

## **Temperature-variations in the diseases of children / by William Squire.**

### **Contributors**

Squire, William, 1825-1899  
Royal College of Surgeons of England

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TEMPERATURE-VARIATIONS

IN THE

DISEASES OF CHILDREN.

BY THE SAME AUTHOR.

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INFANTILE TEMPERATURES IN HEALTH AND  
DISEASE.

J. & A. CHURCHILL, NEW BURLINGTON STREET.

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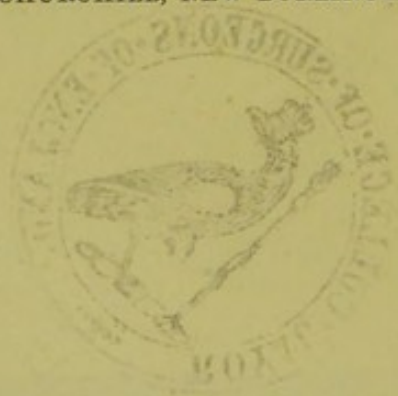
ALSO

PUERPERAL TEMPERATURES.

WITH DIAGRAMS.

REPRINTED FROM THE NINTH VOLUME OF THE 'TRANSACTIONS OF THE  
OBSTETRICAL SOCIETY OF LONDON.'

J. & A. CHURCHILL, NEW BURLINGTON STREET.



# TEMPERATURE-VARIATIONS,

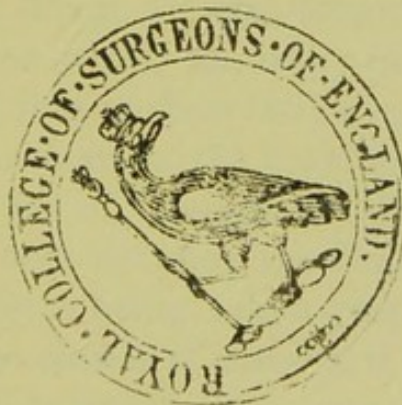
IN THE

## DISEASES OF CHILDREN.

BY

WILLIAM SQUIRE, L.R.C.P. LOND.,

AUTHOR OF THE ARTICLES "CROUP" AND "DIPHThERIA" IN REYNOLDS'  
'SYSTEM OF MEDICINE.'



LONDON:

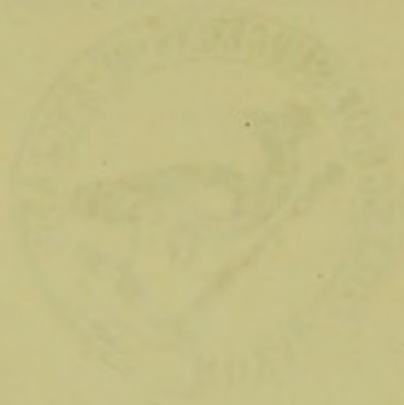
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## TEMPERATURE-VARIATIONS IN THE DISEASES OF CHILDREN.

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IN prosecuting the investigations on the temperature-changes characterising the disorders of infancy, a large number of observations have accumulated, some of which may now conveniently be brought together, arranged, as much as possible, in the order that has guided me in this inquiry.

The object, foremost in my view, has been to gain a more definite idea of the natural history of the states of disease to which children are specially liable, and to illustrate the more leading features of the most marked and common forms of the acute specific diseases. As a consequence of this it is hoped that some addition might come to our certainty in diagnosis, and especially to our power of identifying at the outset those diseases most requiring early recognition. This is important, not only in the treatment of the individual, but for the protection of other members of a family and the community at large. There are also considerations of therapeutics and of hygiene which naturally follow, and are not unconnected with the line of observation pursued.

In some of the exanthemata the development of the eruption is followed by a fall of temperature, in others the temperature at this time does not show the same tendency to fall. Measles and scarlet fever being taken respectively as representatives of these two classes of disease, it may be remarked that in the one there is generally a long incubative period, that in the other this is generally short; in fact, the skin is the first tissue in the latter disease to be affected, though by no means the last, while in the former, as is well known, a catarrhal period of considerable severity, and of three or four days' duration, precedes the eruption.

In a previous paper instances were given to show the probability of the pre-eruptive period in measles being infectious, positive evidence can now be adduced to show that this period is not without temperature changes sufficient to give warning of the danger of infection before the rash, which in scarlet fever is warning sufficient, has had time to appear.

The temperature-changes for the initiatory stages of measles are given in the accompanying tables. These, and some others which follow, are of interest as indicating :

- (i) By alterations both of pulse and temperature, an excitement of the system caused by the presence of the poison ;
- (ii) By a well-marked depression of temperature, the point from which the commencement of the disease may in reality be dated ;
- (iii) The special series of temperature-changes characterising the particular disease present.

TABLE 1.—*Pre-eruptive stage of measles. Morbilli.*

A girl, æt. 5 years, exposed to infection March 30th, cough on April 2nd.

Days of illness.	Date.	Pulse.	Resp.	Temperature in axilla.	Remarks.
4	April 3	110	26	98·6° noon	Slight cough and coryza.
3	„ 4	120	32	99·4° „	Eyes red, tonsils full.
2	„ 5	120	30	100·7° „	Doubtful mottling of parts of skin.
1	„ 6	104	30	99·0° „	Face mottled.
0	„ 7	100	26	97·3° „	Skin clear, slight cough.
1	„ 8	110	26	99·2° „	Respiration weak, a wheeze on forced inspiration.
2	„ 9	130	30	100·3° „	Ill, but not in bed.
3	„ 10	130	40	100·5° „	Respiration clear, spots of measles visible.
4	„ 11	...	...	102·0° „	Rash; purulent secretion from the conjunctiva.
5	„ 12	...	...	... „	Rash fully out, eyes better.

A boy, *æ*t. 4 years, exposed to infection March 30th.

Days of illness.	Date.	Pulse.	Resp.	Temperature in axilla.	Remarks.
1	April 9	120	30	98·6°	Looks ill, frequent spasmodic cough.
2	„ 10	140	35	101·3°	No rash, wants to go out.
4	„ 12	...	...	102·6°	Spots appearing on temples, cheeks, and behind ears.
5	„ 13	...	...	103·0°	Full dark rash, face swollen; frequent vomiting.
6	„ 14	...	...	...	Defervescence; some desquamation in the following week.

An instance of measles being infectious before the eruption is given in the following case:

A child on a visit, leaves February 13th with symptoms of illness, but no signs of measles till the 15th; a girl, *æ*t. 10 years, had slept with this child from the 9th to the 13th, and remained at home after her visitor had left; she seemed ill on the 20th, had chorea on the 23rd, with epistaxis in the evening, temperature 101·4°; rash of measles on the 24th, croupy cough at night, temperature 103·6; full rash on the 25th, croupy cough and tracheal sifle, temperature 104°; next day the temperature is only 98·7°.

TABLE 2.—*Morbilli*.

CASE 1.—A boy, *æ*t. 12½ years, exposed to infection March 20th, did not appear to be well on the 26th.

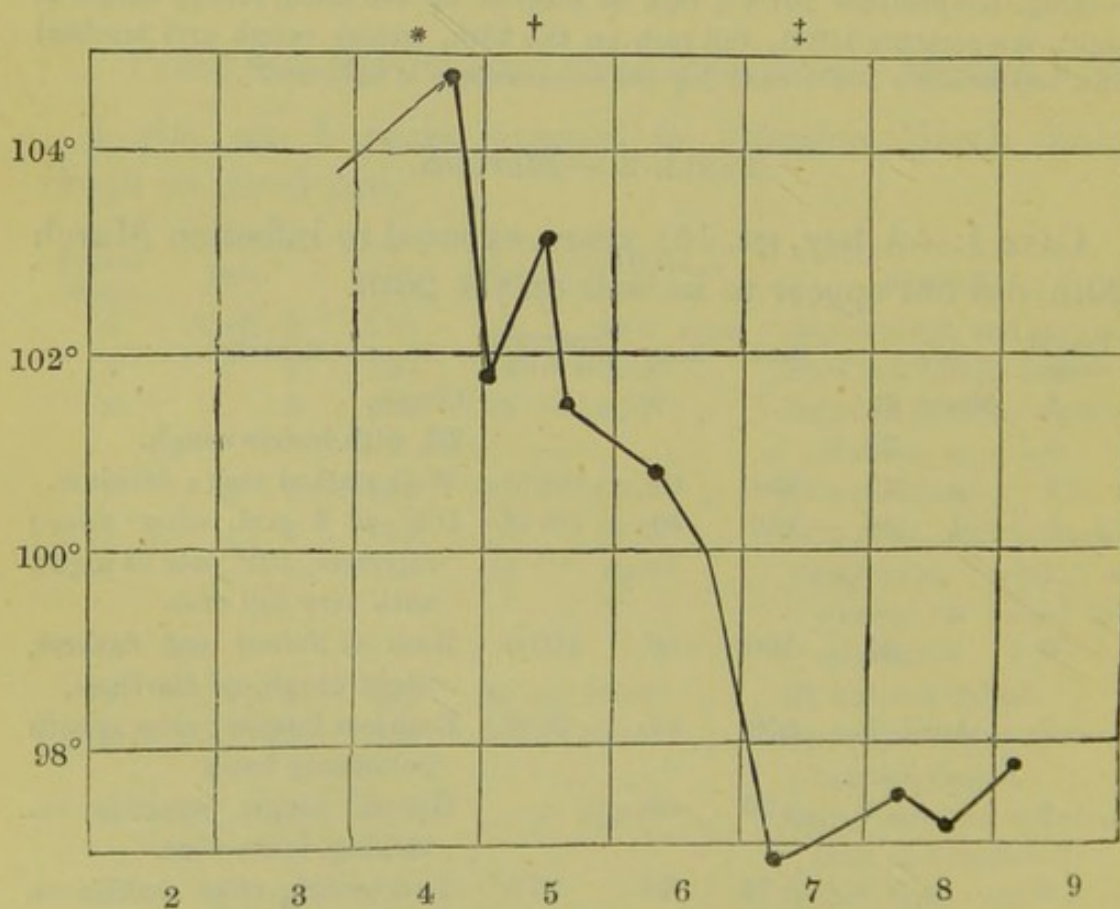
Days of illness.	Date.	Pulse.	Resp.	Temperature in axilla.	Remarks.
2	March 27	..	...	...	Cough.
3	„ 28	...	...	...	Ill, with hoarse cough.
4	„ 29	130	40	104·5°	Well-marked rash; delirium.
5	„ 30	130	40	101·6°	103° at 5 p.m. after wine; diarrhœa, 101° only at night, with very full rash.
6	„ 31	100	36	100·6°	Rash at fullest and darkest, slight cough, no diarrhœa.
7	April 1	108	36	96·8°	Rash less intense; râles at both pulmonary bases.
8	„ 2	96	32	...	Hoarse cough, appetite returning, takes wine.
9	„ 3	74	24	97·6°	Less cough, râles audible on forced inspiration.
11	„ 5	...	...	...	Seemed to be well; parotitis occurred on April 9.



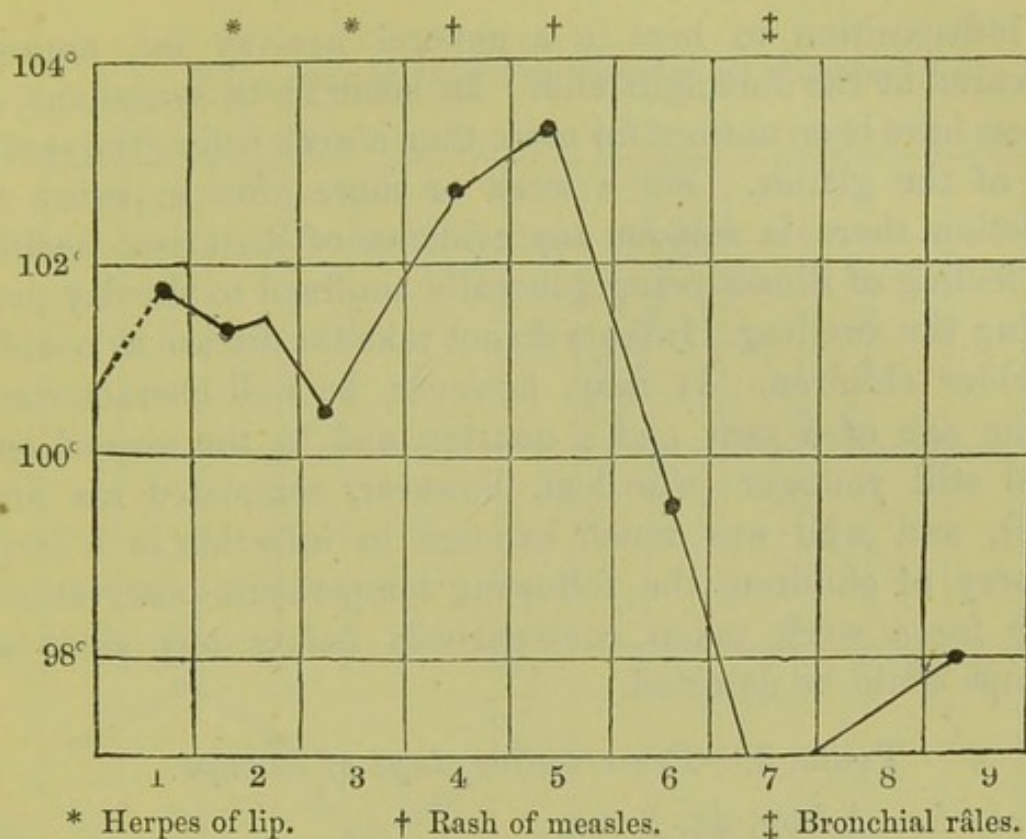
CASE 2.—A boy, æt.  $6\frac{1}{2}$  years, was with the boy whose case is last given from March 26th to March 30th.

Days of illness.	Date.	Pulse.	Resp.	Temperature in axilla.	Remarks.
1	April 5	120	40	101·8°	Does not feel ill; conjunctiva red, tonsils full.
2	„ 6	100	40	101·5°	Small red spots on lip and cheek.
3	„ 7	110	30	100·5°	Herpes of lip and cheek.
4	„ 8	130	40	102·6°	Seems ill; rash of measles at night.
5	„ 9	130	50	103·3°	Full rash on face and shoulders.
6	„ 10	120	30	99·5°	Body covered with rash; perspiration.
7	„ 11	...	...	97·4°	Tongue furred; some bronchial râles.
9	„ 13	...	...	...	Convalescent; no râles.

These two cases may be represented in diagrams thus :



\* Rash of measles. † Wine given once.  
‡ Bronchial râles, wine repeated.



*Parotitis.*—Mumps is the most nearly related to measles of the acute specific diseases. The period of incubation is even longer; a fortnight generally passes between exposure to infection and the full development of the disease; and where no attempt has been made to obviate sources of infection, or where the child, after mumps, has returned to the family too soon, an interval of two months has been known to elapse between the one case and the next: this, however, is the longest that has come under my notice.

Under my observation, the interval from complete separation from all sources of infection to the first symptom of disease has been nineteen days, though the time passed in that instance after the greatest exposure to infection was twenty-two days. Exactly this time elapsed from removing a child with mumps, who had been three days in the house, before a servant remaining in the house felt the first symptom of the disease.

The whole of this intervening period has not been occupied by temperature-observations. Occasional fainting, and a feeling of weakness occurred in a delicate girl for nearly three weeks before mumps was declared. Once, on a wound showing

an indisposition to heal in a general healthy lad, mumps appeared at the fortnight end. In some cases symptoms of illness have been noticed for more than a week before the swelling of the glands. For a week or more after exposure to infection there is seldom any evidence of disturbed health, the feeling of illness being generally confined to the day preceding the swelling. Infants do not take the disease as readily as older children. It may, however, be well characterised at the age of a year and a quarter, and in the case of one child still younger (who had, however, completed his first year), and who was much exposed to infection in a large nursery of children, the following temperature-observations were for a week taken consecutively before any signs of mumps could be detected.

TABLE 3.—*Pre-eruptive stage of Mumps.*

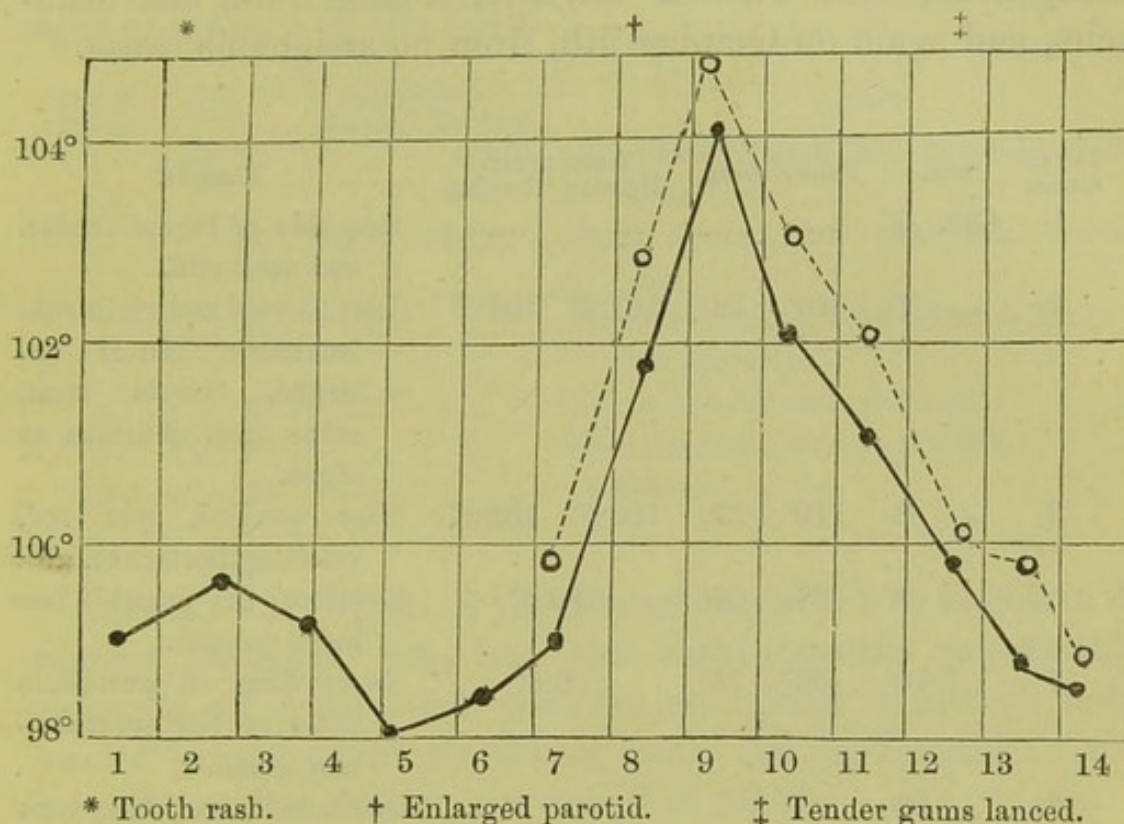
CASE 1.—A boy, *æt.* 1 year.

Day of illness.	Date.	Temperature.	Remarks.
—3	April 7	99·0° axilla	Two upper molars at gum, red spots on arm.
—2	„ 8	99·5° „	Small spots of herpes or strophulus on arm.
—1	„ 9	99·2° „	Seems well, no other spots on skin.
0	„ 10	98·0° „	
1	„ 11	98·6° „	
2	„ 12	99·6° „	Excitable.
3	„ 13	101·8° „	Vomited, parotid glands first perceptible.
4	„ 14	104·7° <i>in recto</i> at night.	One submaxillary gland affected.
5	„ 15	102·0° axilla	Seemed ill all day.
6	„ 16	101·0° „ 102° <i>recto</i> .	
7	„ 17	99·6° „	Some swelling of both sides of face.
8	„ 18	98·6° „ 99·7° <i>recto</i> .	Herpetie spots near left ear.

Point of left upper molar at gum and corresponding gum on right side full, both lanced; child well.

Of these fourteen days of pyrexia, the first three and the last two were probably owing to the teeth; there were, however, five days consecutively febrile, and it was not till the third of these that the child obviously had mumps.

*This case is thus represented in diagram.*



The dotted lines in this and a subsequent diagram represent the temperature *in recto*.

In this case, what might be the import of that temperature nearly of  $105^{\circ}$ , had it not been known that the poison of mumps was maturing in the system and would probably be cast off with no greater accident than a special irritation of certain fibrous and glandular structures? and is it not evident that the special affection of these glands is the final result and consequence of the illness under notice, and not the cause of the illness? It has seemed that in some cases the salivary secretion, as well as those of the mouth and throat are deteriorated; not only is there a peculiar odour from the mouth but ulceration at the orifice of the salivary duct has been noticed in the course of the disease.

TABLE 4.—*Mumps*.

CASE.—A boy, *æt.* 13 years, at home for the Michaelmas holidays, exposed to the infection of mumps at school, had

not seemed in his usual health since he left; he became easily tired. On October 1st, after a long walk, had headache, and again on October 5th, from no assignable cause.

Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
				Morning.	Evening.	
1	Oct. 6	...	...	...	...	One side of throat tender, and neck stiff.
2	„ 7	100	24	101.2°	103.0°	Left parotid and right submaxillary glands enlarged, bowels open, urine free, delirious at night.
3	„ 8	110	27	102.4°	102.4°	Face swelled, eyes red, vomiting, better at night.
4	„ 9	84	26	100.2°		Swelling of parotid less hard, no pain.
5	„ 10	68	24	98.4°		No swelling of parotids, a little of left submaxillary gland.
15	„ 20	...	...	...	...	Quite well, had felt weak till now, no metastasis, no relapse.

CASES.—A boy at home ill with measles on April 1st, has mumps on April 9th; four younger children in the house are in the same room with him from the 5th to the 9th, and after the 11th of April.

CASE 1.—A girl, æt. 11 years, not having looked well for a day or two is restless at night, and has pain under the ears on April 22nd.

Day of illness.	Date.	Temperature.		Remarks.
		Morning.	Evening.	
2	April 23	100.0°	101.0°	Swelling of both parotids, and pain.
3	„ 24	98.8°	...	Much swelling, pain relieved.
4	„ 25	97.2°	...	Glands still painful.
5	„ 26	...	...	Nearly well, perspired at night.
8	„ 29	...	...	Not febrile, relapse, submaxillary glands affected.

CASE 2.—A girl, æt. 9 years, who had not looked well for nearly a week, is slightly febrile on April 22nd, has signs of mumps on the 24th.

Day of illness.	Date.	Temperature.		Remarks.
		Morning.	Evening.	
1	April 23	...	99·4°	Slight swelling of both parotids, right most.
2	„ 24	100·7°	100·9°	Face flushed, left eye pink, severe pain.
3	„ 25	98·5°	...	Great swelling of both sides; is hungry, but cannot eat.
4	„ 26	97·7°	...	Great redness and swelling.
5	„ 27	..	...	Swelling less, redness persists.
6	„ 28	...	...	Epistaxis.

CASE 3.—A girl, æt. 8 years nearly, exposed to infection of mumps on April 9th, has the right parotid perceptibly enlarged on April 23rd, with no complaint of illness until awoke in the night by severe pain, she is languid in the morning and excitable, but not ill at night.

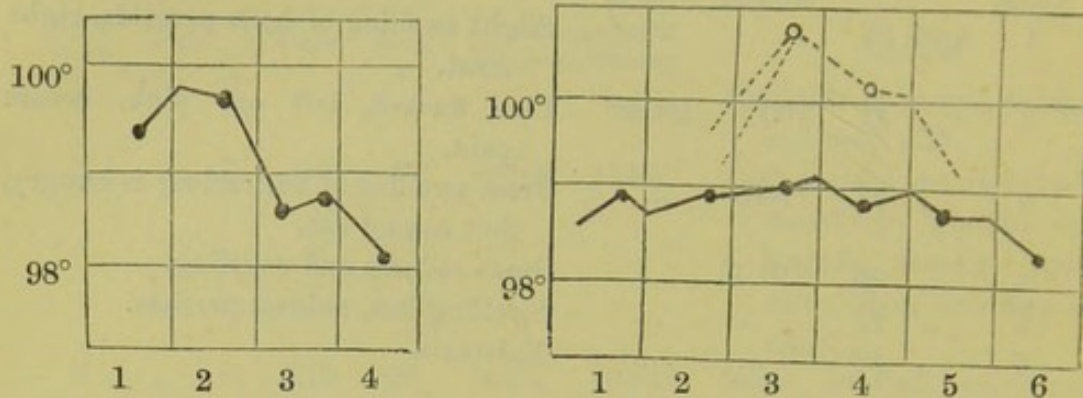
Day of illness.	Date.	Temperature.		Remarks.
		Morning.	Evening.	
1	April 23	98·2°	99·6°	Severe pain in the night.
2	„ 24	99·2°	98·6°	One parotid tender, the schlerotic of one eye pink.
3	„ 25	98·5°		Both sides swelled, severe pain in right ear, chloroform given.
4	„ 26	97·1°		Pain on left side.

CASE 4.—A boy, æt. 6 $\frac{3}{4}$  years, same exposure to infection, had swelling of the right parotid on April 25th with a temperature of 100°, pulse slightly quickened, respiration not affected, no complaint of illness, is sent to bed; April 26th no pain, not much appetite, temperature 100·7°; next day there is swelling commencing on the left side, no pain, pulse 100; respiration 24; temperature 99°. There was considerable swelling during the next three days, but no pain and no fever.

When separation and isolation have been carefully carried out, it has seemed that a milder course of the disease has

followed, at least when the health of the child was not defective.

*Diagram of two mild cases of parotitis.*



A little girl, five years old, was sent from home on March 14th, because her brother came from school on March 11th, with an illness which proved to be mumps; on March 28th she felt slight soreness of throat in eating her dinner; by night the right parotid was swelled and painful, temperature  $99.4^{\circ}$ . 31st.—Pulse 80; respiration 20; temperature  $98.2^{\circ}$ ; and though some swelling might be noticeable for nearly a week, no subsequent febrile disturbance could be detected. A younger brother three years old, who went from home at the same time to another house, was first noticed to be amiss on April 2nd and was restless at night; 3rd, complained of throat, swelling doubtful, febrile at night; 4th, both parotids palpably affected. Pulse 120; respiration 18; temperature in recto  $100.6^{\circ}$ ; axilla  $99^{\circ}$ ; but neither in the mouth nor at the sides of the neck could a temperature of  $99^{\circ}$  be obtained; 7th, submaxillary slightly affected, temperature  $98.4^{\circ}$  axilla.

This child was subject to sudden rises of temperature from apparently trivial causes; he suffered severely with both measles and whooping-cough, and might have been expected to show considerable temperature disturbance in this complaint, had he not had the benefit of change of air and excellent hygienic provision. He subsequently afforded an instance of the positive lowering of temperature the day before the appearance of the eruption of varicella.

In several cases a higher temperature has been obtained at the neck or in the mouth on the side affected than in the axilla, affording a fallacious support to the idea that the general temperature, and so, inferentially, the general disease was excited by, or was a consequence of, the local lesion. The case first given, and this last case, afford strong evidence the other way. If the febrile excitement be not to a high degree, the general temperature is not always readily obtainable in the axilla; even in the last case the axillary temperature, though in excess of that in the mouth, was a degree and a half below that of the rectum: it may be generally stated that the local temperature will not be found to be in excess of, or even equal to, the general temperature, if that can be effectually obtained.

A wave of low temperature preceding the development of many of the acute specific diseases, for which priority of observation may be claimed, has been demonstrated in the early stages of measles, mumps, varicella, vaccination, and whooping-cough. This period of depression does not coincide with the chill or rigor ushering in most acute diseases, for that occurs only when a considerable elevation of temperature is already established, while this is prior to the rise of temperature excited by the progress of the disease. Up to this time it is conceivable that the poison of a disease might be thrown off harmless from the system, and the process of infection might be interrupted, but not afterwards. This puts a period to the true incubation stage, and marks the commencement of what is generally called the stage of invasion, but which ought strictly to be considered as part, and a most essential part, of the disease itself.

The early recognition of this stage is insisted on as of practical importance both for the safe conduct of the patient through the disease, which though now impossible to avert is more easy to manage, and also for the safety of others in guarding them against infection before it is too late.

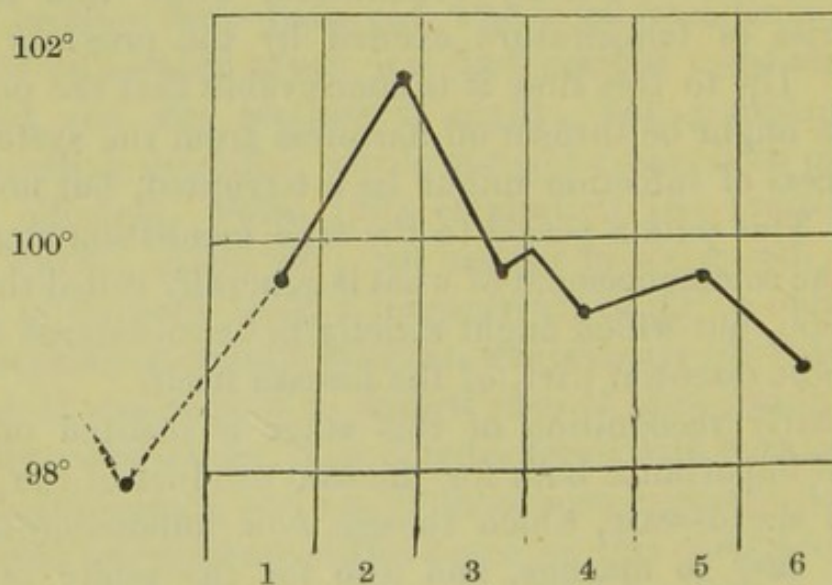
*Varicella.*—In chicken-pox the rise of temperature accompanies the first appearance of the spots, and falls after the



eruption is developed though it is somewhat elevated as long as any fresh spots appear. The illness precedes the eruption by a few hours only; generally it is indicated by some papular red spots as soon as the illness is felt, and it has but once occurred to me to find any elevation of temperature without also finding indications of the eruption. Observations made during the period that intervenes between exposure to infection and the appearance of the disease have afforded no more marked result than that the positive lowering of temperature, occurring at the commencement of most of the acute specific diseases, is here noticed on the day which precedes the more characteristic signs of the disease. Some symptoms of illness, such as pallor, and increased frequency of the pulse, may be at the same time noticeable.

The incubation period of varicella may be given as ten days; it is at least eight or nine days, as stated by Heberden; and at most, a fortnight or even seventeen days, as stated by Trousseau, may elapse from the beginning of infection to the appearance of the disease.

TABLE 5.—*Varicella*.



CASE 1.—A girl, aged 8 years, attending a day school, is seen with a characteristic spot of varicella on the upper lip, with others in the throat; she remained at home, and on the

following day there are numerous spots, with nocturnal fever; the fever continued next day, and was at  $101^{\circ}$  the day after, when the earlier and more considerable spots were drying; fresh small spots continued to appear on the two following days with diminishing febrile action; six days were febrile. A brother, aged 3 years, whose case is represented in the diagram, remaining in the house and occupying the same room had the first symptoms of the illness fourteen days from its commencement with his sister, and ten from the day of greatest fever, when she remained in bed. Two other children in the family sickened on the following day.

A woman who had been assisting in a room where there was chicken-pox, spends an afternoon in the end of November with her sister, living at the distance of half a mile, who has two children at home; the younger (CASE 2), a girl aged two years and eight months, was restless in the night of December 14th, she had some red spots on December 15th, and was seen by me December 16th with well-marked chicken-pox. The pulse was 180. Respiration 40 to 60 in the minute. Temperature in the axilla  $101^{\circ}$ ; next day, pulse 120, respiration 30, temperature  $100^{\circ}$ , with but few new spots. On the 18th the spots were drying and there was no increase of temperature at night. On the 19th the pulse was 100, the respiration 30, the temperature  $98^{\circ}$  only.

CASE 3.—A boy, aged six years and ten months, with his sister throughout, was restless in the evening of December 27th, when one spot was detected on the head; he vomited in the night. On the 28th several spots appeared; pulse 120; respiration 24; temperature  $101.3^{\circ}$ . Next day pulse 100, respiration 26, temperature  $99.7^{\circ}$ ; he was able to eat a chop at dinner; there were a few new spots; one or two of these on the chest and upper arm were rounded, flat, pellucid, with drying, if not depressed centres, and some areola; all the others were very characteristic of varicella. Here, at apparently the height of the disease, there was a fall of more than a degree and a half of temperature, though the boy had been kept warm in bed. On December 30th two

new spots, full, opaque, of rounded outline, with red edges, appeared on the nates. Temperature  $99.2^{\circ}$ . December 31st, pulse 110; respiration 30; temperature  $99.5^{\circ}$ ; one new spot, the last two are turbid; next day pulse 100, respiration 30, temperature  $98.5^{\circ}$ , and the disease was over.

CASE 4.—A younger brother, 5 years old, out to nurse under unfavorable hygienic conditions, was sent home on January 12th on account of another child in the same room with him being ill with chicken-pox. He showed the first symptoms of lassitude on January 21st, and a few spots were seen near the mouth that evening; the next day, and the day after very numerous vesicles were developed; he had a full and characteristic eruption, but seemed so little ill that he was not kept in bed; partly owing to this, and still more to the low state of health to which he had been reduced before the illness, he suffered afterwards with most intractable sores, which were not all healed on March 2nd, when he had again to leave home, nearly six weeks after the illness.

*Rubeola.*—Rosalia, or epidemic roseola, is nearly allied to measles, not only by a superficial resemblance, but also by having a long incubative period, and by culminating in a speedy subsidence of temperature on the appearance of the rash. The period of incubation, as elsewhere stated,<sup>1</sup> is from eight to ten days; the stage of invasion is short, and, so far as it has been possible to trace the temperature-variations during the pre-eruptive period, affords another illustration of how small is the disturbance created in the system by this class of zymotic poisons, of which vaccinia is the type, until the time has arrived for their ultimate development and expulsion. This is very striking in the form of exanthem to which the name of rubeola (as distinct from morbilli or true measles) ought to be restricted. Not only has no temperature disturbance been obvious until the night preceding, or the morning of, the rash, but there has been exceeding rapidity of both the rise and fall of temperature when this has been

<sup>1</sup> 'British Medical Journal,' 1870, vol. i, pp. 99, 100.

much disturbed. Once it reached  $102^{\circ}$  on the first day, was  $101^{\circ}$  on the second day, and below the normal on the third, with the rash still out. Where the disturbance has been less marked, a slight elevation of temperature has been noticed a day before the rash, has reached  $100^{\circ}$  on the day of the rash, was  $99.6^{\circ}$  on the second day, and  $98.7^{\circ}$  on the third, with traces of rash still on the face.

The great distinction between rubeola or rosalia and measles is the absence of the catarrhal stage of invasion; the appearance of the rash is generally closely similar. In a variety of this exanthem, having the same incubative period, the rash, instead of appearing like measles, presents a finally diffused redness which, except that on the face it has a more rosy hue, could not be discriminated by the most experienced and careful observer from the rash of scarlet fever, though differing from it absolutely as measured by temperature. The temperature change accompanying this form of rubeola is even slighter than in the other; it precedes the rash by a few hours, and has often quite subsided when the rash is most conspicuous, so that, at the time of the greatest redness, the temperature has by evening become normal, or been found at, or even below the normal.

Another class of acute specific diseases characterised by the shortness of the incubative period and the irregularity of the subsequent temperature changes, comprises diphtheria, croup, scarlatina, relapsing fever, cholera, summer diarrhoea, influenza, and whooping-cough. Temperature-changes for the two first of these diseases have been already given;<sup>1</sup> the high temperature marking the course of choleraic or summer diarrhoea in infants is described in a previous paper.<sup>2</sup>

*Scarlatina.*—Scarlatina, or scarlet fever, may be taken as the type of this class. As illustrating the shortness of the incubation period, instances of twenty-four hours (Trousseau) and of less than twenty-four hours (Murchison) have been

<sup>1</sup> Reynolds's 'System of Medicine,' 2nd edition, 1870, vol. i, pp. 118—120, 139; also pp. 79, 80, 84.

<sup>2</sup> 'Obstetrical Transactions,' vol. x, pp. 285—6.

ascertained; the duration of this period may extend to five days; the period of invasion is from three to thirty hours only. In scarlet fever, though the highest temperature often corresponds with the height of the rash, there is no necessary fall of temperature with the fading of the rash; and though at the height of the rash the temperature is high, and is often at its height at the end of the first week of the disease, yet with no other complication than stomatitis or coryza, it has continued at  $101^{\circ}$  and  $102^{\circ}$  up to the end of the third week.

Tables of the lowest ranges of temperature met with in undoubted cases of scarlet fever are here given for comparison with temperature variations in allied diseases: the normal range of temperature in the third case, not a mild one, is evidently controlled by the use of quinine.

TABLE 6.—*Scarlatina mitior.*

CASE 1.—Girl, *æt.* 2 years and 10 months.

Day of illness.	Date.	Temperature.		Remarks.
		Morning.	Evening.	
1	March 2	...	...	Fretful, ill at night.
2	„ 3	$102.0^{\circ}$	...	Full rash.
3	„ 4	$102.0^{\circ}$	...	Tonsils full.
4	„ 5	$100.8^{\circ}$	...	
5	„ 6	...	$100.0^{\circ}$ 3 p.m.	
6	„ 7	$99.2^{\circ}$	$99.0^{\circ}$ only, at night.	
7	„ 8	Normal.		

CASE 2.—Boy, *æt.* 8 years.

Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
				Morning.	Evening.	
1	Dec. 8	140	30	...	$102.2^{\circ}$	Rash on neck and chest, arch of palate red.
2	„ 9	...	...	$101.2^{\circ}$		
3	„ 10	...	...	$100.6^{\circ}$		
4	„ 11	...	...	$100.0^{\circ}$		
5	„ 12	...	...	$99.6^{\circ}$	$100.0^{\circ}$	
6	„ 13	...	...	...	$100.0^{\circ}$	Epistaxis.
7	„ 14	...	...	$99.6^{\circ}$		
8	„ 15	...	...	$98.4^{\circ}$		
9	„ 16	...	...	...	$101.0^{\circ}$	Constipation.
10	„ 17	...	...	$99.0^{\circ}$		
11	„ 18	...	...	$98.4^{\circ}$	...	Some secretion from right ear, slight deafness.

*Scarlatina.*

CASE 3.—A boy, æt. 4 years. Temperature changes arrested by quinine.

Day of illness.	Temperature in axilla.		Remarks.
	Morning.	Evening.	
1	...	...	Vomited at night.
2	...	102·0°	Rash on face and chest, palate red.
3	103·0°	...	Half a grain of quinine three times a day.
4	100·8°	100·4°	
5	98·6°		Stop quinine, an aperient given.
6	99·4°	100·1°	Resume quinine.
7	98·6°	99·8°	Tonsils full.
8	99·4°	...	To take iron with smaller doses of quinine.
9	...	99·0°	Castor oil given.
10	...	98·4°	Takes food well.
12	Defective vision, ciliary muscles paralysed (?), tonsils full.		
15	Improving; thick, glairy mucus at back of pharynx.		
32	Desquamation complete; some paralysis of abdominal muscles.		
38	No action of bowels since last report; convalescent.		

The following case (4), and the next but one (Case 6), show the influence of quinine and the inutility of alcohol in checking the tendency to high temperature during the course of scarlet fever.

CASE 4.—A boy, æt. 2½ years. Suffered from congestion of left lung six months before.

Day of illness.	Pulse.	Resp.	Temperature in axilla.		Remarks.
			Morning.	Evening.	
1	...	...	...	...	Restless, rash, seemed well the day before.
2	130	35	99·4°	...	100·4° <i>in recto</i> ; throat red, rash fullest over the back.
3	...	...	99·6°	...	Rash extends to legs, uvula red; sleeps well at night.
4	130	...	100·2°	...	Rash most on thighs; glairy mucus from one nostril.

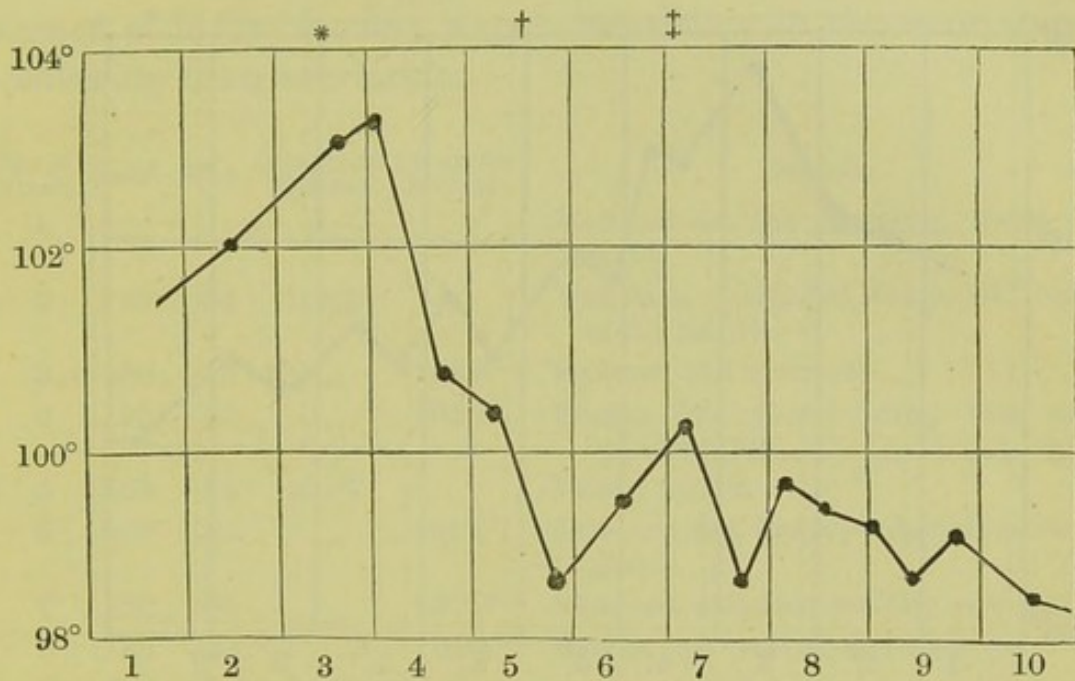
Day of illness.	Pulse.	Resp.	Temperature in axilla.		Remarks.
			Morning.	Evening.	
5	130	30	101·0°	...	One tonsil full, eats and sleeps well, excreta natural.
6	120	30	100·2°	...	Throat better, no coryza.
7	130	30	102·2°	...	Is restless, looks pale.
8	130	40	101·6°	...	Congestion at base of left lung; to be poulticed.
9	120	40	100·4°	...	Respiration audible at base, restless at night; wine given.
10	120	50	101·4°	102·0°	Enlarged cervical gland; to take quinine 1 gr. in powder.
11	120	40	98·4°	99·1°	<i>in recto</i> at 4 p. m. Slight alcoholic stimulant.
12	120	40	99·2°	101·3°	Fulness of neck on both sides; 1 gr. quinine repeated at night.
13	120	36	98·0°	...	98·5° <i>recto</i> ; a little wine and water allowed.
14	100	30	98·0°	...	Less swelling of cervical glands.
15	...	...	...	...	To take steel wine and cod liver oil.
20	100	30	97·9°	...	Seems well; swelling of neck almost gone, cervical glands still perceptible, signs of fine desquamation on hands and feet, skin otherwise clear; has not left the room.
41	120	30	...	...	Submaxillary gland still perceptibly enlarged; the bowels generally acted freely, often disturbed, urine deposited lithates, never albuminous.

This child had been kept indoors three weeks longer than necessary for his own health.

Had the pyrexia on the tenth and twelfth days not been arrested the swelling of the cervical glands would probably have then become a serious complication. The good effect of quinine, as contrasted with that of alcoholic stimulants, was at that time very obvious.

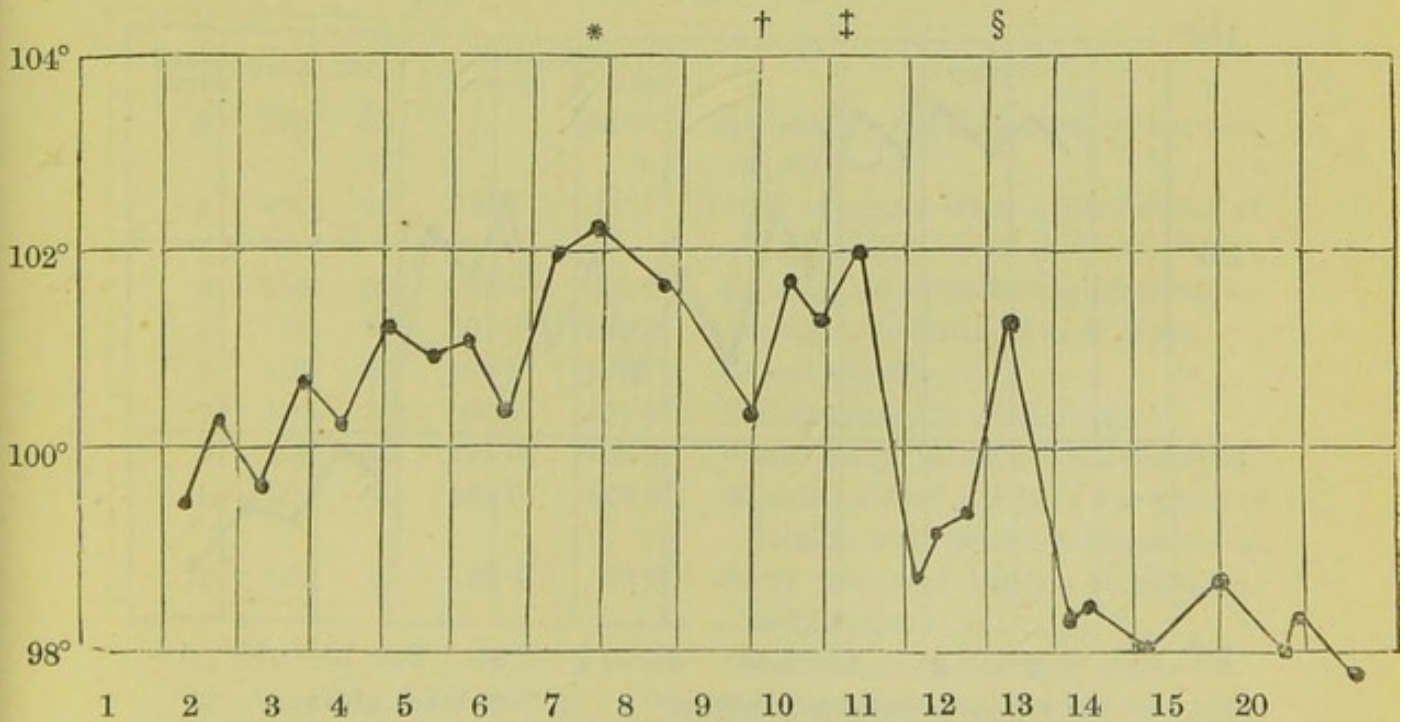
*Diagrams of Scarlatina.*

CASE 3.—A boy æt. 4 years.



\* Quinine given, 3 grains. † Stop quinine. ‡ Resume quinine.

CASE 4.—A boy æt. 2½ years.

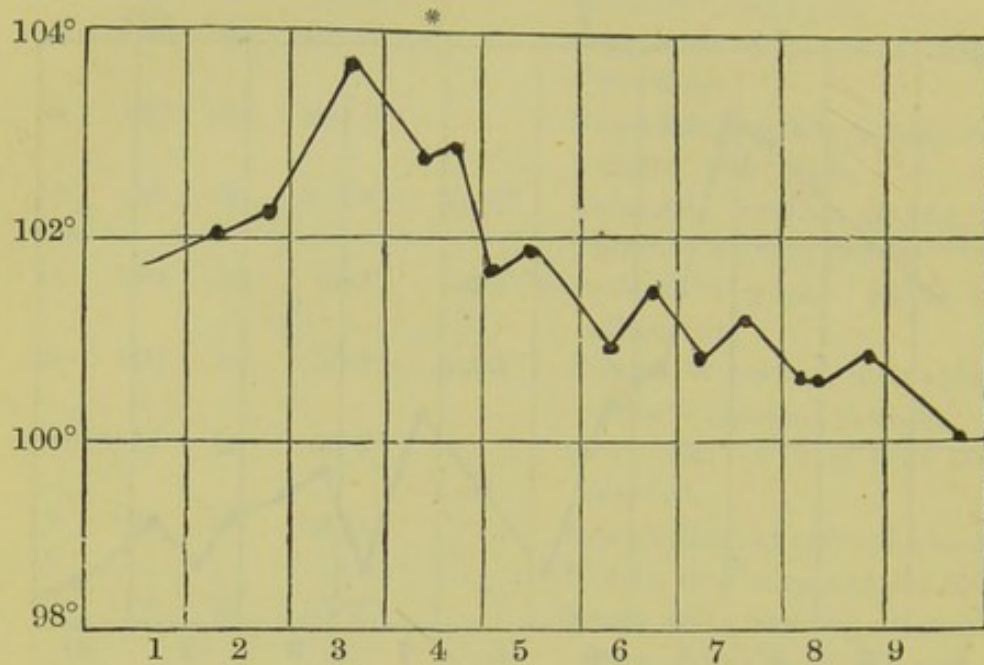


\* Congestion of lung. † Quinine given, one grain in powder, and repeated twice.  
 ‡ Port wine given. § Resume quinine one grain at night.



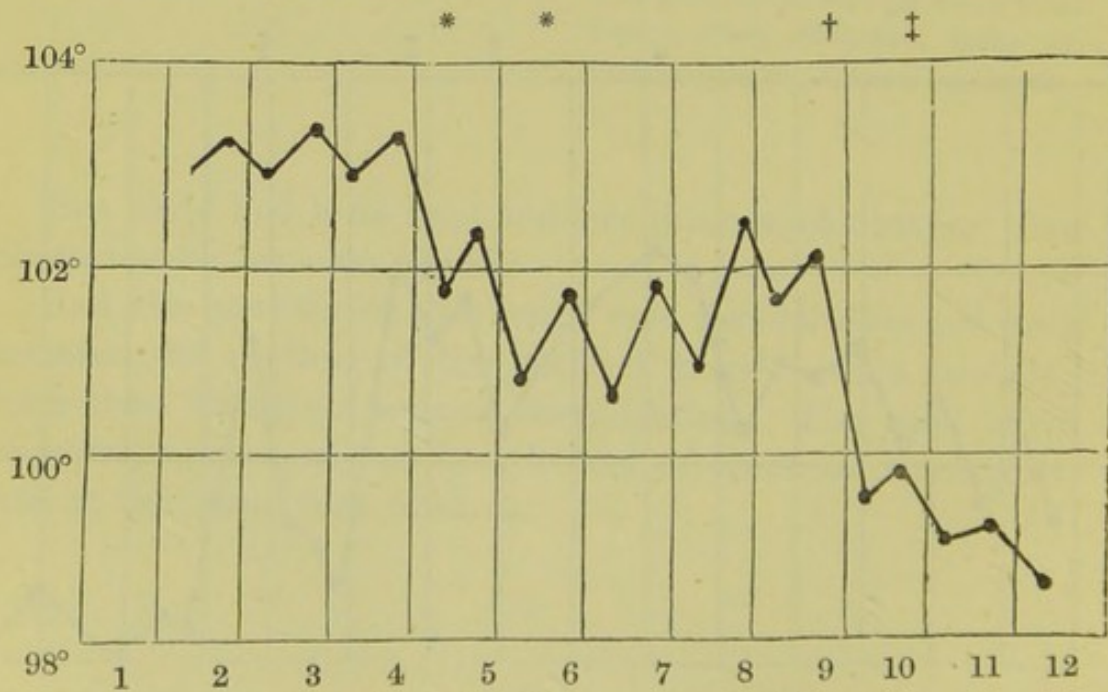
*Diagrams of scarlatina.*

CASE 5.—A girl æt. 3 years.



\* Quinine given.

CASE 6.—A girl æt. 7 years.



\* A dose of quinine at night.

† Wine given.

‡ Quinine given regularly.

TABLE 6.—*Scarlatina.*

CASE 5.—A girl, æt. 3 years. Has been hoarse, and complained of throat for four days; two sisters in the same room recovering from scarlatina.

Day of illness.	Pulse.	Resp.	Temperature in axilla.		Remarks.
			Morning.	Evening.	
1	...	...	...	...	Vomited in the morning, fever at night.
2	140	34	102·2°	...	Full rash, palate red, temp. 101° only in the mouth.
3	180	40	...	103·6°	Sickness and diarrhoea.
4	170	40	...	102·8°	Tonsils full, throat sore; iron and quinine given.
5	160	34	101·7°	...	Throat better.
6	120	34	...	101·2°	Skin very red, harsh; enlarged cervical glands.
7	120	30	...	101·0°	Skin red, soft, less swelling over gland.
8	120	30	...	100·8°	Better, lips cracked and sore.

Continued to improve.

CASE 6.—A girl, æt. 7 years. After complaining of the throat for a day or two is seized with vomiting.

Day of illness.	Pulse.	Resp.	Temperature.		Remarks.
			Morning.	Evening.	
2	120	40	...	103·0°	in the mouth, probably more on surface, slight rash.
3	120	30	102·8	103·1°	102·9° at night, after a third action of the bowels.
4	110	30	102·8°	103·2°	To take acid medicine in place of saline.
5	110	30	101·8°	102·2°	A grain of quinine given at night.
6	108	26	100·8°	101·7°	Repeat quinine.
7	108	28	100·5°	101·8°	Bowels confined, no medicine.
8	108	30	101·0°	102·4°	Claret given, no action of bowels.
9	100	30	101·6°	102·1°	Bowels relieved; to take one grain of quinine, and repeat it in the morning.
10	100	25	99·4°	99·6°	Some fulness of tonsils; to take iron and quinine.
11	100	24	99·2°	99·4°	Constipation; relieved by castor oil.
22	Very free desquamation; a tendency to constipation; no albuminuria at any time.				

The effect of quinine in controlling the high temperature of scarlet fever is still more marked in a case of great severity which concludes this series. The brother of the little girl whose case is last given, had been some months in the country, detained there the last two, in consequence of his sister's attack of scarlet fever at the end of August, returns on October 9th and is put to sleep in the room in which his sister was ill, the room and the bedding had undergone a thorough purification, but the curtains which had surrounded the little girl one night only at the commencement of her illness had been put away since August 30th, after only a few days' exposure to the air, and were now hanging in alarming proximity to the face of the present patient. Four younger children, and a girl, fifteen years old, in the nursery, never having had scarlet fever, remained in the house throughout without showing any symptoms of illness; moreover, the convalescent sister had returned to them seven weeks from the commencement of her attack, but no one but this boy takes the illness.

The ingress of the pyrexia was as sudden as it could possibly be; the child was observed at 2 o'clock in the afternoon to be seemingly in the most robust health, and by six in the evening he was obviously ill with a severe attack of scarlet fever. Whether this is from his sister or from the curtains under which he slept (though in neither case need the germ have been imparted long before) the cause of infection must be considered as acting continuously, and the effect is not produced until ten days from first exposure.

CASE 7.—A boy, æt.  $8\frac{3}{4}$  years, suddenly seized on October 19th, in the evening, with headache, sore throat, and vomiting; has the rash of scarlet fever by night, with high fever and delirium.

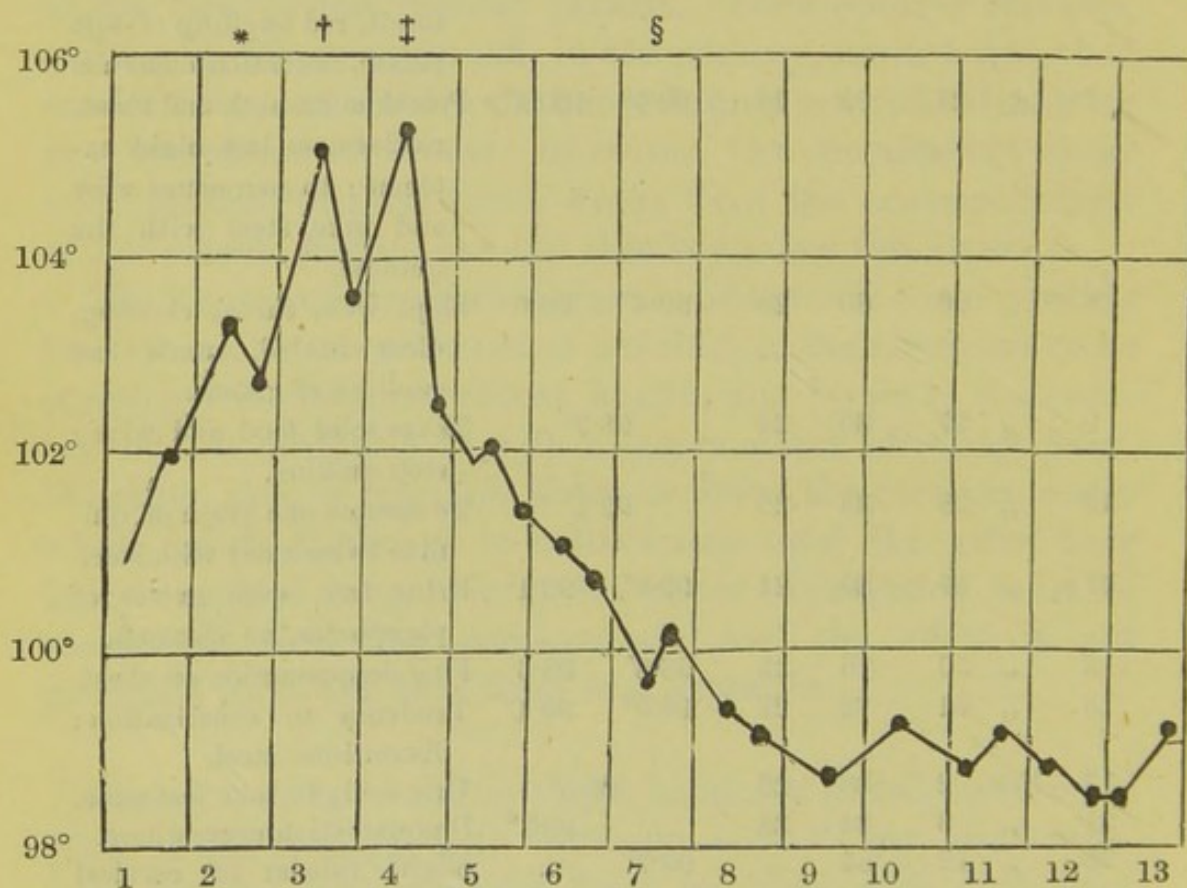
Day of illness.	Date.	Pulse.	Resp.	Temperature in axilla.		Remarks.
				Morning.	Evening.	
	Oct. 19	...	...	...	...	...
2	„ 20	130	46	103·2°	102·5°	Full, dusky rash, bad throat, muscular twitchings at night, and great prostration.

Day of illness.	Date.	Pulse.	Resp.	Temperature in axilla.		Remarks.
				Night.	Morning.	
3	Oct. 21	140	48	105.0°	103.5°	One grain of quinine given at noon, not repeated at night; delirium.
4	" 22	128	40	105.0°	102.2°	Three grains of quinine in the afternoon and two at night, with ice to the head.
5	" 23	100	30	102.0°	101.2°	Slept well, quite cheerful and intelligent to-day; rash less intense, throat freer from sordes, redness of left tonsil, glands tender.
6	" 24	100	28	101.0°	100.7°	Urine passed twice to-day for the first time; swelling under left ear, ulcer of left tonsil, red swelling of soft palate, exudation on uvula.
7	" 25	92	26	99.7°	100.1°	Petechiæ on neck and chest, restlessness last night extreme; to commence wine and take steel with the quinine.
8	" 26	80	28	99.4°	99.0°	Slept well, throat clearing, ulcer healed, much less swelling of glands.
9	" 27	80	24		98.7°	Takes solid food and wine; stop quinine.
10	" 28	88	26		99.1°	To resume one grain of quinine twice a day with steel.
11	" 29	80	24	98.8°	99.1°	Urine free, with excess of phosphates, no albumen.
12	" 30	76	22	98.8°	98.6°	Fine desquamation on chest.
13	" 31	72	22	98.6°	99.1°	Tendency to constipation; discontinue steel.
15	Nov. 2	88	26		99.5°	Uric acid; to take less wine.
21	" 8	84	24	...	99.1°	Desquamation everywhere.
25	" 12	84	...	98.7°	...	Slight fulness of cervical gland remains.
34	" 21	84	26		99.1°	Some fulness of tonsils; to go out.

Here the intensity of the disease necessitated a large quantity of quinine, which did not cause either deafness or other inconvenience; quinine seems to control any tendency to vascular or other excitement that might be occasioned by

the free use of wine; this is traceable both on the seventh and tenth days. The most marked benefit from it is seen at the very height of the fever, when, the general pyrexia being under its control, the heat of head and restlessness at night were readily subdued by the application of ice, and good sleep followed. Next day the intelligence, cheerfulness, and perfect memory displayed make it impossible to suppose that any cerebral congestion had resulted from the remedy, or any cerebral injury from the pyrexia.

*Diagram of scarlet fever influenced by quinine.*



\* Muscular twitchings, great prostration. † One grain of quinine only given.  
 ‡ Three grains of quinine given and repeated.  
 § Wine commenced and given freely next day.

The effect of quinine in scarlet fever is seen in this diagram of the case under consideration. Six grains of quinine in one day and three grains on subsequent days

sufficed here ; from fifteen to forty grains are often requisite in older persons ; the latter quantity has been given in one night with most marked benefit to a boy of sixteen, where fever from another cause was running high. Scarlet fever in the puerperal state requires the largest doses in combination with the stronger forms of iron. Albuminuria has rarely followed in the cases of scarlet fever that have been selected for careful observation, nor as yet, it is worthy of remark, has acute albuminuria been observed in those treated by quinine. After complete devescence, albumen has appeared, with desquamation of the renal epithelium in one case partially treated in this way.

In reducing the high temperature on which the chief danger not only to life, but to the integrity of the tissues, in these diseases, depends, quinine is as powerful a remedy as cold affusion, and is much more convenient and serviceable ; it is nearly as efficacious in typhoid fever, when, the pyrexial period being more prolonged, the cerebral disturbance is greater : how much of this might have been prevented by its use in cases that come to mind ! Once in a child convalescent from typhoid fever loss of memory was so complete that whole weeks remained a blank. Cinchonine has a similar influence, as is illustrated in a case of typhoid fever given at the end of this paper.

The communication of scarlet fever from one person to another in the same household, even where there are several children, is generally preventible. To effect this the general requirements are a separate room for the sick, bared as much as possible of furniture ; a sheet or linen curtain, on which disinfectants can be sprinkled, suspended over the door, and the removal of any carpet or rug from the outside of the door of the sick room ; strict cleanliness within the room ; the immersion in water containing a disinfectant of whatever has to be removed from the room ; an intelligent attendant, and a sufficiently prolonged isolation of the patient. Olive oil containing one twentieth part of carbolic acid, applied to the skin, is useful ; in the earlier part of the illness it is grateful to the patient, in the latter part it obviates some of the dangers attending desquamation. Several instances where

families of six or seven children all remaining in the house have escaped, while one of the number was going through an attack, have come under notice. Even where, in a family of three children with but a single sleeping room, part of it only could be set apart for the treatment of a child seized with scarlet fever, the intelligent application of these principles secured the immunity of the others. So true is it that disinfection, to be real, must begin at the bodies of the sick.

The great difficulty in checking the diffusion of scarlet fever is the uncertainty as to when the infectious period of the disease is over. Six weeks must be taken as the least time allowable for the persistence of personal infection. The way in which clothes may retain infection particles is easily understood, and may be readily guarded against. The disinfecting of the house is a more difficult problem; chief dependence must always be placed upon the care taken to meet every cause of infection at its source. Afterwards, liberating fumes of sulphurous acid, by sprinkling sulphur on some live coals properly placed, is of use; a thorough cleansing of the room is necessary, also the free admission of air; even then, time must aid to free the roof from all taint.

To arrest the spread of scarlet fever at the outset presents a less difficult problem than to limit its extension afterwards. The marked character of the earliest symptoms, the suddenness of the invasion, and the shortness of the incubative period, all tend to favour the success of an immediate segregation of the sick. It is to be remarked how often those escape who are removed from contact with the sick during the first two days of the disease, and how sometimes a short contact with a convalescent has been rapidly followed by symptoms of the illness. The quarantine necessary to those who have been exposed to infection that may guard against their becoming agents in disseminating scarlet fever is not very protracted. Evidence of the shortness of the incubation period is conclusive; this, indeed, can hardly be admitted to extend, even at its longest, to five days, so that generally a week will show whether any one so exposed has taken the disease or not. A difference of result may be looked for

where there is continuous exposure to the source of infection to where there is complete removal from it; under the first circumstance four or five days of slight sore throat or precedent hoarseness have been occasionally met with. Where there has been prompt removal from the infecting cause eight days has been the longest interval from exposure to sickening, under my own observation, isolation being as complete as possible; where the removal has been less prompt, unless a complete immunity from infection may be anticipated, the probabilities are that the disease will declare itself in even a shorter time. A period of hours only has in some instances sufficed for the development of the disease, so that when so long a time as five days is given for incubation,<sup>1</sup> we must conclude either that there has been some hindrance to the passage of germs from the lungs to the blood, or that the first portions absorbed must have been thrown off harmless; at the same time, when a period so long as even twelve days has been given by some writers as a possible one in which the disease might appear, this interval would not be too long for observing a quarantine that might check the spread of so dread a pest.

Influenza, though rarely exanthematous, and liable to recurrence, has alliances with scarlet fever, chiefly in the rapid development of its early stages, and somewhat in its after course, whether that take the form of the herpetic catarrh of spring, the diarrhœa of summer, or the bronchitis of winter.

Whooping-cough, which, but for a doubtful turgescence of skin and the petechial spots sometimes met with, would not be exanthematous at all, has some affinities with this class of disease. It is with difficulty distinguished at the outset from influenza; both, at first, alike depress most seriously the weakest and youngest, yet the more marked consequences of the one and its much longer course render an early recogni-

<sup>1</sup> The evidence as to the infection of relapsing fever is the other way. Exactly five days elapsed from complete removal from the sources of infection to the appearance of the disease in an unexceptionable instance; a doubt as to the other sources of infection must attach to the cases from Camberwell work-house, where the passing one night in infected wards was followed by the appearance of symptoms of the fever in the morning.



tion desirable. Some essential differences should not be wanting to the early stages of a disease differing so widely in its after course as this one does from influenza, in that it is almost always exempt from recurrence.

This difference is found in the pyrexial period of the early stage of the disease, being sometimes more intense, and always more prolonged in hooping-cough than in influenza, and in the incubative period of hooping-cough being much longer. Again, there is this point common to them, which occurs also in other diseases, that on the establishment of the local process the general temperature shows a tendency to decline.

*Influenza* seems to be immediately infectious, and twice it has occurred to me to meet with the first symptoms before elevation of temperature had set in. In one instance there was altered voice and a visibly red epiglottis; in the other, to be presently tabulated, sneezing and slight diarrhœa. In the slighter cases the pyrexial period may be a few hours only, secretion is readily established, and the temperature rapidly declines.

To take, in the first place, simple cases of influenza catarrh. An infant, a boy of three years, and a girl of one and a quarter, come from the country on April 10th to a house where the servants in charge had influenza colds. The little girl has diarrhœa on April 14th; on the 15th there is slight coryza and the first elevation of temperature; on the 16th some harshness of respiration, with a temperature of  $100^{\circ}$  axillâ; 17th, temperature normal, much defluction from nose; 18th, temperature  $97.6^{\circ}$  axillâ, and only  $98.6^{\circ}$  recto. The little boy was well on April 16th; on the 17th was hot and restless, had spots of herpes on the arm in the evening, and coughed in the night; 18th, temperature  $99^{\circ}$  axillâ, perspiring after a midday sleep; 19th, cold in the head, temperature normal. The infant, who was more restricted to the nursery, while the elder children went into other parts of the house, coughed at night on April 20th; on the 21st had signs of catarrh but was not kept to the house, the weather being hot and the catarrhal symptoms trivial.

In cold weather more serious disturbance is to be appre-

hended. On January 21st a boy, two and a half years old, is feverish at night and has croupy cough. 22nd, harsh cough; slight difficulty of swallowing; glandulæ concatenatæ palpable; pulse 160; respiration 40; temperature 101°. 23rd, loose rhonchi in larger bronchi; pulse 160; respiration 40; temperature 99·6°. Next day, pulse 100; respiration 30; temperature normal; some loose cough.

In the nursery with this child is an infant-brother three and a half months old, who, not having been out, was noticed to sneeze on January 23rd. Observations made at the very commencement are given in the following table.

TABLE 7.—*Influenza.—Pneumonia.*

## CASE 1.—

Day of illness.	Date.	Pulse.	Resp.	Temperature in recto.		Remarks.
				Morning.	Evening.	
1	Jan. 23	120	40	...	98·8°	Below the normal for this child.
2	„ 24	135	50	...	101·4°	Cough, harsh respiration, bowels relaxed.
3	„ 25	130	60	101·7°	...	Kept awake by incessant cough, high-pitched rhonchi at scapulæ.
4	„ 26	160	70	102·6°	...	Dulness at left base and diminished expansion.
5	„ 27	180	...	102·4°	103·0°	Crepitation.
6	„ 28	160	60	101·0°	102·3°	Secretion commencing.
7	„ 29	140	60	100·5°	101·0°	Large loose râles, dulness at left base.
14	Feb. 5	...	...	99·2°	...	Expansion good, lungs healthy, some consonant râles heard in large bronchi.

The next table also indicates pulmonary complication. A girl, aged four years and two months, sleeps in the same room with an elder sister, who came home from school with bronchial catarrh on December 11th, 1868. It was noticed at night how quick was the breathing of the one girl and how quiet that of the other. The next morning, at 5·30 a.m.,

a change was remarked in the younger girl; by 7 a.m. there was rapid breathing, afterwards coryza and some fever, though she was cheerful in the afternoon. Throughout the next day, December 13th, she was said to have a severe cold.

TABLE 7.—*Pneumonia.*

## CASE 2.—

Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
				Morning.	Evening.	
1	Dec. 14	140	60	101·0°	...	Congestion of left base.
2	„ 15	160	60	100·5°	...	Pallid, alæ nasi work.
„	„ „	140	70	...	100·6°	Crepitation at base.
3	„ 16	140	70	103·0°	100·1°	Rusty sputa.
4	„ 17	140	60	100·5°	...	Better.
5	„ 18	140	50	98·4°	...	Loose râles everywhere, aphthæ in mouth. Ultimate recovery perfect.

The eldest sister had a temperature of 101° in the evening of December 11th; next day, though she had some congestion of left lung, with mucous rhonchus and great acceleration both of pulse and respiration, the temperature was lower; and on the fourth day, with abundant sonorous râles, the pulse was 120, respiration 40, temperature normal. Two other children of this family on December 13th and 14th were similarly attacked.

In another nursery of four children an elder sister comes home from a day school with cough on December 8th; on December 10th the younger sister, two years old, has a similar cough; on December 13th a stout florid boy of three and a half years, who has once had croup, becomes suddenly febrile, and at night has a temperature of 101°; his breathing is rapid, both inspiration and expiration prolonged; diffused râles; cough.

Day of illness.	Date.	Pulse.	Resp.	Temperature.	Remarks.
2	Dec. 14	140	50	101·5°	
3	„ 15	120	40	99·5°	Râles, most at left base.
4	„ 16	110	40	98·0°	Loose sonorous râles everywhere.
5	„ 17	160	40	100·8°	Excitable; râles almost gone.
6	„ 18	120	35	98·0°	Râles have returned.
7	„ 19	Nearly well.		Respiration slightly harsh.	

Here were two nurseries of young children all ill together with this contagious catarrh, and in both these nurseries the nurses became affected with herpetic sore throat, coming on with intense aching of back and limbs, and resulting in the formation of several small ulcers on the tonsils in one case, and a larger, round, yellow ulcer of one tonsil in the other. In both there was a temperature of  $102^{\circ}$  on the second day, with complete defervescence on the third, though the throat, edge of palate, and back of pharynx continued to be red.

The herpetic variety of this form of catarrh is not unfrequent, and may be considered as the sporadic form of influenza; it comes on after one day of chilliness or pain, has one or at most two days of pyrexia, which subsides often most completely on the third day, requiring, however, but slight variations in the circumstances of its occurrence to be prolonged with various complications. In children it is frequently followed by ecthyma, and so great is the tendency of infectious diseases, not only to propagate their kind, but even their individual peculiarities, that several children of a family will often be seen with ecthymatous pustules on their faces or fingers, resulting from influenza colds, and appearing so nearly together as to give rise to the idea of the exudation itself having contagious properties, while, in reality, they have resulted from a common infection acting on a common predisposition. There are other complications, however, of far more importance, and, excluding the modifications of this influence mentioned at the commencement of the section, certain distinct and separable forms of it, capable themselves of acquiring epidemic influence; yet neuralgia, rheumatism, quinsy, gastric catarrh, diarrhœa, dysentery, bronchitis, and pneumonia frequently result so directly, and the number of unplaced phenomena bearing upon the subject is so great, as to make one conclude that there is no such thing as idiopathic inflammation at all, and that the history of "common cold" has yet to be written.

In the following instances of high temperature associated with influenza the influence of a diathesis is obvious.

CASE 1.—A boy, *æ*t. 5 years and 4 months, has suffered, together with three older and two younger children in the family, from influenza colds, with herpetic and impetiginous spots chiefly on the face; this child has ecthyma of one finger extending to the nail, the remains of some eruption at the right angle of the mouth, and a sore at the edge of the right nostril, obstructing it. He has suffered much from illness; he had croup as an infant, subsequently some meningeal affection, and is slightly hydrocephalic; most of the teeth are decayed, but he is lively and well grown; frequently stumbles in his walk. During the past week's illness he has passed water involuntarily at night, and has been nervous and frightened in the day; he has complained of pain in the head, and has frequently squinted. February 21st, was sick in the night, and had no relief from the bowels. At 2 p.m. the pulse was 140; respiration 44 in the minute; temperature in the axilla  $103^{\circ}$ ; pain complained of behind both ears; no otitis; glands of the neck are perceptibly enlarged. At 4 p.m. he was relieved by black vomit, and afterwards by similar matter from the bowels; a small dose of calomel was given; he afterwards slept well. Next day, February 22nd, the temperature in the axilla was  $100^{\circ}$ , and the day after  $99^{\circ}$ ; there were streaks of mucus at the back of the pharynx; the head symptoms, at first pronounced to be secondary, had entirely disappeared. The bowels showed a tendency to constipation till the 26th, when there was restlessness at night and involuntary micturition. On the 27th the action of the bowels was normal, but the urine contained uric acid, which largely deposited on the 28th. March 2nd.—Pulse 100; respiration 26; temperature, axilla,  $98.8^{\circ}$ . Nostril healed; angle of mouth sore; back of pharynx red, streaks of mucus on it; appetite better; a dessert-spoonful of wine at dinner makes him excitable and prevents him walking steadily; to discontinue it, and take syrup of iodide of iron.

The nurse had ulcerated sore throat on February 22nd, and herpes of lip on 24th; in the next case a servant has herpes of the lip, and the illness of the child follows.

CASE 2.—A boy, æt. 7, subject to sudden febrile attacks accompanying acute enlargement of tonsils; has had a pustular spot on one cheek for a few days. A servant in the house had herpetic catarrh a week before.

Day of illness.	Date.				Remarks.
	Mar. 22	Woke early in the night with a croupy cry, hot and restless afterwards.			
1	„ 23	Both tonsils large, smooth, left slightly red, glands on left side of neck palpable, temp. axilla 103·0°; tincture of steel given.			
		Pulse.	Resp.	Temp.	
2	„ 24	120	30	101·0°	Throat red, no specks on tonsils, viscid defluxion from nostrils.
3	„ 25	112	28	99·4°	Tongue clean, tonsils paler, still full, a small pustule on neck.
4	„ 26	100	20	98·8°	Acrid discharge from nose, sleeps well.

The following case is as much like quinsy as possible in a child so young.

CASE 3.—A girl, æt. 4½, complained of fatigue and loss of appetite on April 26th. Wine given at night; great fever and restlessness afterwards.

Day of illness.	Date.	Pulse.	Resp.	Temp.	Remarks.
1	April 27	...	...	Burning heat.	Vomited; an aperient caused one very dark evacuation.
2	„ 28	144	48	103·0°	Face and arms red, tonsils full with white specks.
3	„ 29	120	30	102·2°	Tonsils enormously distended, glands of neck hardly perceptible.
4	„ 30	110	25	99·1°	Appetite returning, fulness of tonsils has subsided, but they meet, the specks have red edges; uric acid in urine.
5	May 1	Improving; rapid subsidence of tonsils.			

As an illustration of bronchial catarrh in which the temperature falls as secretion is established may be mentioned

the case of a boy, æt. 5, attending a day school, who has slight signs of cold on May 19th, with relaxation of the bowels. On the 20th he is flushed and excitable in the evening, very hot in the night, and disturbed with noisy breathing; pulse 140; respiration 32; temperature 102·8 in the axilla. Next day the respiratory sounds are weak, the fever rather less; salines and rest in bed are prescribed. On the 22nd there are increased signs of bronchial irritation and less fever. On the 24th free bronchial secretion; temperature 97·4 in the axilla.

CASE 4.—*Gastric catarrh; sudden fall of three degrees in temperature after purgation.*—A boy, æt. 3, of rapid growth, thirty-eight and a half inches high (he was thirty-six inches in June last, and thirty-seven and a half in October, so has not grown so rapidly of late) has a slight cold on February 19th; next day, weather being very cold, he is out long and late, and complains of pain in stomach and limbs.

Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
				Morning.	Evening.	
1	Feb. 20	...	...	...	...	Cough at night and diarrhoea.
2	„ 21	130	30	...	102·0°	Headache, rigors, talks in sleep.
3	„ 22	120	30	101·0°	101·4°	Pain in stomach, no cough.
4	„ 23	140	40	102·5°		Tongue furred, yawns, mouth twitches; calomel $\frac{2}{3}$ grain given.
5	„ 24	110	30	99·4°		Bowels three times acted on last night.
7	„ 26	100	26	Non-febrile.		One natural action of bowels.
14	March 5	A sister has cold and sore throat; also a servant, who also has herpetic spots.				

The weather became suddenly mild on February 20th, with a half-inch fall of the barometer, when the following case of bronchial catarrh was observed.

CASE 5.—A boy, æt. 2, still at the breast, the canine teeth not cut, has heat of head on the 21st, cough on the 22nd, coryza on the 23rd, first seen by me on the 24th.

Day of illness.	Date.	Pulse.	Resp.	Temperature.	Remarks.
4	Feb. 24	120	40	100·0° recto.	Sonorous rhonchi at back of chest, sordes on gums, had been purged by calomel.
5	„ 25	120	46	100·6° „	Gums lanced, great irritability, no coryza.
6	„ 26	120	40	100·4° „	Loose cough.
8	„ 28	120	30	100·0° „	Bronchial râles, coryza.
9	March 1	130	40	101·2° „	Harsh respiration with moist râles, excitable at night.

Improvement followed upon an improved diet.

Lancing the gums in this case had no influence on the temperature changes, and the calomel purge at the commencement was injurious. In the following case, occurring in hot weather, the febrile disturbance was neither made shorter nor less by the early use of calomel; moreover, though one of the last two molar teeth was not quite above the gum and the other quite under, they were not interfered with, and the temperature crisis, as in the first of these cases, was determined by a copious deposit of uric acid.

CASE 6.—A girl, æt.  $2\frac{1}{2}$ , well grown, and in apparent health, travels by railway to the seaside on August 14th, the weather being hot, with a cold wind. The bowels are twice disturbed on the evening of arrival. The next day she is out much in the wind, and becomes feverish at night, and is of a burning heat in the morning, when a dose of calomel is given; both vomiting and purging were induced, the fever at night was no less, and next day, August 17th, two doses of calomel were given, and a warm bath at night.

Day of illness.	Date.	Pulse.	Resp.	Temperature in axilla.		Remarks.
				Morning.	Evening.	
3	Aug. 17	...	...	...	103·0°	Frequent disturbance of bowels.
4	„ 18	140	40	102·3°	102·3°	Mucous purging, dry tongue, husky cough.
5	„ 19	130	40	102·0°	102·5°	Urine scanty, bowels free, skin moist.



Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
				Morning.	Evening.	
6	Aug. 20	116	25	97·2°		Slept well, urine very free, with large deposit of uric-acid crystals.
8	„ 22	No return of fever, action of bowels slight and of light colour, almost white on the 24th, natural by the 26th.				

A round worm was voided by this child early in the November following.

*Salivation from Steadman's teething powders.*

A girl, æt. 2, has a cold, and is thought to be ill from teething, the last four molars not being through. The above powders, calomel and opium, are given frequently.

Date.	Temperature.	Remarks.
April 3	102°	Gums swelled nearly to the level of the teeth.
„ 4	101°	Mouth less sore, gums and cervical glands swelled.
„ 7	99°	Mouth well, health improving.

Last molars are not nearly so forward as might have been expected from the ease of early dentition with this child; unfortunately these powders were commenced during some disturbance with the appearance of the canine teeth some months since; by frequent repetition they had caused the usual arrest of development until the elimination of the poison was at length attempted.

*Continuous elevation of temperature accompanying an eruption on the face and body.*

A boy, æt. 3½, strong and healthy, but subject to sudden febrile attacks. After a cold has an eruption extending from the upper lip to the right cheek, which is swollen. When the child was first seen, on April 8th, these spots had become pustular, but numerous raised spots, minutely vesicular (the spots on the cheek said to be like these at first), appear on the chest, abdomen, inner part of arms, outer part of thighs, and on the hips; the temperature of the mouth inside the right cheek is 100·3°. On April 11th it is 100·5°; pustules have appeared on the eyebrows, the spots on the hips are pustular, on one finger the cuticle is raised by a pustular

secretion. April 13th.—Some spots are drying, others extending; temperature in the mouth  $101.8^{\circ}$ ; in the axilla  $101.5^{\circ}$ ; a new but less purulent bulla on finger, the first is well. The child does not appear to be ill; some of the places are irritable at night; those on the body extend in a somewhat circinate manner. April 16th.—All the places are better; purulent crusts are formed on the head; dry, raised crusts on some parts of the body; the face and lips clear; temperature in the mouth  $99^{\circ}$ , in the axilla  $99.5^{\circ}$ . April 25th.—Face quite clear; temperature in the mouth  $97^{\circ}$  only could be obtained; in the axilla still  $99.5$ . There are one or two recent spots on the shoulder, rounded, smaller, drying in the centre; on the dorsum of the foot is a circinate crop of similar spots. Child nearly well. Very little treatment beyond the bath was used; occasionally a mild aperient was required. The year before, on February 25th, the other children in the family having contagious colds, and this child having slight symptoms on the 23rd, has one of the short febrile attacks not unfrequent with him. He slept all day, ate nothing; temperature, axilla, at 5 p.m.  $102.5^{\circ}$ . He roused up before night, ate, and slept well; had no medicine, and next day, at 5 p.m., the temperature was  $99.4^{\circ}$ ; small glands perceptible in neck. March 1st.—Pulse 112; respiration 28; temperature  $99.4^{\circ}$ ; tone of voice indicative of cold. Some months previously the pulse was 100, the respiration 22 only, when in health.

*Herpes zoster*, or Shingles, belongs to this class of disease, and is liable to recurrence; it may directly follow upon a chill, or occur in the course of influenza. The pyrexia begins only with the first spots of eruption, and is greatest on the third day, when they are vesiculated. The general temperature subsides before the vesicles begin to dry, and then the local temperature, often previously at  $101^{\circ}$ , is not above the normal, though the skin be red and hot to the touch; so that, when at the worst, very little temperature-disturbance remains. The pulse is accelerated throughout, while the rate of the respiration is not affected.

*Hooping-cough* gives rise to a remarkable series of temperature-variations. The whole of what in my first paper (Vol. X) is called the incubation period is pyrexial, often to a high degree, and is therefore always an important and sometimes a serious part of the disease. This generally occupies the first week of the illness, and as the characteristic hoop is then very uncertain in its appearance, a longer time often elapses before the presence of the disease is recognised. Hooping-cough, like scarlet fever, may be either immediately infectious, or not appear till after an interval of more or less freedom from ailment, with this difference, that while in scarlet fever, if there is no appearance of rash by the eighth day after exposure to infection, there is a fair presumption of immunity, in hooping-cough seven days is probably the shortest limit of the period in which to expect the more obvious evidences of the disease to be developed.<sup>1</sup> During this period of invasion there is a marked and often progressive elevation of temperature, in itself sufficient to differentiate hooping-cough from the slighter forms of influenza, and sometimes, as in the following case, so out of proportion to the local lesion present as to necessitate the inference of a zymotic cause.

TABLE 8.—*Hooping-cough*.

CASE 1.—A delicate girl, æt. 1, whose sisters are at school, and have a cough suspiciously like hooping-cough, wakes up febrile after a few hours' sleep, at 8 p.m., April 4th, 1869.

Next morning she seemed well, but was again hot in the evening; after a sleep on the 6th there was constipation; on the 7th, thirst, and no appetite.

<sup>1</sup> In one case a boy exposed both to measles and hooping-cough at a day school is first taken ill with measles, and afterwards the symptoms of hooping-cough appear; this might either be evidence of the longer incubation period of hooping-cough, or only of the less intensity of its invasion stage, and of the prepotency of measles. All the other children in the family had measles first and hooping-cough after, this being the order in which they were exposed to infection.

Date.	Pulse.	Resp.	Temperature.	Remarks.
April 7	200	80	105·3° recto.	Dyspnœa.
„ 8	140	50	101·0° „	Congestion of right base.
„ 9	180	60	103·6° „	Crepitation.
„ 10	140	70	98·5° „	Loose râles.

On the 14th hooping-cough well marked, as also in four others of the family who had been ailing most of this time. On April 28th this child again has disturbed breathing, and deficient expansion of right base; on 29th dyspnœa; defective respiration below scapula; râles everywhere; crepitation at base of lungs; convulsions; pupils somewhat dilated, but act to light; fontanelle depressed; pulse 150; respiration 60; temperature 102·5°. On the 30th convulsions through the night; pupils inactive; temperature 103·2°; alæ nasi compressed in inspiration; death at 6 p.m. A remarkable fall of temperature accompanied the establishment of the local process in the lung on the seventh day; that the high temperature preceding this was not due to the lung complication, but part of the general disease, and analogous to what takes place in the early stages of all the exanthemata, is not only the most likely supposition from the facts of the case itself, but is made evident from the case in accompanying table.

CASE 2.—A boy, æt. 4½, exposed to hooping-cough for ten days or a fortnight, is found, after slight symptoms of illness, to be febrile on March 18th.

Day of illness.	Date.	Pulse.	Resp.	Temp.	Remarks.
2	March 18	100	...	99·4° axilla.	Pulse full and jerking; to remain in doors.
3	„ 19	...	...	99·6° „	Coughed in the night.
4	„ 20	120	28	100·4° „	Seems dull and heavy; some loose cough, and wheezing heard.
5	„ 21	120	24	99·8° „	Face flushed; loose râles in larger bronchial tubes.

Day of illness.	Date.	Pulse.	Resp.	Temp.	Remarks.
7	March 23	108	22	99·2° axilla.	Sick before dinner, no appetite, the wheezing has gone, earache at night.
8	„ 24	130	...	102·0° „	Generally worse, not much cough; lips full, dry and red, face flushed; high fever in the night.
9	„ 25	140	40	103·4° „	Tongue white; worse at night delirious.
10	„ 26	140	40	103·0° „	No râles nor defective respiration, perspired a little in the night; bowels and urine free, no chest complication.
11	„ 27	140	40	103·8° noon.	Three grains of quinine given in the afternoon reduced the temperature to 101·3°, and after a second dose it was 100·8°.
„	By 8 p.m.	110	30	101·3° recto.	Only 100·8° in axilla, a fall of three degrees in eight hours from 1½ grs. of quinine, or a fall of four and a half degrees of temperature in one day.
„	At night	100	30	100·8° axilla.	
12	„ 28	100	26	99·3° „	Moist rhonchi on deep inspiration.
13	„ 29	108	30	99·6° „	Respiration weak and irregular in rhythm, frequent cough, deafness, rhonchi on expiration.
14	„ 30	100	26	99·1° „	Earache.
16	April 1	100	26	99·4° „	Inspiration prolonged; no rhonchi.
19	„ 4	100	30	98·6° „	Coughs but little, is weak and thin.
21	„ 6	100	26	99·2° „	Constipation; takes cod liver oil.
24	„ 9	100	20	99·5° „	Regaining flesh, is easily tired.
34	„ 19	88	22	99·0° at end of six weeks.	Better; to go out.

The high temperature from the eighth, ninth, and tenth

days of the illness was not owing to any chest complication nor to otitis; the ears were examined, and there was no deafness on either of those days. On the morning of the eleventh day the child was removed from the room, where the infant was suffering some of the worst effects of the disease, and two drachms of brandy given with no good effect. The quinine was not given until 2 p.m. An hour afterwards the pulse was much quieter, and reduced twenty beats in the minute. The child seemed roused from the lethargy of the previous two days, and wished to be read to; it was then noticed that some degree of deafness existed, and the voice had to be raised in reading to him. Two hours after he felt hungry, eat, and the sordes cleared from the lips. After the second dose of quinine he seemed more deaf, and fell asleep, the pulse then being only 100 in the minute, and the temperature had fallen three degrees, the greatest care being taken that this was obtained with absolute accuracy. The bowels were relieved naturally next morning, and the cough resumed its ordinary characters; the deafness had not quite disappeared before the second attack of earache.

This boy was not seen till March 18th, when he was dressed for going out, and was said to be quite well; but the quick, jerking pulse and elevated temperature showed the necessity for immediate rest and precaution. It is probable that his illness commenced at the same time as that of his two elder sisters, whose cases follow, and that the greater severity and continuance of the early stage of it, is chiefly owing to his greater exposure to the source of infection. The high degree of temperature maintained at the commencement of the second stage of accession is evidently controlled by quinine.

The other children in this family were three girls, the youngest, a year and a half old, has a cough in February, attributed to teething. She was said not to be febrile, and was taken out daily till the beginning of March, when, the weather being cold, she was kept at home, and was consequently more with the other children. The boy was the only one who slept on the nursery floor, and he was in the same room. On March 8th the infant's cough, besides

being spasmodic, was attended with some thin phlegm, which had not accompanied the former cough. On the 15th the child was seen with all the characteristics of whooping-cough.

On examining the sisters, the elder (Case 3), seven years old, apparently quite well, had a temperature below the normal; she sneezed at night, next day was fretful; pulse 100; respiration 26; temperature  $98.6^{\circ}$  axilla. March 18th.—Seems heavy, easily tires and cries, tongue pale, glandulæ concatenatæ a little enlarged; slight irritable cough, quick pulse; temperature  $100.4^{\circ}$  in the axilla. Next day more cough, glands of neck considerably enlarged; still febrile. 21st.—Cervical glands less in size, pulse quick; she is still febrile, but emotional, so that the temperature is not exactly ascertained. March 23rd.—Lively, good appetite, loose cough, glands of neck have subsided, temperature normal. The cough was not severe; it caused the face to redden, and continued for three weeks.

The younger sister (Case 4), three years and four months of age, had the first depression of temperature on March 16th, when she looked pallid, but did not feel ill. Next day the appetite was bad, the respiration shallow. The illness had commenced, and furnished the following observations:

Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
				Noon.	Evening.	
3	March 18	120	28	...	$100.6^{\circ}$	Tongue white, no cough, small glands in neck.
4	„ 19	104	...	...	$99.4^{\circ}$	Pallid, eyes heavy, short breath.
5	„ 20	120	26	$101.0^{\circ 1}$		Râles developed on deep inspiration.
6	„ 21	130	26	$100.4^{\circ}$		Sonorous rhonchus; tongue white; lips dry, swelled.
7	„ 22	110	28	$99.2^{\circ}$		Loose sonorous rhonchus; seems ill, dull and heavy.
8	„ 23	112	...	...	$98.0^{\circ}$	Pallid; coryza, eyelids swollen, better.
9	„ 24	108	28	...	...	Seems weak and languid, had earache in the night, and spasmodic cough; relieved by morphia.

<sup>1</sup> Evidently not influenza; or the temperature would have fallen, or some more marked local effect have appeared ere this.

Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
				Noon.	Evening.	
10	March 25	120	30	...	99.0°	Whoops with the cough, and wheezes.
11	„ 26	110	26		98.6°	Tongue clean, good appetite, cheerful.
13	„ 28	120	20		98.4°	Loose râles; better.
15	„ 30	104	26		98.5°	Râles developed on deep inspiration.
21	April 6	100	22		98.6°	Seems nearly well, coughs night and morning.
24	„ 9	...	...		99.2°	Is not disturbed at night; has a slight fit of coughing, with loose phlegm, in the morning; is taking cod liver oil, which, perhaps, increases the temperature.
45	„ 30	...	...		99.4°	Eyes redden on coughing; white mucus at back of pharynx.

The infant, Case 5, after nearly a fortnight's illness and a week's cough, whooped with it on March 13th. On the 18th the paroxysms were of great violence, and there was much secretion. An emetic with antimony in the night afforded some relief, but was followed by an increase of illness. Next day the face became almost black in the spasms of cough; in the interval air entered the lungs freely everywhere. The temperature at this time was 99.8°; on the 21st, 99.6°; 24th, 99°, with loose râles. On the 26th morphia in minute doses had diminished the expectoration, but was discontinued because of some crepitant râles at the left base, and a poultice was applied; at the same time the temperature was only 99.2°. On the 27th the temperature was 98.2°; the pulse was 120 in the minute; the respiration 36, and much freer. A combination of atropine and morphia, one sixtieth of a grain of each in sugar powders, was now used with most marked good effect, not only in moderating the spasm, but, at the same time in lessening the amount of the thin, acrid secretion. On visiting the child at night the pulse was 88, the respiration 30, the temperature *in recto* 98.7°, and on the surface not



above the normal. On April 7th the cough and secretion were both increased by going out of doors; the temperature was  $99.2^{\circ}$ . On May 4th the cough was not lost, though there was but little expectoration; the temperature *in recto* was  $99.4^{\circ}$ . The eye teeth were near the gum, though not giving rise to much discomfort, and the child's health had much improved.

The treatment in these cases, unless otherwise stated, consisted of ammonia, lemon-juice, and the simplest salines.

The first febrile disturbance occasioned by hooping-cough has a tendency to subsidence on the eighth day, but is most variable, both in kind and degree. Sometimes, but not always, there is evident pulmonary implication, and then the kind of cough and illness that is to result is not altogether unexpected; at others there is little to forewarn and that little is often disregarded, the more so as nearly a fortnight will elapse before the paroxysmal cough is unmistakable.

Where there has been but one exposure to a source of infection an immunity is often hoped for and expected just before the symptoms are developed in full violence, and not unfrequently the disease is at this time unintentionally spread. Examples of the more insidious forms will be first adduced; other cases illustrate the temperature changes of the early stages; the last case but one shows the persistence of a high temperature in the latter stages of this disease; and finally, one case is given of fatal pulmonary complication at its close.

CASE 6.<sup>1</sup>—A boy, *æ*t. 6 years, seems amiss on November the 15th and 16th, but not so much as to prevent him going to school every day. On the 19th he has a cough, and on the 20th a fine rash on the face and chest; he stayed at home without medical aid till the 24th, when he had loss of appetite and hardly any signs of rash. On the 26th the cough became spas-

<sup>1</sup> The house in which these three children resided was made unwholesome by old brick drains in the basement.

modic and the fine rash on the face became more obvious, with spots smaller and brighter than the mottling from measles. A brother, of nearly four years, has already loss of appetite; a pulse of 100, respiration 30 in the minute, and temperature  $100^{\circ}$  in the axilla. On the 26th wheezing, with temperature still above the normal.

There was then but little to be complained of; the wheezing was only developed on forced inspiration. On the 28th the temperature was  $98.6^{\circ}$  in the axilla, and there was already some cough, not evidently whooping-cough, for another week or more, and then not very bad till in the severe weather of the early part of the new year.

CASE 7.—A sister, *æt.*  $2\frac{1}{2}$  years, on the same day, November 24th, was dull, sleepy, and slightly febrile; she had slight diarrhoea on the 20th, and had not seemed quite well since. On November 25th the pulse was 120, the respiration 40, temperature  $100.5^{\circ}$  in the axilla; there was thin white mucus in the throat and the glands of the neck were perceptibly enlarged. On the 26th there were loose rhonchi audible over the whole chest, the temperature half a degree less, other conditions the same. On the 27th the evening temperature was  $99.6^{\circ}$ ; on the 28th it was normal, the child was fretful, but the cough quiet. These children were at no time so ill as the youngest.

CASE 8.—A boy, *æt.*  $7\frac{1}{2}$  months, nourished chiefly from the breast, apparently strong and robust, was seen November 22nd, because of supposed tooth irritation; the central incisors were not very forward, and the temperature, even in the rectum, was below the normal; next day he was said to cough and have short breathing, and the day after he refused food and would only suck a little at a time, but did not seem feverish till night, when very restless and burning hot.

Day of illness.	Date.	Pulse.	Resp.	Temp.	Remarks.
2	Nov. 25	200	80	102·6°	Air enters all parts of lungs; there are ten quick respirations every five seconds, and then a pause.
3	„ 26	200	70	104·0°	Alæ nasi work; dyspnœa relieved by night.
4	„ 27	180	80	102·2°	Respiration improved, moist râles are developed on deep inspiration.
5	„ 28	...	...	101·0°	Vomits with cough.
6	„ 29	130	50	101·5°	Coughs every hour in the night, high pitched rhonchi at right base.
8	Dec. 1	...	...	90·8°	Cough looser, fine petechiæ on skin.
9	„ 2	120	40	99·6°	Improving.

In the cold weather of the early part of this year the spasm with the cough became more violent. The child was kept more at the breast, while, at the same time, the mother had become disqualified (by menstruating on January 15th) for nursing. On February 10th a short febrile exacerbation gave a warning, which was not heeded. On March 12th there was a repetition of febrile disturbance. The child had become thin and weak, and on the 21st he was sick, constipated, feverish, with cough and wheezing, and the following illness:

Date.	Pulse.	Resp.	Temp.	Remarks.
March 22	160	40	103·0°	Large rhonchi, no defective breath sound.
„ 23	140	40	101·0°	Vomits; wakeful, excitable.
„ 24	120	40	99·4°	Crepitation over a definite spot at base of right lung.
„ 27	120	35	98·6°	Below the normal in the axilla, though there is a spot at the right scapula where there are tubular, high-pitched rhonchi and deficient breath sounds; after being suckled much at night he vomited and became feverish, and the next day he was ordered to be weaned.
March 29	140	50	101·5°	Congestion of left as well as of right base.
„ 30	140	56	101·2°	Crepitation at right scapula only, left lung healthy.
„ 31	...	...	99·0°	Perspiration; has not been to the breast again.
April 1	Not febrile.			Small petechiæ visible on neck and chest.
„ 10	...	...	99·0°	Improving, respiration clear.

The incisor teeth were cut without difficulty in the earlier part of the illness. There had been but little signs of hooping-cough in this last illness, during which on two occasions, probably from a defective state of the mother's milk, a sharply febrile attack has terminated in congestive deposit, and even inflammation of a limited part of the lung coincident with a subsidence of temperature almost to the normal; besides the theoretical analogy of this to what occurs when free secretion results, the practical import of it is that a comparatively low temperature does not exclude mischief, for on neither of these days, March 24th and 31st, would the temperature have sufficed to indicate the state of the lung.

CASE 9.—A boy, *æt.* 9, going to school as a weekly boarder, comes under notice February 23rd with hæmorrhage from the bowels. He has been at home three days with a cough, and he was noticed to cough suspiciously the week before. Two little sisters, *æt.*  $3\frac{1}{2}$  and 2, when first seen on February 25th, had coughs which excited a suspicion of hooping-cough, the more so as they had come on without the signs of ordinary cold. On the 28th the youngest had whooped, the cough was violently paroxysmal; some large, loose rhonchi were audible over the chest, chiefly consonant with the larger bronchial tubes; a slight elevation of temperature, hitherto noticeable, had subsided. Both children had the cough badly for the next week or two; some violent paroxysms in the younger child were cut short by minute doses of antimony.

CASE 10.—A brother, *æt.* 6, much with the elder boy since the 19th, did not seem to be quite well on the 25th, but was without cough; the first permanent molars were near the gum, and his temperature was below the normal. A slight cough was first observed on the 27th, when the axillary temperature was  $98.6^{\circ}$  at noon, and  $99^{\circ}$  at night. On February 28th the temperature was  $99.4^{\circ}$ , pulse 100, respiration 24, the tongue whitish, no appetite; there was glairy mucus at the back of the pharynx. This slight degree of pyrexia con-

tinued until March 5th, when the temperature at night was only  $99^{\circ}$  in the axilla; the slight acceleration of pulse and the somewhat spasmodic cough causing the face and eyes to redden, but resulting in very little expectoration, being the only signs of illness. There was still glairy mucus in the throat, the tongue was cleaner, and the appetite had returned since March 2nd. On March the 8th the cough had become more characteristic, the breathing was slow and shallow, but a deep inspiration developes some moist râles in the smaller tubes; the pulse continued to be quick, but the temperature had become normal; it was  $98.3^{\circ}$  in the axilla. During the month an elevation of temperature was, however, frequently met with. On the 30th it was  $99.6^{\circ}$  at 4 p.m.; the cough dry, and causing flushed face; he had sometimes trouble from tenesmus, and was noticed to be readily fatigued.

The next case presents features of unusual gravity.

CASE 11.—A girl, *æt.* 5, whose brother is attending a day-school, and has had cough for some time, is seen on March 23rd with catarrhal symptoms said to be of a week's duration; and, though suspected to be from whooping-cough, the general illness during the next four days was sufficiently severe to arouse doubts both as to cerebral disease and fever.

Date.	Pulse.	Resp.	Temperature.		Remarks.
			Noon.	Night.	
March 23	...	...	$99.0^{\circ}$	axilla ...	Coryza, cough, with sickness.
„ 27	100	26	...	$99.8^{\circ}$ recto.	Lips dry and swollen, frequent vomiting.
„ 31	120	40	$99.5^{\circ}$	axilla ...	Somnolence, great prostration.
April 2	108	30	$99.0^{\circ}$	„ ...	Earache, violent cough, dusky face, swollen lips.
„ 4	100	30	$99.8^{\circ}$		Bloody mucus, both with expectoration and vomiting.
„ 6	100	34	$100.5^{\circ}$		Small doses of morphia gave no relief to cough and are not to be repeated; large rhonchi at right back, râles everywhere.
„ 7	180	36	$102.5^{\circ}$	recto	Large liquid rhonchi, some of high pitch; sputa viscid and opaque; conium and ammonia given.

Date.	Pulse.	Resp.	Temperature.		Remarks.
			Noon.	Night.	
April 9	120	40	102·0°	axilla	Less expectoration, cough violent; takes atropine and morphia.
„ 10	...	...	102·4°	„	Thick expectoration mixed with blood, blood in the stools and vomit, respiration freer; to take chloral at night.
„ 11	130	40	103·0°	recto	Takes but little nourishment, and retains less.
„ 12	120	40	102·5°	axilla	Had sleep after third ten-grain dose of hydrate of chloral.
„ 13	quick, feeble	...	101·4°	„	Less sick; chloral to be given at night.
„ 14	...	...	101·7°	„	Slept, cough and expectoration; better.
„ 15	130	42	...	103·3° recto.	Bowels relaxed, cough; more points of blood in the mucus; chloride of aluminum administered in the form of spray.
„ 16	120	36	...	101·6° axilla.	Less blood in the expectoration and vomit; to be carried out of doors.
„ 17	110	30	...	99·0° „	Ate meat; no blood in the stools.
„ 18	Much improved.		Temperature 98·9 axilla at 6 p.m.		Some large mucous rhonchus heard in coughing.
„ 19	Doing well; coughed frequently in the night; small streaks of blood only in the pharyngeal mucus at the end of coughing.				
„ 20	5 p. m.; temperature 99·4°; loose cough, troublesome only at night; no blood in the expectoration; complexion healthy; takes cod-liver oil.				
May 10	Quite well; no cough except, perhaps, once towards morning.				

The following fatal result of hooping-cough closes these observations :

CASE 12.—A girl, æt. 1½, having suffered from hooping-cough for six weeks or more, is seen on April 18th suffering from extreme dyspnœa, with signs of pneumonia of the left lung. The pulse and respiration were too much disturbed to be accurately recorded.

Date.	Temperature.		Remarks.
	Morning.	Night.	
April 18	...	104·0° recto	Face livid, ensiform cartilage retracted in inspiration, fine dry crepitation over left lung.
„ 19	99·6°	101·2°	„ Administration of brandy of some benefit.
„ 20	101·0°	100·8°	„ Loose râles, moist crepitation, much mucus expectorated.
„ 21	101·2°	102·0°	„ Return of dry crepitation and of dyspnoea, dulness of left back, lips livid.
„ 22	Death at 8 a.m.		

The only temperature-observations in whooping-cough that have come under my notice, beyond the instance given in my last paper (Vol. X, p. 296, where 104° was reached with convulsions and recovery) are those of Dr. Henri Roger;<sup>1</sup> they are sixteen in number, taken in three cases, and fairly indicate what is found in these more extended investigations. Associated with slight bronchitis a temperature of 100·5° is recorded, with very intense bronchitis 102°; without complication the lower range is about 99°; the highest temperature met with was 103·5° in a case where abscess of the lung and cerebral ramollissement co-existed.

In the ordinary course of whooping-cough the temperature variations resemble for a time those tabulated in the case of influenza, corresponding closely with what is observed both in influenza and in croup; but these two diseases, *identical in themselves*, differ essentially from whooping-cough in being suddenly febrile, while the pyrexia preceding the latter is always of some days' duration, and is most marked in some of the most insidious cases. This also is noticeable of diphtheria, and forms a chief means of establishing the essential difference between it and scarlet fever. The early stage, both of whooping-cough and diphtheria, though obscure and often overlooked, is probably the only part constant and inevitable; at this time treatment may be powerless to avert disease, though most powerful in guiding it to a favorable termination; in neither disease is the virulence of the infectious pro-

<sup>1</sup> "De la Température dans les Maladies de l'Enfance." 'Arch. Gén. de Méd.,' p. 301, t. vi, ser. 4, 1844.

ducts so great at first as it becomes in the later stages ; even then, the amount of infection is very much as the amount of morbid secretion formed ; and as whatever limits these secretions also limits the amount of disease present, an opportunity is afforded for medical treatment to check the effects, if not to shorten the duration, of the disease.

*Tuberculosis checked by quinine.*

A boy, æt. 12, height fifty-one inches, after a cold in the spring, has loss of flesh and some chest affection with deficient expansion of the left apex on April 28th, when the pulse is 120, respiration 30, and the temperature  $98.4^{\circ}$  in the axilla. On May 2nd, though there is perspiration, shortness of breath, pallor, and loss of appetite, the pulse is 80, respiration 28, and the temperature in the axilla only  $98.2^{\circ}$  at night. Country air and cod-liver oil did some good. In August the pulse and breathing were again quick, and the axillary temperature was  $99.1^{\circ}$  at noon. Change of air now did no good, and in November the day temperature was generally  $99^{\circ}$ , and the night temperature  $101.5^{\circ}$  to  $102^{\circ}$ . The rise of temperature would begin at an early hour in the afternoon, whatever the care as to quietude and diet ; nor was the evening hectic checked by rest, by stimulants, or any of the means directed against the evident deposit, and its commencing alterations in the left apex of the lung. On December 6th and on 7th five grains given in solution rapidly arrested the night fever ; by the time the daily dose of quinine had reached ten grains, the evening exacerbation was entirely prevented, and from that time the boy gained in flesh and strength ; a year afterwards he continued in good, though not robust, health.

*Meningitis*,—though not without elevation of temperature through most of its course, and subject to a sudden and great increase before its fatal termination, yet in the last case given in the table the temperature was found to be below the normal on the day before death, which seemed to result from great effusion of serum and consequent pressure.



TABLE 9.—*Tubercular Meningitis.*

CASE 1.—A boy, æt. 4 months, after slight dreariness and constipation, on April 10th has a convulsive seizure in the night

Day of illness.	Date.	Temperature.		Remarks.
		Morning.	Evening.	
2	April 11	100·0° recto	101·0°	Convulsive twitchings all day.
3	„ 12	104·0° „	103·6° axilla.	Pupils not contracted, temperature not reduced by cold affusion.
4	„ 13	Death.		

*Acute hydrocephalus ; remarkable fall of temperature before death.*

CASE 2.—A girl, æt. 1 $\frac{3}{4}$  year, after four days' vomiting is partially unconscious on the fifth day, and delirious at night.

Day of illness.	Date.	Pulse.	Resp.	Temperature.		Remarks.
6	Dec. 30	80	20	100·2° recto	98·6° axilla.	Dilated pupil.
7	„ 31	irregular		100·1° „	98·4° „	Coma.
8	Jan. 1	120	30	100·4° „	...	Surface cold.
9	„ 2	weak, irregular		98·2° „	97·0° in folds of abdomen.	
„	At night			100·0° „	...	Limbs cold.
10	„ 3	Death. Some heat of surface before death.				

I remember much anxiety and doubt as to whether some early head symptoms in a child might be owing to tubercular meningitis or to typhoid fever, a question which at certain stages can readily be decided by temperature. This is well illustrated by a case of typhoid fever in an infant of sixteen months old, for which I am indebted to Dr. Hare.



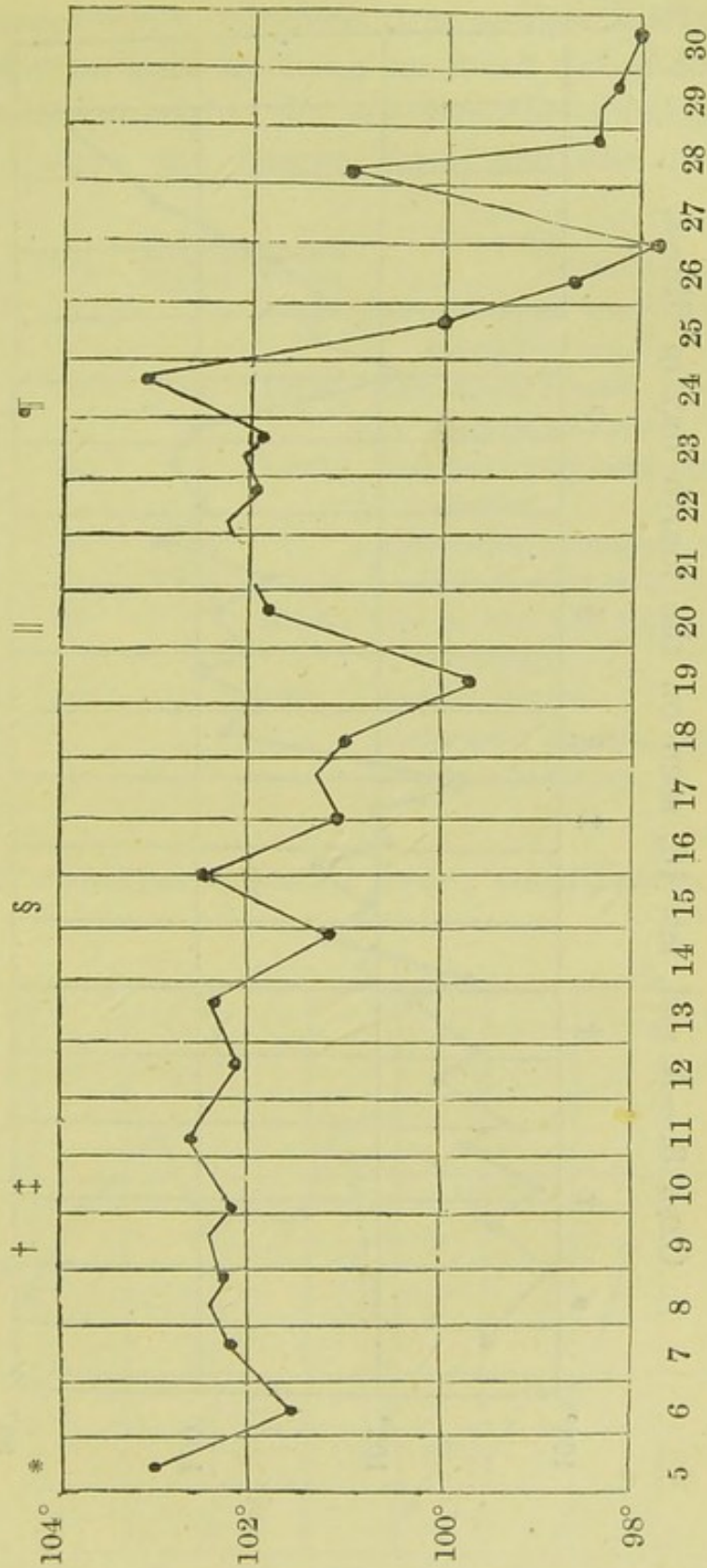
For the details of the following case I am indebted to my friend and former pupil, Dr. Buckell, of Islington. Diagrams of it, and of another case in an older girl under my care, in which there was no diarrhœa, are given for comparison with the somewhat anomalous case in the last diagram.

CASE 2.—A girl, æt. 8, was seen after about a week of malaise and anorexia. Complained of pain in abdomen; on pressure gurgling was elicited in left iliac fossa; tongue was pyrexial in character.

Day of illness.	Temp. Noon.	Remarks
7	103·0°	Four grains of cinchonæ sulph. given in twenty-four hours.
8	101·8°	Ditto.
9	102·2°	Ditto. Diarrhœa very severe.
10	102·4°	Ditto. Rose spots appeared.
11	102·4°	Ditto.
12	102·8°	Ditto.
13	102·2°	Ditto.
14	102·6°	Tongue became brown; stimulant given with cinchona.
15	101·2°	Ditto.
16	102·6°	Ditto.
17	101·2°	Ditto.
18	101·2°	Ditto.
19	99·9°	Ditto.
20	102·0°	Increase of anorexia.
21	101·2°	Vomiting came on; cinchona stopped, nourishment and stimulants given by bowel, nothing by mouth.
22	102·1°	Ditto.
23	102·0°	Ditto.
24	103·4°	Cinchonæ sulph. gr. viij given by bowel in twenty-four hours.
25	100·1°	Ditto.
26	98·8°	Ditto.
27	97·4°	Ditto.
28	101·2°	Ditto.
29	98·4°	Ditto.
30	98·2°	Cinchona stopped; mineral acid given by mouth.
31	98·0°	

*Typhoid fever diagrams.*

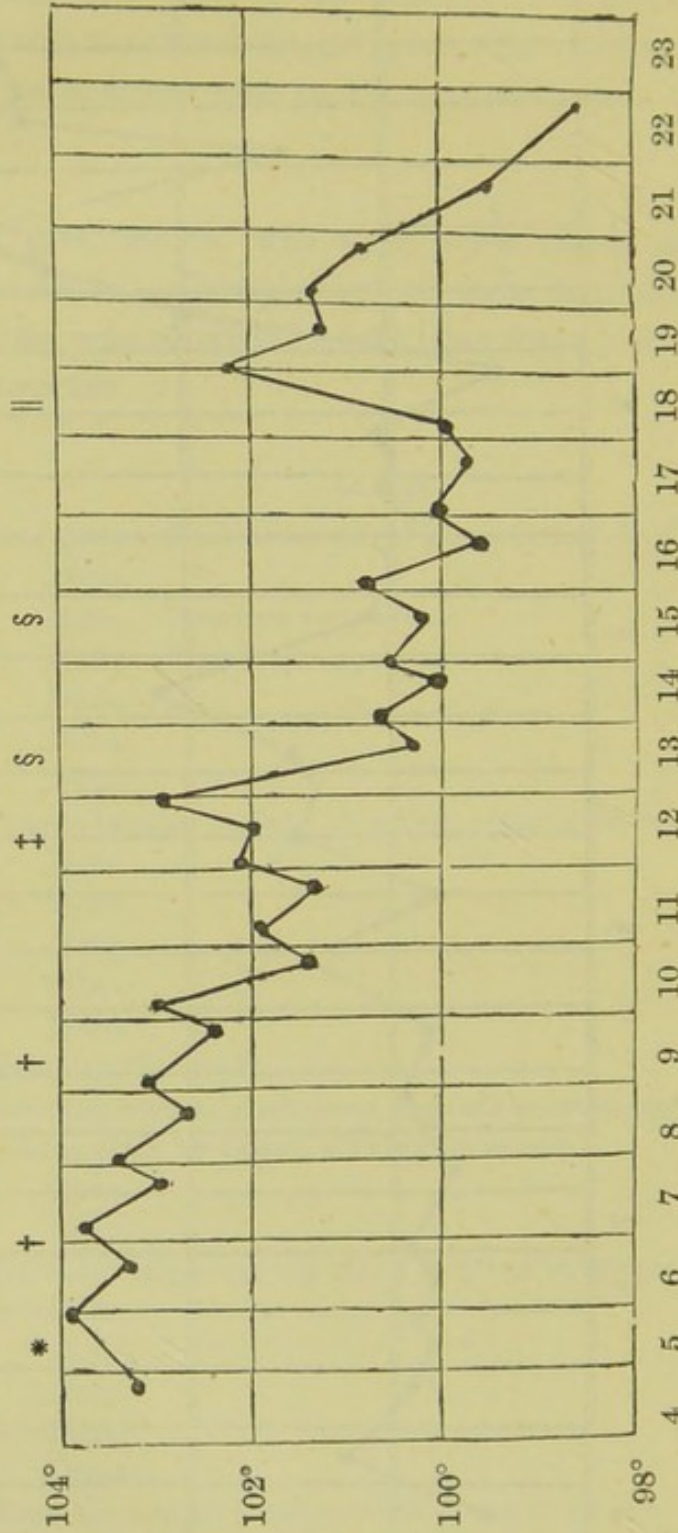
CASE 2.—A girl, æt. 8, seen after some days' illness.



\* Four grains of cinchonine daily. † Diarrhoea. ‡ Rose spots. § Stimulants given.  
 || Omit cinchonine. ¶ Resume cinchonine.

*Typhoid fever without diarrhoea.*

CASE 3.—A girl, æt. 16, seen on the fourth day of illness.

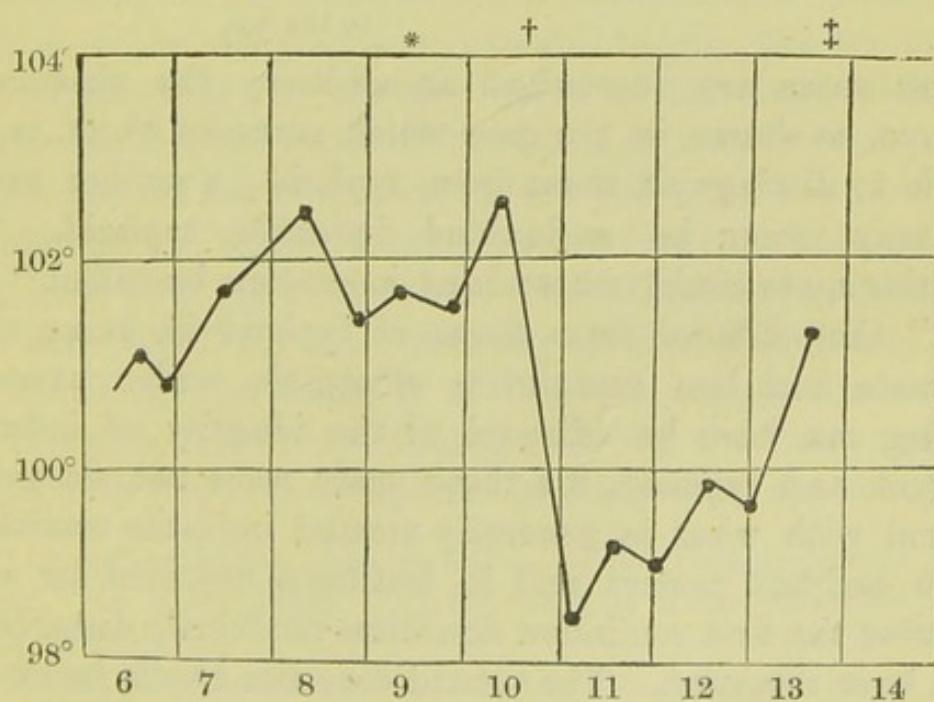


\* Bronchial irritation.      † Quinine given at night.      ‡ Rose spots, abdominal pain.  
 Hæmorrhage from bowels.      || Phlebitis in one leg.

CASE 4.—A girl, *æt.*  $8\frac{1}{2}$  years, after being ten days at the seaside in hot weather, but in healthy lodgings, takes aperient medicine unnecessarily. She feels tired and weak afterwards; the next day is fatigued by being too much out of doors, and becomes feverish at night; for six days she continues to be taken out, though the fatigue, fever, and loss of appetite increase.

Day of illness.	Pulse.	Resp.	Temperature, axilla.		Remarks.
			Morning.	Evening.	
8	110	27	...	102·2°	Has travelled home by railway; ordered to bed.
9	100	30	101·6°	102·4°	No action of bowels; two lenticular spots on abdomen.
10	108	32	...	102·6°	Red spots very numerous; bowels inactive.
11	100	30	98·2°	...	Spots fading; constipation relieved.
12	...	...	100°	...	Some fresh spots on sides of chest.
13	110	32	...	101·2°	One or two new spots behind the shoulders.
15	100	30	...	99°	Bowels inactive.
21	...	...	...	...	Looks well; appetite returned.
30	...	...	...	...	To return to the sea.

*Infantile remittent or gastric fever; constipation.*



\* One or two lenticular spots on body. † Numerous spots.  
‡ One or two spots on shoulders.

CASE 5.—A boy, æt.  $3\frac{1}{2}$  years, brother to the last, went to the seaside the day before the sister was ill; she came to him, but they were not much together; three days after he is sick in the morning, and his bowels disturbed twice; next day and the third day he is dull and languid, with no action of the bowels, and considerable fever.

Day of illness.	Pulse.	Resp.	Temperature.		Remarks.
			Morning.	Evening.	
4	...	...	High		Castor oil acted twice; second relief is almost black.
5	108	30	...	101.4°	Has travelled home; yawns frequently; a sore spot on edge of mouth.
6	112	28	100.1°	...	In bed; tongue cleaner.
7	100	26	98.6°	...	Herpetic spots on lower lip; red spots seen on abdomen.
8	...	...	98°	...	Numerous red spots, like the sister's, over body; one light coloured relief from the bowels.
10	...	...	...	98.2°	Bowels are not quite right.
12	...	...	...	...	Better; appetite good; bowels natural.
15	...	...	98.9°	...	Slight diarrhoea for two days; today dysenteric; tongue pale, with thin fur.
21	...	...	...	...	Cheerful and well; pale; to return to the sea.

These cases are somewhat anomalous; the absence of diarrhoea, as shown in the case which precedes them, is not enough to distinguish them from typhoid; a sudden remission may occur in undoubted infantile typhoid. The lenticular spots could not without hesitation be called "rose spots;" they differed from those of typhoid in being more acuminate and less completely effaceable under pressure. Nothing can here be affirmed of the identity of infantile remittent and typhoid, for these cases were not altogether identical with what is generally termed infantile remittent, though had not perfect rest in bed been enjoined for some time after the first remission doubtless the febrile disturbance would have returned. The second case can hardly be classed with the mildest form of typhoid, yet the two cannot be dissociated.

*Diagnosis.*—The value of temperature observations in diagnosis can now only be slightly touched upon. While readily conceding the merit of priority to M. Henri Roger,<sup>1</sup> some credit may be claimed for having shown that the temperature variation of infants follows the same rules, and is within the same limits as that of adults, and is therefore as serviceable for purposes of diagnosis.

Typhoid fever, in its ataxic form, when it presents the greatest resemblance to meningitis is, as has been shown, readily discriminated from it by temperature. In the sthenic form of typhoid fever, an intercurrent bronchitis or pneumonia is accompanied by a greater temperature-disturbance than would be caused by either of these complications, while the disturbance of the pulse and respiration is less than that met with in simple pulmonary disease. Dysentery and enteritis are readily distinguished even from the slighter forms of typhoid by their lower range of temperature.

In scarlet fever, though the disturbance of temperature is often extreme, it is insufficient for diagnosis, or even for discriminating between it and a disease so nearly allied as influenza. In scarlet fever a temperature as low as 99° has been met with on the second day in a vigorous subject, with full rash, ending on the third week in desquamation: in influenza, with no other complication than full tonsils, the temperature may continue at 101° till the fourth or fifth day; with ulcers on the tonsils, or herpes of the lip and face, the temperature on the second day may even exceed 103°, and has been found at 102° on the third; a temperature less than this, generally very near 100°, is met with in the diffused bronchial irritation with which the more ordinary attacks of influenza begin; in both forms the difficulty of diagnosis may be increased by the presence of a finely diffused rash<sup>2</sup> on the chest and neck, either with the first symptoms of illness, or appearing after

<sup>1</sup> "De la Température chez les Enfants a l'état Physiologique et Pathologique." Par Henri Roger. 'Archiv. Gen. de Méd.,' 4me série, tom. v, p. 273. Paris, 1844.

<sup>2</sup> Of the two illustrations given of mild scarlatina the boy's case is probably of this kind; that of the girl was undoubted scarlet fever.



the application of the warm linseed poultice so useful for their relief.

A low temperature is often sufficient to enable a diagnosis to be speedily arrived at that otherwise must be uncertain or be delayed; a lad exhausted by fatigue and exposure has been found with symptoms that might have indicated either typhoid or scarlet fever except for this test. In laryngismus stridulus, as elsewhere stated, the low temperature invariably accompanying the associated states of irritation and defective nutrition, at once serves to distinguish the spasm from laryngitis, or from an affection symptomatic of serious organic disease.

It is seldom that a single temperature observation could or should be made the basis of a diagnosis; moreover we must remember that it is not to show what the *disease* is, but *how it affects the patient* that temperatures are taken. We have other means of diagnosis that special training must teach, to let us know what form of disease is present. To learn how the individual will bear it is the result of an experience difficult to impart; yet to know this is of as much importance, at least to the patient, as to know the name of the disease, and it is this knowledge which every temperature observation in some degree affords us; yet even here a series of observations is requisite, and experience must give them their value.

Elevation of temperature is useful as indicating the presence of disease generally. How often have the indications of the thermometer afforded the first revelation of unsuspected disease, pneumonic consolidation for example.<sup>1</sup> Absence of disease cannot, however, be affirmed because the temperature is not, at a given time, increased; many diseased processes end in a local process not always accompanied by high temperature; indeed, a low temperature has been found with quite recent congestion of the lung. On the other hand there are times

<sup>1</sup> It has frequently occurred to me to see children forced to exertion, and sent out (especially at the seaside) when a single temperature observation would have shown the necessity for rest, and have guarded against much consequent illness.

of life and states of system, when we meet with sudden rises of temperature not always betokening danger, but only the necessity for care. This is sometimes seen in the puerperal state from only a cracked nipple. In the period of most rapid growth in childhood there is a tendency to just such a state; the presence of a tooth at the gum, or of worms in the intestine, may excite it, but it has no special connection with teeth or with worms; it will occur as readily after all the first teeth are through the gum as before; it is referable to diathetic peculiarities, bad air,<sup>1</sup> bad nutrition, a wrong or defective food, and to rapid growth. Instances have occurred to me of a child growing ten inches in the first year with backward dentition, and only three inches in the second year: another, of slow growth in the first year with forward dentition, and a growth of seven inches in the second year. With this rapid growth, and with some instances of suddenly high temperature in other conditions, has been found associated *gastric* rather than pulmonary congestion, and it is in this association that the benefit said to result from the use of a mercurial aperient has generally been obtained.

*Therapeutics and hygiene.*—During any considerable elevation of temperature sleep is impossible, nutrition is interrupted, and waste increased; indeed, in a continued high temperature the tissues of the body not only waste, but are destroyed. Hence, empiricists have sought for remedies to reduce temperature; but the high temperature is a direct result of the diseased action present, and these remedies, which are useful in reducing dangerously high temperatures are those which have a controlling power over the disease, so that temperature may be a test of the suitability of a particular kind of treatment to the disease present. Hence the benefit of cold affusion and quinine in typhoid and scarlet fevers. Since using quinine in the early stages of the latter, whenever there was a tendency to a high night temperature and consequently to

<sup>1</sup> A high temperature is not only induced by the specialized poisons such as cause scarlet fever or influenza, but the emanations from bad drains will often cause a sudden rise to a temperature as high as 104° or 105°, which, however, may subside without serious consequences.

nocturnal delirium, the temperature has never reached so high a point as it frequently does when not checked in this way. This effect is equally remarkable in diphtheria, where the nocturnal delirium (so often noticed to occur in children, who, as Fothergill remarks, were quiet and sedate in the day) is a result of the evening exacerbation of temperature. The effects of quinine in this way are very marked in the early stage of these diseases, but it has no such influence in their later stages; not only this, but chloral, generally of service in whooping-cough, caused no lowering of temperature in one case, where the use of a weak solution of chloride of aluminium 15 grs. to 1 oz., used in the form of spray, by exerting a favorable influence on the condition of the respiratory tract, resulted in a diminution of temperature; the same thing has happened where the cough and the expectoration have been lessened by a combination of morphia and atropine.

Cinchonine has been found to have precisely the same effect as quinine; the muriate of cinchonine is cheaper, the powder in any dose is easily given in wafer paper, it readily dissolves with a very little hydrochloric or phosphoric acid, and is readily taken mixed with water and glycerine, to which a little chloric ether may be added. By means of cinchonine and quinine, in five- or ten-grain doses, the night fever of tuberculosis has been stopped; more than once has tuberculosis itself been arrested; the febrile stage of many diseases may thus be shortened or greatly controlled, and not only discomfort but danger avoided: indeed, what is effected by this remedy in ague is in some degree effected by it in other febrile states, the tendency to high temperature is checked and at length overcome.<sup>1</sup>

On the other hand, a marked increase of temperature results when the "eliminating" treatment is followed too closely.

<sup>1</sup> In the admirable essays of M. Henri Roger already referred to, 'On the Elevation of Temperature occasioned by Disease,' it is asked at the commencement, "Est il, parmi tous les mystères de l'économie humaine, quelque chose de plus digne de notre attention que cette force mystérieuse créée par la maladie?" In answer, we may compare with it that power from the vegetable world often great enough to control it, which is mysteriously created in the cinchona plant.

In the diseases here under consideration dilute the poison by all means, by pure air especially, and favour the subsidence of the diseased action. To eliminate a poison, if that were possible instead of eliminating the fluids of the body, we must remember that the quantity of poison eliminated can only be in proportion to the diseased action present, so that the diseased action must be increased in the process; moreover, if the last shred of desquamated cuticle in scarlet fever be infected, surely the last atom of living tissue must be, and if the body could be reduced to this and then restored, it would be restored in its state of scarlet fever, and resume the processes peculiar to it till they were accomplished.

Some points of hygiene are elucidated by temperature, to which there is barely time to refer. Dr. Finlayson has called my attention to a greater lowering of night temperature in children than my own observations bear out. Where I have found a temperature as low as  $97^{\circ}$  in the night, I have also found a low range of temperature in the day, and there seems to be a special connection between this and a dislike or a deprivation of fatty food. In a collection of facts any conjecture is an error, yet it is possible that this point might be eventually found useful in correcting the diet tables of workhouses and schools.

The following appendix of extreme and mean temperatures in some diseases of children may be of use :

Temperature in—	Lowest.	Highest.	Mean.
Pneumonia .....	...	$105\cdot8^{\circ}$	...
Pleurisy .....	$99\cdot0^{\circ}$	$104\cdot0^{\circ}$	$101\cdot5^{\circ}$
Peritonitis .....	$98\cdot7^{\circ}$	$105\cdot0^{\circ}$	$103\cdot0^{\circ}$
Dysentery .....	$99\cdot2^{\circ}$	$101\cdot2^{\circ}$	$100\cdot7^{\circ}$
Enteritis .....	$98\cdot7^{\circ}$	$102\cdot5^{\circ}$	$99\cdot0^{\circ}$ or $100\cdot0^{\circ}$
Pericarditis .....	$100\cdot5^{\circ}$	$103\cdot5^{\circ}$	$101\cdot5^{\circ}$ in two cases with rheu-
Stomatitis .....	$100\cdot0^{\circ}$	$102\cdot0^{\circ}$	[matism, and one after scarlet fever.
Thrush .....	$95\cdot0^{\circ}$	$102\cdot4^{\circ}$	
Meningeal tubercle...	$98\cdot0^{\circ}$	$102\cdot0^{\circ}$	...
Meningitis .....	$95\cdot2^{\circ}$	$106\cdot0^{\circ}$ , once $108\cdot4^{\circ}$ just before death.	
Smallpox .....	$98\cdot7^{\circ}$	$106\cdot0^{\circ}$ , once $105\cdot0^{\circ}$ the day before the eruption.	

These figures, excepting the result of fifty observations in pericarditis, and one in smallpox, are from the essay of M. Henri Roger, in which there is hardly a statement that has not been unintentionally verified in the course of inquiries which had been carried out independently and in ignorance of the good work there extant. At the conclusion of these essays M. Roger insists on the efficacy of the external use of cold water, whether by means of the douche, the sheet, or the bath, in moderating the severity, and even influencing the course of typhoid fever; this deduction of French science has been confirmed by the results of German practice, though the lapse of a quarter of a century has been necessary to establish it as one of the chief therapeutical results of that period.

