesicles over left cheek.

March 4th Has slept well, & feels now much better
redness disappearing.

March 7th. Redness quite gone; she is nearly con-
valescent. Dis-charged convalescent March 25th

Case II.

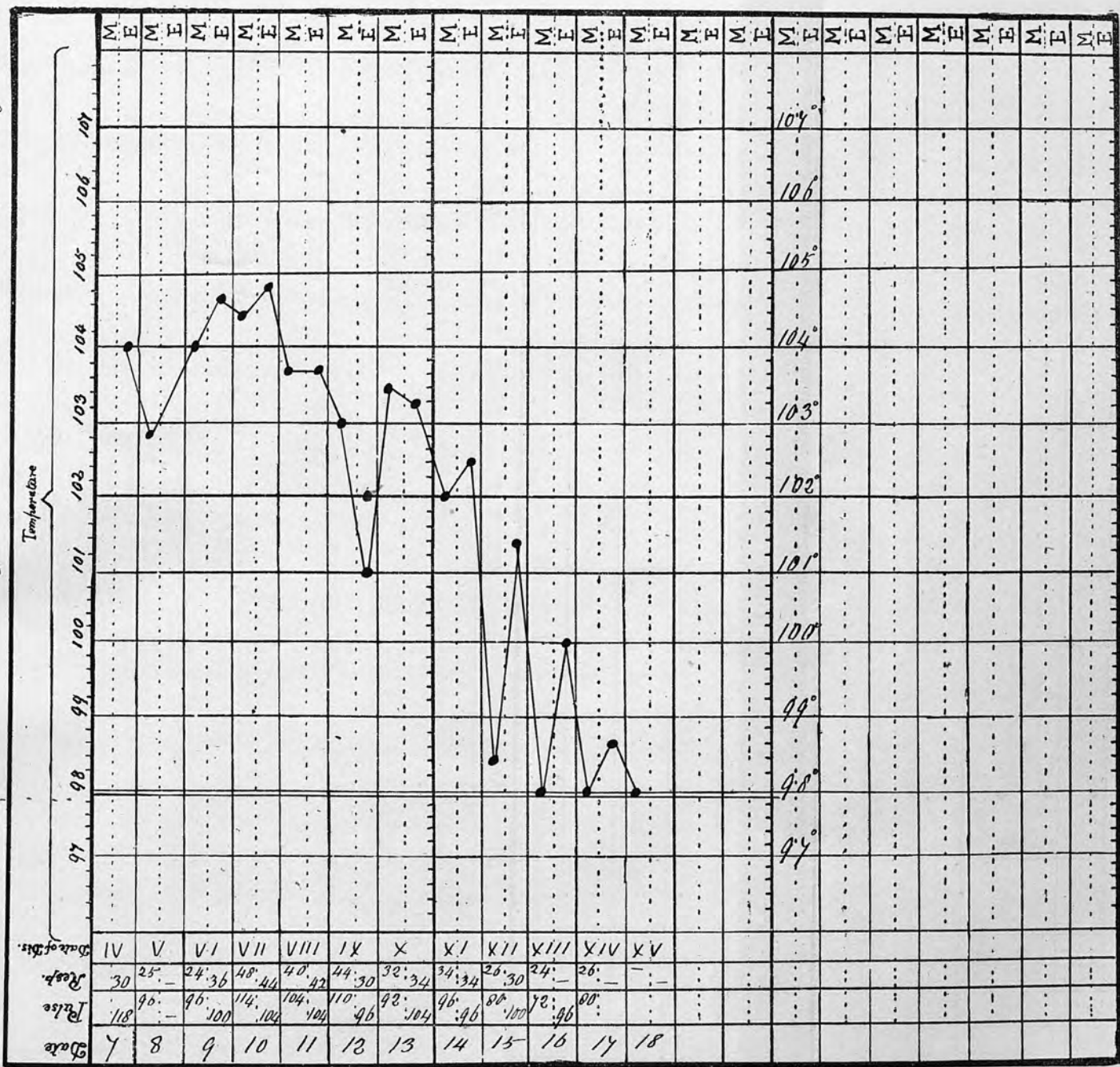
Frederick Wright; a barman at. 25; has had several illness; had rheumatic fever in 1864; tolerably temperate in his habits. On Jan^y 4th /65 was seized with shivering followed by pain in head and throat; the following day a red blush appeared on his nose wh. spread rapidly within the next four & twenty hours. The accompanying pain was of a burning pricking character.

Admitted Jan^y 7th - 1865 into K. C. H. Ward V under Dr Johnson with erysipelas of both sides of face; eyelids swollen; no soreness of throat, or difficulty of swallowing; skin hot & dry; urine clear, no albumen.

Jan^y 10. Erysipelas subsiding; but some redness still remain on forehead, & a tendency to delirium

line of normal
temperature }

Name Frederick Wright Age 25 - Disease Erysipelas of Face



January 1865

Frank Gould del. at Bch.

Temperature

24

at night.

Jan^y 16. Inflammation quite gone; desquamation taking place.

Jan^y 23. Has been progressing favorably; but to day an abscess has been first noticed on his scalp, behind, ^{wh. was} ordered to be freely opened.

Feb^y 1. 65. Much better. Discharged shortly after this date, convalescent.

On ~~comp~~ comparing these two cases with their respective tables it will be seen that in Lylveston's case, where the disease was slight and uncomplicated, the fall in temperature was complete and took place even before the height of inflammation was reached; whereas in Wright's case, where the disease occurred in a man of not very strong constitution or of strictly temperate habits, & was complicated by an

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abscess, the temperature neither fell so suddenly, nor to the same extent, and for some days kept rising and falling considerably.

The highest temperature in either case was between $104^{\circ}F$ & $105^{\circ}F$, and this was attained in Lyluesters case on the 5th day, and in Wrights case on the 7th day, of illness.

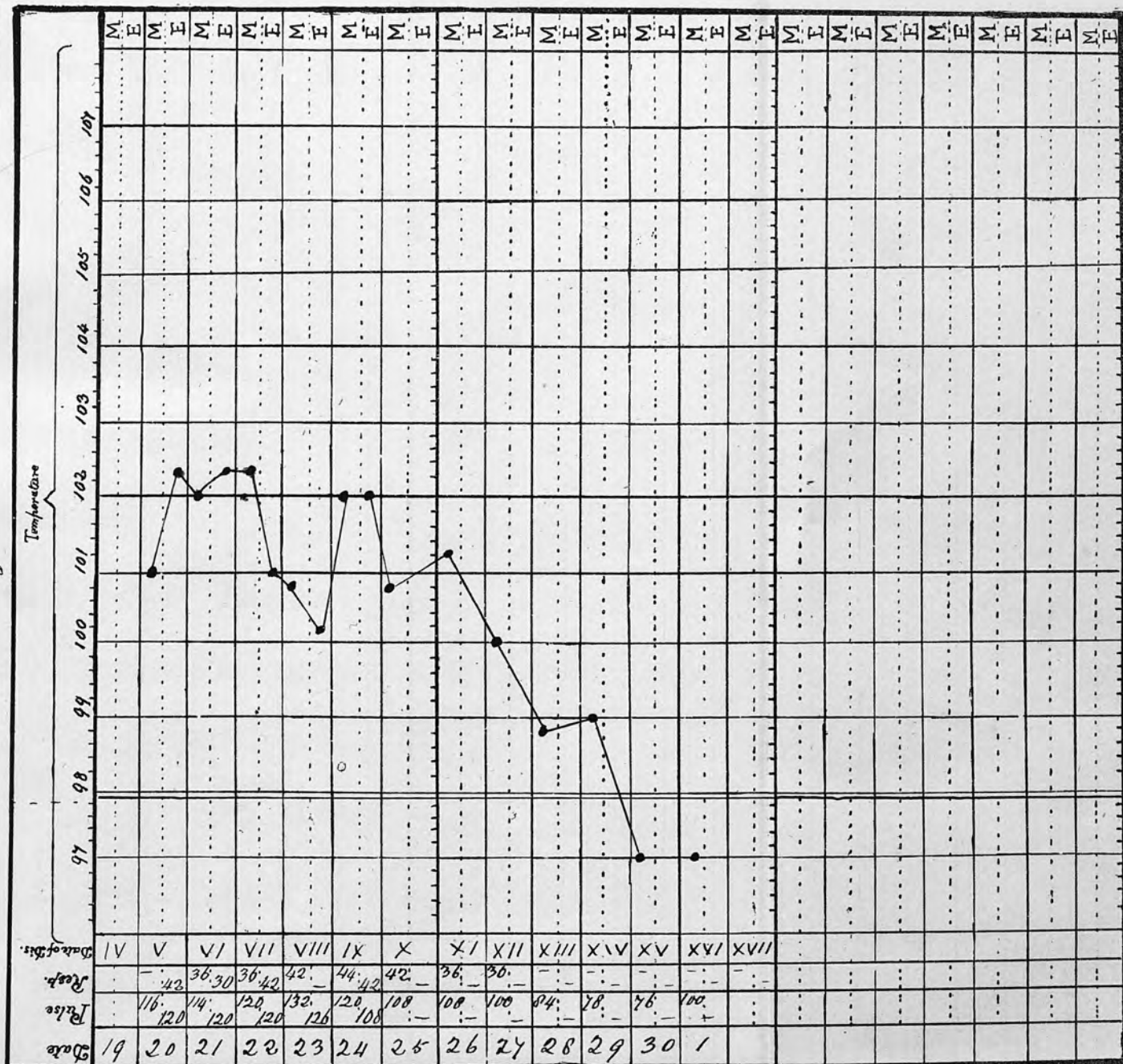
The pulse it will be seen was at about its highest in either case, when the temperature was at its maximum; continued high during the earlier stages of defervescence, & attained its normal number of beats, when the temperature had reached the level of health.

The Thermometer is chiefly of use in this disease, not to diagnose Erysipelas, since with respect to alternation in temperature, many febrile conditions very closely resemble it, but to

forewarn the physician of the probable occurrence
of complications in those cases, in which
the temperature continues high, or at the
most falls but a degree or two & then rises
again, & continues thus to rise & fall with no
tendency to a permanent declension.

line of normal
temperature

Name *Richard Noton* Age *13* Disease *Scarlet Fever*



June 1865

July

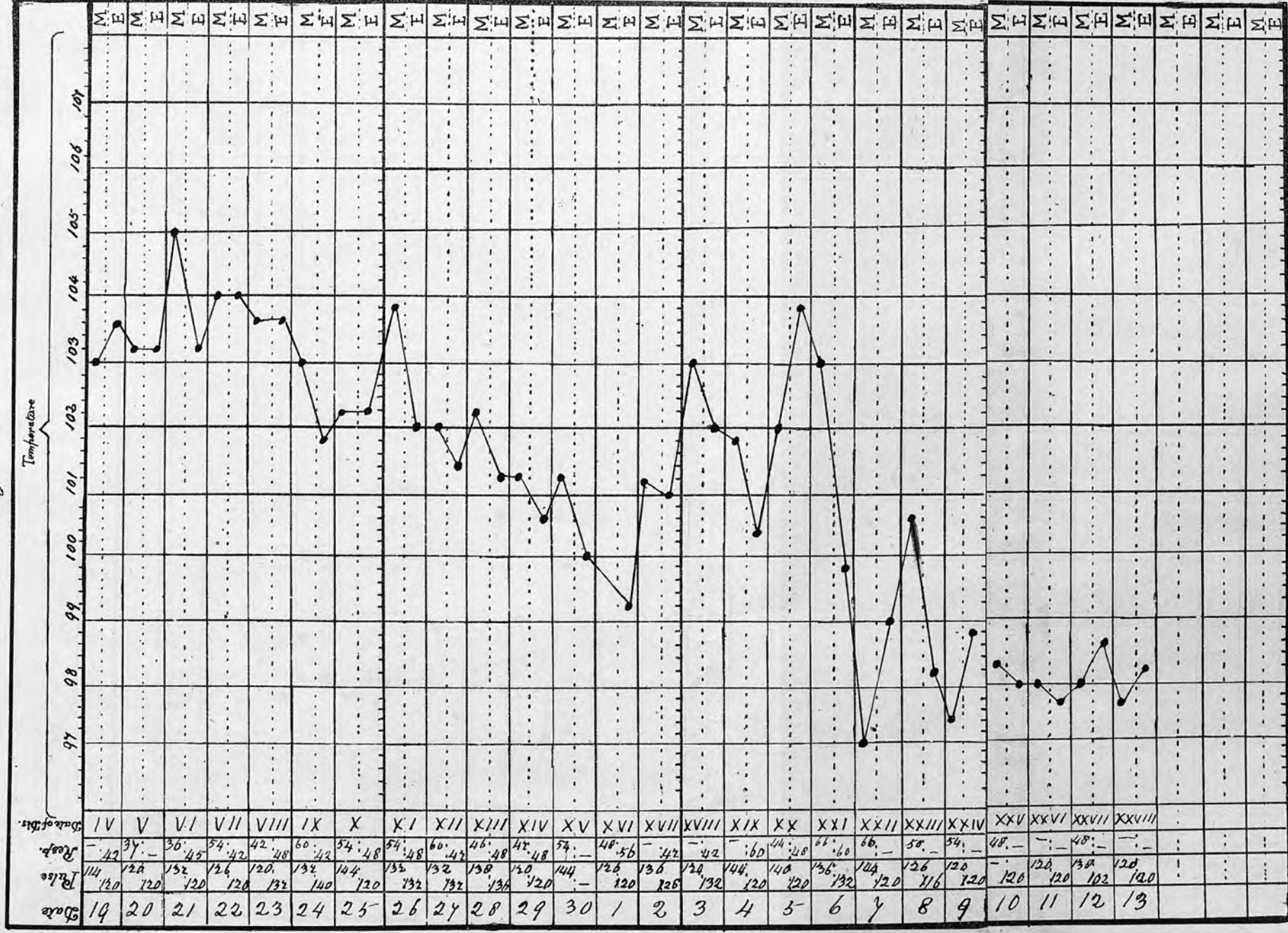
Frank Gould del. at Del.

Temperature

Scarlet Fever

In a mild form of this disease as exemplified in the accompanying table of Richard Notou, the highest temperature would seem to be reached about the 5th day of the disease, on which same day the disease, in these cases, is also at its height. In the milder forms of Scarlet fever the temperature rarely exceeds 102° or 103° F. The temperature having thus attained its maximum does not then gradually fall as in measles, but shews a tendency to remain stationary for two or three days, and then commences a defervescence which may be interrupted in its course by repeated slight elevations of temperature. This persistency and subsequent elevation is well marked in the severer

Name Selina Morris Age 14 Disease Scarlet-Fever



Frank Gould del. at Wash.

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forms of the disease, and is especially seen in the table here given, viz that of a young girl Selina Morris. In this instructive case the temperature on the 6th day of the disease was 105° (some authorities state that in bad cases it may even reach 112°); and even so late as the 20th day of the disease a temperature of 104° was recorded. The whole period of defervescence extending in this case over a period of about three weeks, was marked, it will be seen, by repeated rises in the temperature, occurring at irregular periods, and materially delaying the patient's recovery.

From the marked tendency to repeated elevations of temperature after the commencement of defervescence in this disease, Dr Ringer would wish to establish a theory {Med: Chir: trans: }
{Jan: 20th 1862 }

that the range of temperature, in the severer forms atleast of Scarlet Fever, tends to form cycles composed of a variable number of days but generally five; a fall of temperature taking place on the 5th, 10th, or 15th day of the disease; and further, that if the temperature remains high, on the 5th, 10th or 15th day respectively, we may look forward to a continuation of the fever for another five days.

In refutation of this theory I must add that in no instances coming under my notice in the Hospital, ~~did~~ was it confirmed.

Not only in Scarlet fever, but in many acute diseases of a like nature, and also in Phthisis, alternations in temperature during the progress of the disease, either in its acute or convalescent stages may occur; but these

exacerbations of temperature shew no relation to each other with respect to the time at wh. they occur, and only seem to be due to some of the countless and frequently trivial circumstances, to which patients suffering from disease in any form are liable. Imprudencies in the matter of diet, excitement caused by the visit of friends, atmospheric influences even, may all tend to corresponding alterations in temperature, well marked at their outset, if they be not persistent in their course.

Measles

Unfortunately I have been unable to find any case among our Hospital reports in which the Thermometric range of this disease has been noted, and therefore I must give a brief abstract of what has been written by others on this subject.

It has been stated that the highest point is usually attained on the 5th day.

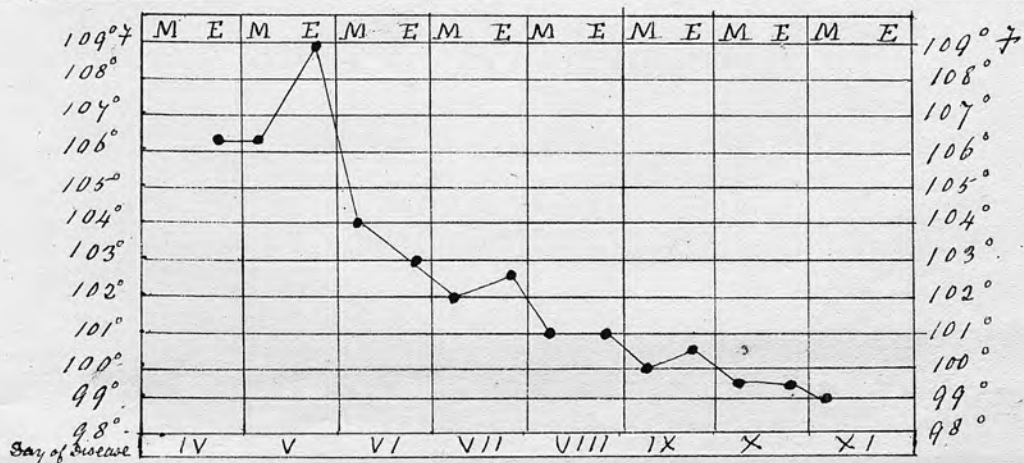
In cases where the rash is fully developed, the temperature may reach a higher point, than in almost any other disease; Wunderlich states that its maximum is occasionally 109°F .

As a rule in Scarlet fever, with which some cases of measles might possibly be confounded, the maximum height is reached on the 4th or

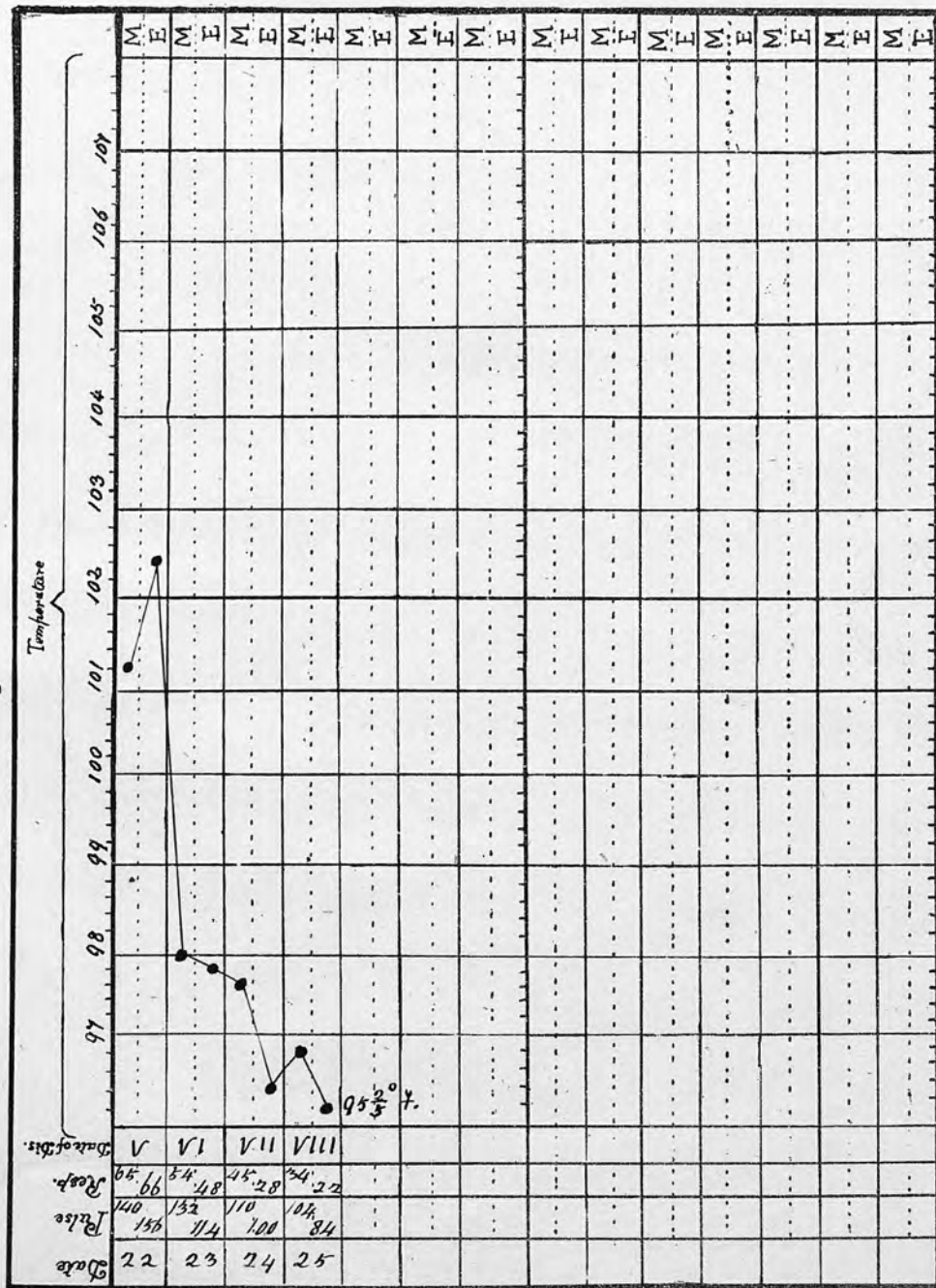
even so early as the third day of the disease.

In uncomplicated cases the temperature sinks very suddenly after the evening of the 5th day; but should it fail to do so, and continue at, or a little below its maximum, the physician should be on the alert to detect such complications as bronchitis or pneumonia, which, if they have not already manifested themselves, are probably on the point of breaking out. In cases where such complications occur the defervescence is invariably slower and more protracted.

Table of typical range of Temperature in Measles



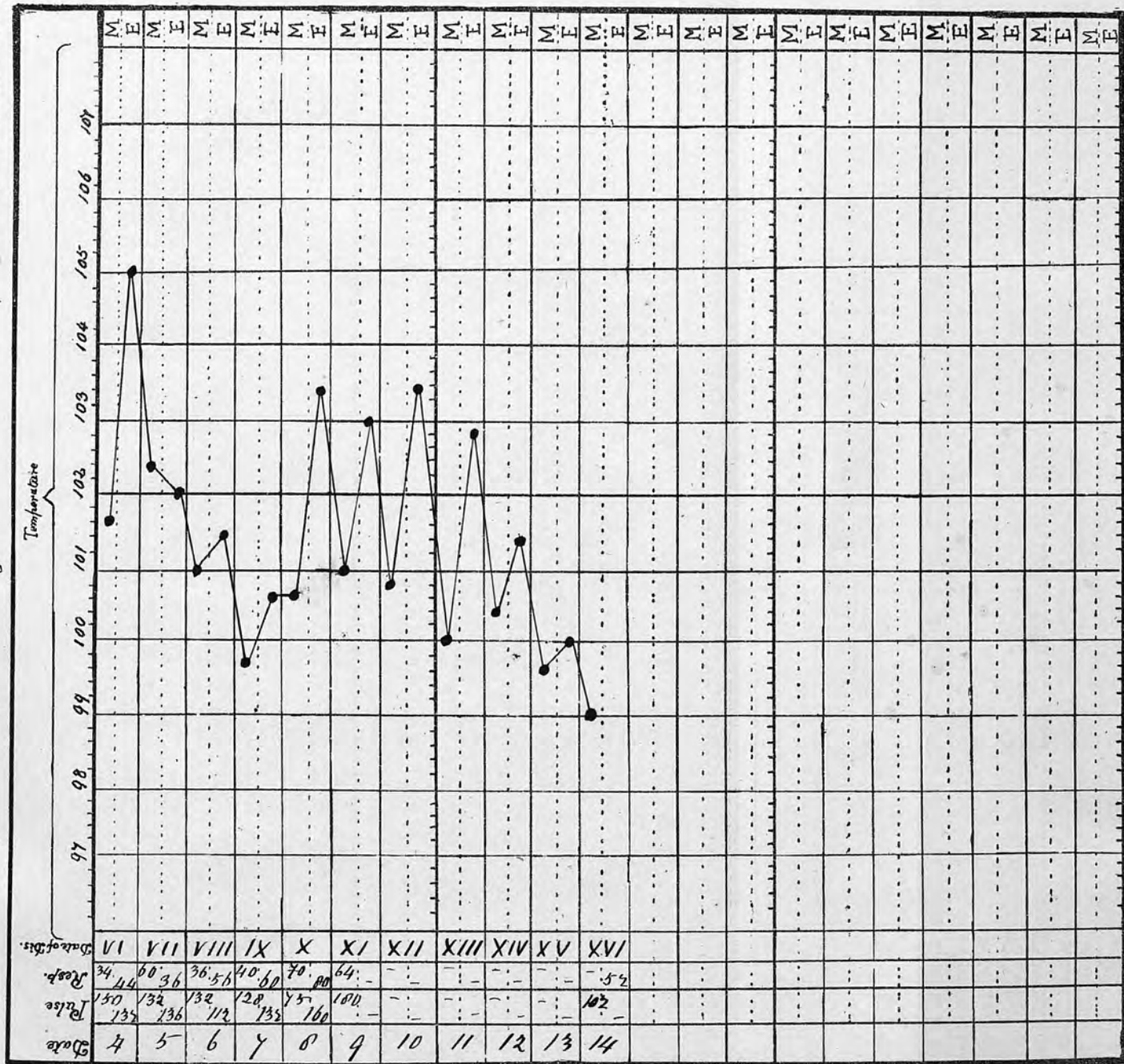
Name A. J. Clinch Age 4 Disease Measles



Jan^y 1865.

Since writing the above I have been fortunate enough to obtain reports on two cases of Measles occurring in the Hospital, and in each of which the temperature was carefully noted; one was a very simple case, the other severe and complicated with Bronchitis, I A. J. Clinch aged 4 years. This was a brief but decided attack, the rash being well out on the 3rd day, it was however simple and uncomplicated in its course. The temperature was at its height on the 5th day $102\frac{2}{5}^{\circ} F$, but on attaining that elevation immediately sank, and in its deferescence reached even to so low a point as $95\frac{2}{5}^{\circ} F$. Indeed Mr Kelly the H. P. at Kings Coll: Hosp: assures me that no disease to which the Thermometer has been employed in that Hospital, appears to attain so low a level as in some cases of Measles.

Name *Mary A. Cope* Age *4* Disease *Measles; Bronchitis.*



Dec 17 1065.

Frank Gould del. at Mich.

Temperature

Case II Mary A. Cope ab. 4 years. This was a very severe attack. There was a copious rash out on the 4th day; on the 6th day of the disease the temperature had attained the height of $105^{\circ}F$. From that date the temperature began to decline though slowly, & certainly not in a marked manner, this led me to be on the guard for complications, and sure enough on the 10th day of the disease, capillary bronchitis manifested itself, ^{it was} accompanied by an increase of temperature; for several days a temperature of about $103^{\circ}F$ was maintained; on the 14th day a more marked deferescence occurred, and on the 16th day it had reached the normal height. The case was treated throughout with Milk diet, and Aqua Camphorae. No stimulants were given.

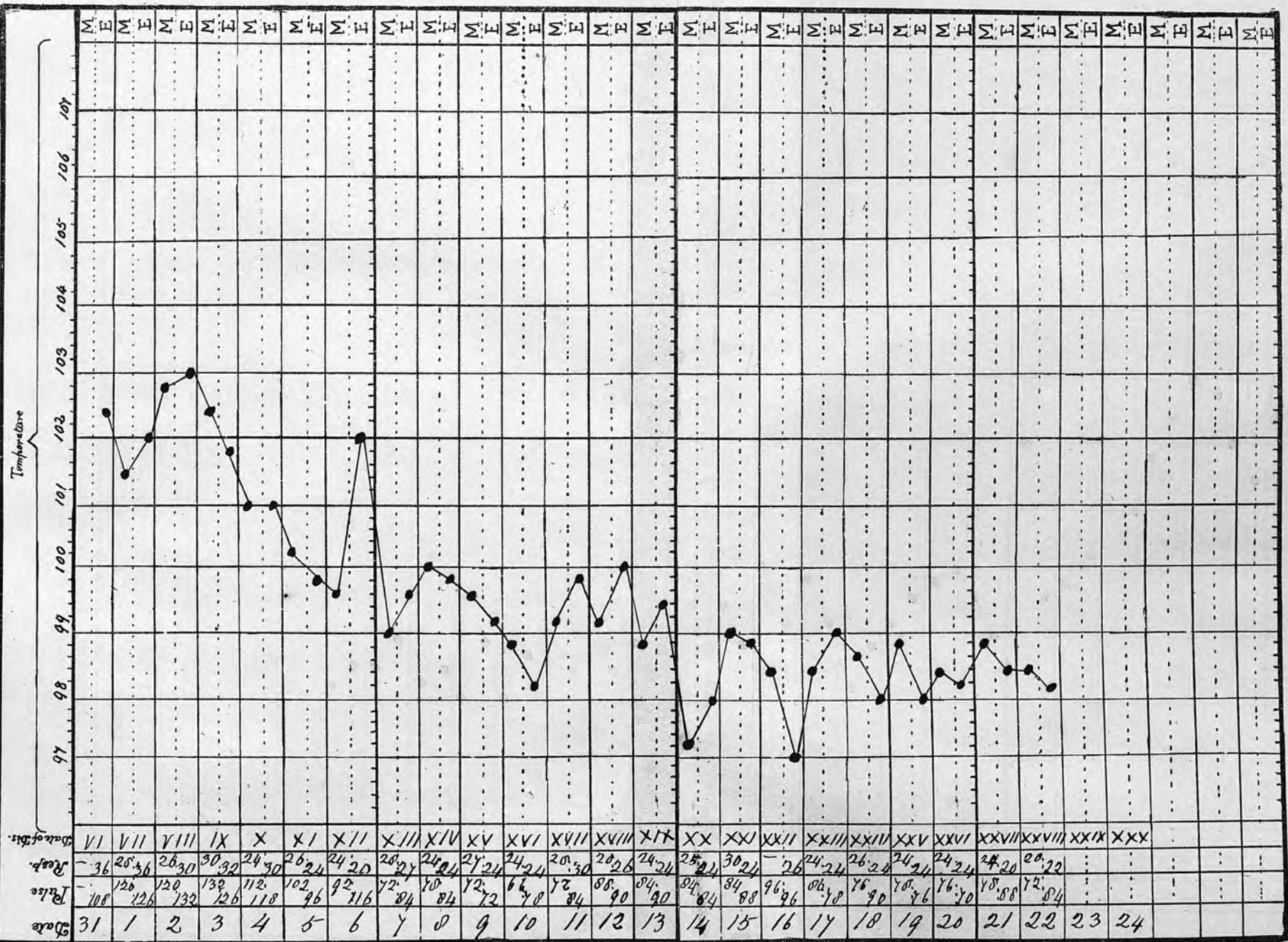
Typhus Fever

In this disease, which presents so many dangers to the patient, and occasions so many anxieties to the physician, the Thermometer affords ~~an~~, as we shall presently see, a most valuable aid in his Prognosis. The range of temperature in this disease, as well as the period of deferescence is distinctly proportionate to the severity of the attack. But even in a mild case marked deferescence rarely takes place before the middle of the 2nd week. It will be as well perhaps to consider the variations of temperature as they occur during the 1st, 2nd, and 3rd weeks of the fever.

1st week Be the case mild or severe, a temperature of about $103^{\circ} F$ or $104^{\circ} F$ is reached on the 2nd or 3rd

Name Charles Hardy Age 37 Disease Typhus Fever

October 31st Nov. /64

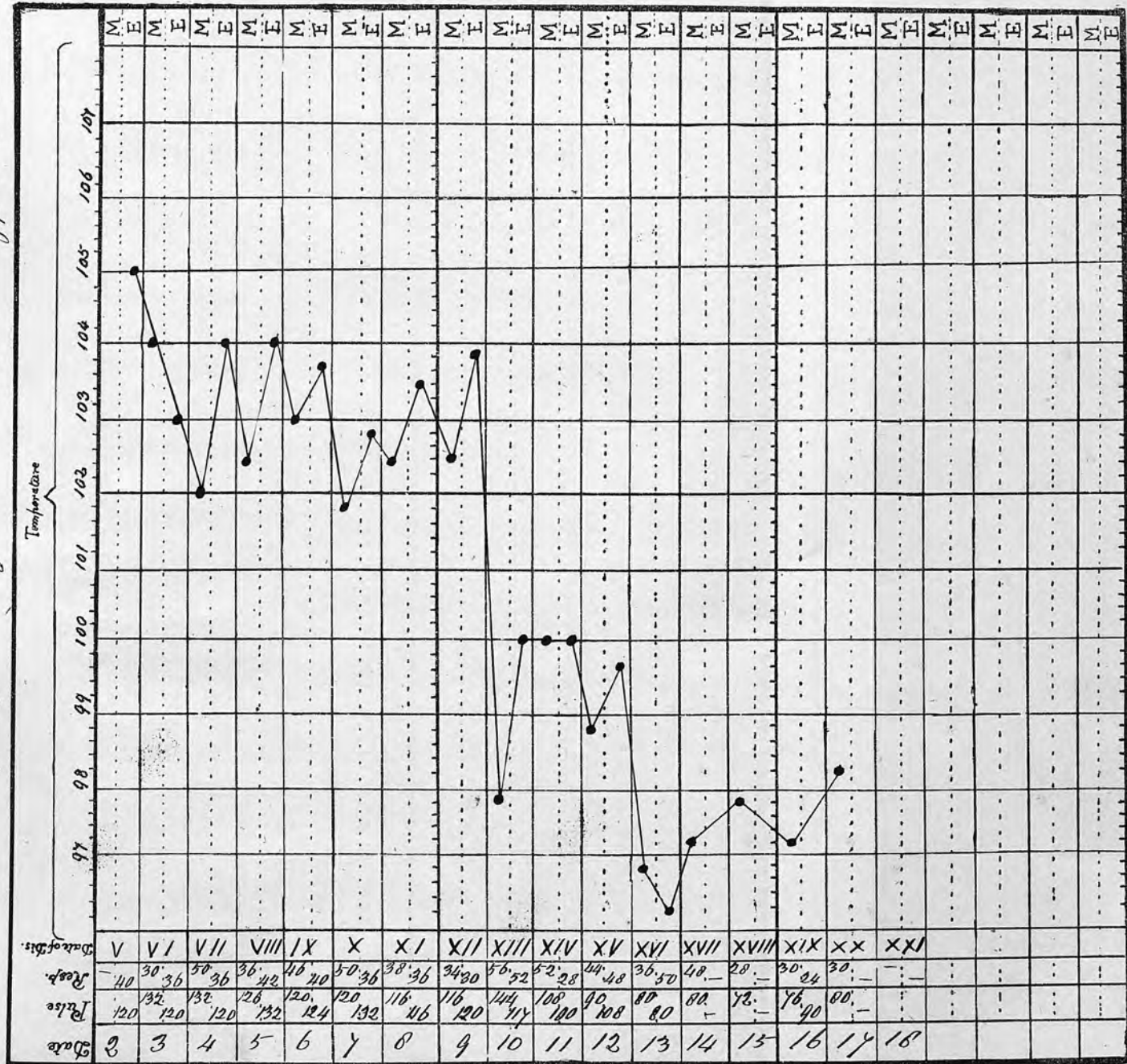


Frank Gould del. at Wash.

day; in severe cases the temperature may attain a considerably higher point; the chief distinction, however, to be borne in mind is this, that, as a rule, if the temperature throughout the first week be not only high, but continuously high, i. e. with but little diurnal variation, then the case may be regarded as likely to prove serious; but on the other hand should the temperature not attain a point above 103° , or doing so, nevertheless shows a well marked and considerable daily variation then a favorable issue may be expected. I was much struck with this in the case of the man C. Hardy given here. This man was brought to the Hospital about the 6th day of his illness; he was then labouring

under the following grave symptoms, great nervous depression, delirium, and intense prostration; took little notice of what was going on round him, and answered questions somewhat incoherently; the typhus rash was well developed and he had the peculiar physiognomy and the suffused conjunctivæ often to be seen in the disease. However notwithstanding all these symptoms, the thermometer only indicated a temperature between $102^{\circ}7$ & $103^{\circ}7$, & hence taking into consideration the date of the disease, and this comparatively low temperature a favorable prognosis was given, which was verified by the ultimate recovery of the man. Other cases have also occurred in the Hospital ~~now~~ bearing out in a more or less marked

Name *Harriett Spruigall* Age *25* Disease *Typhus*



January 1865

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manner, the truth of these observations.

Thus, there were two men admitted much about the same time into No. 4 ward under the care of Dr Beale, in one, who eventually died, the temperature was $105^{\circ}F$ on the 5th day and was maintained at this height with but little variation for the rest of the week; in the other, who eventually recovered the temperature although $104^{\circ}F$ on the 5th day had fallen to $102\frac{1}{2}^{\circ}$ on the next day, & each day shewed a tendency to a corresponding well marked variation.

2nd week. In mild cases defervescence usually takes place about the 7th day. In the case here given, that of Harrieh Springall, the defervescence was very well marked; indeed the whole case affords a typical example of

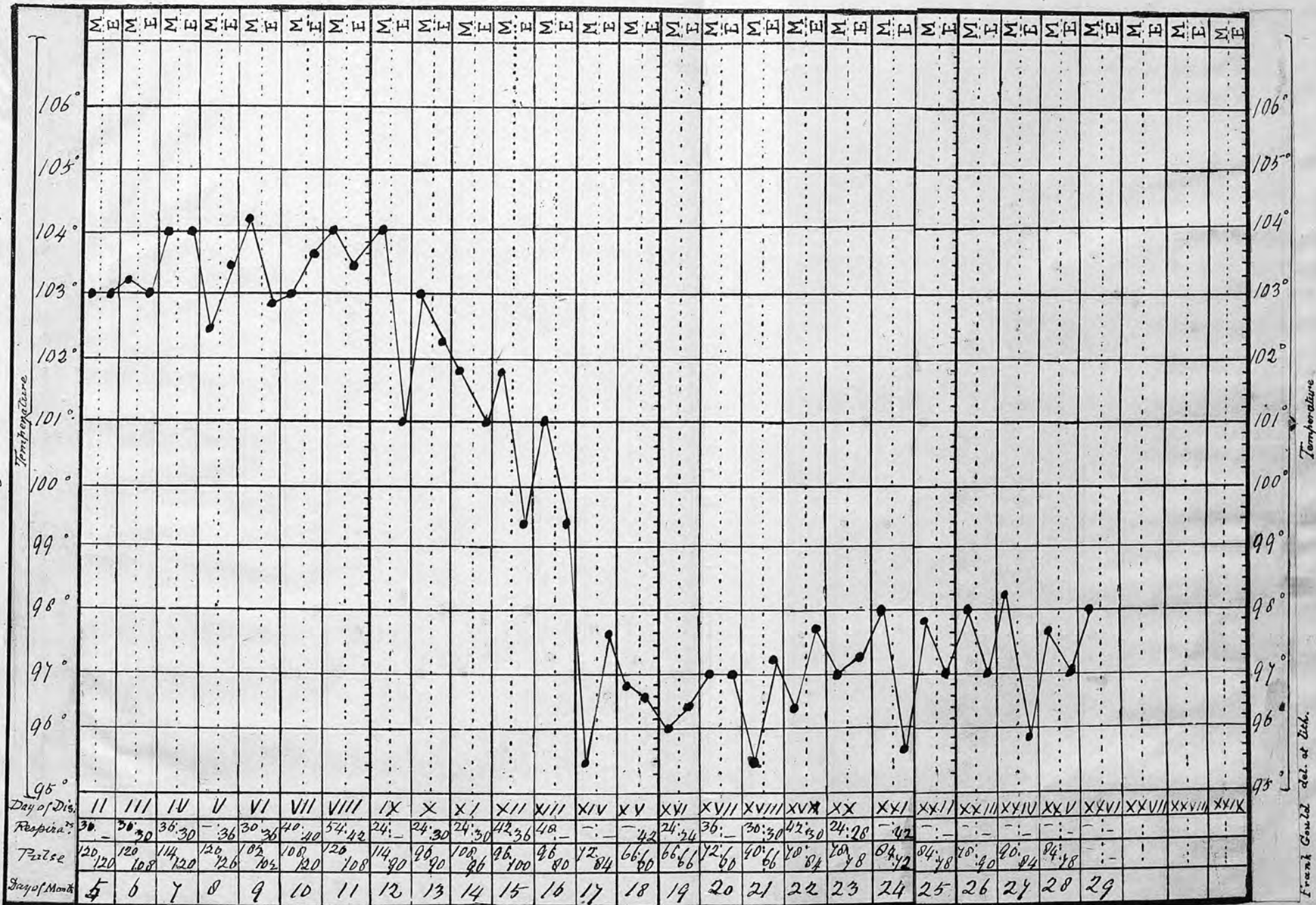
a mild attack of Typhus. In all cases a marked defervescence about the 9th day, not followed by more than a slight reaction, is a very favorable sign. Even a slight fall about that date although it may not be at once followed by real defervescence, is of favorable import. In severe cases the temperature continues high throughout the whole of the 2nd week, defervescence rarely taking place before the commencement of the 3rd week. Should the temperature continue high after the 14th or 15th day, & even show a disposition to ascend still higher, the patient must be considered to be in a most critical condition; but the setting in of defervescence about the same period may, on the contrary, inspire both Physician

and patient with the hopes of a favorable though gradual recovery.

It is in these cases, and in this stage of the disease, when the anxieties of relatives and Physician are strained to the utmost, that the Thermometer rings out in a clear and decided tone what may, on the one hand, be the death knell of the patient, but on the other, the awakening summons to a life of renewed health, strength, and vigour; not to be reached, however, in most cases, but through a protracted and tedious convalescence.

3rd week. In speaking of the temperature of the 2nd week I have been unavoidably ~~led~~ led into discussing some of the phenomena of the 3rd; but I have still a few other facts to

Name Anna Wilkinson Age 13 to Disease Typhus Fever



February 5th 1865

Frank Gould del. at Wash.

mention. The diarrhoea which is often present about the termination of the 2nd or commencement of the 3rd weeks, although it may prostrate the patient, seems to have a tendency to lower the temperature, & is in many cases the precursor to defecescence.

In favorable cases it will be noticed that by this time not only has the temperature reached the normal line, but that it has gone below it; this phenomenon occurs in all uncomplicated cases, and is well marked in the accompanying table of Anna Wilkinson. In Hardys case it was prevented from so doing by the occurrence of a carbuncle which appeared on one of his shoulders, about the commencement of the 3rd week. Such a complication

as Pneumonia, too, would have a tendency to keep up a considerable elevation of temperature; hence any sudden rise during this period should put us on our guard against impending complications.

Great care too should be taken that the patient (who though at this stage may be recovering still lies in a very feeble & prostrate state) be not subjected to any external exciting causes. I have before me the notes of a case taken by Mr Kelly, of a man under Dr Beale who seemed in a fair way of recovery from Typhus fever; his temperature was only $98\frac{2}{5}^{\circ}$, he was however suffering from great prostration and nervousness, and on the evening of the same day on which the above temperature was recorded, was very much excited and frightened

by the ravings of a delirious patient in the adjacent ward; on the following morning it was found that his temperature had risen to $101\frac{4}{5}^{\circ}$; the next day it had increased to 103° , and on the next day to that the man died, notwithstanding the free administration of stimulants &c. The sudden rise of temperature on the morning following his disturbed night, was regarded as a very ominous sign, and, as it eventually turned out, not without reason.

I see that Dr Aitken, in quoting Dr Cheyne of Dublin, would seem to infer that the temperature, in this disease, falls as death approaches, the contrary to this has however been observed at my own Hospital, where an increase of from 2° - 3° was always noticed immediately

before death took place.

The distinctive variations in the Thermometric ranges of Typhus & Typhoid Fevers, will be noticed when speaking of the latter.

Typhoid Fever

The course of uncomplicated cases of this fever, thermometrically considered, is very typical; presenting, like Typhus, certain groups of phenomena which, as in the latter disease, it will be best for us to consider as they occur in the 1st and succeeding weeks.

1st week I have unfortunately not been able to obtain a table illustrating a case of slight Typhoid fever, the only two that I shall introduce into this description being a severe and fatal case, and a severe but non-fatal case. From the fact, too, that neither of these patients came under observation before the end of the first week of the disease their tables will not shew the range of the Thermometer

during this stage.

During the 1st week the Thermometric range in both mild and severe cases appears to be much the same; the maximum, which is attained about the 4th day, varies from 103° – 104° the first few days of the fever presenting the characteristic phenomena, of marked increase of temperature in the evening & remissions in the morning, the temperature in each succeeding evening and morning rising to 2° & higher, & falling 2° lower than on the preceding days.

A continuous ^{vaccinating} ascent is thus made up to the 4th day; ~~having~~

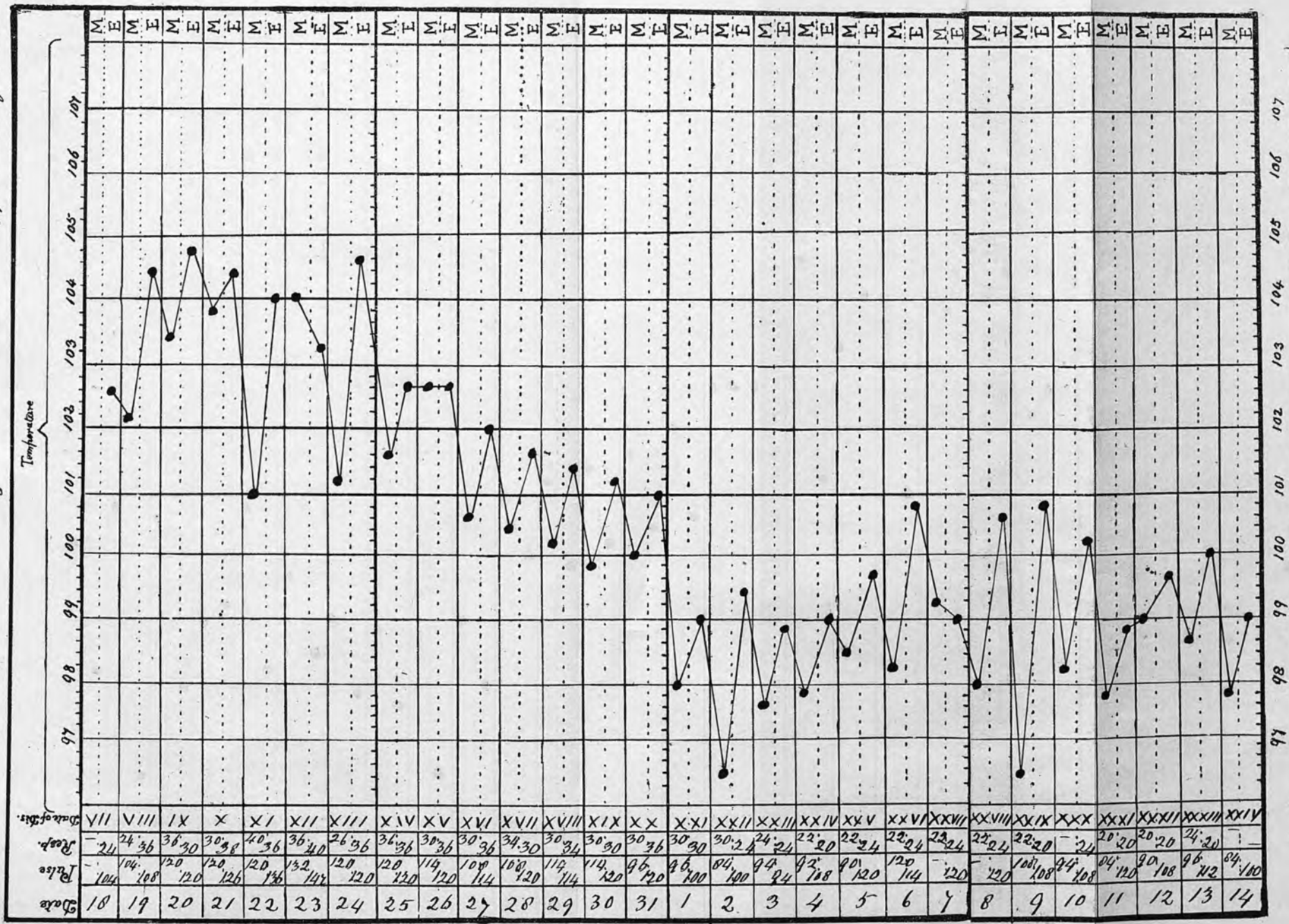
2nd week. Throughout this week, in severe cases at least, the temperature maintains a high range in mild cases a tendency to deferescence may be noticed towards the ~~end~~ middle or

end of that week.

3rd week In mild, & even moderately severe cases, now occur those peculiar retrograding vacillations of temperature so characteristic of the later stages of the more favorable forms of Typhoid fever; these are well seen in Maryann's case which I shall presently speak of. In the severer form as exemplified in Gaily's case the temperature remains high, and shewing but little if any variations in the morning and evening ranges.

4th week. In the milder form the vacillations of temperature become perhaps even more marked than ever; whereas in those cases in which death is ultimately the termination the temperature is still maintained at a high level.

Name *Henry Morgan* Age *14* Disease *Typhoid fever*



Dec. 1864

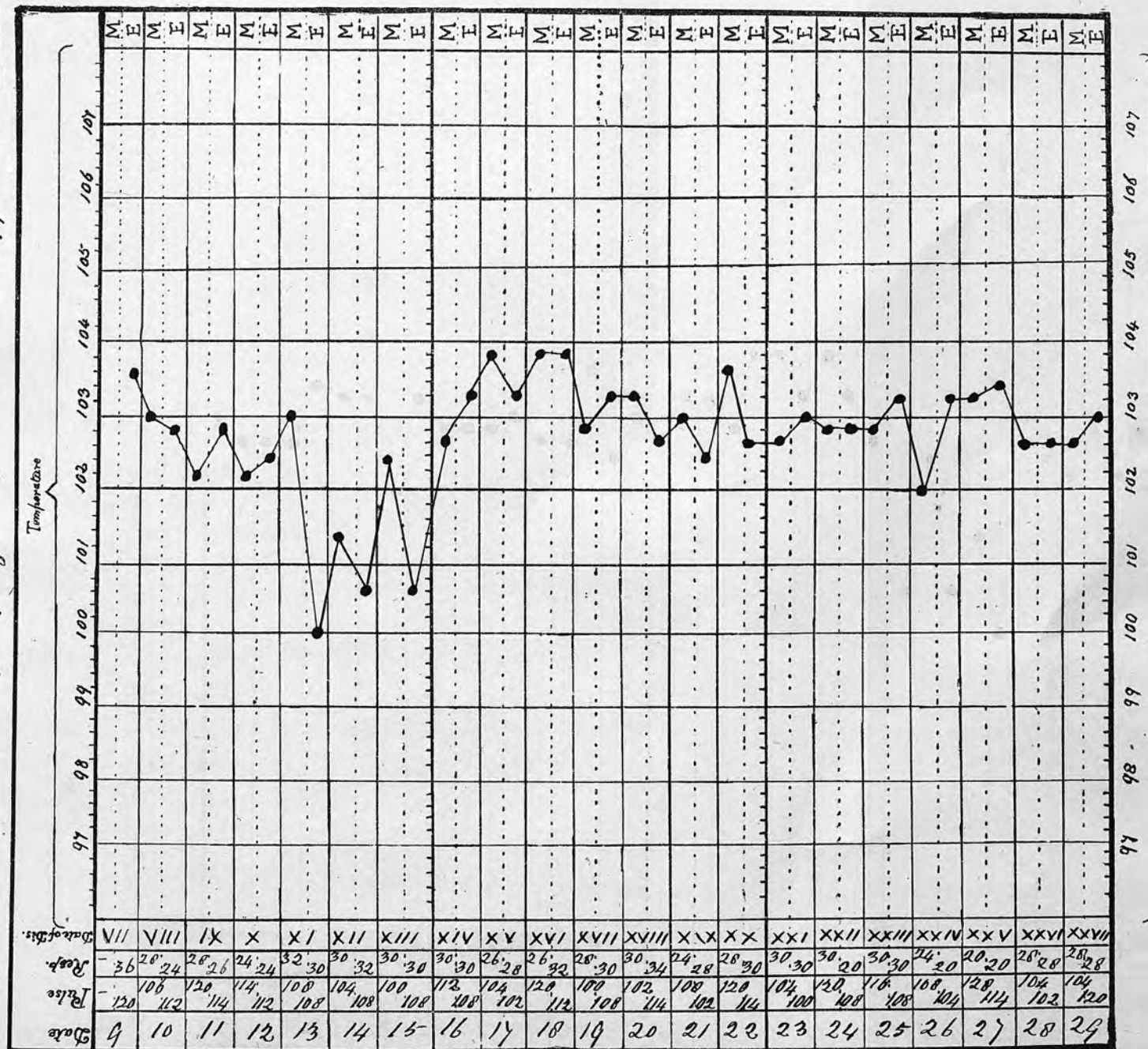
Jan. 1865.

Frank Gould del. at Dick.

Case I Henry Morgan; aged 14. Admitted with typhoid spots and all the usual symptoms; had a very severe attack, with much delirium and prostration; but eventually recovered.

In this case there seems to have been some curious ~~vaccillations~~ about the end of the 2nd week, but marked deferuence did not take place until the middle of the 3rd week, when it was conducted in the characteristic manner peculiar to Typhoid fever, there being evening exacerbations & morning remissions, but each of these being on each succeeding day from $\frac{1}{2}^{\circ}$ to 1° lower than before. These variations became still more marked in this case during the 4th & 5th weeks during which time a slight rise in the range of temperature was observed

Name Sarah Ann Gaily Age 14 Disease Typhoid Fever



Dec 9th 1864

The case throughout was uncomplicated and recovery gradually took place. But compare this ~~to~~ with

Case II where a fatal termination was arrived at. Sarah Gaily had shivering on Dec 3rd/65 accompanied by pain in limbs & other febrile symptoms; was admitted on the 9th Dec. into the Hospital with all the signs of Typhoid fever. She was placed on milk diet with Beef tea & eggs, & had bark & ℞ℓ. She had a good deal of purging, with much delirium and prostration; albumen in urine. This patient did very well up to the 3rd week; but throughout this the temperature shewed no signs of a decrease, and consequently fears were entertained for the result. About the middle of the 4th week there was constant sickness,

and increased prostration; she complained of no pain in abdomen.

She slowly sank from exhaustion and died on the 30th day of the disease. A Post-mortem examination showed a large amount of peritonitis, but no perforation, though the bowel was very thin in places.

The temperature in this case went down ~~just~~ 2 days before death to $101\frac{2}{5}$, keeping as low as this up to her death.

It has been noticed that where death occurs at an early stage, and apparently by the overpowering force of the Typhoid poison, the thermometer has indicated a high level viz. 105° - 106° immediately before death, but that when peritonitis or perforation, ^{or Bronchitis,} is the cause of, or concomitant with death, then a ~~low~~ com-

paratively low temperature, of from 101° - 102° , will be most probably indicated.

With respect to prognosis in this form of fever it may be observed, that the commencement of defervescence in the course of the 2nd week must be looked upon as a favorable sign, whilst a continued high temperature throughout the 2nd & 3rd weeks, must occasion grave apprehensions; a severe form of the fever is to be expected according to Dr Aitken when the morning temperature at the beginning of the 2nd week is above 104° , and when the evening reaches nearly 106° ; he also thinks oscillations recurring in the 2nd week of bad import; these you will see occurred in the fatal case of Gaily.

The defervescence in Typhoid fever is essentially

a remittent one, this is well seen in Morgan's case. The temperature is a certain sign of the severity of the case, but is not always proportionate to the nervous symptoms present.

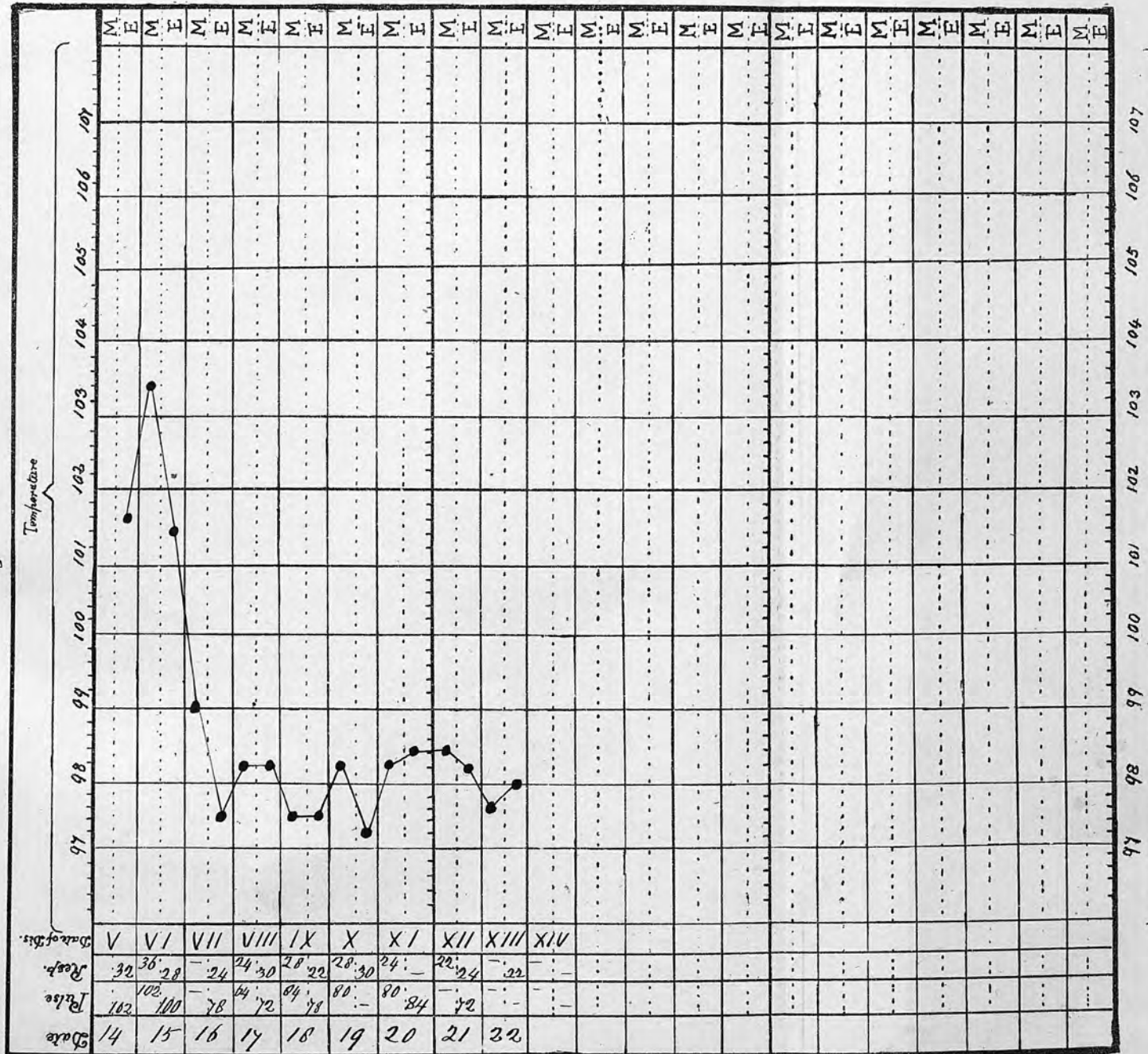
I shall conclude this subject with a few remarks on the chief distinctions observed in the Thermometric ranges of the two Fevers, Typhus, and Typhoid.

Typhoid fever has an equally high Thermometric range with that of Typhus, and differs but little from it during the first week. The high range of temperature in Typhoid fever continues however at least a week longer than that of Typhus. Defervescence in Typhoid is always protracted and of a characteristic remittent type, whilst as a rule in Typhus it is sudden & in some

Cases even precipitant, the normal temperature being reached in one night, mostly in 24 or 36 hours.

The temperature of Typhoid fever somewhat resembles that seen in Acute Phthisis, but differs in being more regular and of shorter duration.

Name Thomas Peckham Age 20 Disease Pneumonia



November 1864

Frank Gould del. et lith.

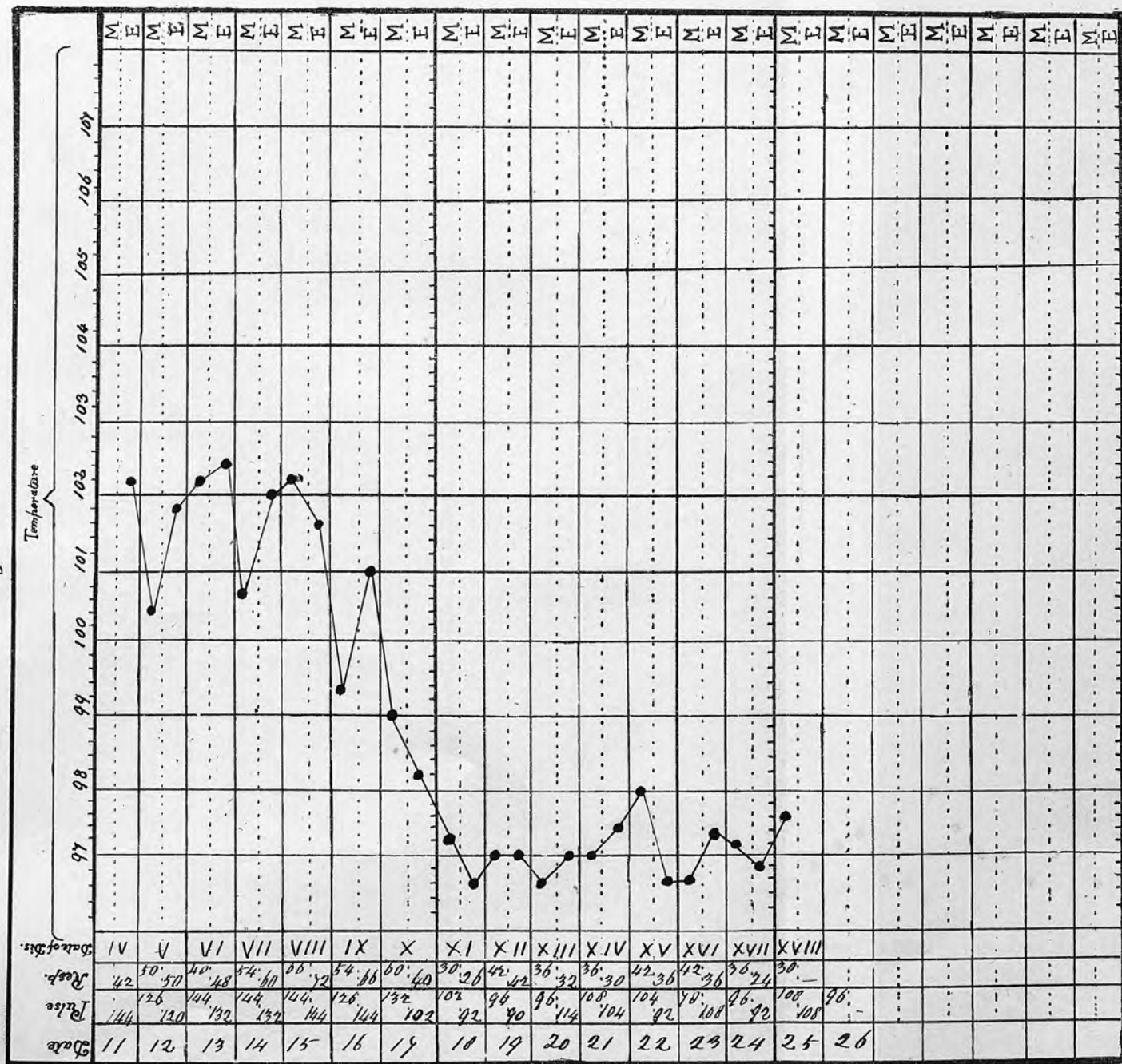
Pneumonia

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In this, as in all acute diseases, there is a great rise in the temperature for the first few days; the highest point would seem to be reached about the sixth day, and the defervescence is regulated by the severity of the attack.

The 1st case that of Thomas Peckham is a good example of the range of temperature in the most favorable forms of this disease; the man had simple pneumonia, ^{of} that of slight character; the defervescence occurred on the evening of the same day that the highest temp. viz 103.2° ^{the temperature} was attained, ~~and~~ rapidly ~~sinking~~ ^{sank} to below the normal line, about which it kept; the pulse was never much over 100, or the ~~tempera~~ respiration over 30 during the acute stage of the disease.

Name Samuel Hyams Age 20 Disease Pneumonia



January 1865

Frank Gould del. at Litch.

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The 2nd case that of Samuel Hyams was of a
severer nature, although the highest temperature
reached was only 102.2° ; The history of the
case is as follows:—

S. Hyams et. 20; bruised his right side by
a fall June 8th 1865. On the 10th he was
admitted into No 14 Ward K.C.H. under Dr
Garrod, with symptoms of pneumonia of the
~~the~~ same side. This then would be the 3rd
day of the disease; the temperature was 102.2
on the evening of the 6th day of the disease it
was 102.2 . and instead of defervescence taking
place immediately, it was not until the
morning of the 10th day of the disease, that
a marked diminution of temperature took
place; during the interval between the 6th & 10th
days of the disease, the inflammation had spread

so as to involve the greater part of the left lung also, & thus kept up the temperature. On the 8th day of the disease, resection to the extent of a few ounces was practised, and was followed that same evening by a reduction of the temperature.

Wunderlich judges of the intensity of cases of Pneumonia in the following way; - viz he is disposed to call all cases slight, that fall below, and all cases severe which rise above those averages in which the temperature records 104° , the pulse 120° , & the respirations more than 40 in the minute during the height of the disease.

The pulse and temperature in Hyams case bear out this statement; but I think the temperature estimated rather too high, since

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for a period of 24 hours ^{he} was in ^a worse than a critical state, and yet his temperature never exceeded 102.3° .

If, in pneumonia, defervescence be prolonged and a continuous high temperature be found to prevail, then the presence of Phthisis may be very strongly suspected, as in the case of Field which is spoken of under the head of Phthisis.

scorified skin, and blue marks seem to indicate a deficiency of vital warmth; we find there is nevertheless a great rise in the temperature; this rise is still further augmented in the succeeding or hot stage, but as soon as the sweating stage commences and the perspiration bedews the whole surface of the body, the temperature sinks to its lowest point.

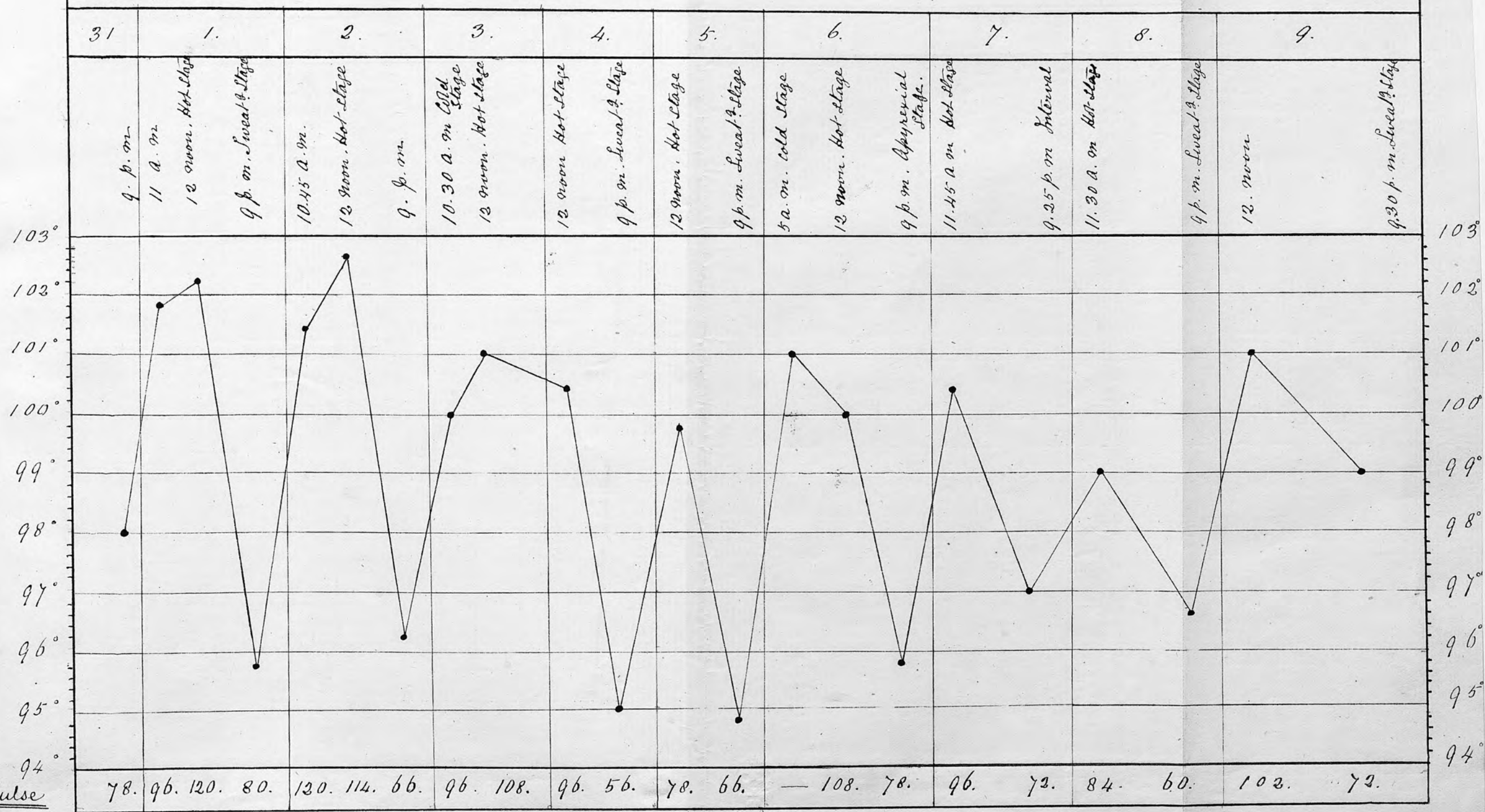
Intermittent Fever

The variation of temperature in this disease is very great, and affords points of peculiar interest; thus in the course of a single fit, the patient may pass from a temperature of 102°F to as low as one as 96°F .

Curiously enough, when the patient lies shivering and shaking in every limb, when the pinched lived face, wrinkled skin, and blue nails seem to indicate a deficiency of vital warmth, we find there is nevertheless a great rise in the temperature; this rise is still further augmented in the succeeding or hot stage; but as soon as the sweating stage commences and the perspiration bedews the whole surface of the body the temperature sinks to its lowest point.

Name James Connor Age 23 Disease Intermittent Fever Zootic

May June - 1865



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The following characteristic case occurred in the Hospital during the ^{Spring} ~~Autumn~~ of 1865.

James Connor Aet: 23 an Irishman; by occupation a labourer; generally enjoyed good health. In the beginning of September 1864, was working in the Isle of Sheppy, a low marshy district at the mouth of the Thames. In March 1865, after having been living nearly six months of the intervening time in London, was seized for the first time, after getting wet, with violent shivering, heat &c. Since that time constantly suffered from ague fits, which latterly have occurred daily.

Admitted May 31st 1865 into No V ward K.C.H. under the care of Dr Johnson.

Condition on admission. He is a tall thin man with dull earthy complexion; conjunctivae slightly

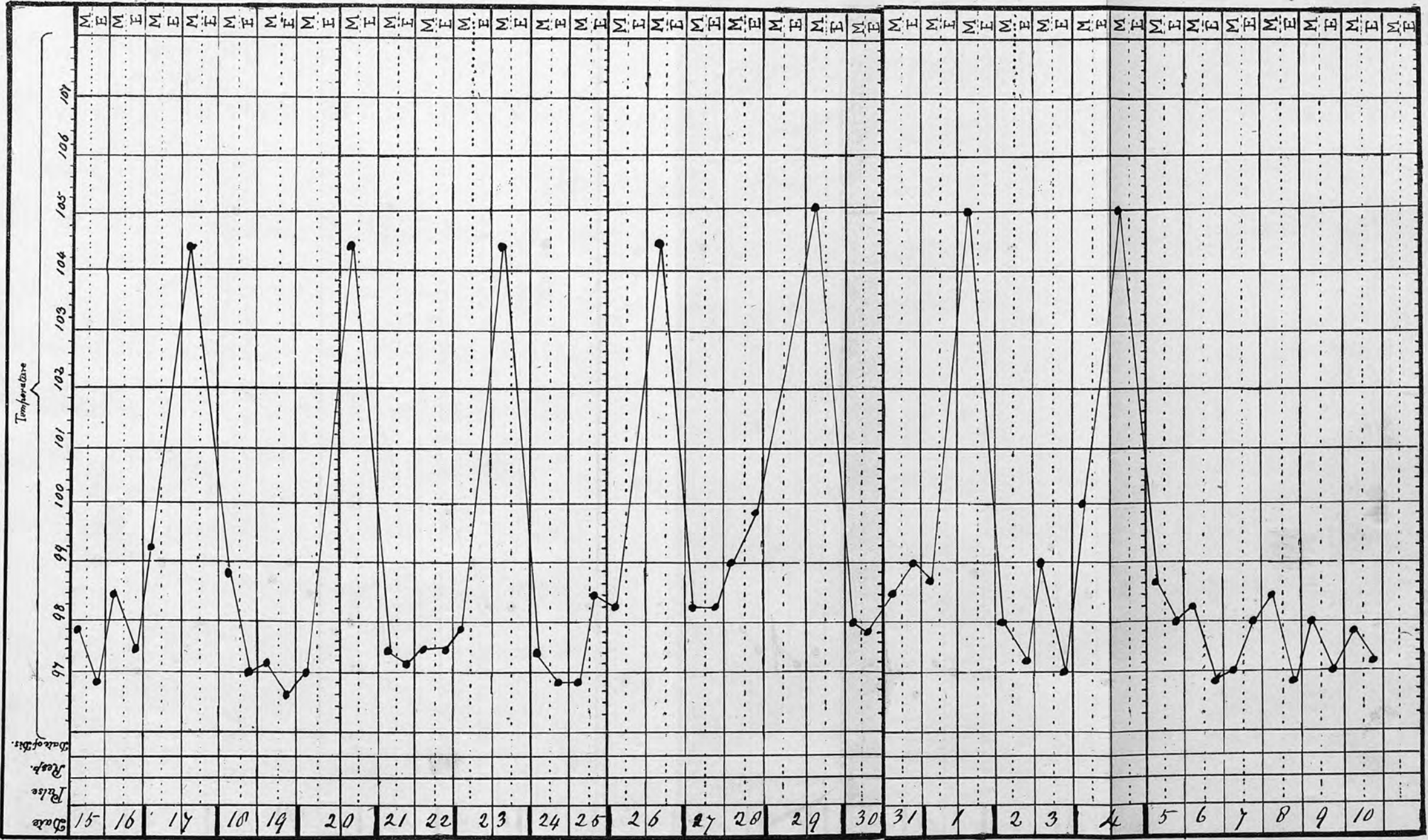
yellow. Hepatic & splenic dulness somewhat increased. Has fits of ague daily. The cold stage lasts from 10 minutes to half an hour, the hot stage continues for 5 or 6 hours, and the sweating stage for about the same period, imperceptibly merging into the apyrexial stage.

For the first nine days no treatment but Aq. Camphora was given, in order that some of the phenomena of the fit might be noted. On the tenth day Quinine was ordered in 5 grain doses to be commenced prior to the advent of the fit; he had one fit after beginning with the quinine, but never afterwards, and was finally discharged Cured June 25th/66. On the ^{pre}~~sub~~ceeding page will be found a table noting the ranges of temperature during the time he was under the treatment of Aqua Camph.

From this table it will be seen that a rise of temperature generally precedes what is termed the cold stage; from this stage to that of burning heat the temperature rapidly rises; at the commencement of the sweating stage, small ^{may be noted} ~~v~~axillations, and continue for a short time, after which the temperature gradually decreases generally at the rate of about $2^{\circ}F$ every half hour until the normal temperature is reached. It is interesting to remark that ~~in~~ the colligative sweating of advanced Phthisis, also occasions a fall of temperature.

Another case in the Hospital was that of a young man George Ryan, aged 22, who had been working in the autumn of 1865, at Sheerness, ~~at~~ on the mouth of the Thames. He was admitted into Kings Coll: Hosp: ~~in~~ Dec: 1865. The fits came on with the greatest regularity every

Name *James Ryan* Age *22* Disease *ague Quartan*



Dec^r 1865

Jan^y 1866

Frank Gould del. at Zich.

Temperature

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third day. The ~~last~~^{first} stage in this case, (i.e. the interval between commencement of shivering & commencement of sweating) lasted about $3\frac{1}{2}$ hours, the defervescence lasted about the same time. It will be seen that in this case there was a variation in temperature of about seven degrees, during the continuance of the fit; the temperature previous to the fit being usually between 98° & $98^{\circ}7$, and the highest point reached $104\frac{2}{5}^{\circ}7$.

For the first few days he was merely treated with rest, middle diet, and aqua Camphorce, in order that a few observations respecting the temperature might be noticed. On Jan 1st on the commencement of one of the fits, brandy was administered in large quantities, but with no effect on the tem-

perature which rose and fell as before. On the 4th on the next recurrence of the fit 10 grs. of Quinine were given; this had no effect on the temperature during that fit, but being continued in 5 grain doses three times daily during the next & succeeding days no recurrence of the fits took place.

In comparing this case with that of Connor there will be noticed a curious difference in the range of temperature; in Connor's case the temperature ranged in some of the fits from as low as 95°F to nearly 103°F . In Ryan's case the temperature in no case went much below 97°F , but reached as high as 105°F .

I forgot to mention, that with the rise of temperature, there is seen a corresponding rise in the pulse, & with the defervescence, a decrease, this is well seen in Connor's table.

Acute Rheumatism

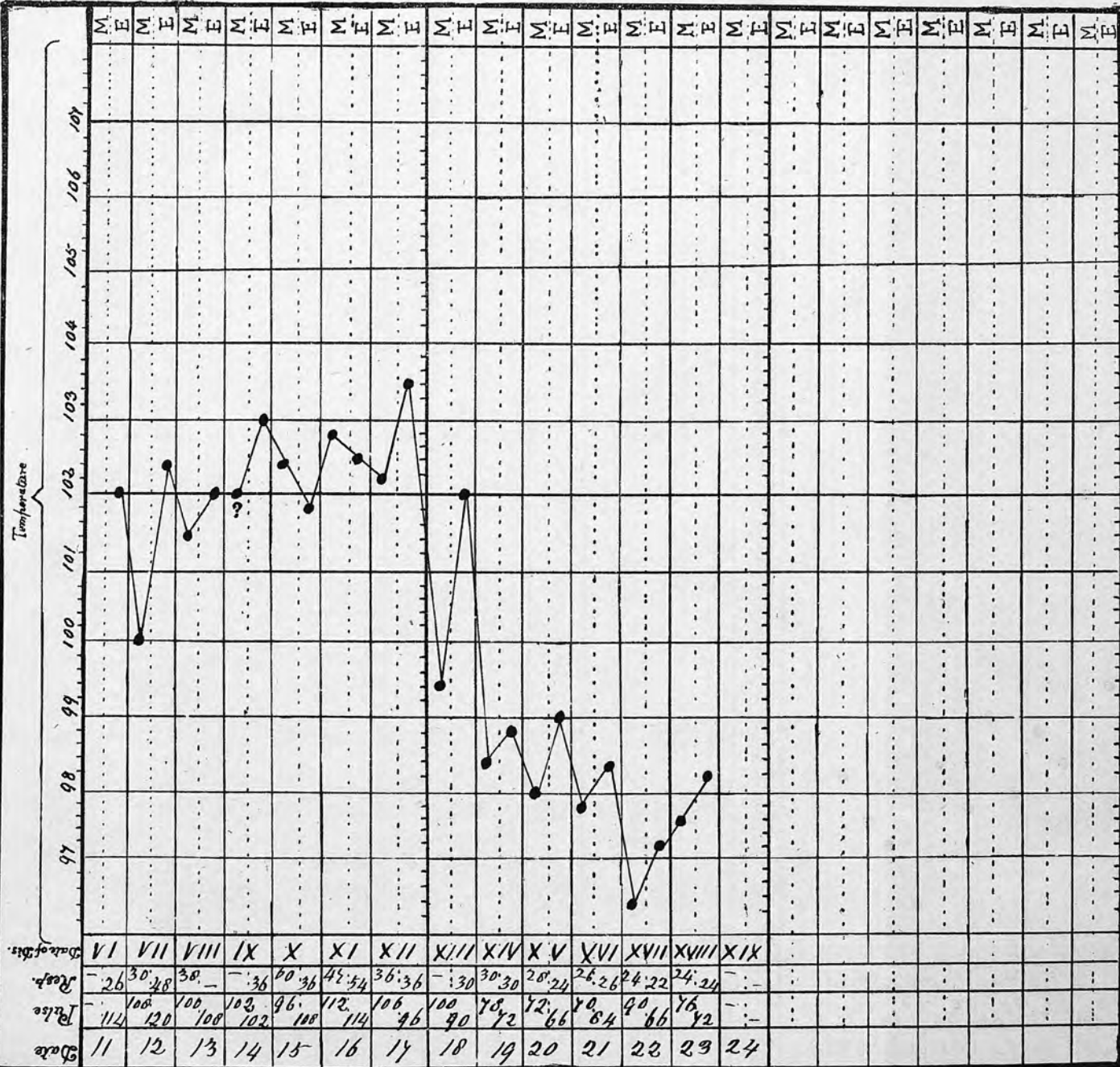
The range of temperature in this disease may vary from 102°F to 106° or even higher according to the severity of the attack; a height of 104°F or over, is said to denote a severe attack. The temperature over the surface of the affected joints may vary from 100°F to 105°F . But the most characteristic circumstance to be noted with respect to the temperature in this disease, is the great diurnal variations; alterations of from 2° - 3° sometimes taking place two or three times in the same day (Ringer). The period of defervescence will be regulated according to the severity of the attack, and in the majority of the cases is very gradual in its progress.

Name Mary Sparvil Age 19 Disease Rheumatic Fever. Pericarditis

Date of Dis.
Temp.
Pulse
Resp.

Date	Pulse	Resp.	Date of Dis.
11	114	26	VI
12	120	30	VII
13	100	48	VIII
14	108	38	IX
15	102	-	X
16	108	36	XI
17	112	42	XII
18	106	54	XIII
19	96	36	XIV
20	90	30	XV
21	92	30	XVI
22	96	28	XVII
23	96	24	XVIII
24	92	24	XIX

Nov: 10: 1865



Frank Gould del. at Wash.

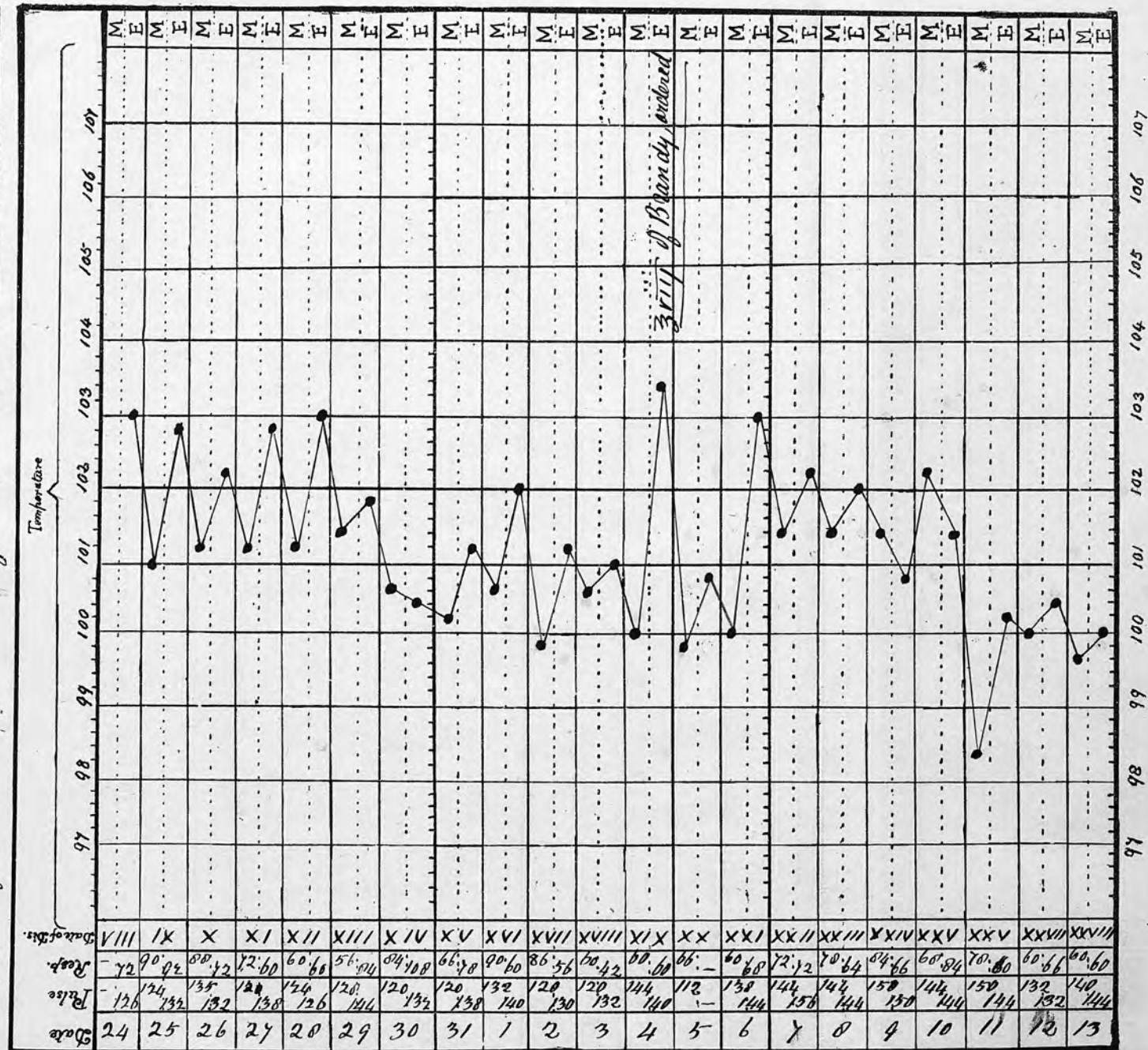
Temperature

In all severe cases of Acute Rheumatism the possible super-vention of Pericarditis or Endocarditis must be borne in view, and hence great attention should be paid to the diurnal variations, since a sudden rise might be one of the earliest signs of the approaching mischief.

I append here some very meagre notes of two cases of this description.

Case I Mary Sparid aged 19, admitted under Dr Johnson with acute Rheumatism chiefly affecting the wrists & ankles, on the 8th day of the disease a Pericarditic rub was heard; although this complication in the present case does not seem to have been preceded by any marked elevation in temperature, it was nevertheless accompanied and followed

Name Alfred Mason Age 14 Disease Acute Rheum - Pericarditis.



Frank Gould del. at Rich.

Temperature

January 10 66.

by a very distinct one; little or no effusion however took place, and after the application of a few leeches, and the exhibition of opium the symptoms gradually ceased, and after the 13th day of the disease, the normal line was speedily attained.

Case II Alfred Moon aged 14. This boy seemed to have had a certain amount of Cardiac mischief accompanying the Rheumatism even so early as his admissions; there was speedily pretty copious effusion into the pericardium; the cardiac mischief reached its height about the 19th day of the disease at which date the thermometer was indicating a pretty high point; but throughout the whole of the case it will be observed, by glancing at the table, how the cardiac complication kept up a high

range of temperature; he was treated mainly with Aq. Camph. with the exception of occasional small doses of Morphia, and a single application of half a dozen leeches; the boy eventually recovered.

Dr Ringer mentions that in fatal cases of this disease, the thermometer has been seen to indicate a very high temperature viz 109°.6 F or even 110° F immediately before death. In subacute rheumatism the temperature never rises above 100° F or 101° F.

Diabetes (Mellitus)

In the winter of 1864-65 two cases of this disease were in Kings Coll. Hosp. at the same time, and in either case the daily temperatures and several other observations were very carefully noted; the very low temperature characteristic of this complaint is ~~very~~ remarkably illustrated by their cases; as they were both in the Hosp. at the same time, and were fed on similar diet, it will not be uninteresting to compare the two cases; for this purpose a brief abstract of the case will be essential.

Case I Maria Matthews et. 48 married; a laundress by occupation; history of Phthisis in the family, she having lost 2 sisters and a brother by that disease. In October /64 first noticed the continued

thirst with which she appeared to be troubled, and about the same time also, the increase in her appetite, and the large quantity of water she was daily making; conjointly with these symptoms she noticed that she was losing flesh and strength; was accustomed to live badly, having meat only once a week. Admitted Jan^y 3/65 into K.C.H. Ward VI under the care of Dr Garrod.

Condition on admission: - pale, thin, and with careworn expression of features; skin dry; slight oedema of thigh; On auscultation harsh breathing could be heard beneath either clavicle, especially the left; no moist sounds could be detected. There was abundance of sugar in the urine.

Jan^y 7. Has passed 151 oz of water in 24 hours

containing 9.01 oz of sugar Sp. gr 1045.

Ordered the following diet:—

Bran biscuits	—	8 oz
Brandy	—	4 oz
Milk		1 pint
2 chops		
4 eggs		
Greens	—	q.s.

ordered Aqua Camph 3, t.d.s

Jan^y 18. Does not gain strength, and complains of pain in head, & dimness of sight; but there is a marked diminution both in her thirst, and in the amount of urine daily passed.

Feb^y 21 Much the same. amount of urine large, but not so large as on her admission

Feb 25. Within the last few days the Phosp. of Soda has been tried but without any benefit. Passed 148 oz of water within the last 24 hours.

March 16. Passes less water, but is still very weak;
ordered Quinine & Iron, and Cod liver oil.

April 10. Owing to the occurrence of great heat
the last few days, ~~the~~ excretion from the
skin ~~is~~ increased, and there ~~is~~ con-
sequently a marked diminution in the
quantity of water passed; at the same time
the specific gravity ~~is~~ not much increased
so that the diminution cannot be ascribed
wholly to the increased activity of the skin.
The following are the chest signs at the present date;
No appreciable dulness at either apex; slight
harshness on inspiration accompanied by
prolonged breathing at right apex.

During May she improved considerably and
was discharged much relieved May 31/65.

From some very careful experiments made by
Mr Kelly the assistant House Physician

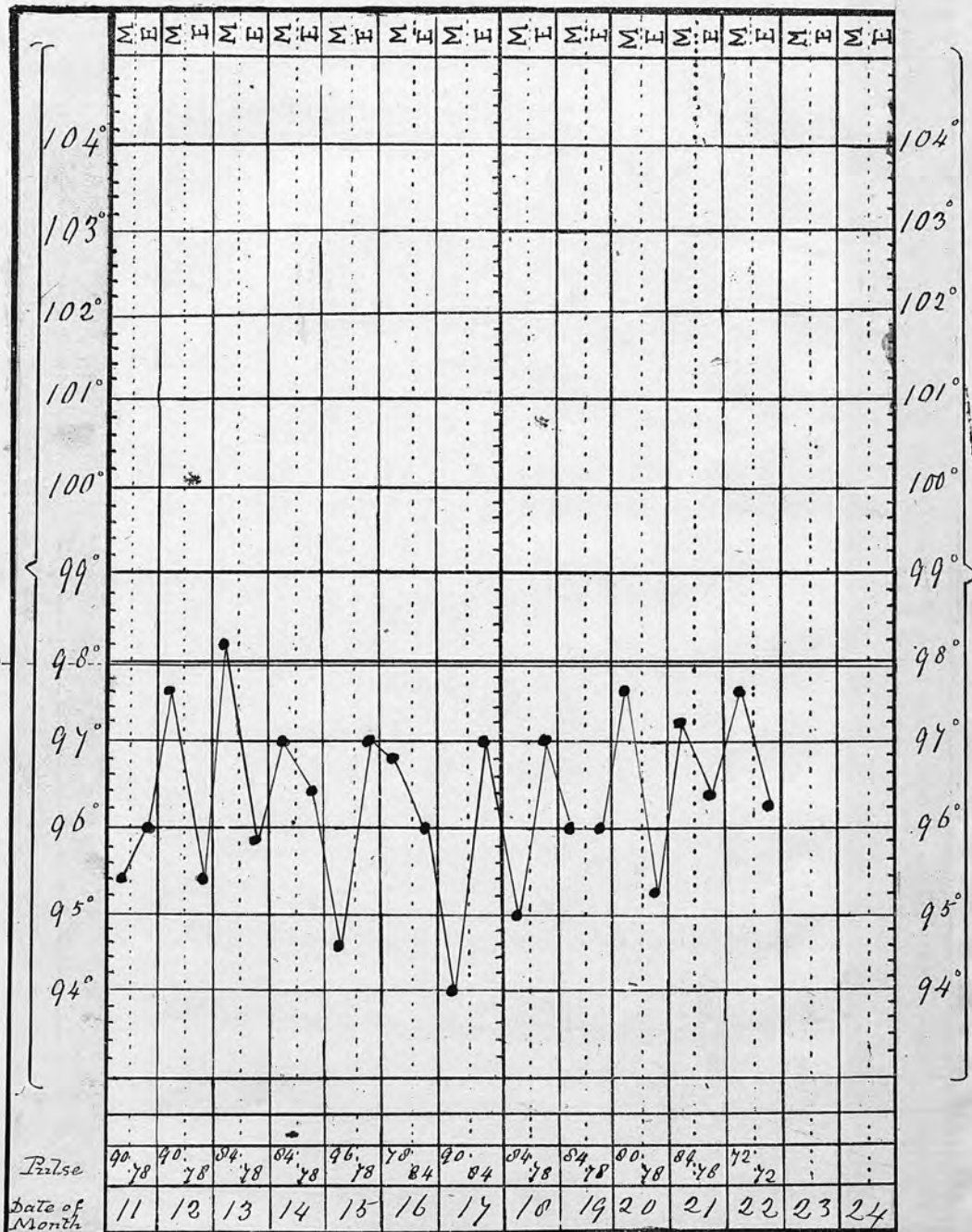
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during the progress of this case it was ascertained that (contrary to the opinion of some^{in this disease}) the urea in the urine was considerably increased; at one time she was passing more than three times the normal amount, viz 65.6 grammes (French weight) every 24 hours. This large amount of urea, whether formed by ~~simple~~ the direct conversion of the ~~at~~ surplus albuminous material, as some say, or resulting from the increased metamorphosis of the formed tissues of the body, is not accompanied by any increase in the temperature, but on the contrary by a marked diminution of it.

In Matthews case the temperature hardly ever rose to 98° , and was once even as low as 94° , while generally it ranged between 96° and 97° . The following table shews the

Name *Maria Matthews* Age *48* Disease *Diabetes Mellitus*

normal line
Temperature



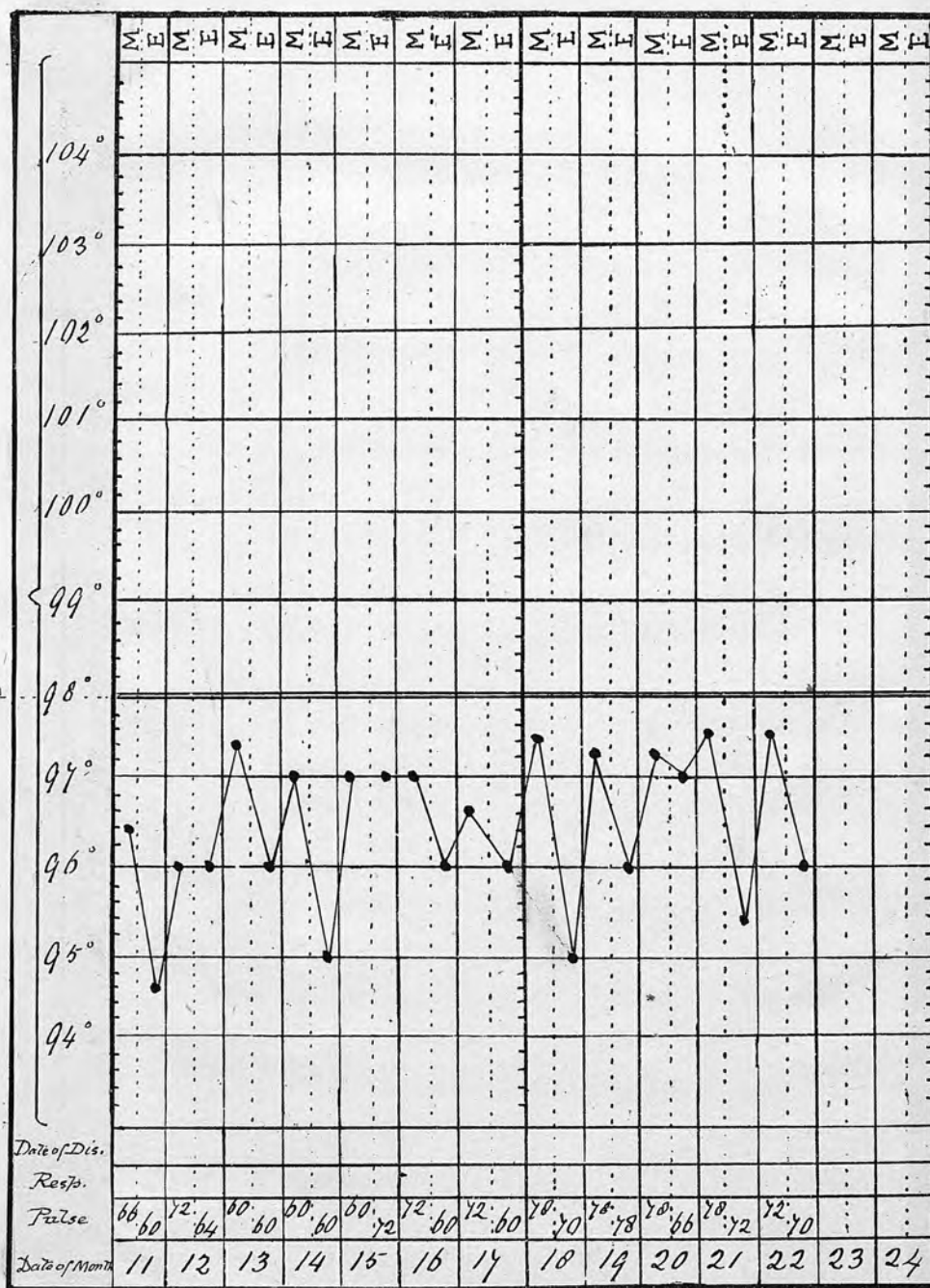
March 1865

Line of normal
Temperature

Name Henry Crook

Age 25

Disease Diabetes Mellitus.



range of temperature in Matthews case during a portion of her stay in the Hospital, for the facility of comparing it with that of Crook during the same period, both being under exactly the same treatment.

It will be seen that in both cases, there was a decrease in the temperature, and that this diminution was not temporary but continuous. No relation in either case was noticeable between the amount of urea excreted, and the heat of the body; in both the temperature ranged between 96° and 97° . The greater daily variations in Matthews case were probably due to the lurking tuberculosis in her system, which although but very slightly developed was sufficient to account for the difference; for it will be seen hereafter that in Phthisical cases there exists a continuous elevation of temperature, & great

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diurnal variations. The urea diminished during her stay.

Soon after her admission the average daily amount of sugar excreted was 188.5 grammes. This seemed to bear no relation to, or at all influence the temperature.

Case II Henry Crook at: 25; single; by occupation a labourer; has always been a temperate man; no history of Phthisis in the family; has never had but one serious illness; that being a fever which was followed by deafness wh. still remains; has usually enjoyed good health though continually exposed to wet and cold. In November /64 noticed for the first time a diminution in his strength, which was followed by pains in his limbs, weariness, and general prostration. In January /65 began to be troubled with a perpetual thirst, and to pass larger quantities

of water than usual.

Admitted March 1st 1865 into No 4 ward K.C.H.
under Dr Garrod.

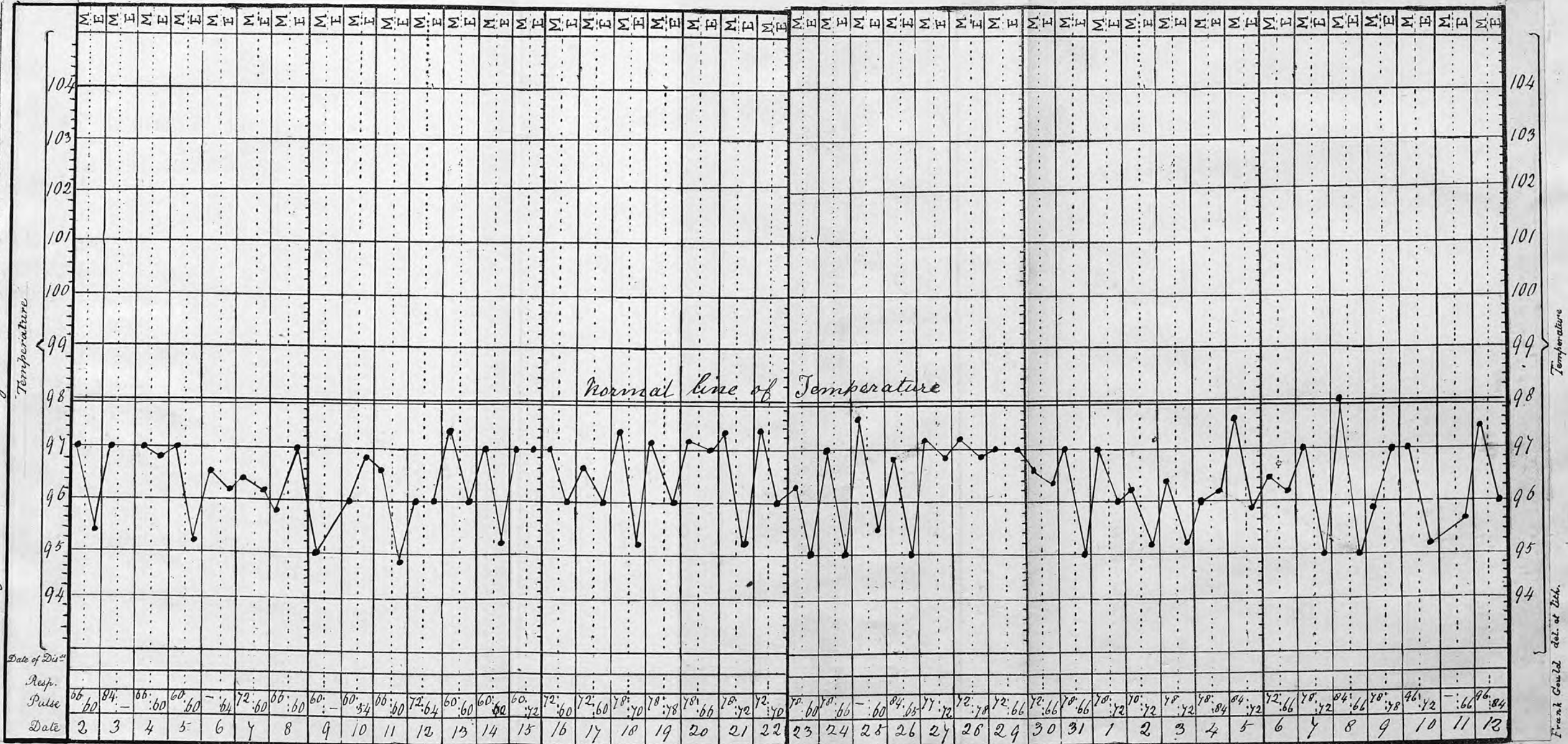
Condition on admission; a pale, thin, spare man;
rather deaf; cheeks sunken; skin harsh and dry;
no eruption on body; heart & lung sounds normal.

March 9th. Since his admission his urine has
been ascertained to contain 7.4 p.c. of sugar; is
ordered this day the same special diet as in
the preceding case.

March 21st ordered ℞: Morrhua 3j t.d.s
Under the special diet and the above treatment,
the condition of the man greatly improved,
the amount of water & percentage of sugar daily
decreased, and the patient left the Hospital
much relieved April 25th 1865.

This man when he entered the Hospital was

Name *Henry Crook* Age *25* Disease *Diabetes mellitus*



March 1865

Frank Gould del. et lith.

passing a daily average of 137 oz of water, containing 7.4 p.c. of sugar; when he left he was passing a daily average of 78 oz containing about $2\frac{1}{2}$ p.c. of sugar.

Along with Matthews table is given Crooks range of temperature during the same fortnight so that they may be compared together; in either case it may be seen that the pulse was slow, particularly in Crooks case; other points of difference have been before pointed out.

The accompanying table however shows the daily range of temperature during almost the whole of his stay in the Hospital. It will be seen that on an average it varied from 96° - 97° ^{but} sometimes sinking lower even than 95° , and never rose so high as the normal line.

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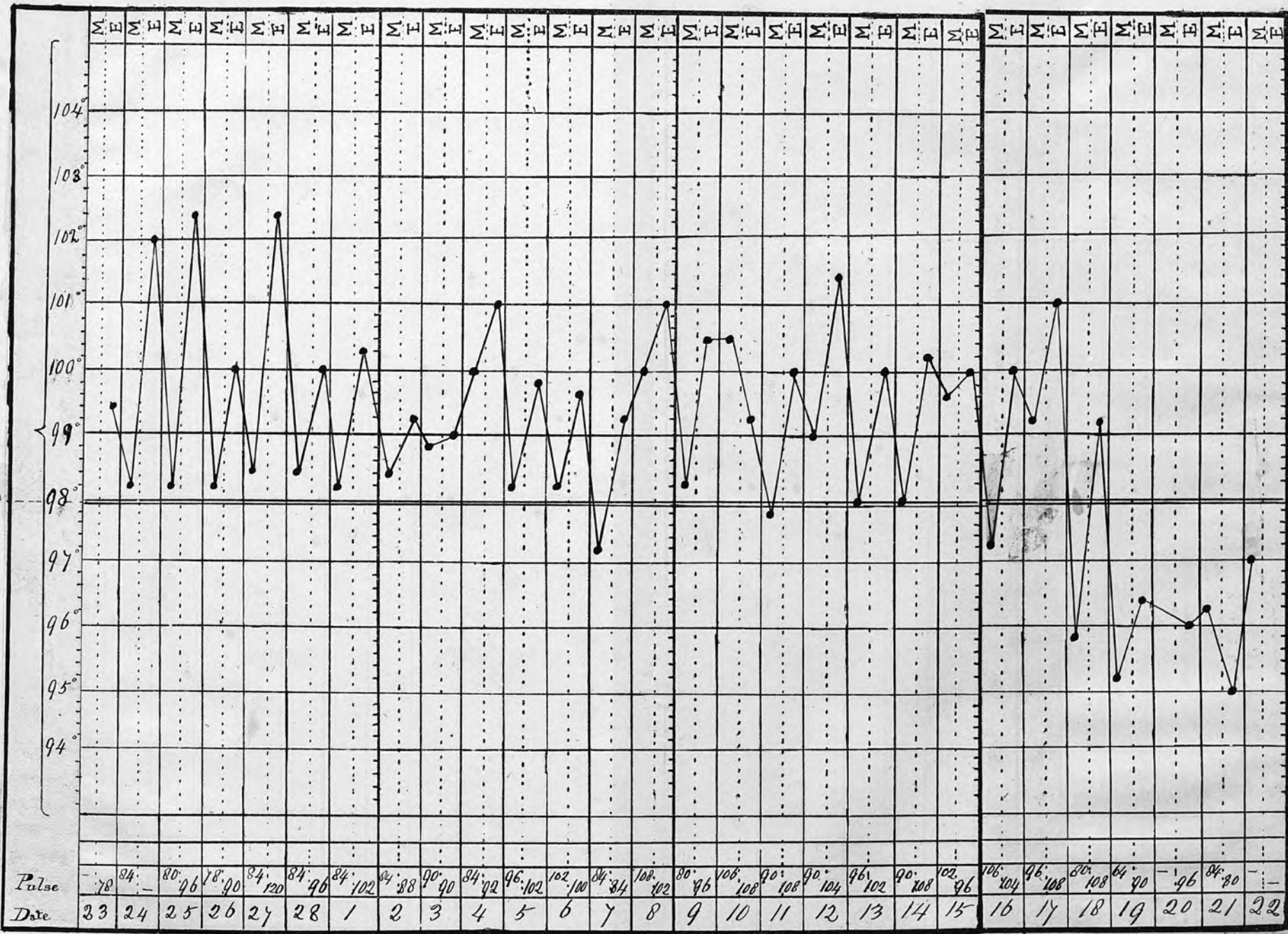
The urea was increased from 2-3 times its normal ~~about~~ amount, the average quantity daily being for some time 63.03 grammes; on leaving it was about 44 gms.

The continued low range of temperature exemplified in this disease, may be due to the vital forces being lessened by some of the peculiar metamorphoses going on in the tissues, but since in the two cases given both the amount of sugar and urea daily excreted diminished during treatment, without any corresponding elevation or depression of the temperature, it is clear that they can have but very little connection with the low range seen in this complaint.

No other disease that I am aware of possesses such a continuously low range as that of Diabetes.

Name Henry Isbery Age Phthisis Disease

Normal range of Temperature



Temperature
Frank Gould del. at Del.

February 1865 March

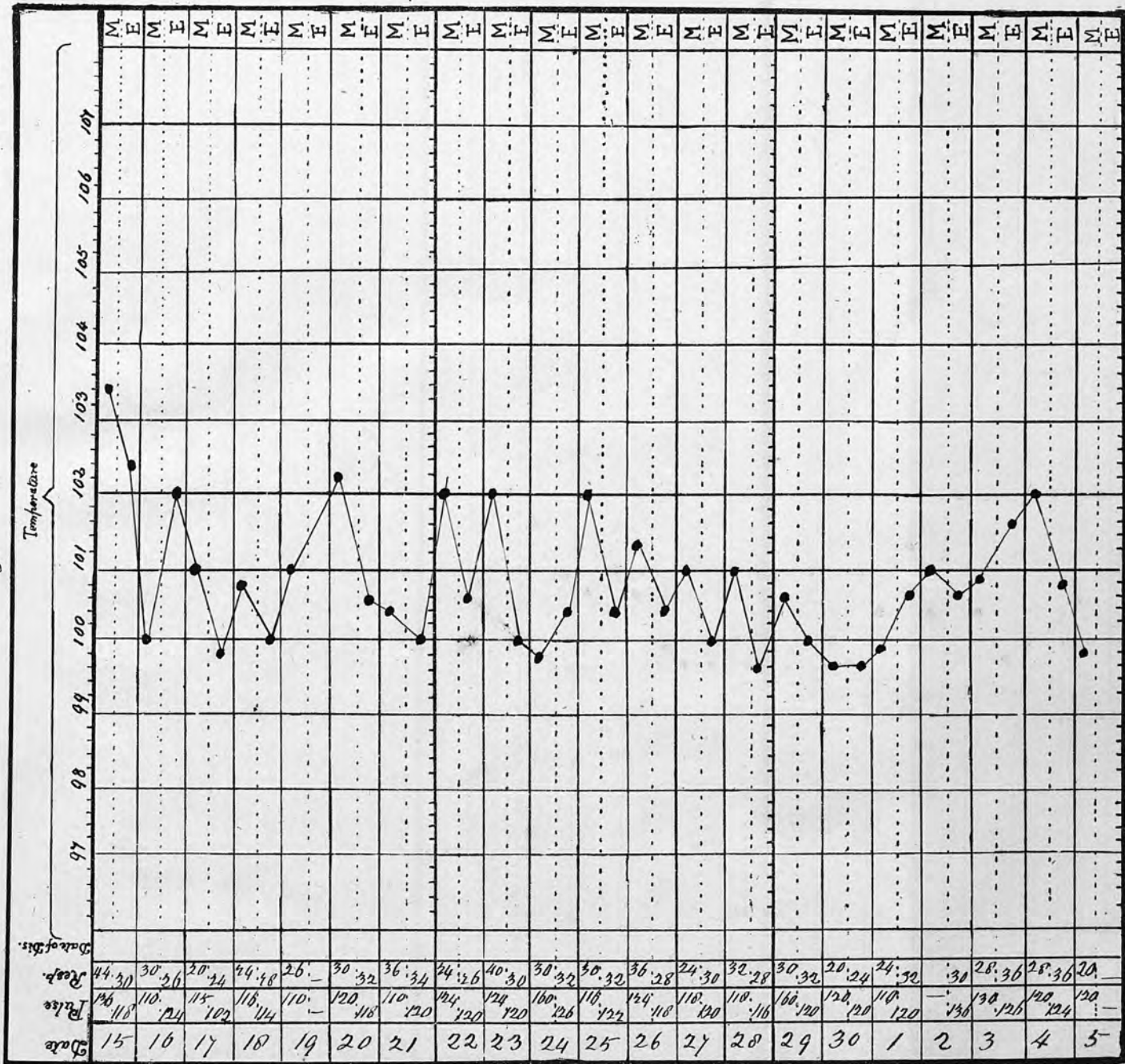
Phthisis

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Here in contradistinction to what we see in Diabetes, we find a continuous elevation of temperature, continuing for weeks and even months. This is seen both in acute and chronic cases but especially in the former. The first case I shall notice is that of Henry Lsley a man suffering under chronic Phthisis of some months standing. Here we find that the temperature kept almost invariably above the normal line, reaching on some days between 102° and $103^{\circ} F$, and maintaining generally, on an average, a ~~range~~ height of about $100^{\circ} F$. Previous to his death which took place at the end of the month (March 1865) the temperature sank considerably.

The second case is that of a man named

Name *James Horton* Age *30* Disease *Acute Phthisis*



June 1865

Frank Gould del. at 21th.

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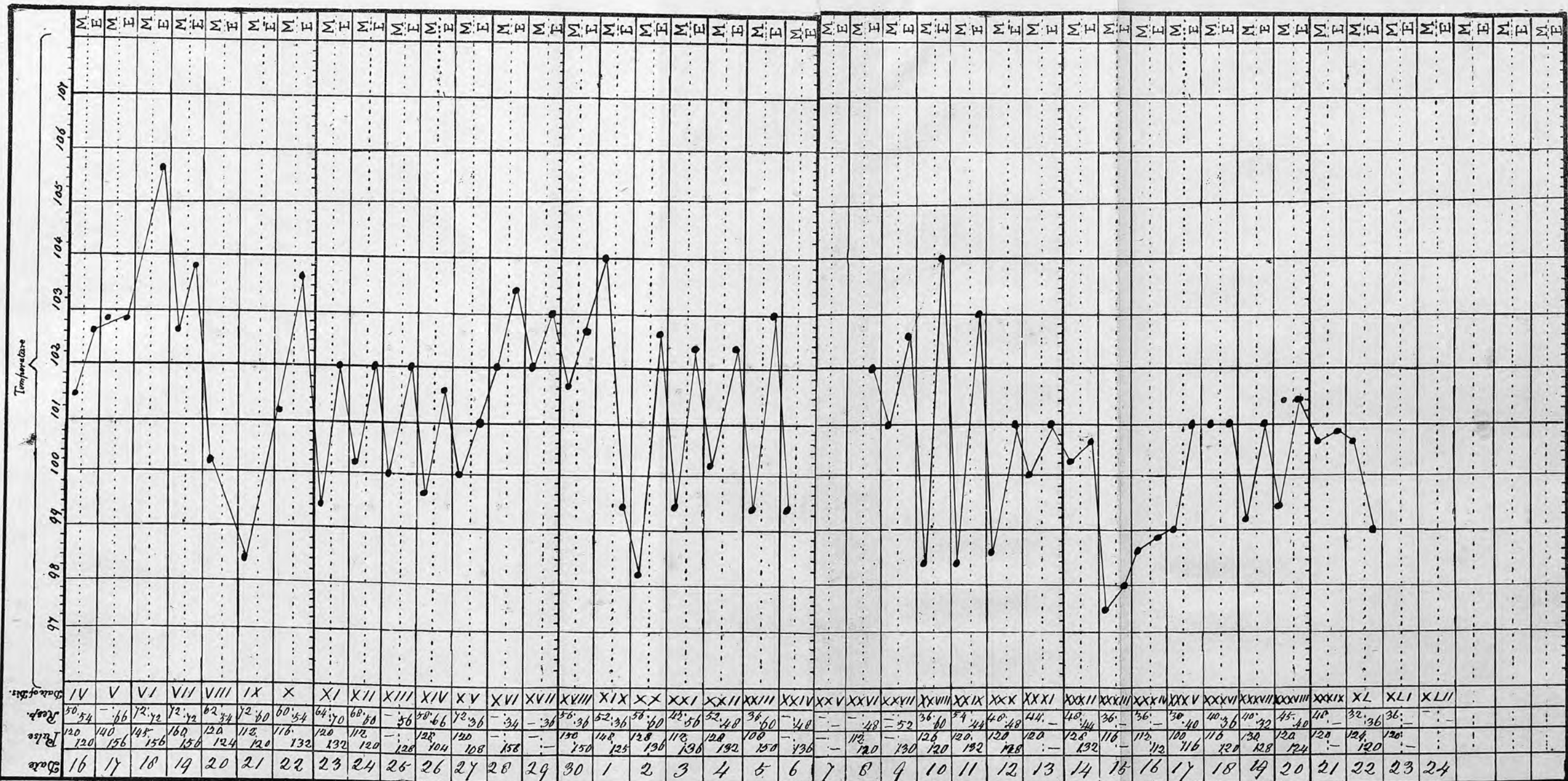
James Horton, who was suffering under Acute Phthisis of only about two months standing.

In this case the elevation of temperature was still more marked, reaching on one occasion to between 103° and $104^{\circ} F$, and maintaining an average height of a little over $101^{\circ} F$. In either case exacerbations of temperature were of daily occurrence but no periodic regularity in the height to which they rose, could be made out.

The two leading distinctions between the case of Horton wh. was that of Acute Phthisis, and that of Loley which was Chronic Phthisis, are 1st The higher continuous range by one degree in the former case, and 2nd the rapid running pulse also seen in Horton's case.

Horton did not die in the Hospital, but left it in a very dangerous condition.

Name Robert Field Age 13 Disease Pneumonia, Phthisis.



November 1864

December

Frank Gould del. at N.Y.

The third case is one of a boy Robert Field formerly referred to when treating of Pneumonia. This case is introduced here, since the continuous high range of temperature noticed in it, was probably due, as will be subsequently seen, to the complication of the Pneumonia with Tuberculosis. This boy was labouring under pneumonia confined mainly to the upper lobe of the left lung, but instead of deferescence taking place as usually seen in simple Pneumonia about the 6th or 7th day, and keeping down, a reaction took place on the 10th day when the temperature again rose, and from that date maintained for several weeks a continuously high range of temperature, subject to frequent alternations. This high range must have ~~some~~ had some other cause

than the mere presence of the Pneumonia, and at that time even the commencement or presence of Tuberculosis was strongly suspected, though this could not be satisfactorily confirmed by percussion or auscultation.

Dr Ringer, who has paid considerable attention to the ranges of temperature in this disease, states that the continuous elevation is due either to the general condition of the body, (tuberculosis), or to the deposition of tubercle in its various organs (tuberculization); the former being probably the correct view since: -

1. The elevation is not proportionate to the amount of tubercle developed.
2. The temperature rises for a long time before

any physical signs shew that tubercle is deposited,

3. Because in other diseases as in fevers &c., we do not find any proportion between the extent of the rash out, and the temperature, and in these cases we ascribe the rise to the general condition."

Further on Dr Ringer seems to mollify the first of these observations, viz that about the temperature having no relation to the amount of tubercle deposited, by stating that "the temperature may be taken as a measure of the amount of the tuberculosis and tuberculation." For my own part I think it probable that fluctuations in the temperature do indicate corresponding fluctuations in the severity of the disease.

Dr Ringer is sanguine enough to think

that the temperature will enable us to diagnose Tuberculosis & Tuberculation before the physical signs manifest themselves. I do not think he has clearly justified this assertion, though the thermometer is of undoubted service in those doubtful cases such as that of Field, or even in some cases where Chronic bronchitis, or other comparatively mild affection of the lung is present with, & tends to mask, the presence or advent of Phthisis. I believe it possible for a patient to have a normal temperature even although he may have tubercle present in his lung, provided always that that tubercle is in a quiescent condition.

IV The aid furnished by the Thermometer in Diagnosis, Prognosis, and Treatment.

Before closing my subject I would say a few words with especial reference to the aid furnished by the Thermometer in the Diagnosis, Prognosis, and Treatment of Disease.

Whilst describing the varying Thermometric ranges in the several complaints treated of in the preceding pages, much may have been learnt either from positive statements, or by inference with respect to the value of the Thermometer in Disease, but it may still further elucidate the matter if I were to direct the readers attention more especially to a few selected illustrations bearing upon the general value of that instrument as an

auxiliary to the Physician, and as a means whereby the latter is better enabled to form an opinion as to the present state and future prospects of any patient under consideration, and the method of treatment most applicable to the case.

It is only within comparatively recent times that a more intimate knowledge of the diseases of the thoracic cavity has been gained by the introduction of that valuable instrument, the Laryngoscope, and it is within still more recent times, that the Ophthalmoscope, and Laryngoscope have in their turn contributed to elucidate in a clearer manner, the various diseases affecting the Eye and the Larynx. Each at their introduction met with the usual opposition, always so un-

sparingly bestowed by shallow minded and prejudiced individuals upon inventions the utilities of which their feeble capacities are unable to grasp, but each has risen from the contest, more irreparably fixed in the good opinion of its supporters, to enlist fresh advocates for its use, and to bestow no slight additional power upon man in grappling with his fell destroyer, Death.

But for any one to base his conclusions upon the Thermometer solely, to the utter disregard of symptoms other than those furnished by its means, would be as foolish and weak-minded as to use the above mentioned instruments in the same capacity and would only tend to the weakening and disparagement of scientific research. Each has

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its own ~~special~~ value, and when used conjointly render great assistance to the medical man.

Of this assistance the Thermometer surely renders its share, far, although probably more in its infancy, in relation to disease, than either the Stethoscope or Ophthalmoscope, enough is known of it, and I trust enough even may have been learnt from these pages, to prove that it merits the earnest consideration of all zealous followers of Medical Science.

1. Diagnosis.

I cannot say that there is any one disease that can be specifically diagnosed by the use of the Thermometer alone, even if this were desirable, but it is in the evidence

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it offers in the broad question of the presence or absence of Disease generally, that the Thermometer shows its value in Diagnosis.

Many a derangement of internal functions will produce a train of symptoms all but typical of fever, such as the brown & furred tongue, sickness, obscure pains in limbs, headache, oppression, languor, dryness & apparent heat of skin, but the normal temperature of the body cannot be markedly departed from unless fever be really present. During the winter of 1864-65, at a time when typhus was very prevalent in London, and cases of that disease were frequently brought to the Hospital, a boy was admitted with almost every febrile symptom, under the impression that he had been

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seized with the prevailing epidemic he was placed in one of the wards. An application however of the Thermometer in this case shewed that his temperature was 99° only, while on the morning & evening of the 2nd & 3rd days it was quite normal; thus proving incontestably that the constitutional symptoms had not at all events been produced by fever.

But I was the more especially impressed with the benefit derived from a use of the Thermometer in these cases, by an incident which occurred in the person of Sarah Walker, a young girl aged 18 who was under my care as clerk in K. C. H. She had been sometime under treatment for numerous hysterical complaints, the hysteria being

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very well marked. Typhus however appearing in the ward in which she was placed, and shewing a disposition to assume a very infectious form, it was considered advisable to discharge at once all such patients as could be conveniently removed; this was done and the girl with many others left the Hospital. The poison had, however, in too many instances already disseminated its germs far and wide, and one by one the discharged patients came dropping back with confirmed Typhus upon them, amongst the number, but at rather a later period came this girl with all the manifest symptoms of some febrile complaint upon her. She was complaining of muscular pains, nausea, headache &c, had a flushed face

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face and rapid pulse. All these signs con-
joined with the fact of her having been
subjected to the influence of the Typhus poison,
would naturally have led many to jump
at the conclusion that she had taken that
complaint, but knowing the peculiar
hysterical temperament of the girl, and
learning that she had been living very
badly, and had been subjected to much
anxiety since leaving the Hospital, the
House Physician Dr Powles was induced to
apply at once the Thermometric Test, which
by recording only a normal height dispelled
any suspicion as to her really having the fever.
Now observe the sequel;— the girl instead of
being transferred to the Typhus ward, where,
in every probability, she would have shortly

taken that disease, was placed elsewhere, and under appropriate treatment recovered without a sign of fever manifesting itself.

I have dwelt rather longer than I intended on this point, but I think that in so doing at least one of the uses of the Thermometer in Disease has been the more vividly pointed out.

But further, the Thermometer is invaluable in diagnosing the probable advent of some complication occurring in the course of a disease, the range of temperature of which, has been carefully noted; as for example pneumonia in Typhus, bronchitis in Measles, pericarditis in Acute Rheumatism &c. Thus in the case of Selina Morris spoken of under

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the heading of Scarlet Fever, after a gradual
depression extending over 10 or 11 days, a
sudden elevation of temperature to $104^{\circ}7$ took
place and on auscultation small crepitation
could be distinguished at the base of the
right lung; she had, at the same time, slight
expectoration of a viscid but not rusty
character; doubtless there was slight pneumonia,
sufficient, in this instance, to elevate the
temperature, without materially influencing
the favorable progress of the case.

So again in the case of the little girl Clinch
suffering from measles, the bronchitic com-
plication was distinctly foreshadowed by
the elevation of temperature.

In the case too of Robert Field suffering
under pneumonia (vide Phthisis) the com-

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tinued high temperature lead one to infer at least, that there was incipient ~~Phthisis~~ as well.

The following observations have also been recorded by some authors relatively to the diagnosis of Febricula or Pneumonia

1. If the temperature get to a very high point, in a very short time, the disease is probably either Febricula or Pneumonia
2. If it rise again after going down it is Febricula.
3. If it run down at once and keep down it is Pneumonia (favourable case).

I have not had sufficient experience either to confirm or disprove these remarks, & therefore I only just mention them for what they are worth.

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Wunderlich states that Intestinal Catarrh, some forms of Pneumonia, meningitis, Acute Tuberculosis and Brights disease may all simulate Typhus, but that by carefully noting the Temperature we may diagnose between them.

There is no doubt that from a large collection of tables of the ranges of temperature in various diseases, we may with tolerable accuracy pick out the most typical ones & state the diseases they represent; but at present we are unable to say positively from the Thermometric range solely, that such a patient, has Typhus, and such a patient, pneumonia, though we may be able to give a pretty shrewd guess.

2. Prognosis

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It is in this sense, perhaps, that the Thermometer affords the most valuable aid to the Physician. Much of its value in this respect has either been pointed out, or may have been inferred, when treating of the various diseases given in this paper, and therefore I will only draw the readers attention here to the more important points. Wunderlich, who has perhaps made the most complete series of experiments in this branch of Science, maintains that he can distinguish with certainty the mild from the severer forms of Typhus, & this sometimes even so early as the end of the first week; also the mild form of Pneumonia from that likely to be severe; simple from malignant scarlatina.

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and all by carefully watching the range of temperature.

By carefully studying some of the cases and observations mentioned in the preceding pages, it will be seen on what bases these assertions are founded, Thus we have seen that in Typhus, a defervescence commencing on the 10th day, and becoming distinctly developed by the 13th or 14th is a most favorable sign; but that, on the contrary, if at this date a further rise takes place, then danger to the life of the patient may be predicated. So in Typhoid fever, by noticing the difference in the range during the third week, the Physician may give a pretty accurate prognosis as to the ultimate recovery of the patient.

It is especially in the fevers of children, that

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the Thermometer will aid us so much in forming a Prognosis, far on account of their tender age, but little can be gleaned from the patient relative to the progress of the disease, and too often, delirium, which is not invariably proportioned to the severity of the attack, renders questioning the patient, be he child or adult, quite useless.

Evening declension is in all acute diseases, a most favourable sign.

3. Treatment

My observations on this point are extremely brief. I have no proofs to offer of any one peculiar method of Treatment, whether it be Stimulants, Mercurials, Mist Camphorae (i.e. non-treatment), materially influencing the temperature

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in acute disease. Bleeding may have in some instances a tendency to lower it, if we may judge from the decrease of temperature observed in hemorrhage from the bowels during the course of Typhoid fever; bleeding is however so rare in the London Hospital, as a method of treatment, that I have no observations to offer on this point.

The Thermometer is however of signal advantage in impressing the Physician with the necessity of increased care, and the most prudent dieting &c in those cases in which, either complications are indicated as about to manifest themselves, or in which the prognosis arrived at is very unfavorable. By a careful watch over the temperature, the imprudent and often fatal error of

allowing a patient to leave his bed too soon, or to indulge in food unsuited to his condition may also be guarded against.

My subject having come to a termination, so far as my individual experience has been directed, I must in all humility crave the indulgence of the reader for my imperfect attempt to condense a subject which has been so voluminously treated of by such devotees to medical Science as Wunderlich, Krüger, &c. My apology must be, that even investigations on a small scale, provided they be independently carried on, and recorded with accuracy, will be of essential service in strengthening or refuting the theories for which they were made.