THESIS.

FOR THE DEGREE OF

DOCTOR OF MEDICINE.

"ENTERIC FEVER WITH SPECIAL REFERENCE TO DIAGNOSIS BY BLOOD CULTURE."

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S U M M A R Y.

INTRODUCTION.

Decline in mortality and prevalence chiefly due to improved water supply and methods of sewage disposal.

Influence and function of Isolation Hospitals

ANALYSIS OF 55 CONSECUTIVE CASES NOTIFIED AS ENTERIC FEVER

METHODS OF ISOLATION AND IDENTIFICATION OF BACILLUS TYPHOSUS.

AGGLUTINATION REACTION

BACTERIOLOGICAL DIAGNOSIS

(a) By Widal test (55 cases)

(b) BY BLOOD CULTURE (21 cases)

COMPLICATIONS.

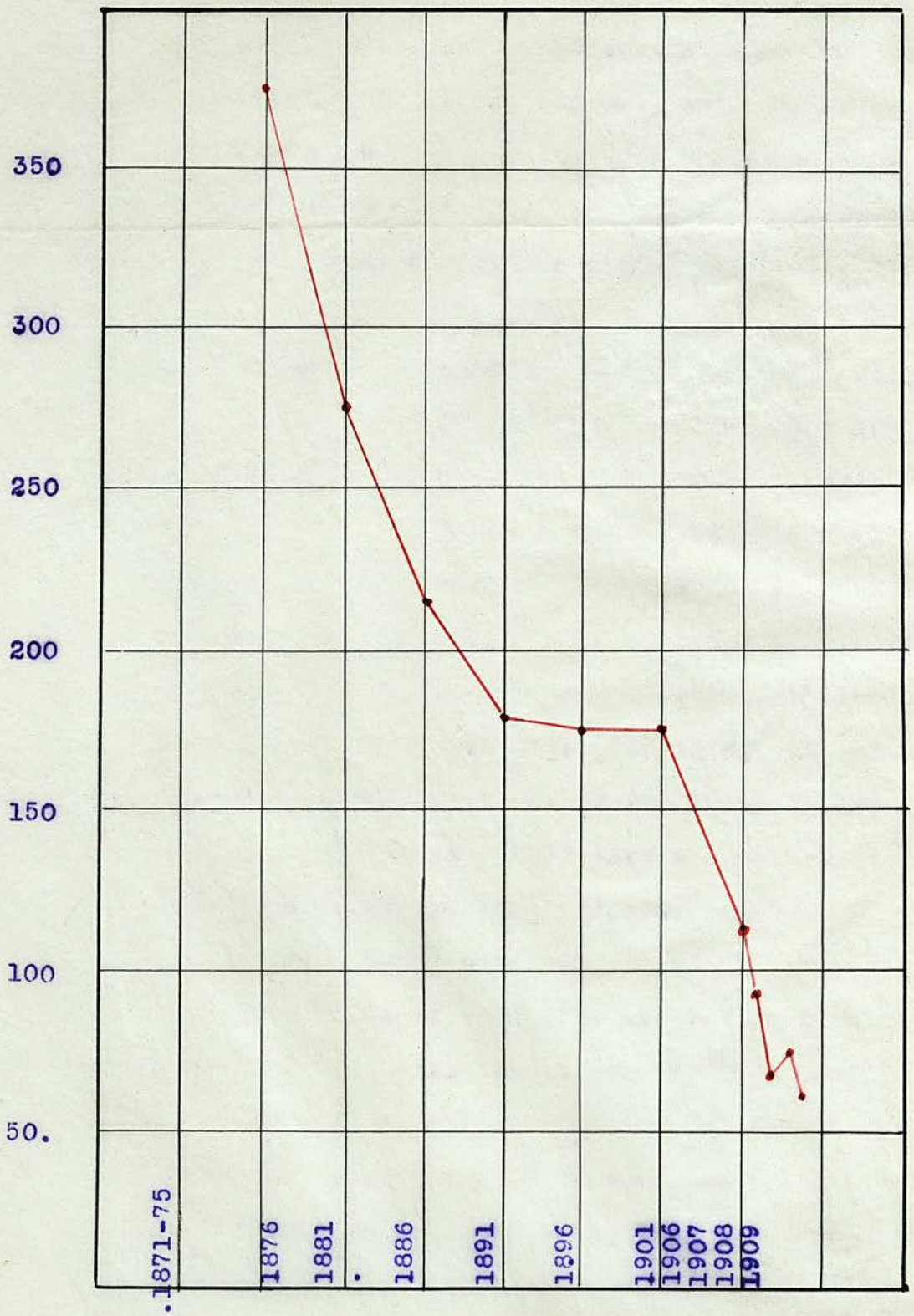
TREATMENT.AND DIET.

GENERAL CONCLUSIONS.

ABSTRACT OF CLINICAL NOTES (55CASES)

England and Wales
Enteric Fever, Death Rates per Million in Quinquennia

Chart 1



INTRODUCTION.

During recent years there has been recorded in England and Wales a remarkable reduction in the death rate at all ages from all causes, and in particular, from Tuberculous phthisis and from Enteric Fever. The death rates (per million) from Enteric Fever in successive quinquennia and in the last four years were as under:-

Table 1

Years	Death Rates	Years	Death Rates.
1871-75	374	1901-05	113
1876-80	277	1906	92
1881-80	216	1907	67
1886-90	179	1908	75
1891-95	174	1909	60
1896-1900	175		

In the Registrar General's Report for 1909, the corrected annual death rates from Enteric Fever are charted from the year 1896 onwards. It is pointed out that "The Statistical history of Enteric Fever mortality can be divided into three main periods: into two of decline) (A) from 1869 to 1885 inclusive and (B) from 1900 to the present date, and into one showing no decline from 1886 to 1889. The first period (1869-1885) may however be sub-divided into two portions, (1) that prior to and including 1875, the

date of the Public Health Act, which shews very slight decline and (2) from 1876 to 1885 inclusive which shews a sudden and relatively enormous reduction in the mortality."

The diminished mortality must either be ascribed to a diminished fatality i.e. to a milder type of disease or to diminished prevalence. The statistics of the Metropolitan Asylums Board (1875-1909) are as follows

Table 2.

Years	Admissions	Deaths	Case Mortality.
1875-79	1828	390	21.3
1880-84	2157	405	18.8
1885-89	1734	257	14.8
1890-94	2761	470	17.0
1895-99	4329	322	16.7
1900-04	5994	898	15.0
1905-09	2665	387	14.5

and it is seen that there has been a considerable reduction in the case Mortality which fell nearly 30 per cent in the interval between 1875 and 1909.

The death rate at all ages however fell nearly 60% in the same period.

It must therefore be concluded that the reduction in Mortality from Enteric Fever which has been recorded

in England and Wales is chiefly due to the diminished prevalence of the disease, though a lower case-mortality has not been without its influence.

It must be remembered however that the removal of patients suffering from Enteric Fever to Isolation Hospitals has been facilitated and encouraged and the later statistics might reasonably be anticipated to be more favourable than the earlier. But if the Notification Returns of Enteric Fever be examined, it will be found that of recent years the number of cases notified per 100,000 inhabitants has fallen very considerably, and I quote the figures for the City of Liverpool.

In that City the notification of Infectious Diseases Act of 1889 was adopted as early as was possible, so that complete returns are available from the year 1889 onwards

Chart 2.

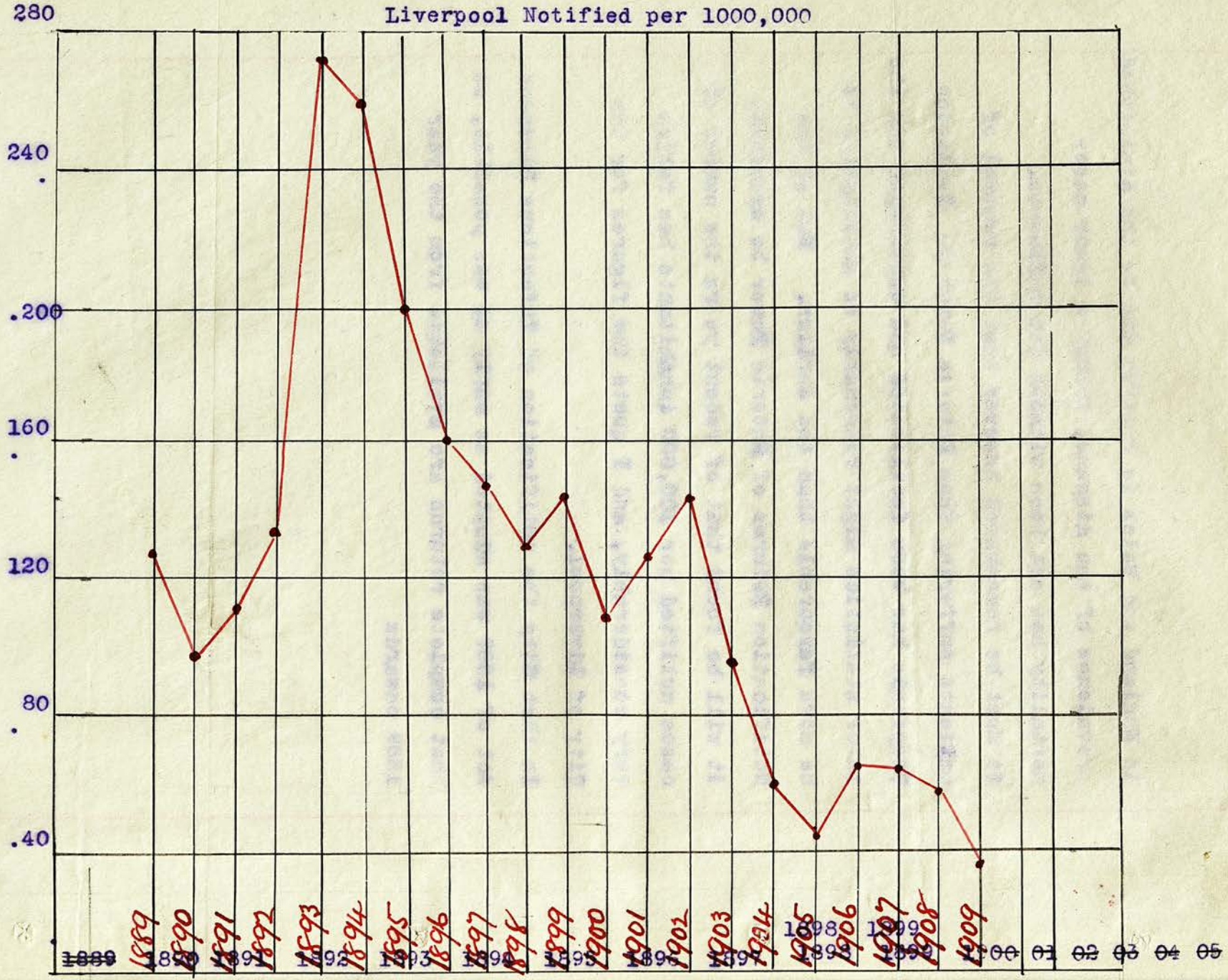

Liverpool Notified per 1000,000
280
240
200
160
120
80
40
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909

Table 3.

City of Liverpool Notification of Enteric Fever.

NOTIFICATIONS.

Year	Total	Per 100,000 population.
1889	670	128
1890	506	97
1891	588	113
1892	699	134
1893	1396	272
1894	1350	259
1895	1306	200
1896	1063	161
1897	991	149
1898	863	129
1899	988	146
1900	731	107
1901	864	126
1902	1026	144.
1903	681	95
1904	434	60
1905	325	44
1906	491	66
1907	482	64
1908	447	59
1909	278	37.

And the death rate from Enteric Fever declined proportionately to the diminished prevalence.

Table 4.

Years	Mortality per 100,000
1876-85	21.5
1886-95	28.4
1896-1905	19.3
1906-09	9.0

While the death rate in England and Wales for the three quinquennia 1886-90, 1891-95, and 1896-1900, remained almost stationary, there was in Liverpool ~~an increased~~ decrease death rate- the mortality for the decennium 1896-1905 being 32 per cent ~~higher~~ lower than for the preceding. The difference in case-mortality was however comparatively small. In 1896-1905, it was 16.87 per cent and in 1906-1909, 15.90 per cent: more than 1 per cent higher than the mortality in London during the same period.

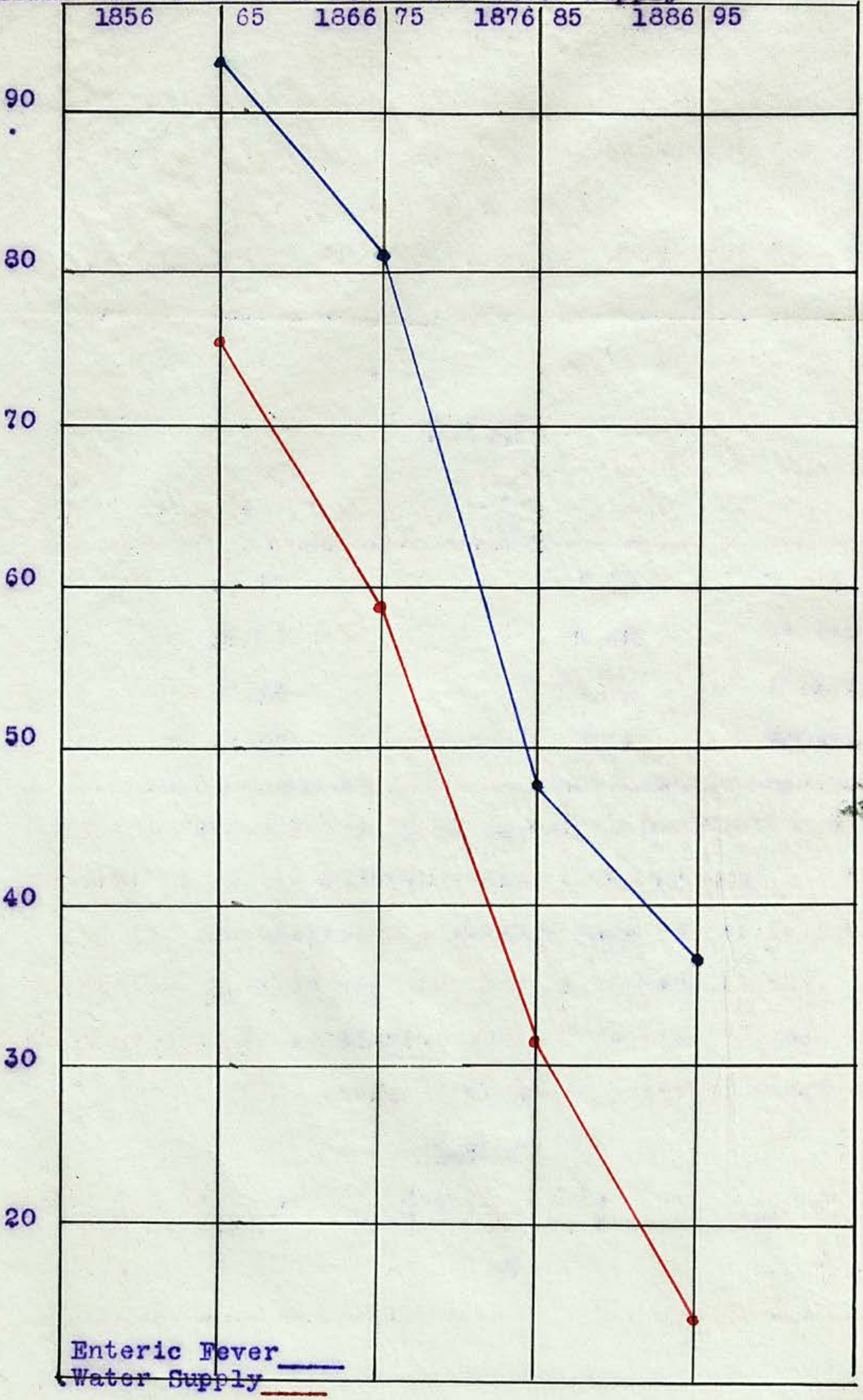
The decline in the prevalence of Enteric Fever and the associated reduction in its mortality must be attributed to the same factors which have reduced the death rate from all causes and from Phthisis-i.e. to the general improvement in the Sanitary conditions of the people-

the result of progressive civilisation, of education of increased material prosperity tending to a higher standard of comfort, to better food and to improved housing. And although this improvement is largely due to an unconscious effort on the part of the people, to the indirect influence of education, it has been encouraged and fostered by the more efficient sanitary administration inaugurated by the Public Health Act of 1848 and largely extended by the Act of 1875 and by much other general and special legislation.

Pre-eminent among the measures which directly tend to the diminution of Enteric Fever, are (1) the provision of an adequate, and even abundant, supply of pure wholesome water by the Public authorities and (2) efficient public scavenging and sewage disposal, especially the adoption of a water-carriage system. The water-carriage system of sewage removal involves, of necessity, improved drainage: and so permanently lowers the level of ground water.

(1) The invariable effect of the provision of a pure water supply is, the reduction of the mortality from Enteric Fever and Diarrhoeal Diseases. The statistics issued by the Massachusetts Board of Health some years ago illustrated graphically the intimate relation which exists between the prevalence of Enteric Fever

Massachusetts Enteric Fever and water supply



Massachusets

and the water supply. It was found that as the proportion of the inhabitants of Massachusetts which derived its water supply from the public authorities increased, the prevalence of Enteric Fever diminished just in the same proportion. In other words, as private wells and public pumps were closed, so did the mortality from Enteric Fever fall.

Table 5.

Period.	Death from Enteric Fever per 100,000	Proportion of population NOT supplied with public water.
1856-65	92,90	75.44
1866-75	80.80	58.94
1876-85	47.40	31.75
1886-95	36.40	13.93

(2) the influence of drainage, of improved scavenging and of the adoption of a water-carriage system of sewage removal is not less obvious and conspicuous.

An extreme example of the relation between the method of sewage disposal and the prevalence of Enteric Fever is found in the City of Nottingham.

Table 6.

period	Pail closet houses	Water closet houses
1887-1898	1 case in 120	1 case in 558
1899	" " " 70	" " " 296
1909	" " " 295	" " " 1189

Enteric Fever is more than four times as prevalent in houses with Pail closets than in those provided with water closets.

In 1909, there were in Nottingham 36,318 pail closets and 21,397 water closets, so that pail closets still serve more than half the houses. It is unnecessary to discuss here the means by which the infection is spread but it may be pointed out that a striking reduction in the mortality from Enteric Fever as well as from Diarrhoea and Enteritis follows the substitution of the water-carriage system for the conservancy system of sewage disposal. In Leicester the pail system has been completely abandoned and the following comparative table of Mortality from Diarrhoea in Nottingham and in Leicester illustrates decline in Mortality which can be explained by no other cause.

Table 7.

	1889-93	1894-8	1899-1903	1904-8	1909
Nottingham	100	139	145	119	96
Leicester	100	115	89	78	48

The decline in the Diarrhoea rate in Leicester was 52 per cent whereas in Nottingham it was only 4 per cent.

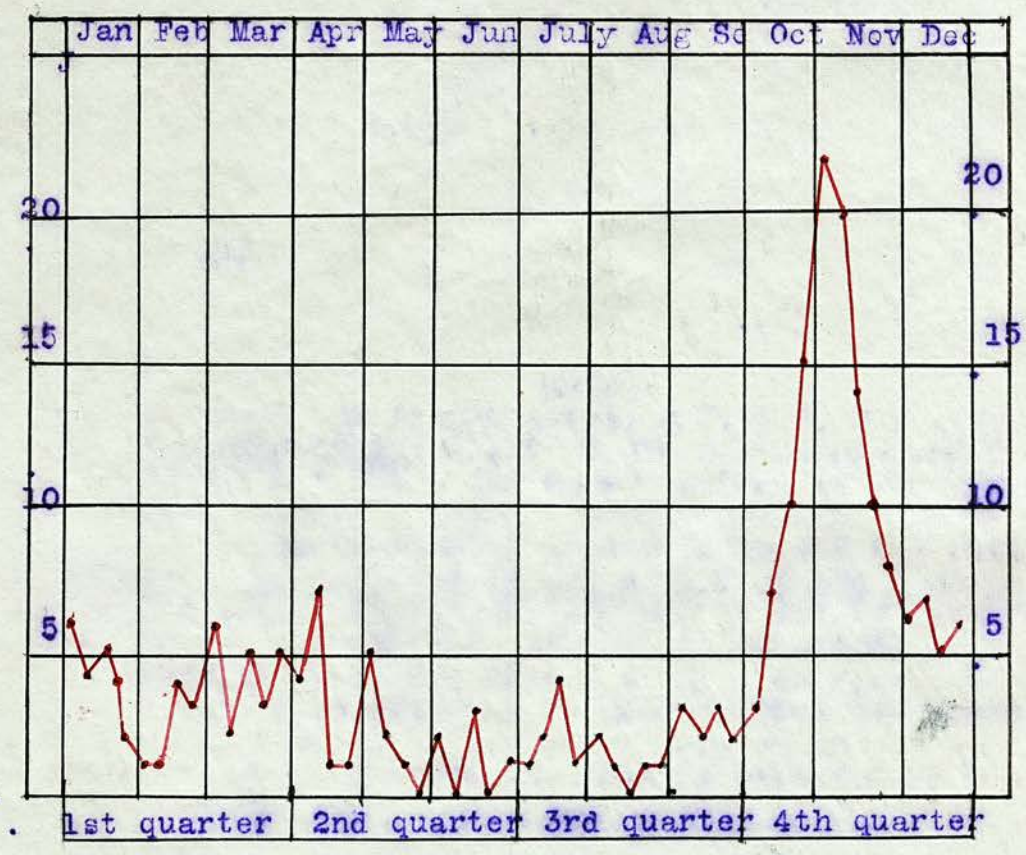
In Birmingham since 1903, a rapid conversion of pan

closets into water closets has been taking place. Coincident with this conversion, progressive yearly decrease has occurred in the number of Enteric Fever cases notified. There seems little doubt that the progressive decline of typhoid fever is causally related to such conversion. Between 1897 and 1909 inclusive 20,392 pan closets were converted into water closets and I summarise the statistics in the following table.

Table

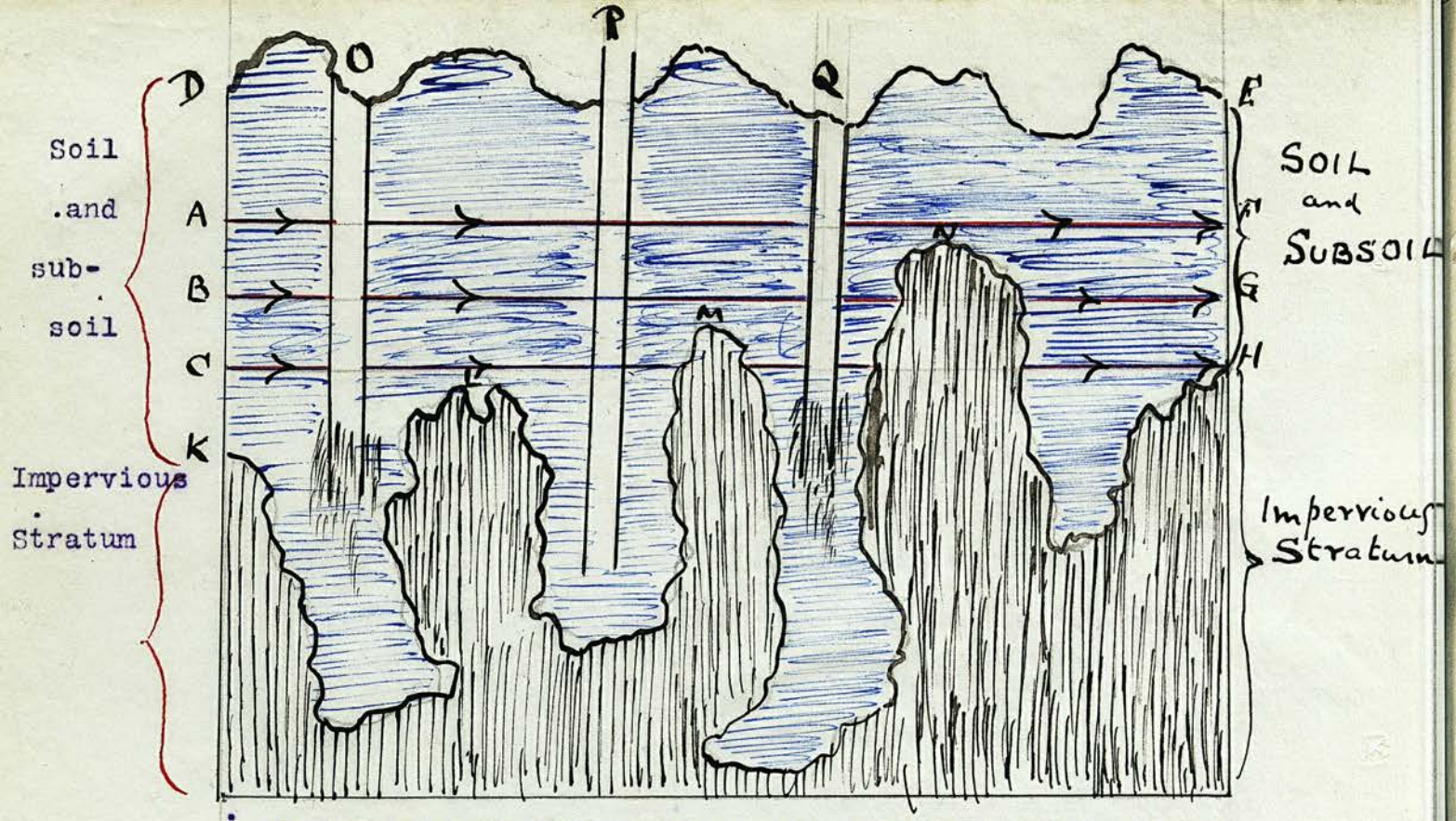
Years	Average Number of pan closets converted	Enteric Fever. Average Number of Notifications	Average Death rate per 100,000
1897-1902	359	660	23.0
1903-1908	2752	239	8.5
1909	1763	95	4.0

The arrest of the decline in Mortality from Enteric Fever (1886-1889) has been accounted for by a succession of years characterised by deficient rainfall and of Autumns with high temperatures.
The total deficiency in Rainfall 1886-1900 (from the average of 60 years) amounted to no less than 17.7 inches.



Nottingham Weekly

M O H report Notifications of Enteric Fever.



LetD E represent the ground level, A F, B G, C H , three levels of ground water. O and Q two cess pools and P a well (surface) K L M N , the upper surface of the first impervious stratum.

As long as the water remains at the level A F the well is not likely to be polluted to any extent by the Cess pool which drains into a depression and not at all by cess pool Q owing to the onward flow of the ground water.

If the cesspool water falls to C H and then rises, to fall again, the well P is polluted by leakage from the cesspool Q: If the water level be low originally at the level and it if it rises and then falls the well is polluted by leakage from the cesspool O.

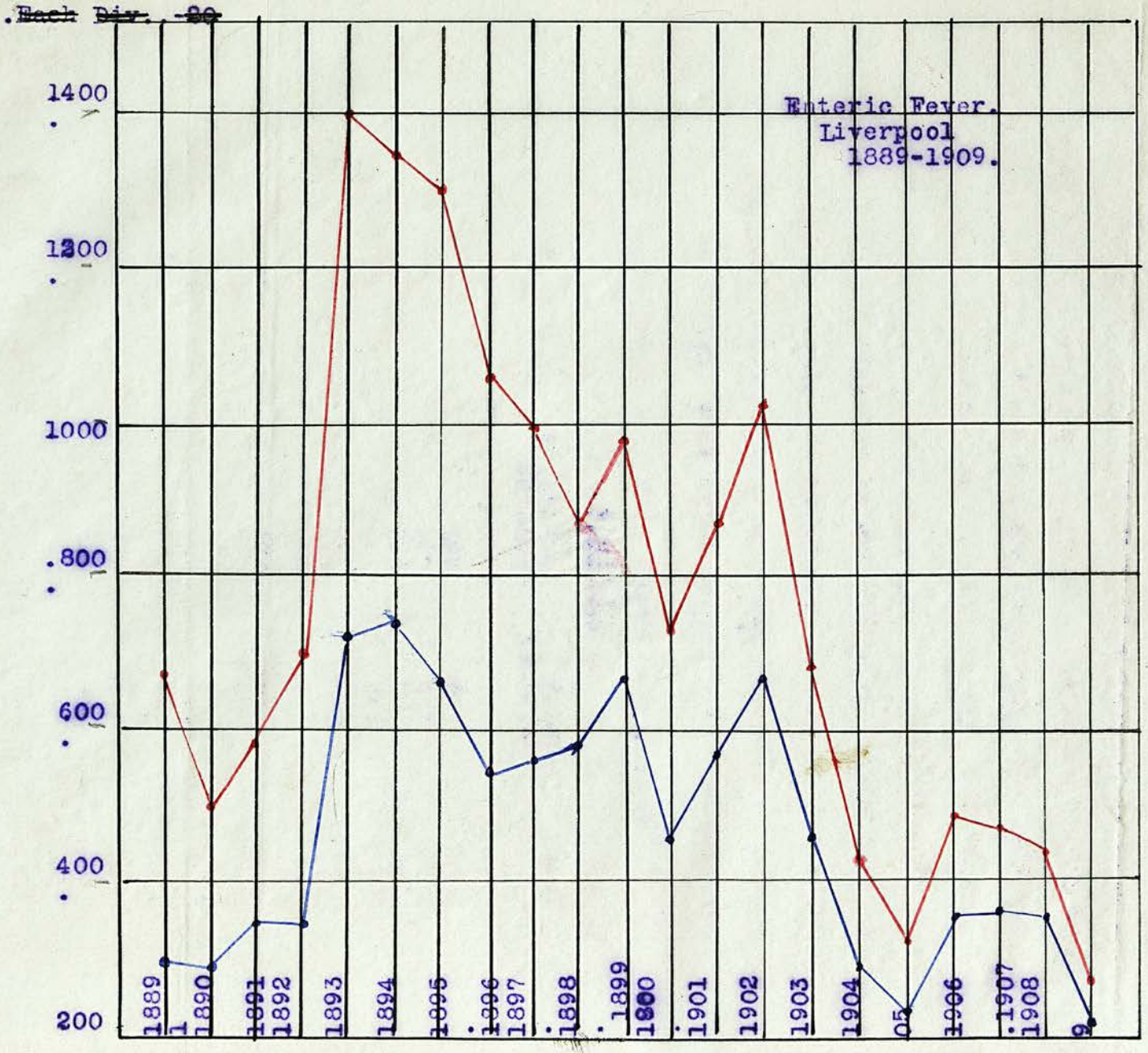
Table 8. RAINFALL

1886-90	Total deficiency	3.7 inches.
1891-95		2.4 "
1896-1900		11.6 "
1901-05		1.7 "
1906-09	Excess.	0.1 "

The seasonal prevalence of Enteric Fever, well illustrated by the tracing of the weekly incidence of the disease in Nottingham (obtained by the charting of the Notification certificates) is related to the fluctuating levels of subsoil water and to temperature Let it now suffice to point out that the prevalence of Enteric Fever is more closely related to fluctuations in the level of the ground water than a sustained high level. The inconsistency noted in different districts, in some i.e. Berlin and Munich an outbreak is noticed with a fall in the level following a rise and in others e.g. Buda Pesth with a rise following a fall is explained by the contour of the first impervious stratum.※ In the recently issued report of the Local Government Board 1909-10 on "Shellfish in relation to Disease," there is collected evidence to shew that the ingestion of polluted shellfish would appear to account for a not inconsiderable portion of the Autumnal rise of Enteric Fever.

Attention must be directed to the influence of Isolation Hospitals on the prevalence of Enteric Fever. The increased provision of such hospitals and the

※ See diagram.



.Cases notified ____ Cases removed to hospital _____

greater use of them made in the reception of patients suffering from Enteric Fever must necessarily exercise influence on the prevalence of the disease. For a source of infection is withdrawn from among the general population. Multiple infections of the same household are prevented and the danger of the transference of the disease from the one locality to another is minimised.

In Liverpool the percentage of removals of notified cases has increased remarkably and almost continuously during the past 20 years so that in 1909, fully 83 per cent of the notified cases were treated in hospitals.

Table 9

Year	Cases notified	Removed to hospital	Per cent.
1889	670	302	45
1890	506	296	58
1891	588	350	59
1892	699	345	49
1893	1396	728	52
1894	1350	745	55
1895	1306	662	50
1896	1063	539	50
1897	991	559	56
1898	863	585	67
1899	988	668	67
1900	731	450	61
1901	864	567	65
1902	1026	670	65
1903	681	462	67

Enteric Fever percentage of removals to City of Liverpool Hospitals.

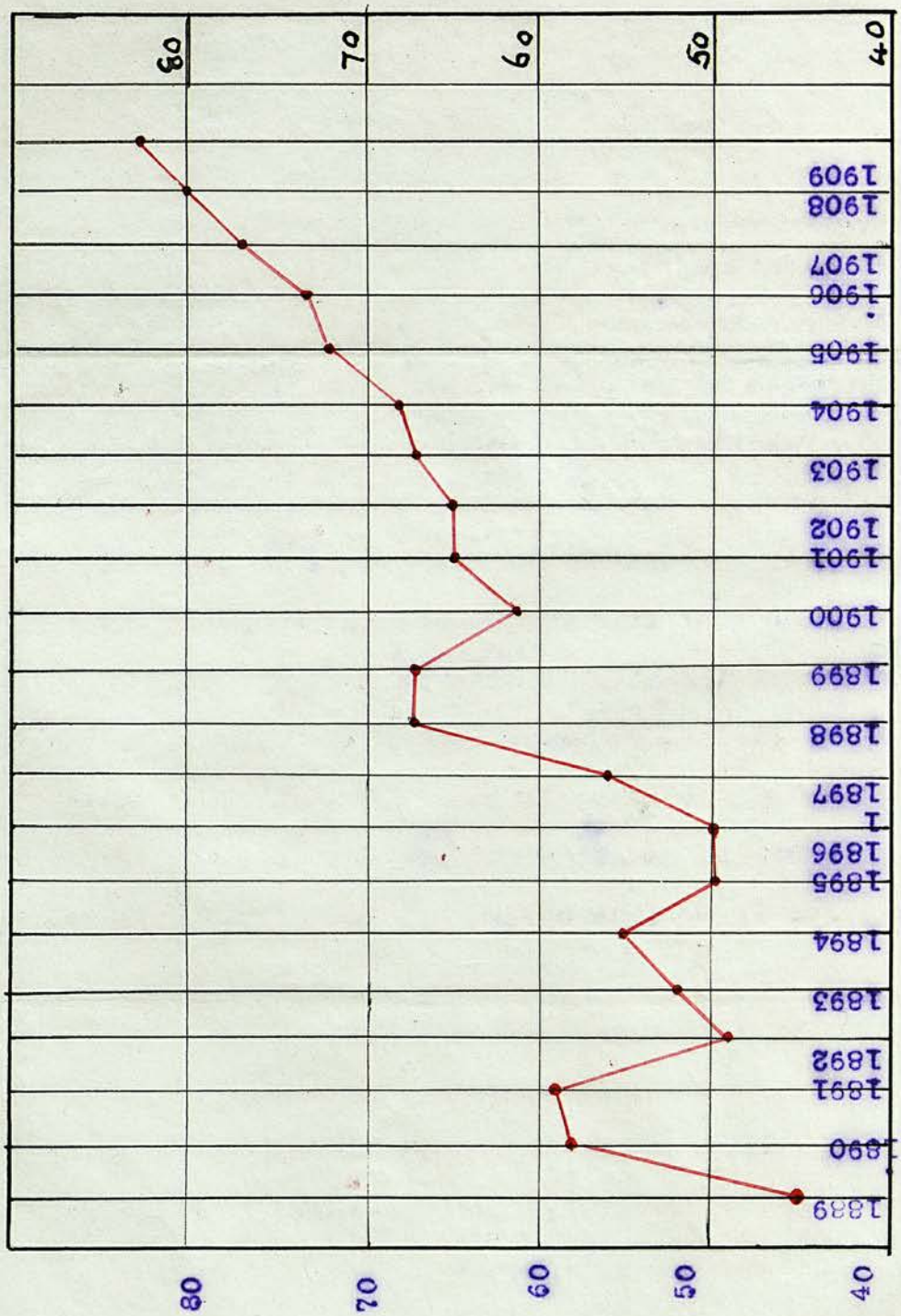


Table 9, continued

Year	cases notified	Removed to hospital	Per cent.
1904	434	296	68
1905	325	235	72
1906	491	360	73
1907	482	332	77
1908	447	360	80
1908	447	360	80.
1909	278	223	83

In consequence of the diminished prevalence of Enteric Fever, and the increased percentage of removals of notified cases to Isolation Hospitals, the function of such hospitals is becoming materially extended. For it is essential to the success of any attempt to control the prevalence of any infectious disease that accurate diagnosis should be made early and that isolation should be prompt.

In no disease is there such difficulty in clinical diagnosis at an early stage as in Enteric Fever. The disease may even run its course and a certain diagnosis be impossible. A large number of patients will therefore be received in which it will be necessary to revise the diagnosis and with a diminishing prevalence of Enteric Fever the proportion of such cases will tend to rise. Out of 55 consecutive cases (to which I make detailed reference) in no less than 17 (or 31 per cent) the original diagnosis was faulty.

The admission of such cases in to Isolation Hospitals ought to be encouraged rather than deprecated. For the best hope of success depends upon a cordial co-operation between the private practitioner and the Public Health Authority.

The cases to which reference has been made were generally of a severe type. But another class of cases, much more numerous, occur. A patient is ill without presenting any very definite symptons and recovers without the cause of the illness being recognised; such mild and obsecure cases of Enteric Fever are a grave source of danger to the community for by them the disease may be conveyed and spread.

A thoroughly equipped isolation hospital affords a means whereby both classes of cases can be readily diagnosed by bacteriological methods.

The cases admitted can be diagnosed almost with certainty by means of the blood-culture method within 48 hours. Unfortunately it is not possible to use it in the majority of cases occuring in private practice. The recognition of the rôle played by Typhoid "carriers" in the propagation of the infection throws an additional onus on the Medical officer.

For little public protection is afforded by the Isolation of a patient suffering from the disease in an acute phase if, when convalescent, he continue to excrete Typhoid bacilli. The number of such cases is by no means insignificant and many outbreaks of Enteric Fever have already been traced to this cause. Before a patient is discharged from an Isolation Hospital, it is necessary that his excreta should be free from the infective bacilli.

Theoretically therefore the excreta should be examined in every case before discharged from the Hospital.

This would necessitate an increase in the medical staff.

Only by the early isolation of doubtful cases and the careful examination of convalescents will the full value of isolation hospitals in the safe guarding of the Public Health from Enteric Fever be obtained.

My Thesis "that the isolation of the Bacillus Typhosus from the blood of patients suffering from Enteric Fever affords the best and most satisfactory means of diagnosis especially in the early stages of the disease, and that the recovery and recognition of the organism is conclusive evidence of the nature of the disease" is based upon observations made in 55 consecutive cases, notified as Enteric Fever, and admitted for isolation and treatment, within a period of eighteen months, at the Liverpool City Hospital, Grafton Street, at which I am Resident Medical Officer

Of the 55 cases admitted, blood was taken for purposes of cultivation from 21 cases.

It is a well recognised fact that the early diagnosis of Enteric Fever is often impossible by the ordinary means at the disposal of the general practitioner.

In the majority of cases few, if any, of the outstanding signs, which together form a clinical picture of Enteric Fever are present in the early stages of the disease and there is not one feature of the disease which, taken by itself, can be said to be pathognomonic.

Formerly, when Enteric Fever was rife and practitioners were constantly on the look out for it, the diagnosis of a first case occuring in a family or institution was not so likely to be overlooked.
At the present time when, in many towns and districts there are only occasional sporadic cases it is no uncommon thing for secondary infections to occur before the primary case has even been recognised as Enteric Fever.

In connection with cases admitted to the above mentioned Hospital within a period of eighteen months, I have seen at least four instances of this fact, involving a total of 13 cases of Enteric with four deaths. Eight of these cases were admitted to this hospital, including one primary case, and of the eight cases admitted one died.

In one of the four above mentioned instances, 3 cases and 2 deaths occurred in the same family; death occurring in the first and third cases. It is highly probable that had an early diagnosis been arrived at in the first cases, in all four instances, followed by hospital isolation and nursing, the nine secondary cases and four deaths would have been prevented.

Not only is early diagnosis essential for the preventive measures, but it is equally necessary for a good prognosis which is very greatly dependent upon careful nursing from the first.

The following is an analysis of the 55 notified cases admitted to hospital.

55 Total Cases.

38 (69%) proved to be Enteric Fever.

17 (31%) proved to be suffering, not from Enteric Fever, but from other diseases, which were as follows;

Acute Pneumonia	10
Bronche-Pneumonia	1
Pleurisy	1
Pulmonary Tuberculosis	1
Tuberculous Meningitis	1
Tonsillitis	1
General Peritonitis	1
Malaise (undiagnosed)	1
	17 Total

These cases illustrate therefore some of the diseases which are mistaken for Enteric Fever, and, to some degree, the extent to which mistakes occur, owing usually to the difficulty in early diagnosis.

Of the seventeen negative cases, a definite and immediate corrected diagnosis was possible in eleven at the time of admission to hospital.

In the remaining six cases the diagnosis was, at first, uncertain, and blood was therefore obtained from each patient with the object of isolating the Bacillus Typhosus if present.

The method will be described later.

A negative result was obtained in all six cases, and they subsequently proved not to be Enteric Fever. They were as follows,

Case Number	26,	Pleurisy	1
" "	35	Tuberculous Meningitis	1
" "	46	Pneumonia	1
" "	52	Pneumonia	1
" "	48	Tonsillitis	1
" "	50	Malaise (i.e. undiagnosed)	1
		Total	6

The case of Malaise (number 50) was a sailor boy age 13 brought from an "Enteric-infected" ship, complaining of sudden onset of headache, vomiting, abdominal pain, and rigor commencing on the day previous to admission. When admitted his temperature was normal

but the spleen was enlarged and palpable, otherwise there was nothing abnormal to note.

The Widal reaction and blood culture were both negative. Next day he was apparently quite well.

He was kept under observation, but no further symptons or signs developed.

Of the 38 cases which proved to be Enteric Fever as notified, the diagnosis was straightforward in 28, Blood cultures were nevertheless taken in 9 of these cases to test the reliability of the method.

There remained ten cases in which the diagnosis was not certain on admission. Some of these appeared to be probably Enteric, and others were doubtful.

Blood was obtained from six of these patients and in 5 cases the Bacillus Typhosus was isolated.

In the one exception, case 55, ~~Bacillus was found~~ blood was not obtained until the temperature had practically settled.

Thus in 14 or 93 per cent of Enteric cases the Bacillus was found, and in 6 cases from which blood was taken in the first week of illness, a positive result was obtained in each =100 per cent.

TABLE OF CASES SENT INTO HOSPITAL AS ENTERIC FEVER, FROM WHICH BLOOD WAS TAKEN ON ADMISSION.

	Case	Day of Disease	Widal Reaction (1 in 60)	Typhoid Bacillus	Final Diagnosis.
25	J.B.	8	Positive	Positive?	Enteric
24	O.B.	7	"	Positive	"
26	A.H.	21	"	Negative	Pleurisy
29	M. Mc C	8	"	Positive	Enteric.
30	H.P.	9	"	"	"
32	W.B.	7	"	"	"
31	C.R.	12	"	Positive?	"
35	W.G.	11	"	Negative	Meningitis
42	H.K.	13	"	Positive	Enteric
43	G.Q.	3	Partial	"	"
44	G.M.	5	Positive	"	"
45	S.B.	13	"	"	"
46	E.H.	14	Partial	Negative	Pneumonia
47	A.F.	16	Positive	Positive	Enteric
48	F.D.	2	Negative	Negative	Tonsillitis
49	R.P.	8	Negative	Positive	Enteric
50	L.H.	3	Negative	Negative	Malaise
51	F.W.	8	Partial	Positive	Enteric.
52	H.D.	3	Positive	Negative	Pneumonia
54	J.S.	6	Partial	Positive.	Enteric.
55	J.M.	19	Positive	Negative	"

Total Cases----------21

Total Enterics----------15

B. Typhosus found in-----14=93.3%

NOs 25 and 31 In each of these cases (both in the second week of illness) a motile bacillus was seen in hanging drop from the broth-blood culture but owing to faulty technique the organism was not recovered.

CULTIVATION OF THE BACILLUS TYPHOSUS FROM THE BLOOD.

METHOD OF OBTAINING AND ISOLATING ORGANISM.

On admission to hospital the patient's arm, at the bend of the elbow, is prepared by washing with soap and water followed by the application of a carbolic fomentation (1 in 40). This renders the skin as far as possible antiseptic, and also acts as a local anaesthetic.

Apparatus always kept ready

(1) 20 CC glass and metal syringe, with metal piston, and needle with sharp point.

(2) Tubes, each containing 10 cc 1% sodium citrate solution in normal saline (sterile)

(3) Tubes, each containing 10 cc of sterile ox-bile

The bile is obtained from the slaughter house in the gall bladder intact (roughly ½ litre of bile in each gall bladder.)

It is filtered, placed in tubes, and sterilised in a Koch Steriliser at 100°c for 20 minutes on three successive days.

Withdrawal of blood.

A bandage is applied to the upper arm sufficiently tightly only to impede the venous return and so cause

the veins to swell. It is sometimes necessary in addition, to instruct the patient to open and close the fist as a further aid to engorgement of the veins. The skin over the median basilic vein is drawn towards the operator by the left forefinger and the needle (attached to syringe) is plunged obliquely through the skin and into the vein, with the eye of the needle looking upwards.

There is no difficulty as a rule in striking the lumen of the vein, except occasionally in patients with very fat arms, or feeble circulation, or in very young children. In the latter it may be necessary, first to expose the vein by skin incision.

Having entered the vein, 15 cc of blood are withdrawn by making gentle traction on the piston. Next loosen the bandage, remove the needle, and seal the prick with collodium.

Beyond occasional slight ecchymosis I have never seen the slightest ill effects follow the "Blood ~~culture~~ letting".

The blood mixture is now transferred, 4 c c at a time, into each of 5 bile tubes. Up to this point the work is performed at the bedside.

The tubes are at once placed in the incubator at 37°C. At the end of 24 hours (or thereabouts), ten Petri dishes having been prepared with solidified agar medium

1 c.c. of the blood-bile mixture from each tube is plated out (o.5 c.c. on each plate).
by means of sterile glass pipettes fitted with rubber teats. The dishes are then incubated at 37°c for 12 to 24 hours according to convenience.

METHOD OF INENTIFYING ORGANISM OBTAINED.

The colonies, which are usually numerous, are then picked off with a platinum needle and subcultured into the following media.

(1) Agar (sloped)
(2) Peptone water.
(3) Litmus milk.
(4) Litmus Glucose broth.

At the same time a hanging drop is made and examined for motility.

Also films are made and stained:-

(1) By Methylene Blue.
(2) By Gram's method.
(3) For Flagella (not essential)

Later the organism is tested against the serum of a rabbit which has been inoculated with a known strain of B. Typhosus.

In my earlier cases the blood was placed into broth tubes (10 c.c. each) and at the end of 24 hours plated

out into melted agar at 40.c This was found unsatisfactory, for on two occasions (Cases 25 and 31) although feebly motile bacilli could be seen on examining the broth by hanging drop method, the organisms were not recovered in culture. The blood probably inhibited the growth of the organisms in spite of being diluted in broth. Ox-bile was next used as recommended by Coleman and Buxton (Am. Jour. Med. Sciences, June 1907) on the assumption that bile neutralises the inhibitory effect of the blood. After 24 hours incubation, plates were made on Mc Conkey's solid medium and also on solidified agar plates. The colonies were always more numerous on ordinary agar and that medium was consequently used solely for plating out purposes. Contamination by staphylococcus albus occurred occasionally and chiefly in my earlier cases through imperfect preparation of the skin and want of skill in striking the vein the first time.

DURATION OF TIME BEFORE ORGANISM ISOLATED AND IDENTIFIED.

Usually 48 hours to isolate organism which can then be tested at once against another patient's serum, or against a typhoid rabbit's serum if available. Later the further cultural tests can be applied.

AGGLUTINATION REACTION. of organisms isolated against a rabbit's serum which gives positive Widal reaction with a known Bacillus Typhosus when diluted 1 in 100 and also clumping (but not a completely positive reaction) 1 in 500.

	Name	1 in 100	1 in 500.
	B. Typhosus	Positive	clumping.
24	Olive B.	"	"
29	Mabel Mc C	"	"
30	Henry P.	"	"
32	Walter B.	"	"
42	Hans K.	"	"
43	Gerald Q	"	"
44	Gerald M.	"	"
45	Susan B.	"	"
47	Archib.. F.	"	"
49	Robert P.	"	"
51	Frank W.	"	"
54	John S.	"	"

Time limit 2 hours Room Temperature.

LABORATORY METHOD OF PERFORMING AGGLUTINATIONS.

Blood, from a rabbit previously inoculated with Bacillus Typhosus, is withdrawn from a vein on the posterior surface of the ear (after shaving and cleaning) into a drawn out glass pipette. The ends are sealed off and the blood is centrifugalised. A file mark is then made on the blood tube and the top broken off. The clear serum is pipetted off and placed in a clean test tube and from it various graduated dilutions are made with sterile normal saline into separate test tubes. Each test tube is supplied with a glass pipette fitted with a rubber teat. A few drops from each dilution are placed in separate watch glasses, and into each is stirred a very minute quantity of a 12 to 18 hours agar culture of the organism under examination. At the same time a control emulsion is made in normal saline in the same way. From each watch glass a hanging drop preparation is made and the slide is marked with the time and name.

Method of performing Widal reaction for clinical purposes. in the cases referred to above as distinct from the Laboratory method already described.

Required.

(1) 18 to 24 hours broth culture of Bacillus Typhosus, on solid medium.

(2) Wright's tube containing patient's blood.

Method.

Place blood-tube in centrifuge and whirl till serum separates.

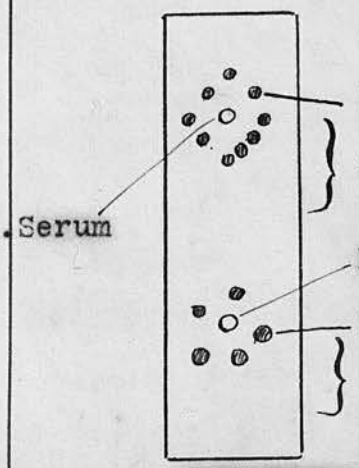
Take up a loopful of serum and place at one end of a clean glass slide, and around this place nine drops of Typhoid culture.

Mix intimately on the slide=1 in 10 dilution.

Further along the slide place one drop of 1 in 10 dilution, and surround it by five drops of broth culture.

Again mix=1 in 60 dilution.

From each dilution make a hanging drop preparation, and mark the slide with the time and degree of dilution.



MICROSCOPIC APPEARANCES AND CULTURAL REACTIONS OF ORGANISMS ISOLATED.

Case	Methylene Blue	Gram stain	Hanging drop motility	Litmus milk	Peptone water for Indol	Litmus Glucose broth
24 C.B.	Bacillus 2μ to 4μ x 0·5 μ	Negative	Positive	Acid. No clot	Negative	No clot Acid.
29 M McC	"	"	"	"	"	"
30 H.P.	"	"	"	"	"	"
32 W.B.	"	"	"	"	"	"
42 H.K.	"	"	"	"	"	"
43 G.Q.	"	"	"	"	"	"
44 G.M.	"	"	"	"	"	"
45 S.B.	"	"	"	"	"	"
47 A.F.	"	"	"	"	"	"
49 R.P.	"	"	"	"	"	"
51 F.W.	"	"	"	"	"	"
54 J.S.	"	"	"	"	"	"

Ehrlich's method of testing for Indol (Journal of Hygiene) Solutions required.

Solution 1.

Paradimethylamido Benzaldehyde.---------- 4 parts

Absolute Alcohol.----------380 "

Concentrated Hydrochloric Acid.---------- 80 "

Solution 2.

Saturated watery solution of potassium persulphate.

Method.

To a 24 hours old peptone water culture of the Bacillus under examination add

5 C.C. solution i

and 5 C.C. solution ii

using separate pipettes for each solution.

If indol be present a pink colouration appears in a few minutes.

Claims for Blood culture method of diagnosis in Enteric Fever.

(1) Early diagnosis (at latest within first week)

(2) Absolute Diagnosis. (if the organism be found)

(3) Rapid Diagnosis. (result obtained in less than 48 hours

Objection.

Method is not adopted to general practice unless employed by clinical bacteriologist, but blood may be drawn into ordinary capillary tubes and sent to a laboratory for incubation and examination.

The organism has been recovered by this method but the percentage of successes is low.

Other Methods of Bacteriological Diagnosis.

(1) From Rose Spots.

The rose spots are incised and the scrapings placed in various media. Thebacilli are found in the lymph, the pink colour being caused by bacillary irritation. The method is painful, and uncertain in result. Moreover rose spots do not usually appear before the end of the first week and roughly 25% of cases have no exanthem at all.

(2) By Puncture of the Spleen.

The method is accurate but painful, and distressing to the patient. Further there is danger of haemorrhage in perforating a diffluent or semi-diffluent spleen. Bryan (Ann of Surg. Nov.. 09) has collected 29 cases of rupture and haemorrhage of the spleen in Enteric Fever. Moreover fatality has followed splenic puncture (Hirsch, Jour. Am. Med. Assoc. June 1906)

(3) BY Puncture of the Lung.

The B. Typhosus has been obtained by puncture of the lung in cases of Enteric Fever with Bronchitis. The few drops of the bloody serum obtained in the syringe are mixed with broth and incubated. The method is painful and not always successful.

Bancel of Paris obtained the organism in 6 out of 15 cases by this method. (Jour. de Phys. et Path. Gen 1903, Vol V.)

(4) From the Urine.

Bouchard in 1881 first isolated the B. Typhosus from the urine. The method is of small value however from a diagnostic point of view, as it can rarely be obtained before the end of the second week, and in a large proportion of cases(about $\frac{2}{3}$) it is not recovered at all.

It is found intermittently in "Carrier" cases and in this connection is of considerable value.

(5) From the Feces.

This method is uncertain in result from the point of view of early diagnosis.

The results are by no means always positive.

The method is slow, laborious, and unpleasant.

Some observers (Jour. A.M.A.Vol. Ll. 1908. NO.12) consider the gut contents to be a bad medium for the B. Typhosus and that the organism gains access to the feces from the gall bladder, and that this accounts for the fact that the Bacilli are only found in the feces from time to time.

They consider Enteric Fever to be primarily a Septicaemia with a secondary infection of gall bladder

and intestines. This is to some extent supported by the opinion of other observers Drigalski &c., who consider the tonsils to be the site of inoculation and instance this by isolating the organism from the sore throats which occur in many Enteric cases at the commencement of the disease, often as an initial symptom. I examined bacteriologically the throats in two of my cases but failed, in both, to obtain the Typhoid Bacillus.

Dean (B.M.J. Nov.. 12 1910) is able by means of the complement fixation method to detect the presence of small quantities of Typhoid Bacilli in the mixed growth obtained on plates inoculated with an emulsion of feces. The method is hardly suitable for the clinical bacteriologist in dealing with Enteric Fever in acute form, but is valuable in discovering "carrier" cases.

(6) By "Lumbar Puncture"

Cases are reported in which the organism has been isolated from the cerebro-spinal fluid obtained by Lumbar puncture. These methods have now more historical than clinical value for they are superseded by that of direct culture from the blood.

Widal Serum Diagnosis.

An indirect method of bacteriological diagnosis. It is based upon the fundamental investigations of Pfeiffer and his pupils, originally undertaken in the study of immunity.

They studied the action of the blood serum of animals immunised to Cholera and Typhoid upon the respective organisms. They showed that Pfeiffer's well known Cholera reaction was applicable also to the Typhoid Bacillus.- namely the serum of animals immunised to Typhoid, when placed in the abdominal cavity of a healthy guinea-pig, together with an amount of Typhoid culture (experimentally found to be fatal) not only protected this animal against the action of the Bacilli; but also caused breaking down and finally solution of the Bacilli. The next step was to establish the fact that this method could be used to differentiate various organisms especially the Typhoid from the Colon group. Next it was discovered that the reaction could take place in the test tube.

Gruber and his pupils (Grünbaum &c) later showed that the blood serum of a human being behaved in the same way as the blood serum of an immunised animal. Thus blood serum from a patient after an attack of Enteric Fever if brought in contact with Typhoid Bacilli

in a test tube was found to cause clumping and sedimentation.

Gruber and his pupil Grunbaum therefore first called attention to the fact that this method not only differentiated the Typhoid from other allied Bacilli but also furnished proof in the human being of a previous attack of Enteric Fever, and to them belongs the credit of pointing out the diagnostic usefulness of the agglutination test (Sitzungsb.D.Weisbadener Congress.F.Inn Med. April 1896. and the Lancet Sept. 19.1896)

Later Widal (Sem. Méd. 1896, No 33) pointed out that the serum showed agglutinating power during an attach of Enteric Fever as well as after recovery.

Time of appearance of the reaction.

Most frequently not before the end of the first week (from the 7th to 10th) day Sometimes it is delayed till later.

Complete absence is very rare. The reaction has been found to occur occasionally in normal serum and in serum from patients suffering with other diseases(e.g. Tuberculous Meningitis. &c)

At the John Hopkins hospital a standard of dilution of 1 in 50 and a maximum time limit of one hour are employed.

The reaction is to be considered positive if in every field there are numerous clumps, and the Bacilli have lost their motility, but the presence of a few motile Bacilli does not render the test negative.

A negative result does not necessarily imply that the patient is not suffering from a Typhoid infection.

In my cases a positive result was obtained in 35 out of 38 cases or 92%, and in 7 cases a positive result was obtained when the patients were suffering from other diseases- one of ~~whom patients~~ whom had had Enteric Fever seven years previously.

I here summarise objections to the Pfeiffer- Gruber- Grünbaum- Widal reaction.

(1) It is usually late in appearances and very occasionally absent entirely.

(2) It is not always specific of Enteric Fever

(1) Sometimes positive in other diseases.

(2) Patients may have had a previous attach of Enteric Fever.

(3) Patients may have had anti-typhoid inoculation.

(4) May obtain in infections with allied organisms.

(Paratyphoids, Gaertner, &c.)

Typhoid Fever was until comparatively recently regarded as " a continued fever of long duration, usually attended with diarrhoea, and characterised by peculiar intestinal lesions, an eruption of small rose spots and enlargement of the spleen."

Even after the recognition of the B. Typhosus, it was believed that Enteric Fever, was, like Cholera, an intestinal disease. But through the demonstration of the presence of the Bacillus in the blood by improved methods of culture, the disease is now regarded as a septicaemia, the chief portal of invasion being the Alimentary Tract, more especially its lymphatic tissues, which are readily infected by the Bacillus. It has recently been shewn by Drigalski that in a very large proportion of cases -(40 per cent) the invasion is attended by sore throat. He found the Bacilli frequently in the tonsils.

From the lymphatic tissues of the Alimentary Tract the Bacilli gain access to the blood and so are distributed generally throughout the body.

Multiplication need not of necessity occur in the blood, but growth appears to be active, not only in the tissues already referred to but also in the

mesenteric glands, the spleen and the bone marrow. The blood infection is thereby intensified. The Bacilli present in the tissues act as irritants, and local inflammations and necrotic foci may develop in various parts of the body. (e.g. Liver, Kidney, Lungs, and spleen). The ulceration of the Peyer's patches is thus explained.

There is a remarkable similarity in the aetiology and pathology of Enteric Fever and Tuberculosis more especially in the more modern conception of the two diseases. In Tuberculosis, the presence of the Tubercle Bacillus has recently been demonstrated in the blood: and the importance of the lymphatic invasion chiefly by way of the Alimentary Tract (to the exclusion of inhalation) prior to the development of a general septicaemia is now recognised.

The septicaemic nature of Enteric Fever being acknowledged, it follows that the method of diagnosis by means of blood cultures is theoretically rational and I have shewn that, in practice it surpasses all the other methods hitherto adopted for the diagnosis of Enteric Fever by its absolute certainty as well as by the early date at which it is available.

SUMMARY OF CASE REPORTS.

The following symptons and complications were recorded.

Otorrhoea (2), Inflamed Glands (1), Mastoiditis (1), Prostatitis (1), Mastitis (1), Phlebitis (2), (both legs were affected in one case), Sore Throat (5), Pleurisy (1), Bronchitis (7), Hypostatic Pneumonia (1) Pneumonia and Gangrene (1), Oedema of ankles (1), Hyperpyrexia (1), Delirium (4), Retention of urine (1) Epistaxis (1), Haematuria (1), Profuse sweating (18) Slight abdominal pain (20), Slight distension (29), Tympanites (2), Meteorism (1).

In 17 cases the bowels were loose on admission and in 18 cases, constipated. In two cases only was there diarrhoea whilst under treatment in hospital.

The Spleen was palpable in 24 cases, enlarged but not palpable in 6 cases, and not enlarged in 8 cases.

Relapses occurred in 7 cases; Haemorrhage in 3 cases.

Collapse, with severe abdominal pain (? partial perforation), 1 case.

The pulse was dicrotic in 17 cases, not dicrotic in 14 cases.

Rose spots were present in 36 cases, absent in 2 cases.

In 17 cases, spots were many and in 9 cases few.

Days in Hospital		
1-7	1 Case.	(NO 19 Died.
18-14	2 Cases	(NO 10. Died.) (NO 20 Died.)
15-21	1 Case	(NO 55 Transferred.)
22-28	1 "	(NO 32. Died.)
29-35	1 "	(NO 13. Mild attack)
36-42	4 Cases.	
43-49	6 "	Average duration of 34 cases.
50-56	9 cases	(Four fatal cases being
71-77	3 "	excluded.)
78-84	4 "	= Nine weeks.
85-91	2 "	
92-98	2 "	
106-112	2 "	

Case Mortality.

Four cases proved fatal. 10. 5%.
2 cases (NO 19 and 20) died from intense toxaemia
1 case (NO 32) died from gangrene of the lung following Pneumonia.
1 case(NO 10) died from Pneumonia as a complication.

Routine Treatment of Enteric Fever carried out in the above cases.

Diet.

On admission 1½ pints to 2 pints of milk freely diluted with water are given in 24 hours. The patient being fed every 3 hours. The degree of dilution is regulated by the condition of the patient's intestinal tract as to diarrhoea, or vomiting.

Occasionally, according to the type of case, in addition to milk, beef tea is given - 4 ounces at noon and 4 ounces at midnight.

After the temperature has remained normal for 7 days arrowroot is given - thin at first - 1 teaspoonful in 4 ounces of milk increasing to one tablespoonful in ½ pint of milk.

Therefore towards the end of the second week of normal temperature, the patient is getting:-

Morning--- ½ pint arrowroot.
Noon------ ½ pint beef tea.
4 P.M.---- ½ pint milk.
Evening--- ½ pint milk.
Midnight-- ½ pint beef tea.

After a week on the above diet it is changed to the following:-

Morning ½ pint of Bread and milk (without crust) well boiled with one egg beaten in.

Noon. ½ pint of beef tea with bread without crust

4 P.M. ½ pint of bread and milk as in the morning.

8 P.M. ½ pint Milk.

Midnight. ½ pint beef tea.

At the end of the 3rd week of normal temperature the diet is gradually increased with fish &c.

The patient is usually allowed to get up at the end of the 3rd week of normal temperature.

If there be vomiting or diarrhoea on admission, ½ pint or less of peptonised milk freely diluted is given in 24 hours - with 2 hourly feeds

Sponging

Should be performed twice in 24 hours all through the course of illness, unless for special reasons it is discontinued. If temperature above 103° F tepid sponging 4 hourly.

Diarrhoea.

Very seldom occurs with careful dieting.

Bismuth, Salicylate is occasionally given.

If Haemorrhage occurs no food is allowed for about 24 hours, ice being given by the mouth, and a light

ice cap containing finely crushed ice is applied to the abdomen.

Morphia sub-cutem.

Meteorism.

In one case with extreme meteorism occurring concurrently with haemorrhage, extract of pituitary gland was given sub cutem, with wonderful result and relief.

The Bowels.

Enema every 3rd day if bowels not moved

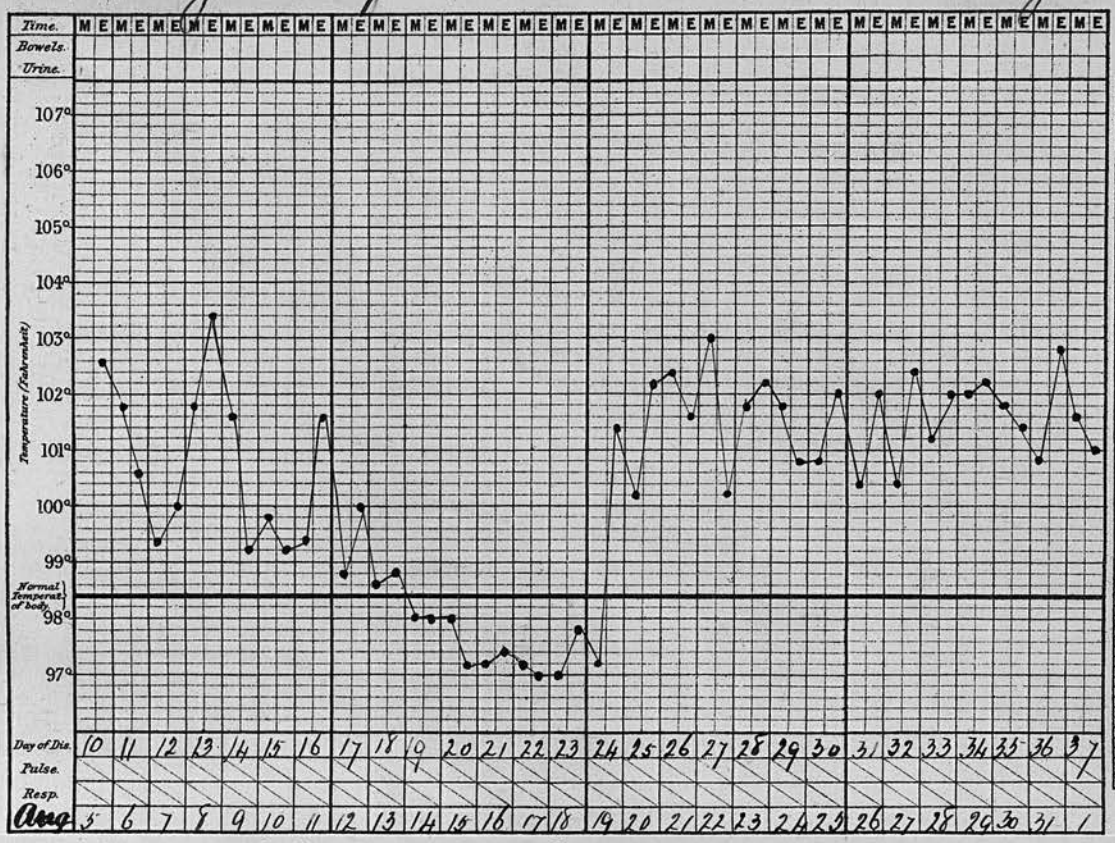
Aperients not until patients allowed up.

BRIEF NOTES OF 55 CONSECUTIVE CASES NOTIFIED AS

ENTERIC FEVER AND ADMITTED TO HOSPITAL.

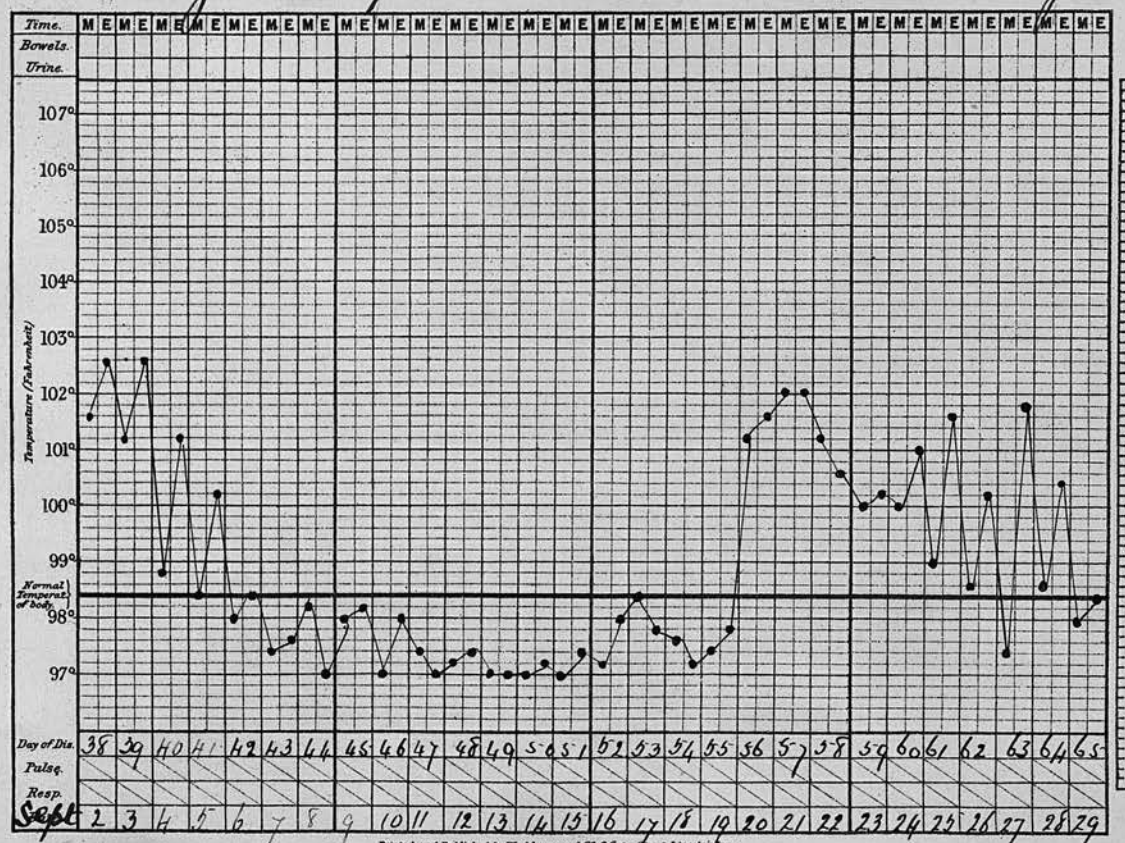
Notes of Case.

Name Mary O'Y Age 7 Disease Enteric Result Recovery.



Notes of Case.

Name Mary O'Y Age 7 Disease Enteric Result Recovery.



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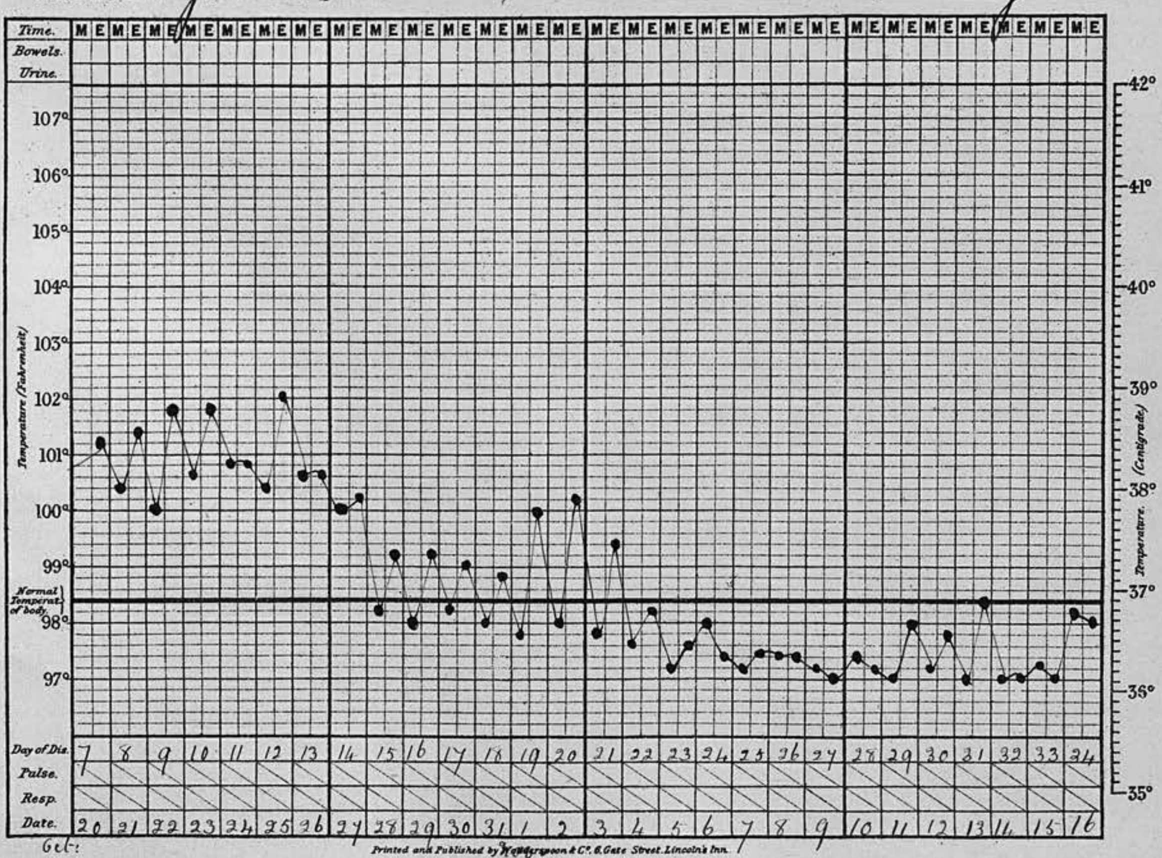
NO 1. ENTERIC FEVER.

Mary O'T	Age 7, School girl.
Admitted.	Aug.. 5th 1909
Day of illness.	10th.
Onset.	gradual, Headache, and slight sore throat followed by Vomiting and Diarrhoea.
On admission.	Temp.. 102. 5, Pulse 120, Dicrotic, Resp.. 22.
Tongue.	Dry furred, sordes on lips and teeth
Throat.	Inflamed.
Skin.	a few Rose spots on abdomen.
Abdomen.	Slightly distended.
Spleen.	Not palpable.
Bowels.	Loose and dark.
Ehrlichs reaction.	Positive.
Widal reaction.	Positive. 1 in 60

Course of illness.	Two relapses. Slight congestion of bases.
Result.	Recovery.

Notes of Case.

Name Marg^t McA Age 10 Disease Enteric Result Recovery.



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NO 2. ENTERIC FEVER.

Margaret Mc A Age 10 School girl.

Admitted. Sept 20 th 1909.

Day of illness. 7th.

Onset. gradual. Headache and Malaise.

On Admission. Temp.. 101.2, Pulse 120, not dicrotic
Resp.. 22.

Tongue. Dry, Sordes.

Skin. Nil.

Abdomen. Slightly distended.

Spleen. Palpable.

Bowels. Constipated.

Ehrlichs reaction Positive.

Methylene Blue. Positive.

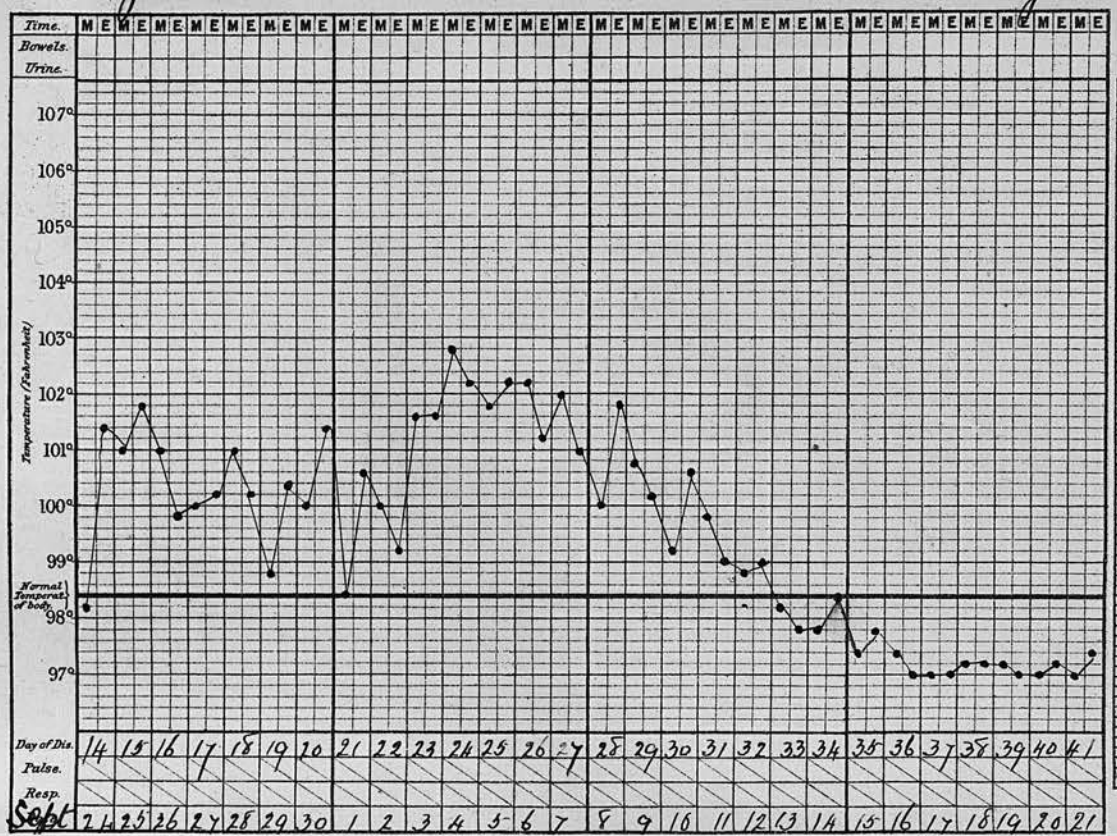
Widal reaction. Negative., (Positive on Sept..26th)

Course of illness. moderately severe, No complications.

Result. Recovery.

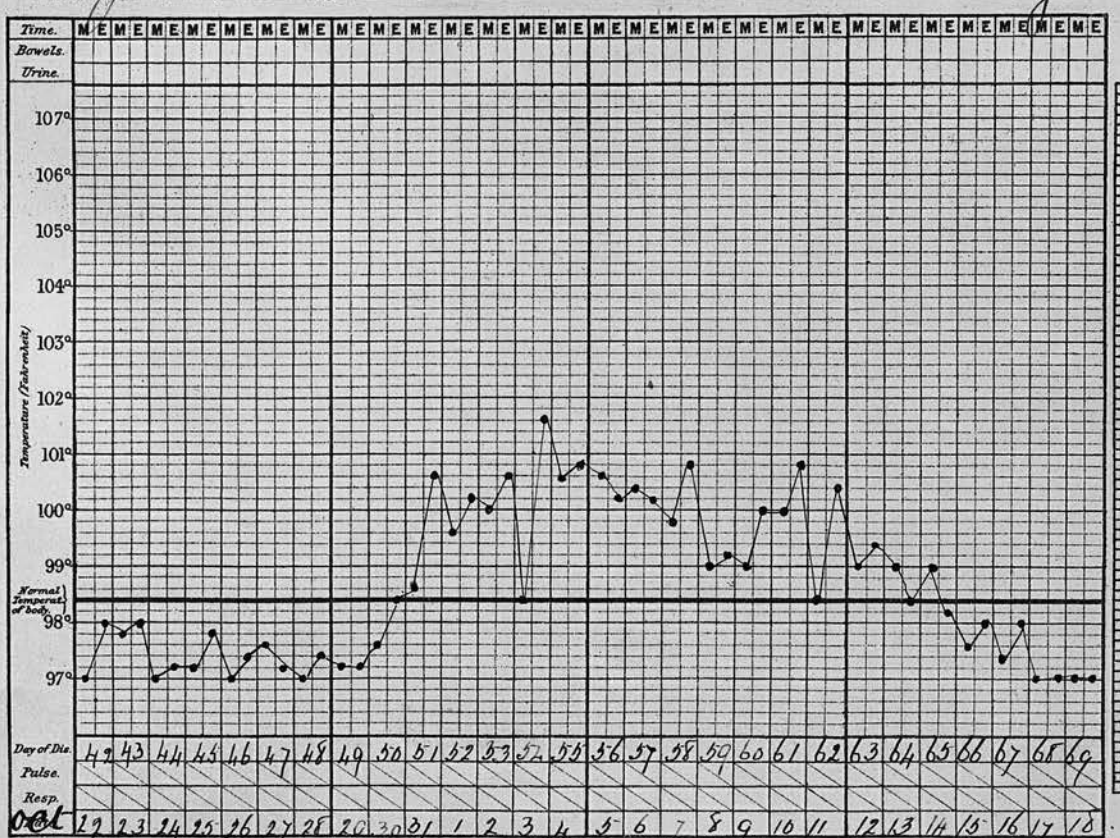
Notes of Case.

Name James. R. Age 28 Disease Enteric Result Recovery.



Notes of Case.

Name James. R. Age 28 Disease Enteric Result Recovery



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NO 3 ENTERIC FEVER.

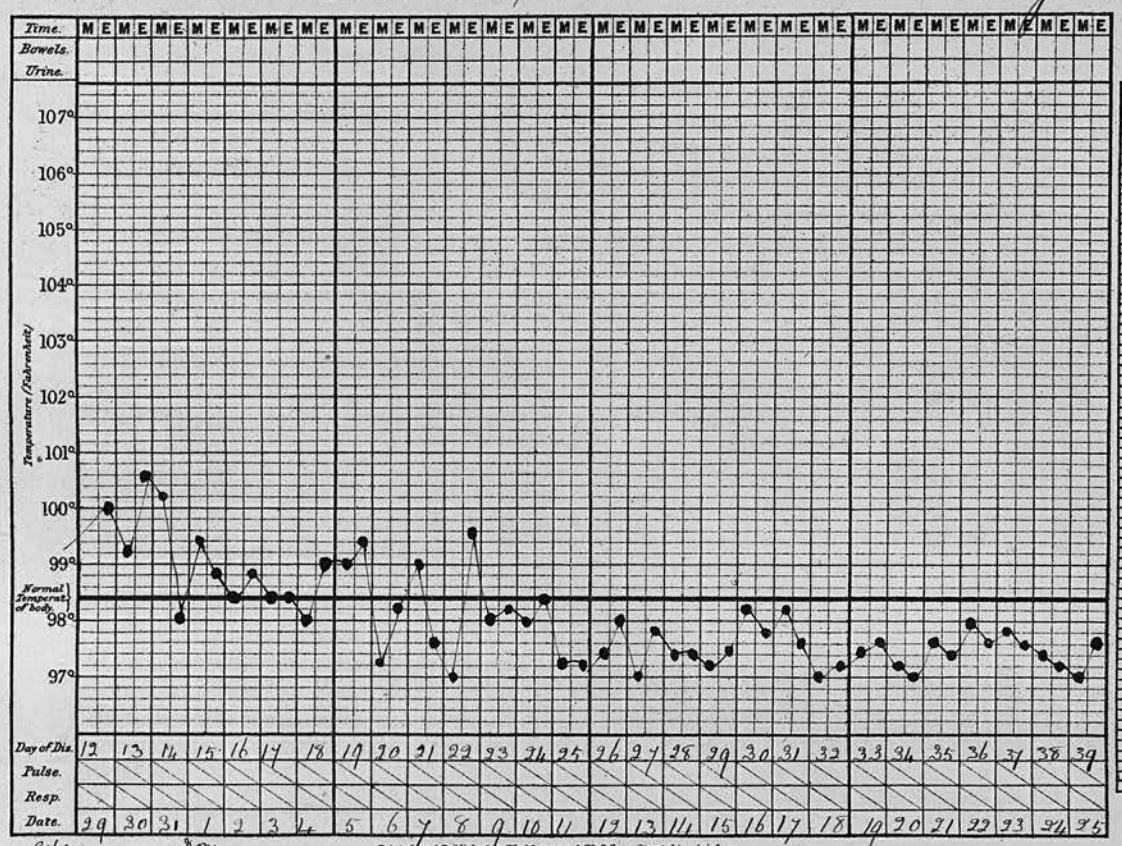
James R.	Age 28. Sailor.
Admitted.	Sept.. 24th 1909.
Day of illness.	10th.
Onset.	gradual, Malaise, and constipation.
On Admission.	Temp.. 101.4 Pulse. 66 not dicrotic Resp.. 20.
Tongue.	furred and dry.
Throat.	
Skin	One Rose spot on abdomen.
Abdomen.	Not distended.
Spleen	Palpable.
Bowels.	constipation.
Ehrlichs reaction	Positive.
Widal reaction.	Positive. 1 in 60.

Course of illness. Relapse. sweats
Relapse.

Result. Recovery.

Notes of Case.

Name Norman. D. Age 21 Disease Enteric Result Recovery.



NO 4 ENTERIC FEVER.

Norman D. Age 21 Sailor.

Admitted. Oct.. 29th 1909.

Day of illness. 12th.

Onset. Sudden, Vomiting, & Diarrhoea.

On Admission. Temp.. 100. Pulse 78. Dicrotic,
Resp.. 20.

Tongue. Dry and brown fur.

Throat.

Skin. Two Rose spots.

Abdomen. Not distended.

Spleen. Palpable.

Bowels. Constipation.

Ehrlichs reaction. Positive.

Methylene Blue. Positive.

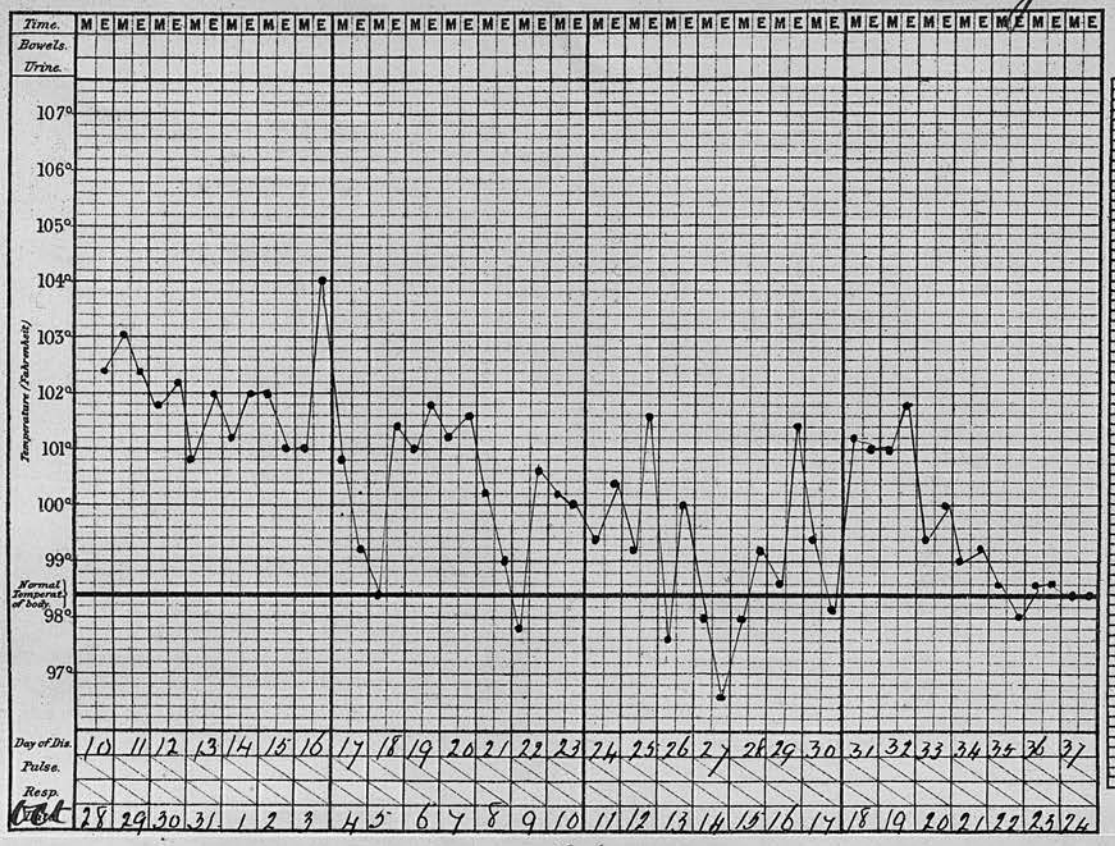
Widal reaction. Positive.

Cause of illness. Mild,
No complications.

Result. Recovery.

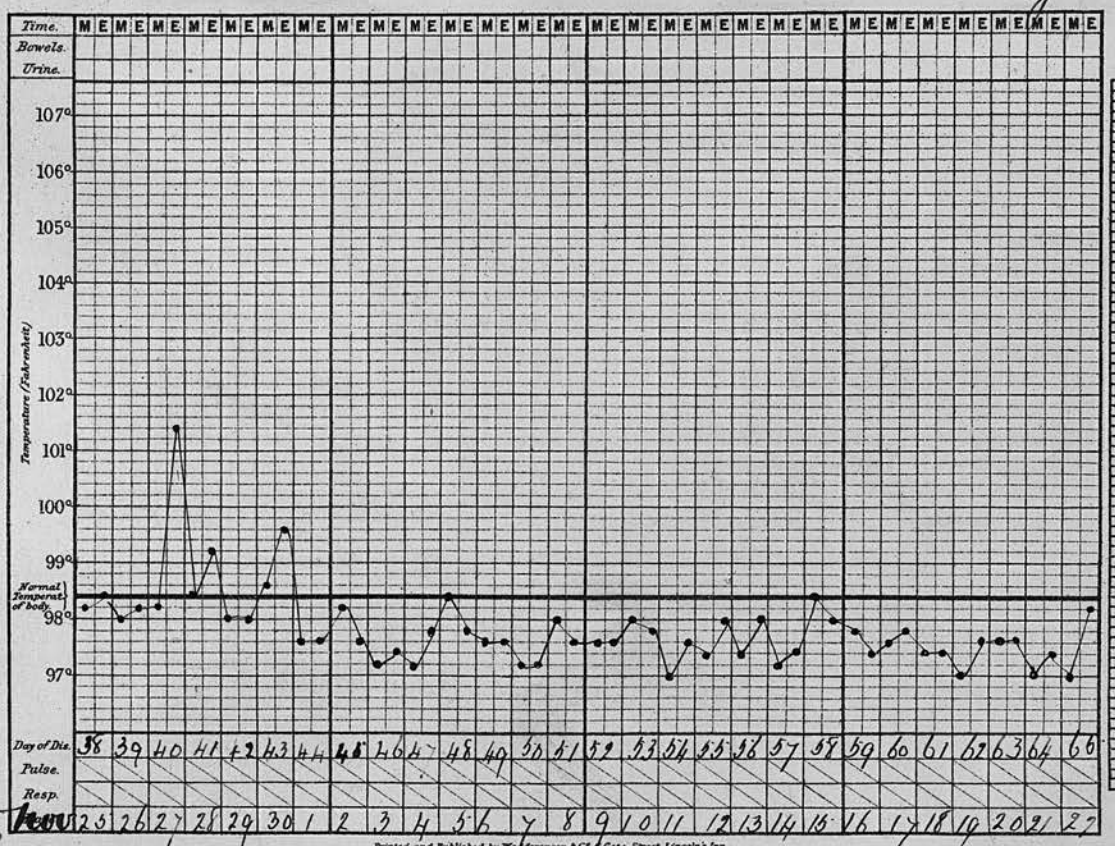
Notes of Case.

Name Robinson M Age 25 Disease Enteric Result Recovery.



Notes of Case.

Name Robinson M Age 25 Disease Enteric Result Recovery.



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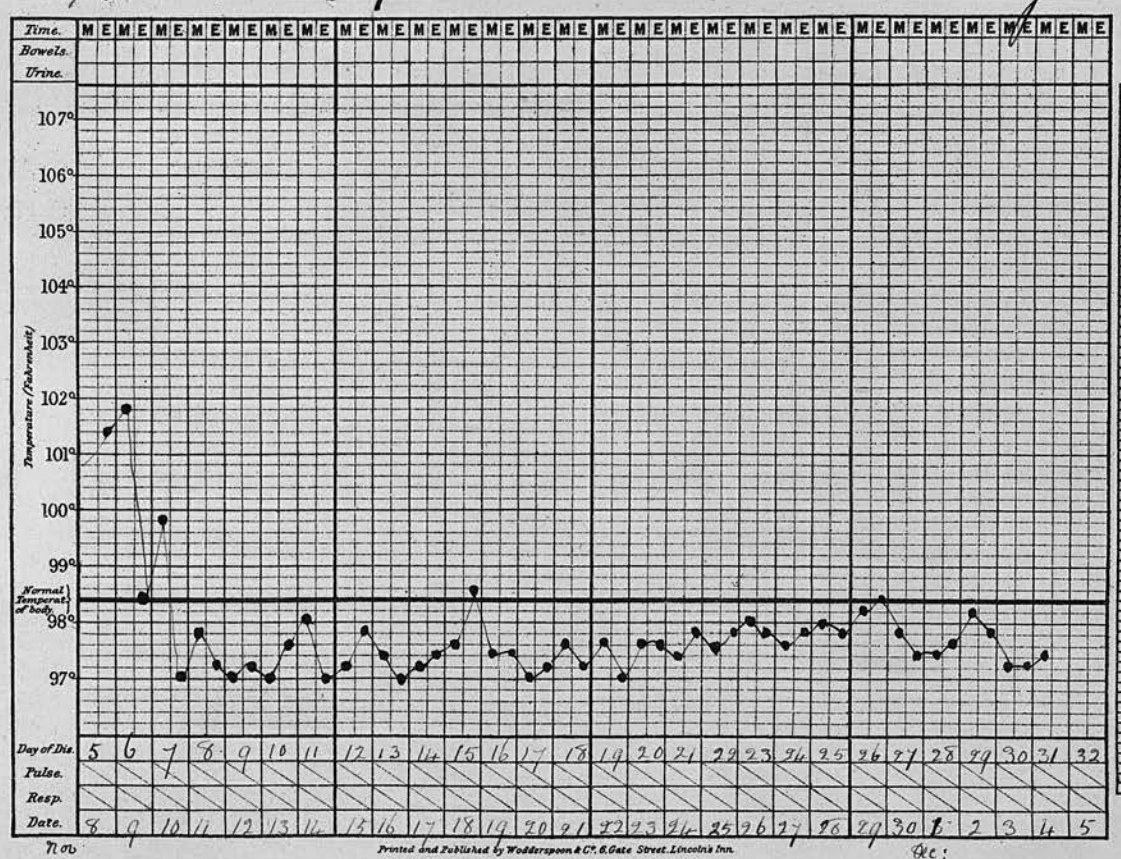
NO 5 ENTERIC FEVER.

Robinson M.	Age 25 Dock Railway man.
Admitted.	Oct.. 28th 1909.
Day of illness.	10th.
Onset.	gradual, with headache and diarrhoea.
On Admission.	Temp.. 102.4. Pulse. 100 Dicrotic, Resp. 24.
Tongue.	dry and brown fur.
Throat.	
Skin.	Numerous rose spots.
Abdomen.	Slightly distended.
Spleen.	Palpable.
Bowels.	Loose and dark (haemorrhage.)
Ehrlichs reaction	Positive.
Methylene Blue.	Positive.
Widal. reaction.	Positive.
Blood culture	

Course of illness	Severe. Pleurisy. haemorrhage. Collapse (?partial perforation) Profuse Petechial rash on chest and abdomen. Erythematous rash Profuse sweats. Phlebitis both legs.
Result.	Recovery.

Notes of Case.

Name William L Age 9 Disease Pneumonia Result Recovery.



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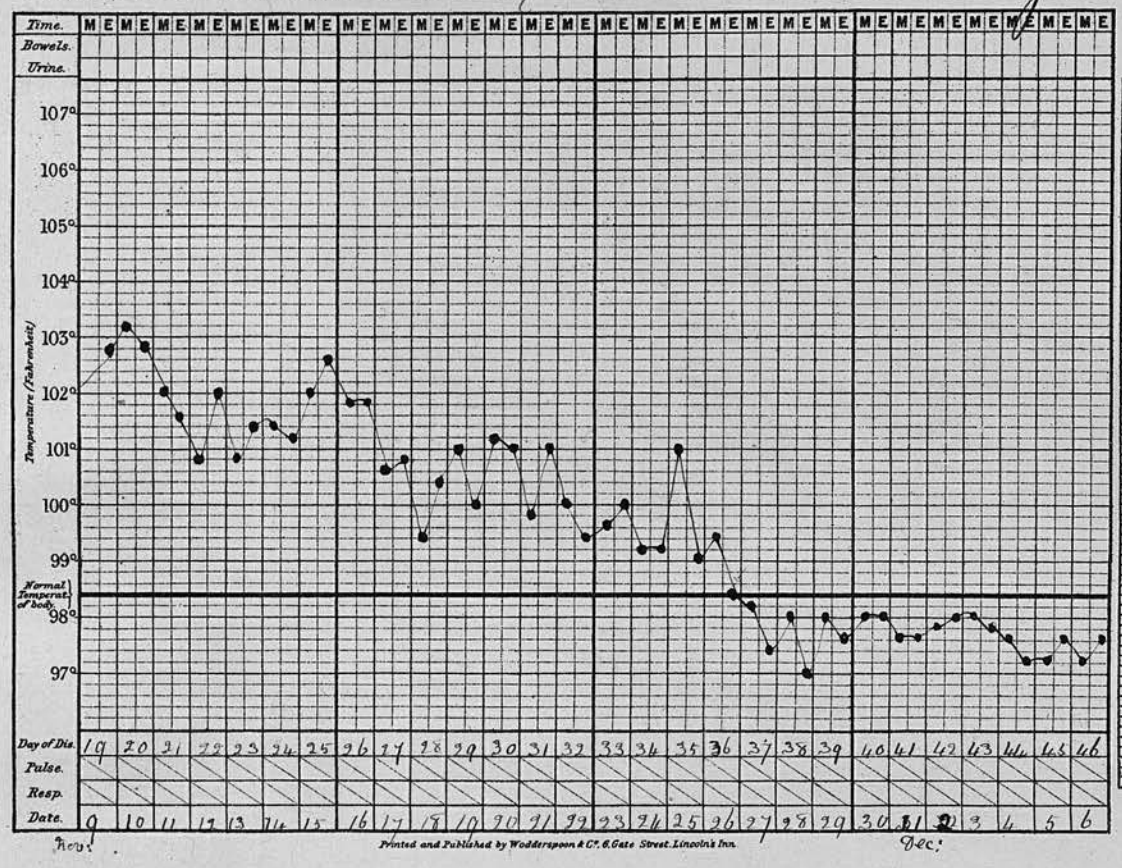
NO 6 Pneumonia.

Walter L.	Age 9 School boy.
Admitted.	Nov.. 8th 1909.
Day of illness.	5th.
Onset.	Sudden, Headache, Cough, Pain in Chest, and Abdomen.
On Admission.	Temp.. 100.4 Pulse 104. Resp.. 44
Tongue.	Furred and moist.
Throat.	
Lungs.	Definite physical signs of left lobar Pneumonia.
Skin.	
Abdomen.	Slightly distended.
Spleen.	
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Negative.
Blood culture.	

Course of illness.	Crisis 7th day.
Result.	Recovery.

Notes of Case.

Name William A. Age 24 Disease Enteric Result Recovery.



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No 7. ENTERIC FEVER.

William A. Age 24 Dock labourer.

Admitted. Nov.. 9th 1909.

Day of illness 19th.

Onset. gradual, Malaise, Vomiting, Diarrhoea, Cough, Abdominal pain,

On Admission. Temp.. Pulse 72. Dicrotic, Resp 24

Tongue. Dry.

Throat.

Lungs. cough, Rhonichi in both lungs,

Skin, a few Rose spots,

Abdomen. Slightly distended.

Spleen.

Bowels. Loose.

Ehrlichs reaction.

Methylene Blue.

Widal reaction. Positive (1 in 60)

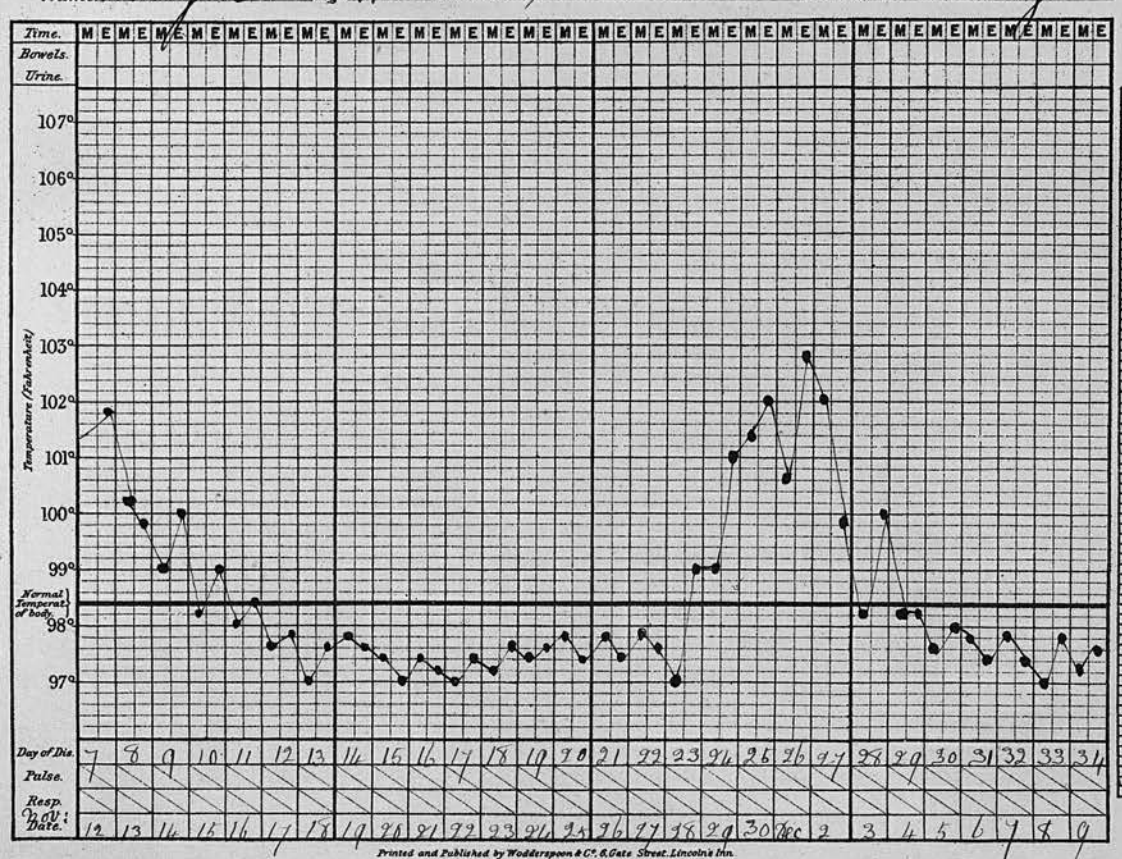
Blood culture.

Course of illness. Severe
Cyanosis. Heart sounds feeble,
Delirium.
Copious recurring crops of Rose spots, Profuse sweats.

Result. Recovery.

Notes of Case.

Name Mary C. Age 42 Disease Uterine Result Recovery.



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NO 8. ENTERIC FEVER.

Mary C. Age 42. Housewife.

Admitted Nov.. 12th 1909.

Days of illness 7th (?)

Onset. gradual. Headache, cough, Shivering

On Admission. Temp.. 101.8. Pulse. 96. Resp..20

Tongue. furred and dry.

Throat.

Lungs Slight cough. Rhonchi in both lungs

Skin.

Abdomen distended.

Spleen.

Bowels. Constipation.

Ehrlichs reaction.

Methylene blue.

Widal reaction. Positive. 1 in 60.

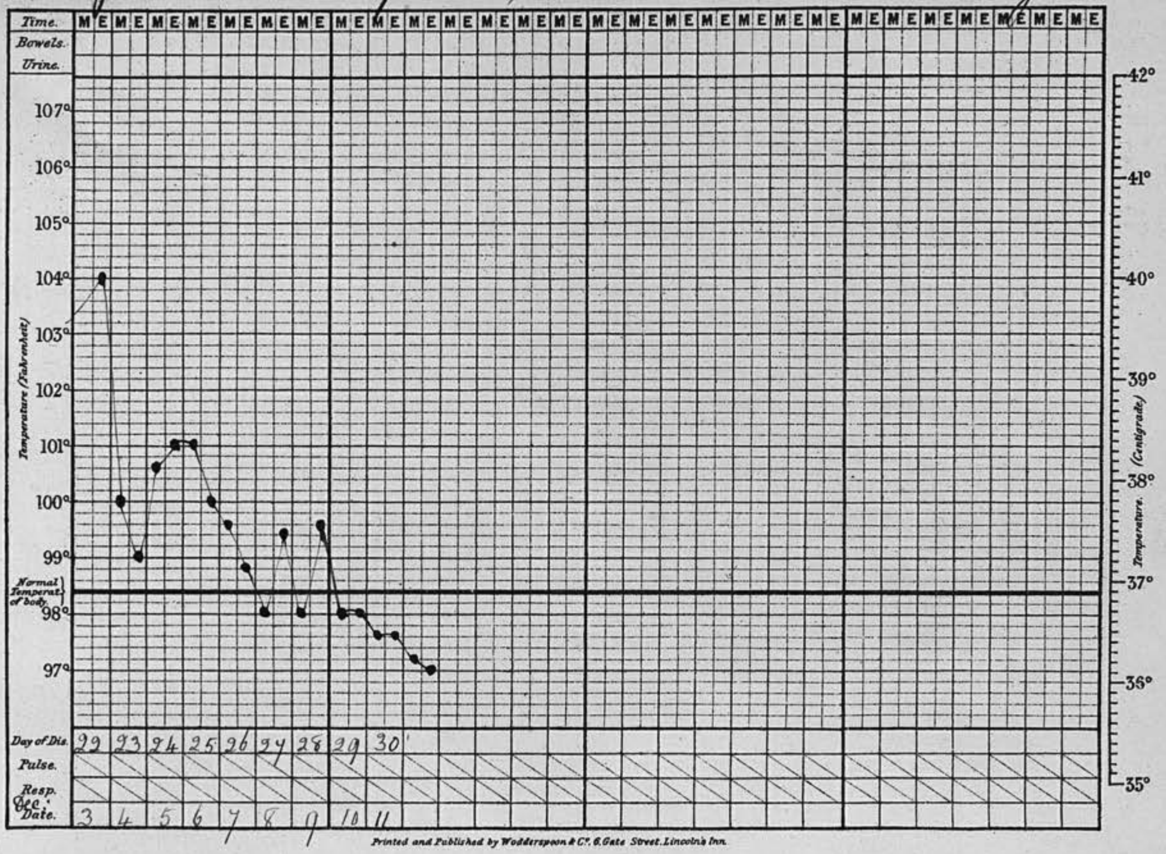
Blood culture.

Course of illness. Relapse.

Result. Recovery.

Notes of Case.

Name John O'B. Age 27 Disease Enteric Result Recovery



NO 9. ENTERIC FEVER.

John O'B. Age 27 Sailor.

Admitted. Dec.. 3rd 1909.

Day of illness. 22nd.

Onset. gradual, Headache, Vomiting, Diar-rhoea, Cough, Shivering,

On Admission. Temp.. 101.6 Pulse.80. Dicrotic, Resp.. 20.

Tongue. Dry and furred.

Throat.

Lungs. Cough.Rhonchi in both lungs.

Skin. a few fading Rose spots on abdomen.

Abdomen. Slightly distended.

Spleen. (Palpable Dec..6th.)

Bowels. Constipation.

Ehrlichs reaction.

Methylene Blue.

Widal reaction. Positive (1 in 60)

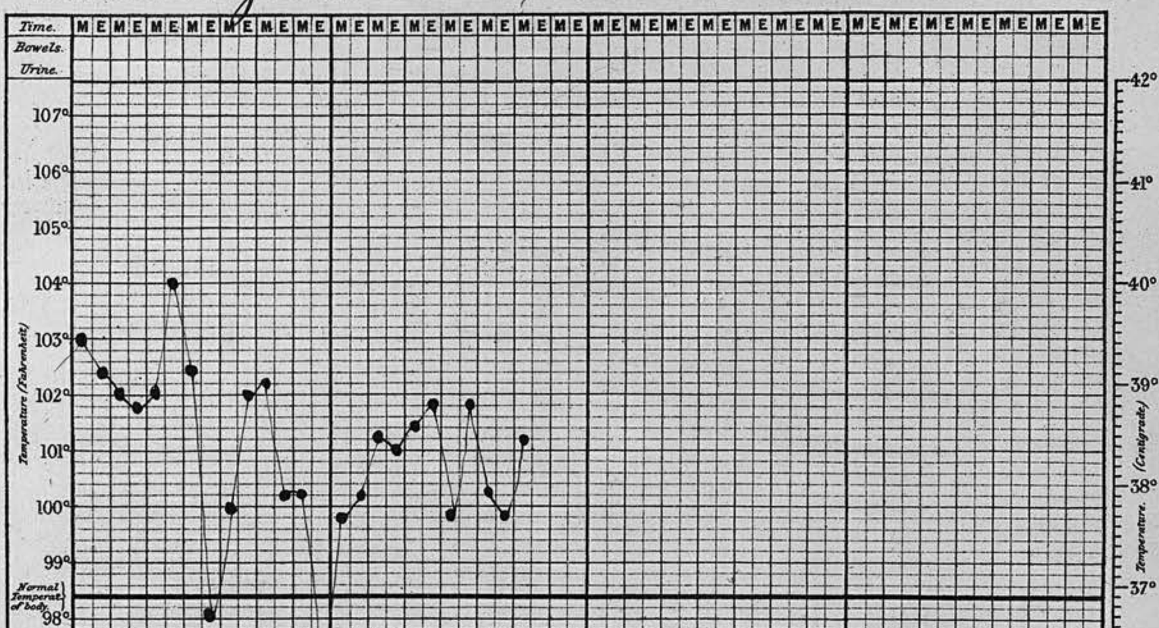
Blood culture.

Course of illness. Mild.

Result. Recovery.

Notes of Case.

Name Anthony H. Age 31 Disease Enteric Result Died.



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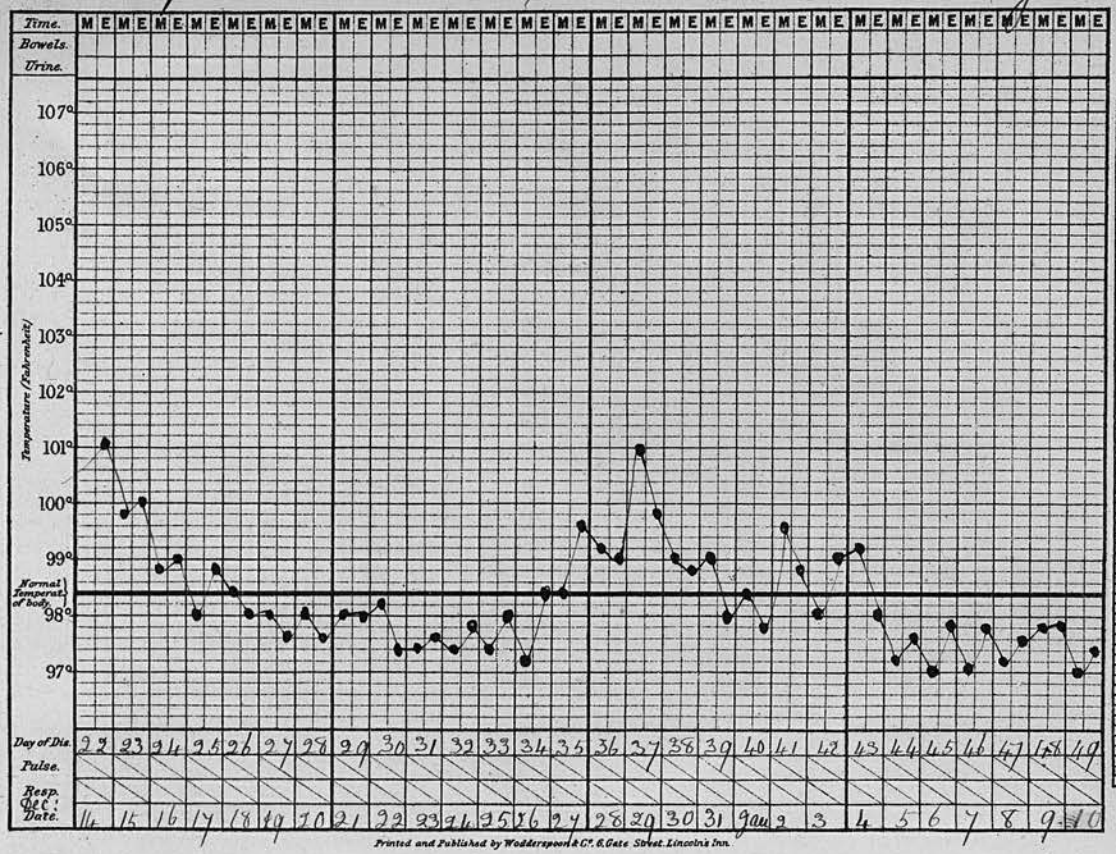
NO 10 ENTERIC FEVER.

Anthony H.	Age 31 Sailor.
Admitted.	Dec.. 7th 1909.
Day of illness.	10th.
Onset.	Gradual, Malaise, Headache, Diarrhoea, Cough, Abdominal pain.
On Admission.	Temp.. 103 Pulse 104 Resp.. 20. (Not Dicrotic).
Tongue.	Dry and furred.
Lungs.	Cough, Rhonchi in both lungs, creps at bases.
Skin.	A few Rose spots, also sudaminal rash.
Abdomen.	Distended.
Spleen.	
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive 1 in 60.
Blood culture.	

Course of illness.	Very Severe. Severe Haemorrhage. Profuse sweating. Meteorism. Hypostatic Pneumonia.
Result.	Death.

Notes of Case.

Name George A Age 30 Disease Enteric Result Recovery.



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NO 11 ENTERIC FEVER%

George H. Age 30. Clerk.

Admitted. Dec.. 14th 1909.

Day of illness. 22nd.

Onset. gradual, Malaise, (2 weeks) followed by Headache, Diarrhoea, Rigor, Sore throat, cough.

On Admission. Temp.. 100.2 Pulse 84. Dicrotic. Resp. 20.

Tongue. Clean and moist.

Throat. ~~Throat~~.

Skin. Rose spots on abdomen and back.

Abdomen. slight distension.

Spleen. Palpable.

Bowels. Constipation.

Ehrlichs reaction. Positive.

Methylene Blue.

Widal reaction Positive 1 in 60.

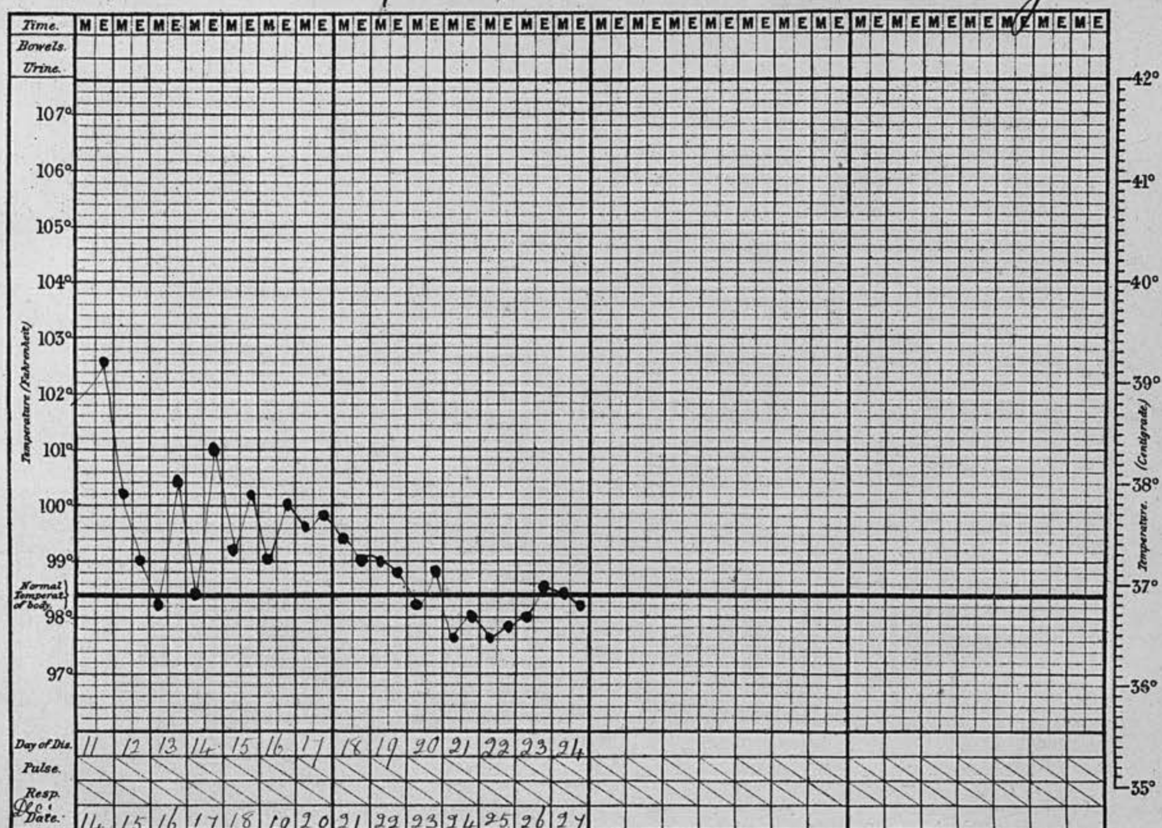
Blood culture.

Course of illness. Mild.
Profuse sweats.

Result. Recovery.

Notes of Case.

Name *William C.* Age *19* Disease *Enteric* Result *Recovery*



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No 12 ENTERIC FEVER.

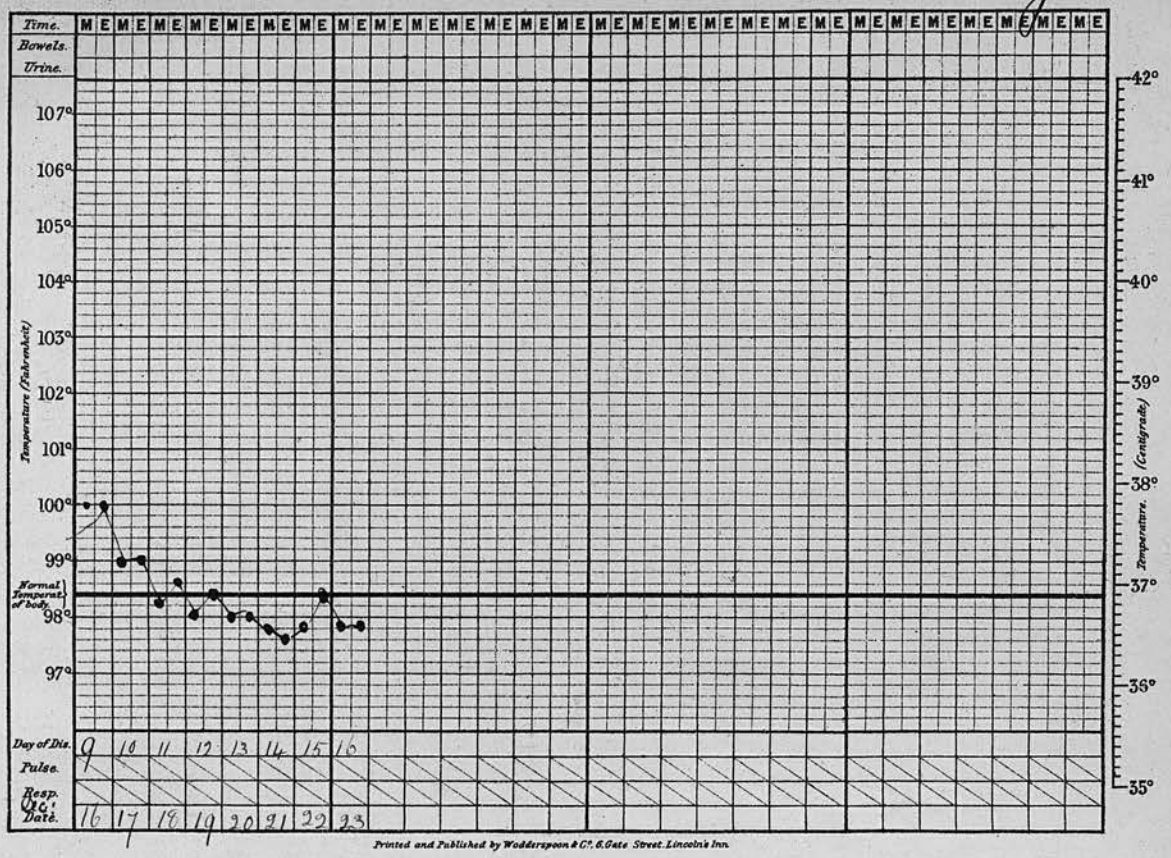
William C.	Age 19 Errand boy.
Admitted.	Dec.. 14th 1909.
Day of illness.	11th.
Onset.	Sudden Syncope followed by Headache, Shivering, Cough, Pain in Abdomen and back.
On Admission.	Temp.. 102.6. Pulse. 104 Dicrotic. Resp.. 22.
Tongue.	Moist and clean.
Throat.	
Skin.	
Abdomen.	Distended.
Spleen.	Not enlarged.
Bowels.	Constipation;
Ehrlichs reaction	Positive.
Methylene Blue	Positive. ~~1 in 60.~~
Widal reaction.	Positive 1 in 60.
Blood culture.	

Course of illness.

Result. Recovery.

Notes of Case.

Name Catherine T Age 34 Disease Result Recovery.



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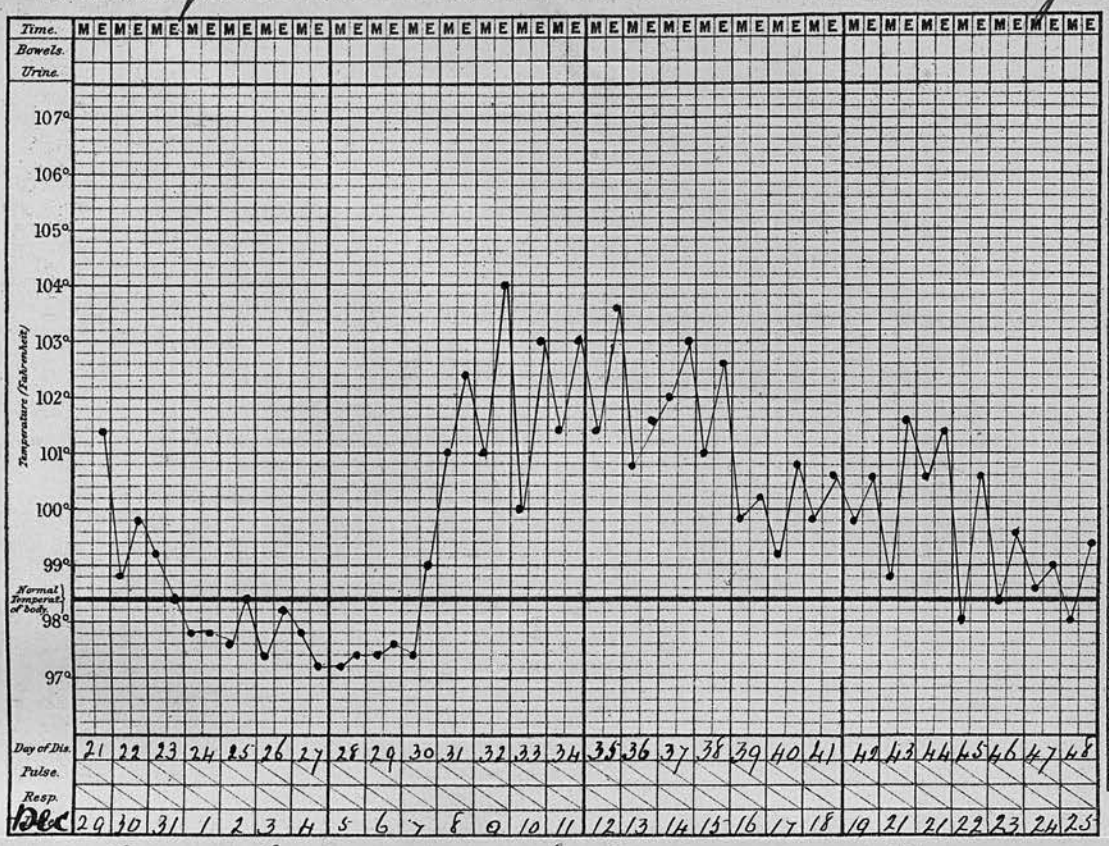
NO 13 ENTERIC FEVER.

Catherine T.	Age 34.
Admitted	Dec..16th
Day of illness.	9th.
Onset.	gradual, Headache, Vomiting, Diarrhoea, Shivering, Cough,
On Admission.	Temp.. 99.4 Pulse 90. Resp.. 20
Tongue.	Furred and moist.
Throat.	
Skin.	Rose spots(fading)
Abdomen.	Distended.
Spleen.	Not enlarged.
Bowels.	Constipation.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Positive.
Blod culture.	

Course of illness.	Mild.
Result.	Recovery.

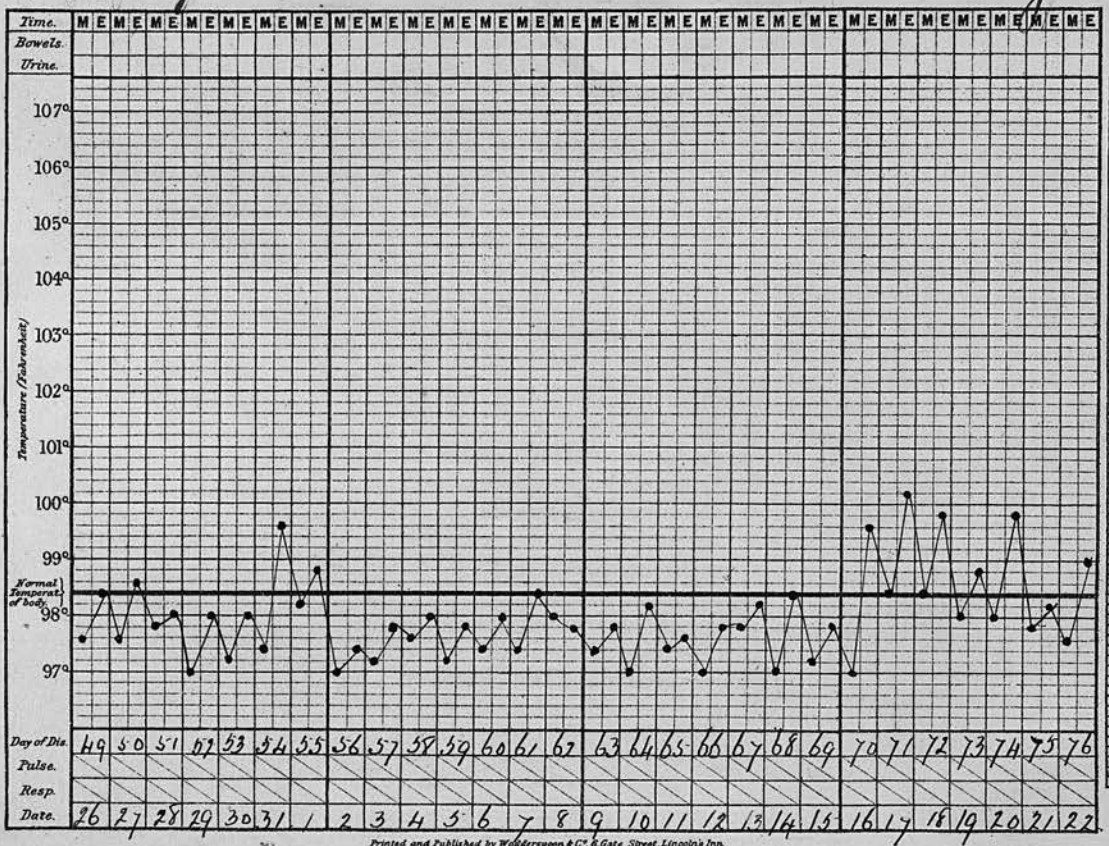
Notes of Case.

Name George. S. Age 35 Disease Enteric Result Recovery.



Notes of Case.

Name George. S. Age 35 Disease Enteric Result Recovery



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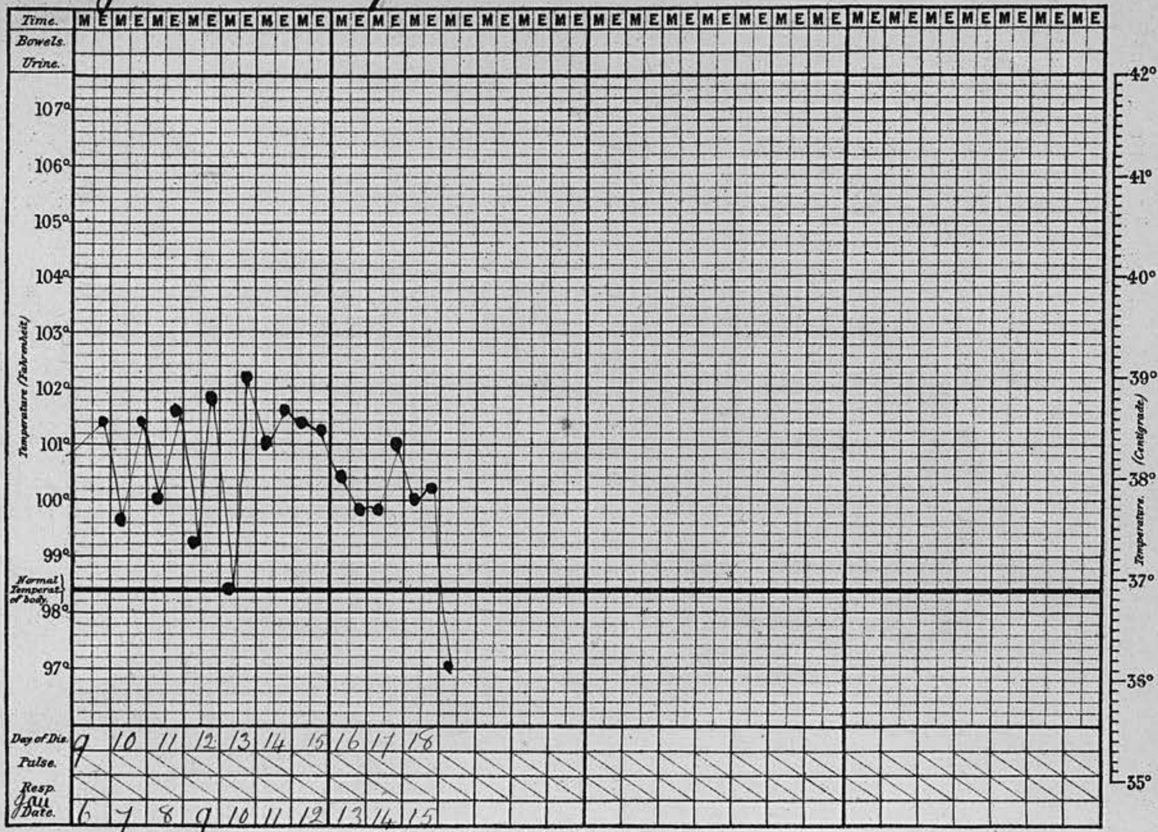
NO 14 ENTERIC FEVER.

George S.	Age 35 Ship Steward.
Admitted.	Dec.. 29th
Day of illness.	21st.
Onset.	Gradual, Malaise, Headache, Vomiting, Rigor, Cough.
On Admission.	Temp.. 104.2 Pulse 100. Resp.. 22.
Tongue.	Furred and moist.
Throat.	
Lungs.	Rhonchi in both. Cough.
Skin.	One Rose spot.
Abdomen.	Distended.
Spleen.	Palpable.
Bowels.	Constipation.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive.
Blood culture.	

Course of illness.	Severe. Relapse. Left Otorrhoea. Profuse sweats.
Result.	Recovery.

otes of Case.

Name John W. Age 17 Disease Pneumonia & Result Died



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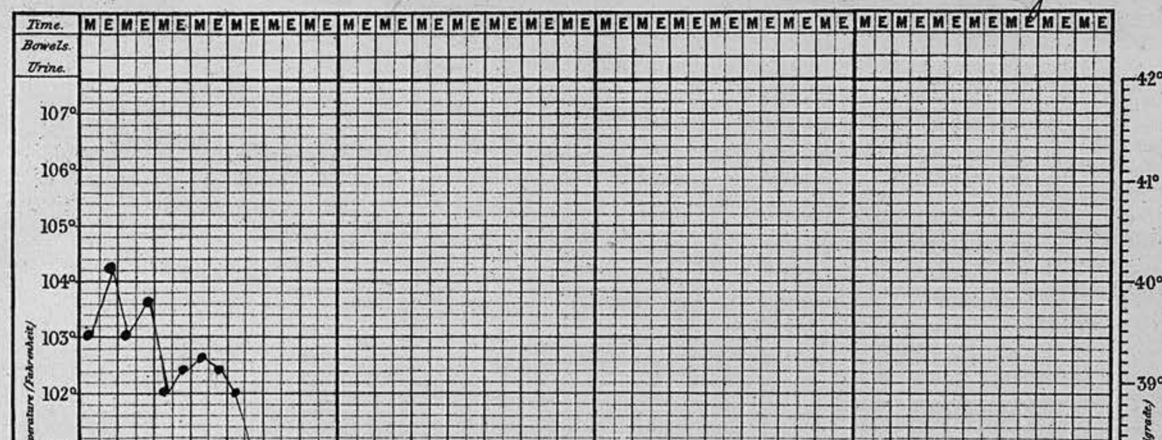
NO 15 PNEUMONIA.

John W-	Age 17 Baker.
Admitted.	Jan.. 6th 1910.
Day of illness.	9th.
Onset.	Sudden, Headache, Diarrhoea, Cough,
On Admission.	Temp.. 101.4 Pulse 116. Resp.. 44
Tongue.	Dry and brown fur.
Throat.	
Lungs.	R. apcial Pneumonia.
Skin.	
Abdomen.	
Spleen.	
Bowels.	Loose.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	

Course of illness.	Severe. Empyaemia Gangreue of lung.
Result.	Death.

Notes of Case.

Name William R Age 14 Disease Pneumonia Result Recovery



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NO 16 PNEUMONIA.

William R-	Age 14
Admitted	Jan.. 1st 1910.
Day of illness.	3rd.
Onset.	Sudden, Headache, Cough, Pain in Abdomen.
On Admission.	Temp.. 104. Pulse 120. Dicrotic. Resp.. 44.
Tongue.	
Throat.	
Lungs.	Rhonchi in both lungs. Comparative dullness. R. Apex.
Skin.	
Abdomen.	Slightly distended.
Spleen.	
Bowels.	

Ehrlichs reaction. Positive.

Methylene Blue. Positive.

Widal reaction. Negative.

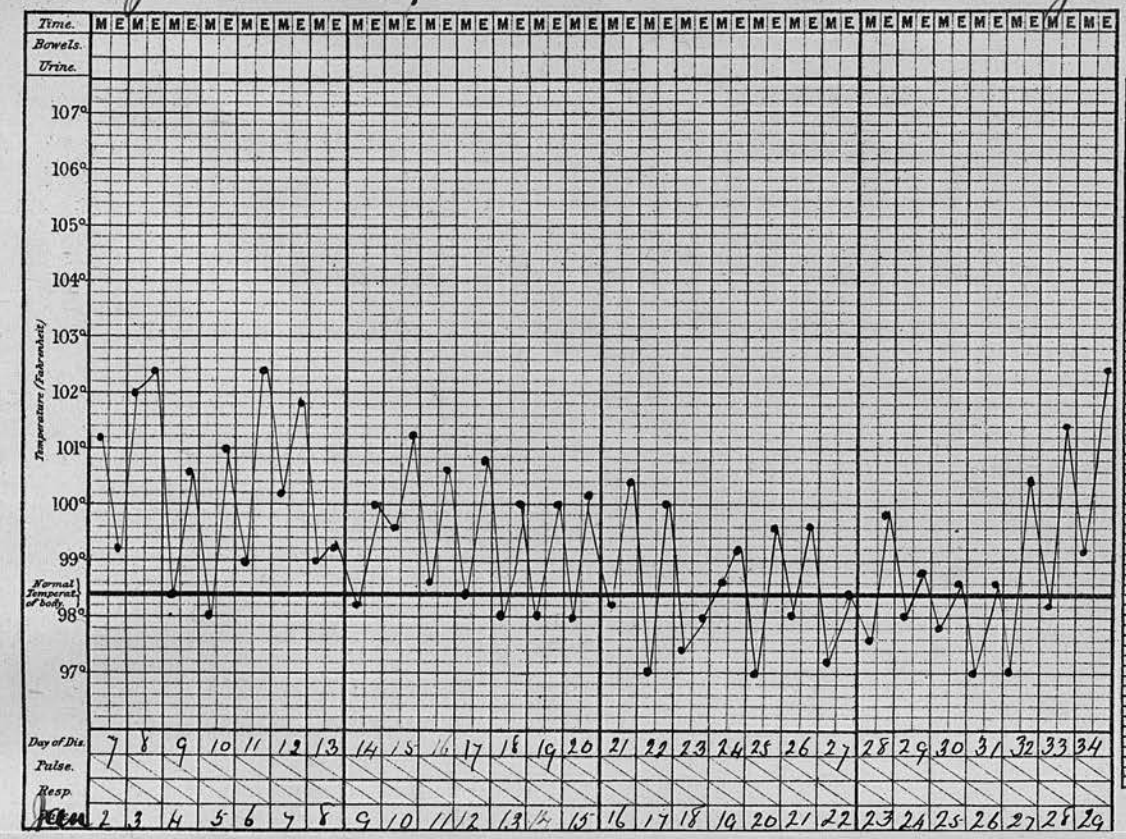
Blood culture.

Course of illness. Crisis 7th day.

Result. Recovery.

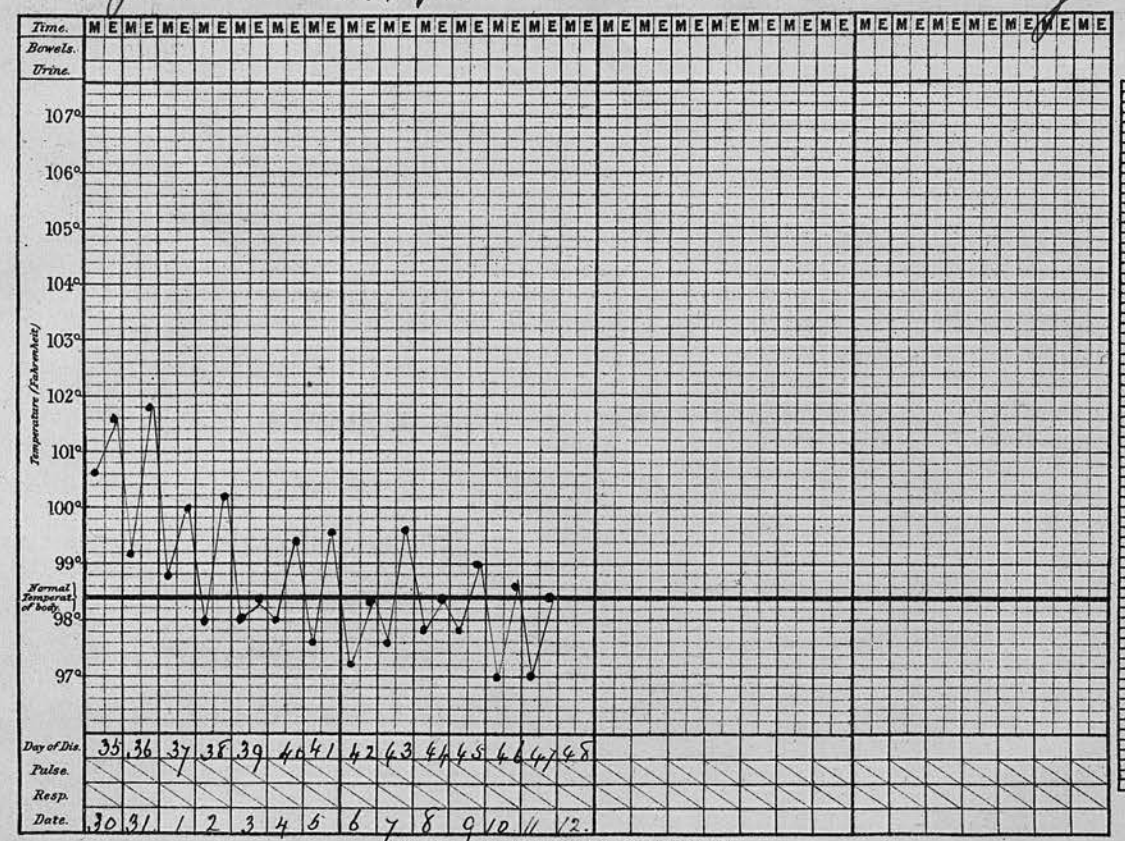
Notes of Case.

Name James H Age 49 Disease Enteric Result Recovery



Notes of Case.

Name James H Age 49 Disease Enteric Result Recovery



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NO 17 ENTERIC FEVER.

James H. Age 49.

Admitted. Jan.. 2nd 1910.

Day of illness. 7th.

Onset. gradual, Headache, Vomiting, Rigors, Pain in back and limbs.

On Admission. Temp.. 101.2 Pulse 92. Dicrotic, Resp.. 20.

Tongue. Furred and dry.

Throat.

Lungs.

Skin. Numerous Rose spots.

Abdomen. Distended.

Spleen. Palpable.

Bowels.

Ehrlichs reaction. Positive.

Methylene Blue. Positive.

Widal reaction. Positive.

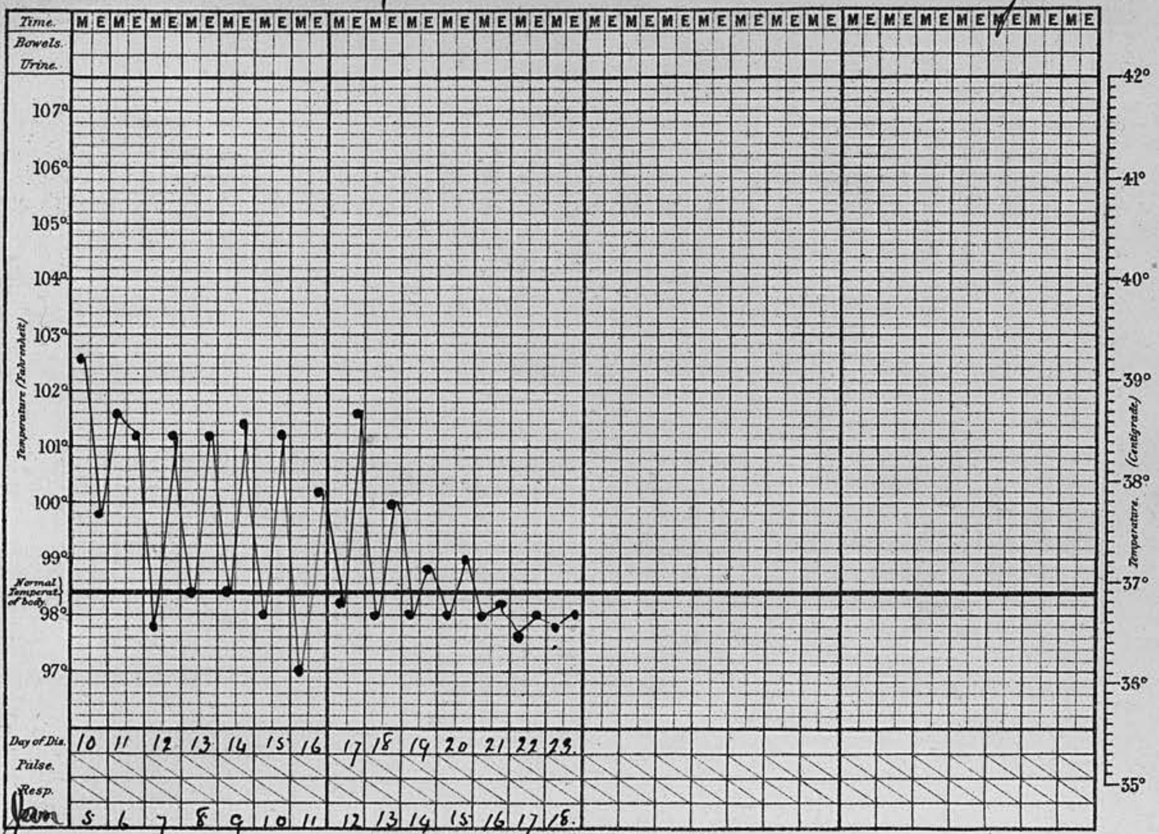
Blood culture.

Course of illness. Moderately severe.
Retention of urine.
(enlarged prostate)
Relapse.
Profuse sweats.

Result. Recovery.

Notes of Case.

Name Rachel M Age 29 Disease Enteric Result Recovery



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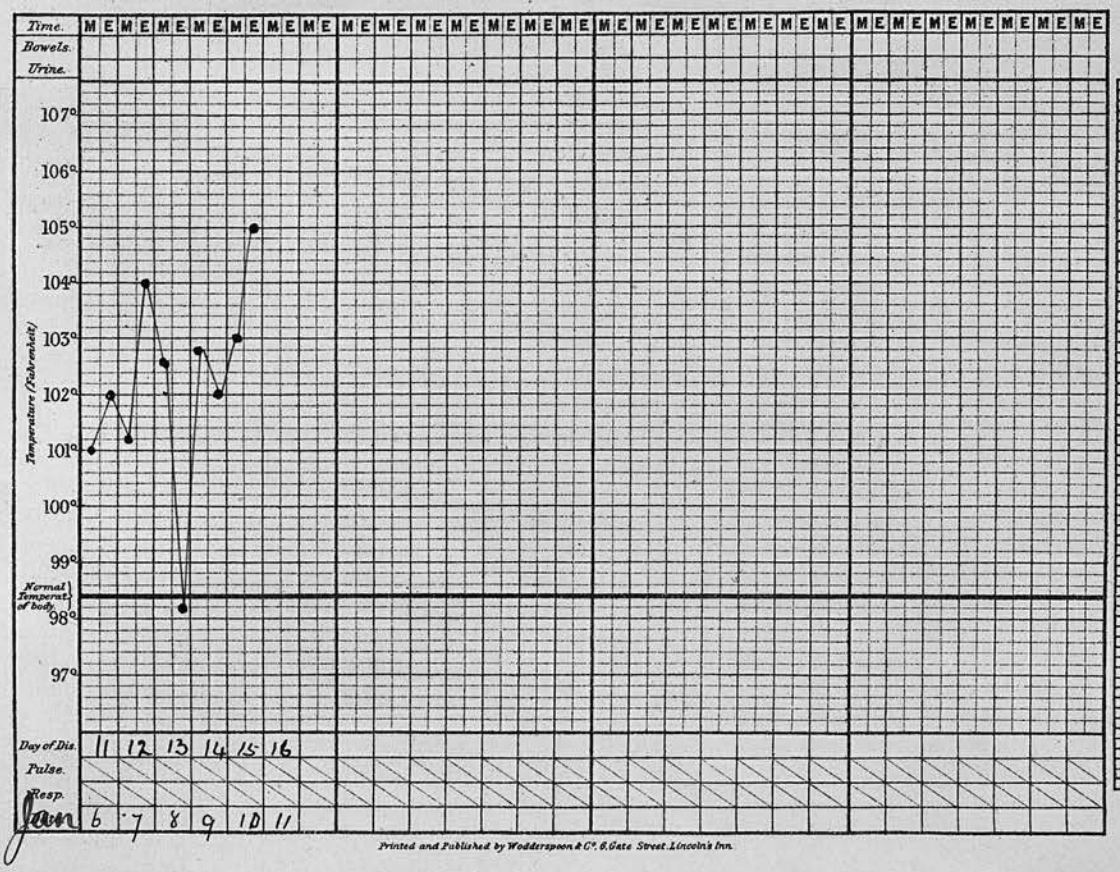
NO 18 ENTERIC FEVER.

Rachel M.	Age 29
Admitted.	Jan.. 5th 1910.
Day of illness.	10th.
Onset.	gradual, Headache, Vomiting, Diarrhoea.
On Admission.	Temp.. 102. Pulse 96. Resp.. 24.
Tongue.	Furred and moist.
Throat.	
Lungs.	
Skin.	Numerous Rose spots.
Abdomen.	Not distended.
Spleen.	Palpable.
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive.
Blood culture.	

Course of illness.	Mild. Profuse sweats.
Result.	Recovery.

Notes of Case.

Name Catherine A Age 35 Disease Enteric Result Died.



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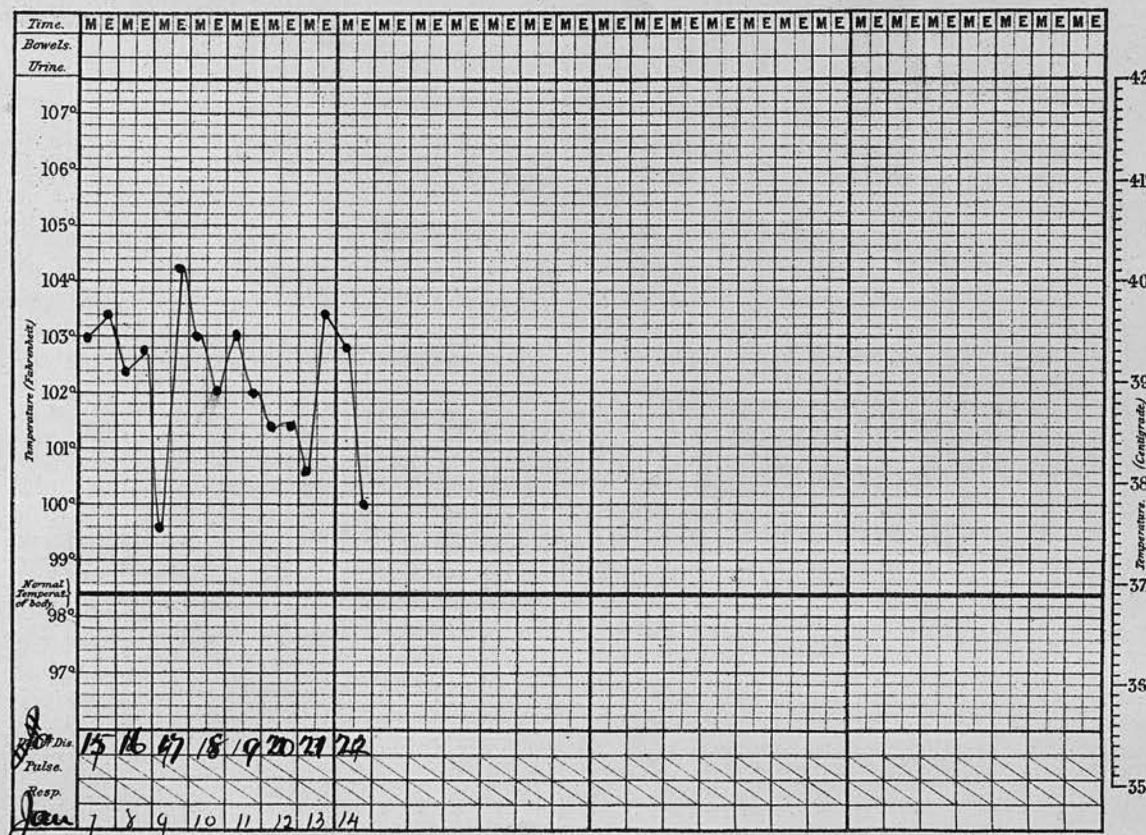
NO 19 ENTERIC FEVER.

Catherine A.	Age 35.
Admitted.	Jan.. 6th 1910.
Day of illness.	11th
Onset.	Headache, Vomiting, Diarrhoea, Shivering,
On Admission.	Temp 102. Pulse 116. Not Dicrotic. Resp.. 32.
Tongue.	Dyr Brown Fur.
Throat.	
Skin.	No Rose spots.
Abdomen.	Distended.
Spleen.	Not enlarged.
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive. 1 in 60.
Blood culture.	

Course of illness	Very delerious on admission. Subsequent Coma, Cyanosis and hyperpyrexia. Profuse sweats.
Result.	Death. P Mortem. Slight Swelling of solitary-glad glands and Peyis patches. B. Typhosus recovered from Spleen.

Notes of Case.

Name Malcolm B. Age 30 Disease Enteric Result Died.



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NO 20. ENTERIC FEVER.

Malcolm B. Age 30 Commercial Traveller.

Admitted. Jan.. 7th 1910.

Day of illness. 7th.

Onset. gradual, Malaise, Headache, vomiting.

On Admission. Temp.. 103.2 Pulse. 118 Dicrotic
Resp.. 24.

Tongue. Dry.

Throat.

Lungs.

Skin. Numerous Rose spots.

Abdomen. Distended

Spleen.

Bowels. No Diarrhoea.

Ehrlichs reaction. Positive.

Methylene Blue.

Widal reaction. Positive.

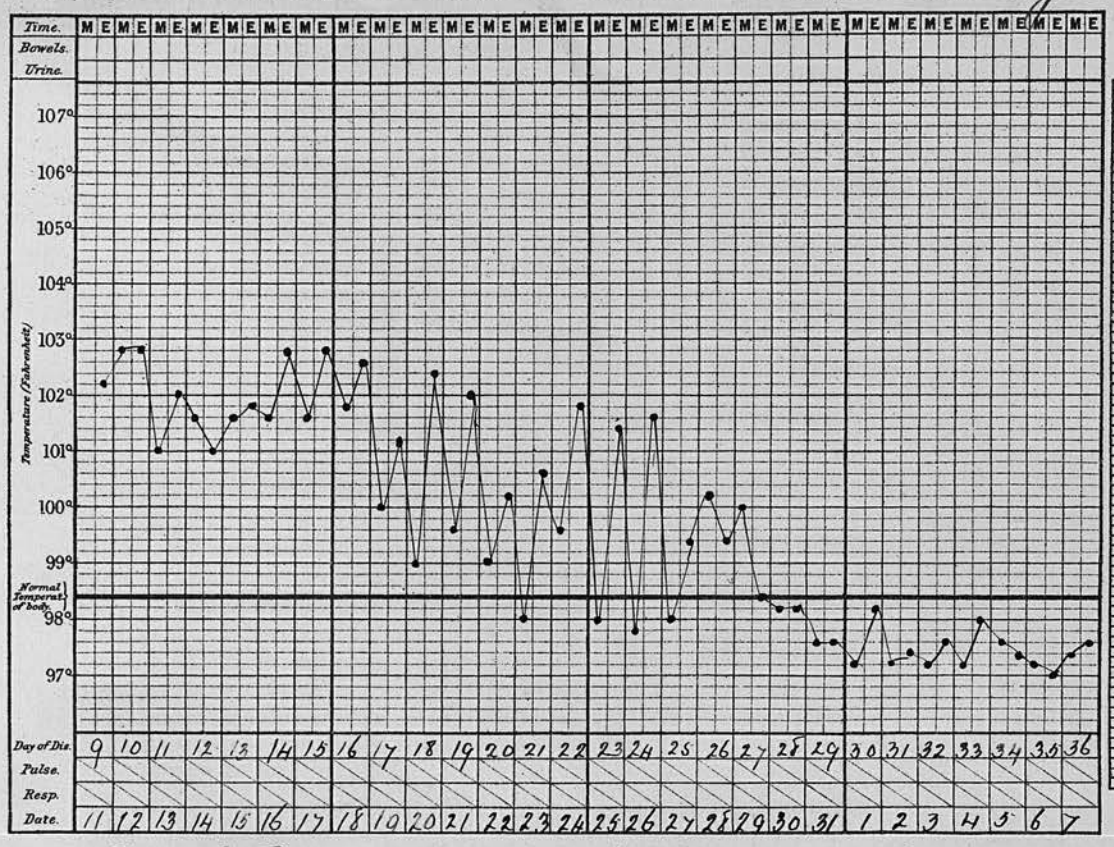
Blood culture.

Course of illness. Very severe toxaemia.
Profuse sweats.

Result. Death.

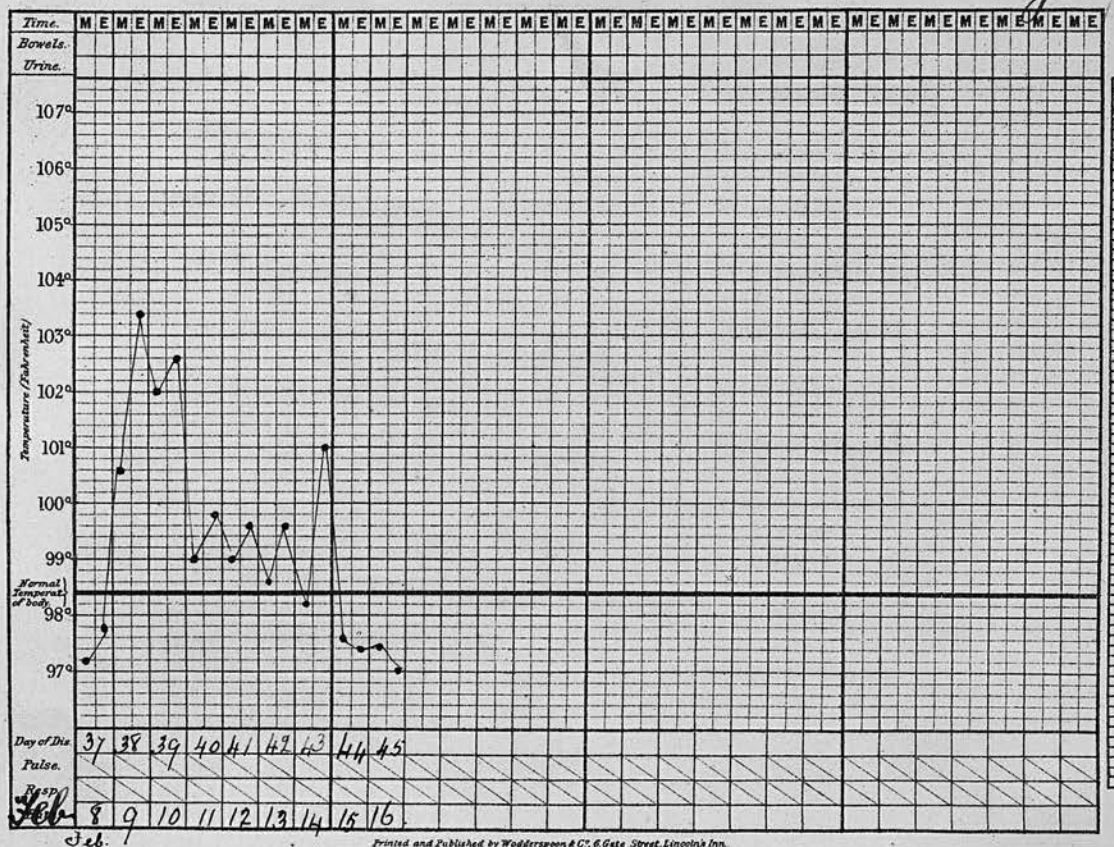
Notes of Case.

Name Sarah P. Age Disease Enteric Result Recovery.



Notes of Case.

Name Sarah P Age Disease Enteric Result Recovery.



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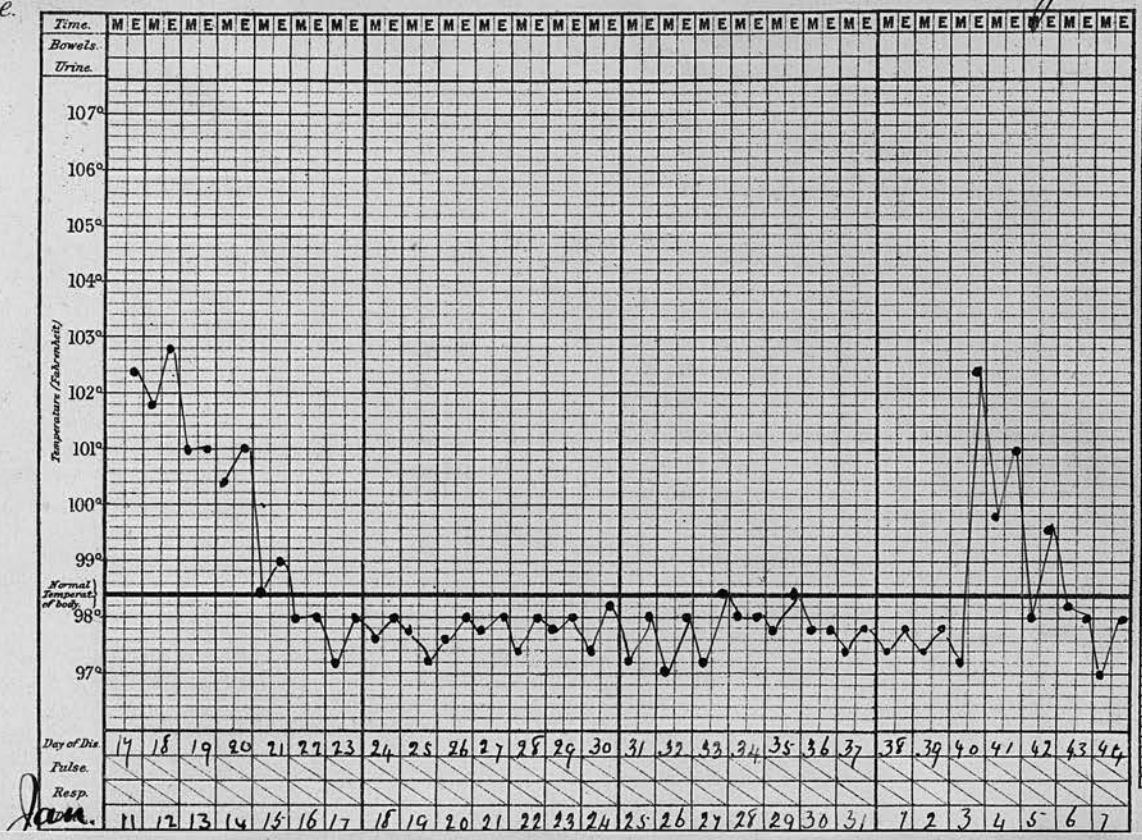
NO 21 ENTERIC FEVER.

Sarah P.	Age 16 years Dressmaker.
Admitted.	Jan.. 11th 1910.
Day of illness.	9th.
On set.	Sudden, Headache, Rigors, Slight Cough.
On Admission.	Temp.. 101.4 Pulse 120. Dicrotic. Resp.. 30.
Tongue.	Dry and brown fur;
Throat.	
Lungs.	Cough, a few Rhonchi in both lungs.
Skin.	Numerous Rose spots on trunk and extremities.
Abdomen.	Slightly distended.
Spleen.	Enlarged.
Bowels.	Constipation.
Ehrlichs reaction.	Positive.
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	

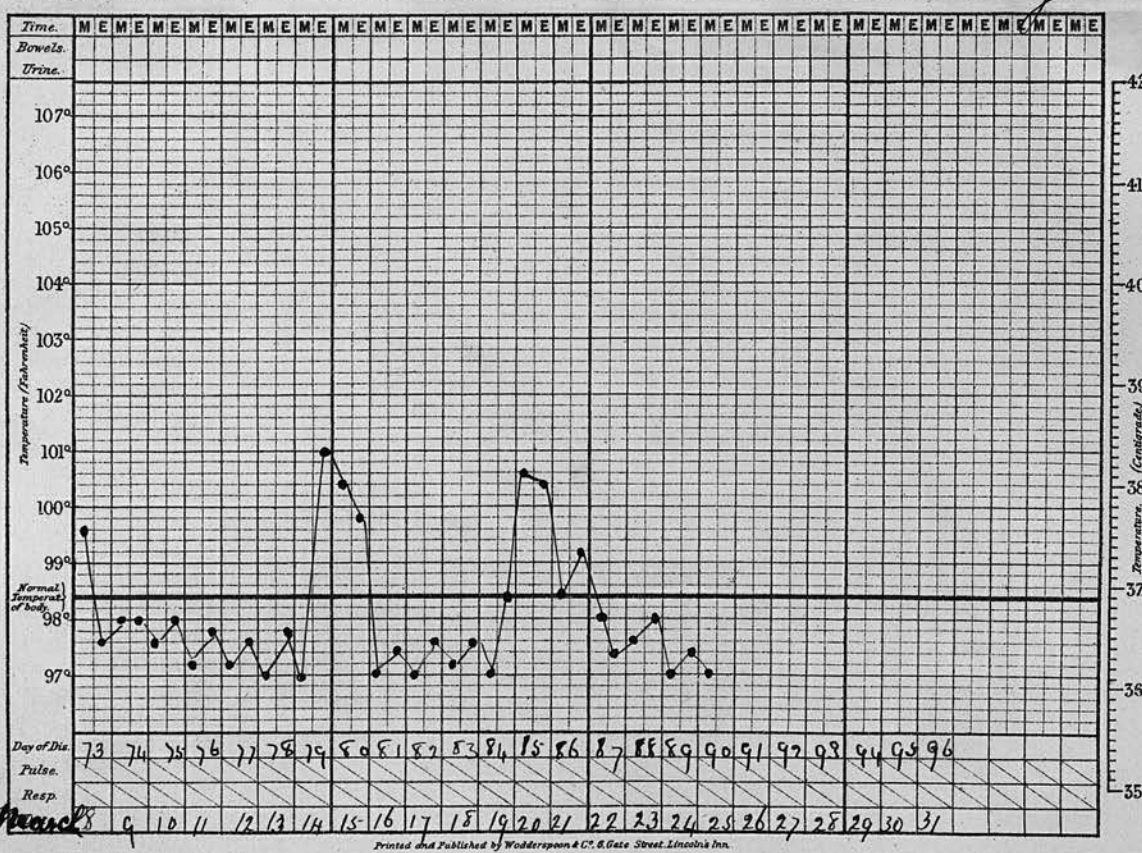
Course of illness.	Very severe Relapse. Profuse sweats.
Result.	Recovery.

Notes of Case.

Name Maria S. Age 31 Disease Enteric Result Recovery



Name Maria S. Age 31 Disease Enteric Result Recovery



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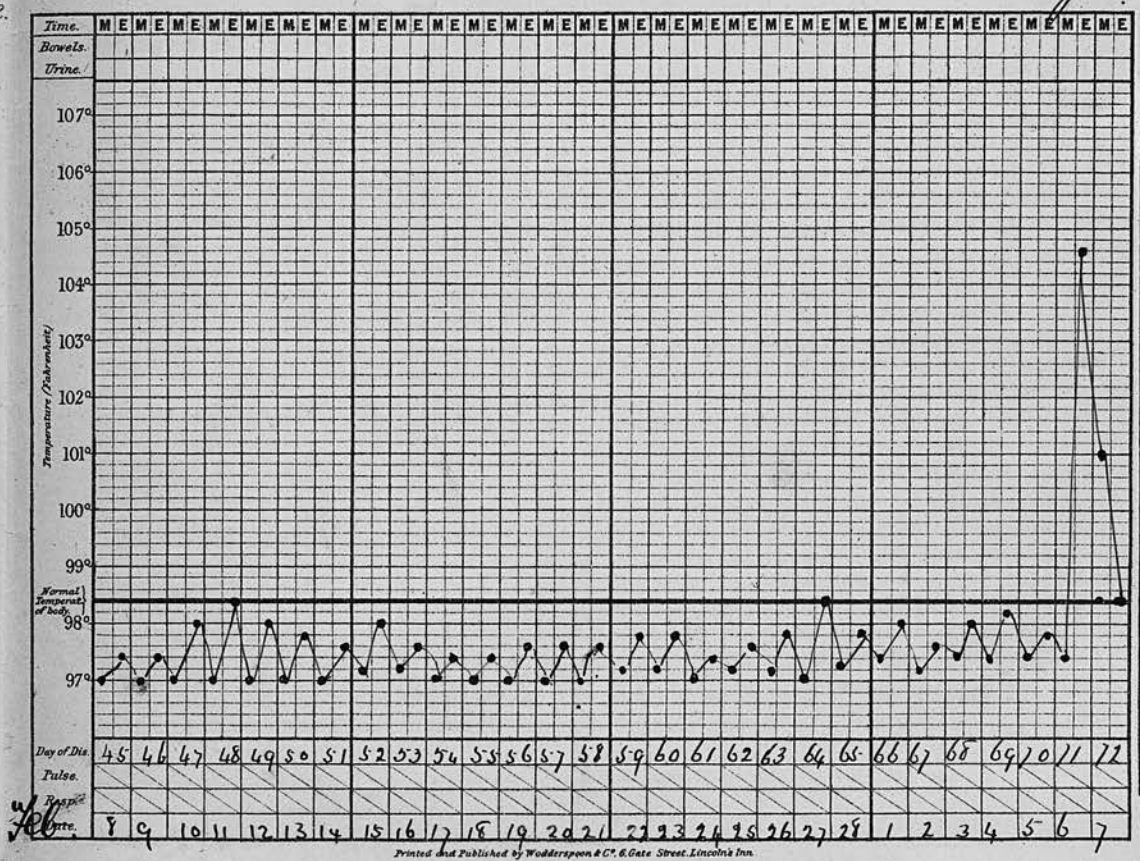
Case.

Name Maria S. Age 31 Disease Result Recovery



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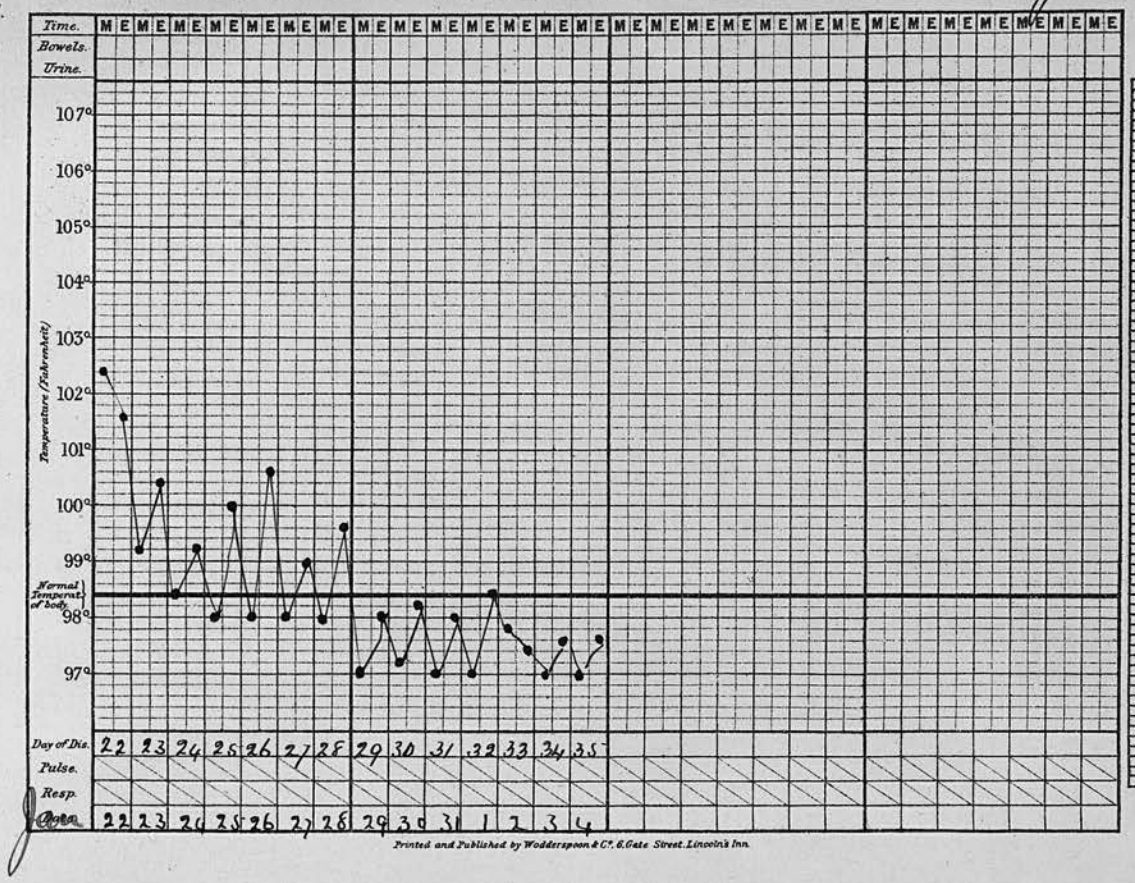
NO 22 ENTERIC FEVER.

Maria S-	Age 31 Housewife.
Admitted.	Jan.. 11th 1910.
Day of illness.	17th.
Onset.	gradual, Malaise, Headache, Vomiting, Shivering, abdominal pain
On Admission.	Temp.. 102.4 . Pulse 104. Dicrotic. Resp.. 36.
Tongue.	Furred and moist.
Throat.	
Lungs.	
Skin.	A few Rose spots on abdomen.
Abdomen.	Slightly distended.
Spleen.	
Bowels.	Constipation.
Ehrlichs reaction.	Negative.
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	

Course of illness.	Relapse. Profuse sweats.
Result.	Recovery.

Notes of Case.

Name William E. Age 12 Disease Eutenic Result Recovery.



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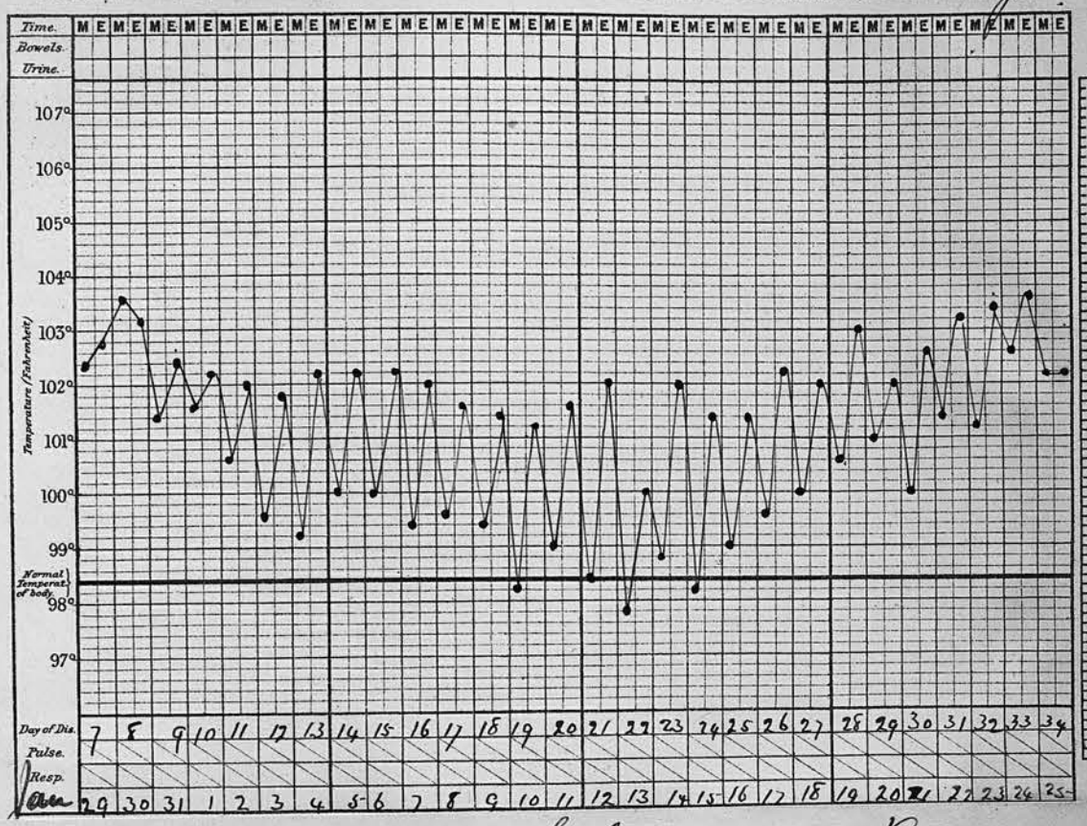
NO 23 ENTERIC FEVER.

William E-	Age 12 years. School boy.
Admitted	Jan.. 22nd 1910.
Day of illness	22nd.
Onset.	Headache, Vomiting, Slight Diarrhoea And slight cough.
On Admission.	Temp.. 102.4 Pulse 108 Resp.. 28.
Tongue	Moist.
Throat.	
Lungs.	
Skin.	Two Rose spots (further crops 25th and 28th Jan..)
Abdomen.	slight distension.
Spleen.	
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive.
Blood culture.	

Course of illness	Mild Erythematous rash.
Result.	Recovery.

Notes of Case.

Name Olive B. Age 22 Disease Enteric Result Recovery



Name Olive B. Age 22 Disease Enteric Result Recovery

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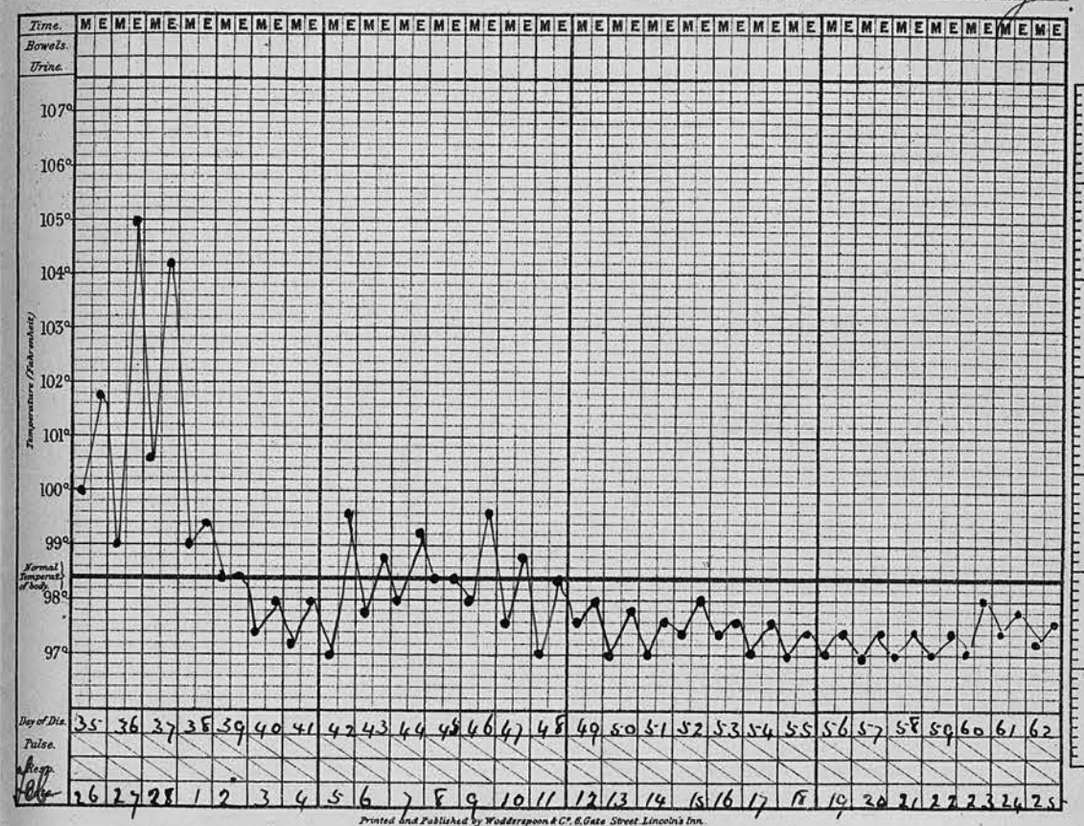
Case.

Name Olive B. Age 22 Disease Enteric Result Recovery



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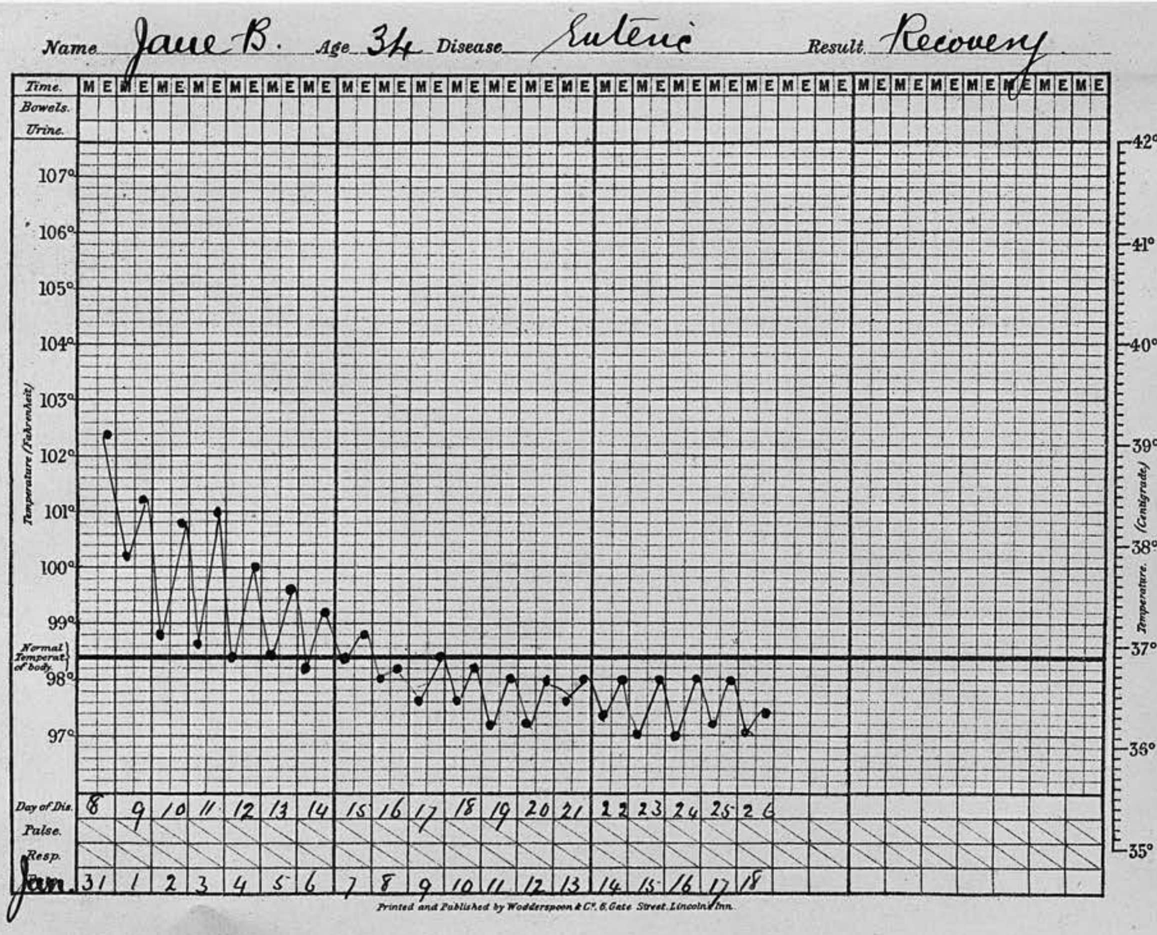
NO 24. ENTERIC FEVER.

Olive B-	Age 22 years Nurse Maid.
Admitted.	Jan.. 29th 1910.
Day of illness.	7th.
Onset.	Sudden, Headache, Rigor, Slight Cough Pain in back and Abdomen.
On Admission.	Temp.. 102.4 Pulse 108. Dicrotic. Resp.. 24.
Tongue.	Furred.
Throat.	
Lungs.	Slight Cough.
Skin.	
Abdomen.	Not distended.
Spleen.	Palpable.
Bowels.	Constipation.
Ehrlichs reaction.	Positive.
Methylene Blue.	
Widal reaction.	Positive. (1 in 60.)
Blood culture.	Positive.

Course of illness.	Severe. L. Otorrhoea.
Result.	Recovery.

Notes of Case.



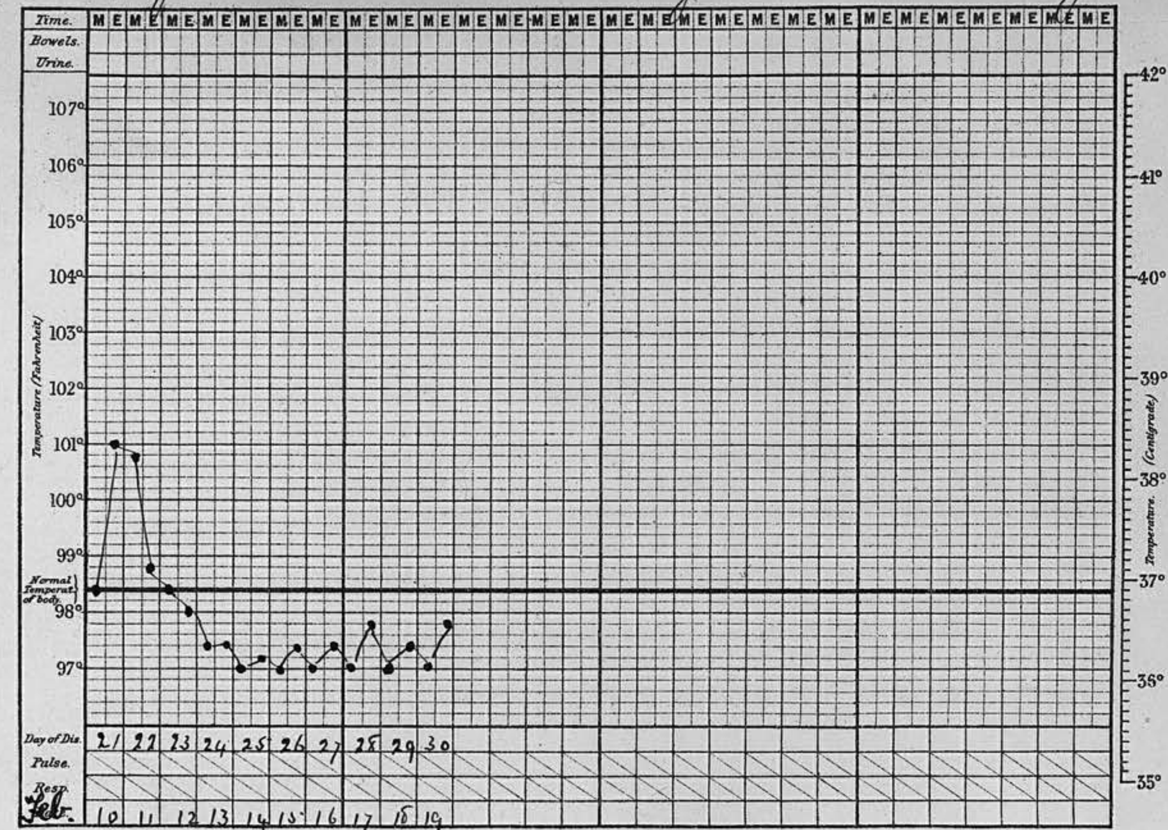
NO 25 ENTERIC FEVER.

Jane B.	Age 34 Housekeeper.
Admitted.	Jan.. 31st 1910.
Day of illness.	8th.
Onset.	Gradual, Malaise, Headache, Vomiting, Shivering,
On Admission.	Temp.. 102.4 Pulse 100 Not Dicrotic. Resp.. 24.
Tongue.	Dry and furred.
Throat.	
Lungs.	Cough.
Skin.	
Abdomen.	Distended.
Spleen.	Enlarged, (Not palpable until Feb.. 5th)
Bowels.	Constipated.
Ehrlichs reaction.	Positive.
Methylene Blue.	
Widal reaction.	Positive. (1 in 60-)

Course of illness.	Mild.
Result	Recovery.

Notes of Case.

Name *Alfred H.* Age *30* Disease *Pleurisy* Result *Recovery*



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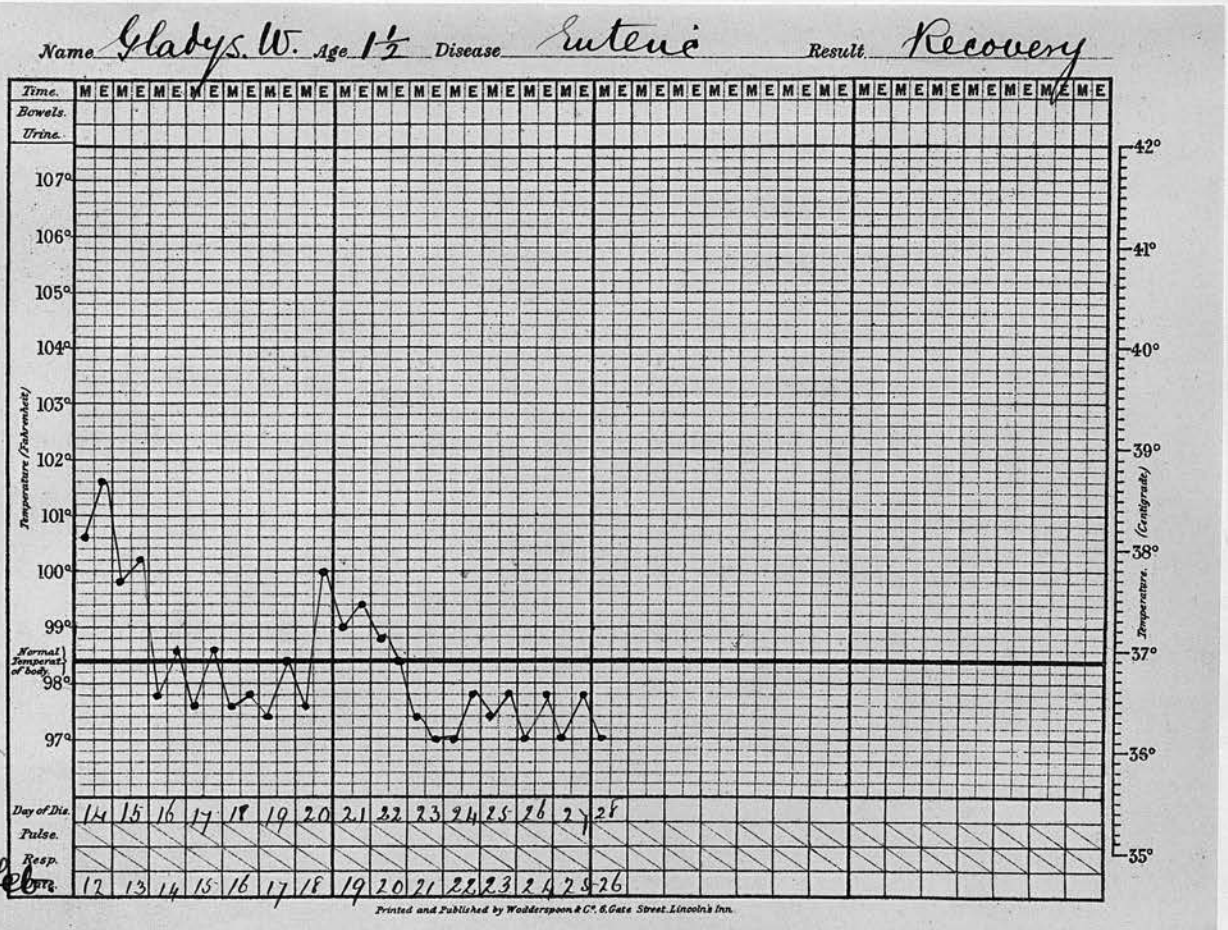
NO 26 Pleurisy.

Alfred H.	Age 30 Sea Cook.
Admitted.	Feb.. 10th 1910.
Day of illness.	21st.
Onset.	Gradual, Pain in right side, with Slight Cough, Shivering.
On Admission.	Temp.. 98.4 Pulse. 96. Resp.. 24.
Tongue.	Dry and furred.
Throat.	
Lungs.	Comparative dullness, in right axilla, with pleuritic rub.
Skin.	
Abdomen.	
Spleen.	Not Palpable.
Bowels.	
Ehrlichs reaction.	Positive.
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	Negative.

Course of illness.	Mild.
Result.	Recovery.

Notes of Case.



NO 27. ENTERIC FEVER.

Gladys W- Age 1 years 6 months.

Admitted. Feb.. 12th 1910.

Day of illness. 14th.

Onset. Sudden, Vomiting, Diarrhoea and ~~cough~~ cough.

On Admission. Temp.. 101.6. Pulse 120. Resp.. 28.

Tongue.

Throat.

Lungs.

Skin. (a few Rose spots Feb.. 19th)

Abdomen. Distended.

Spleen. Enlarged.

Bowels. Loose.

Ehrlichs reaction.

Methylene. Blue.

Widal reaction. Positive.

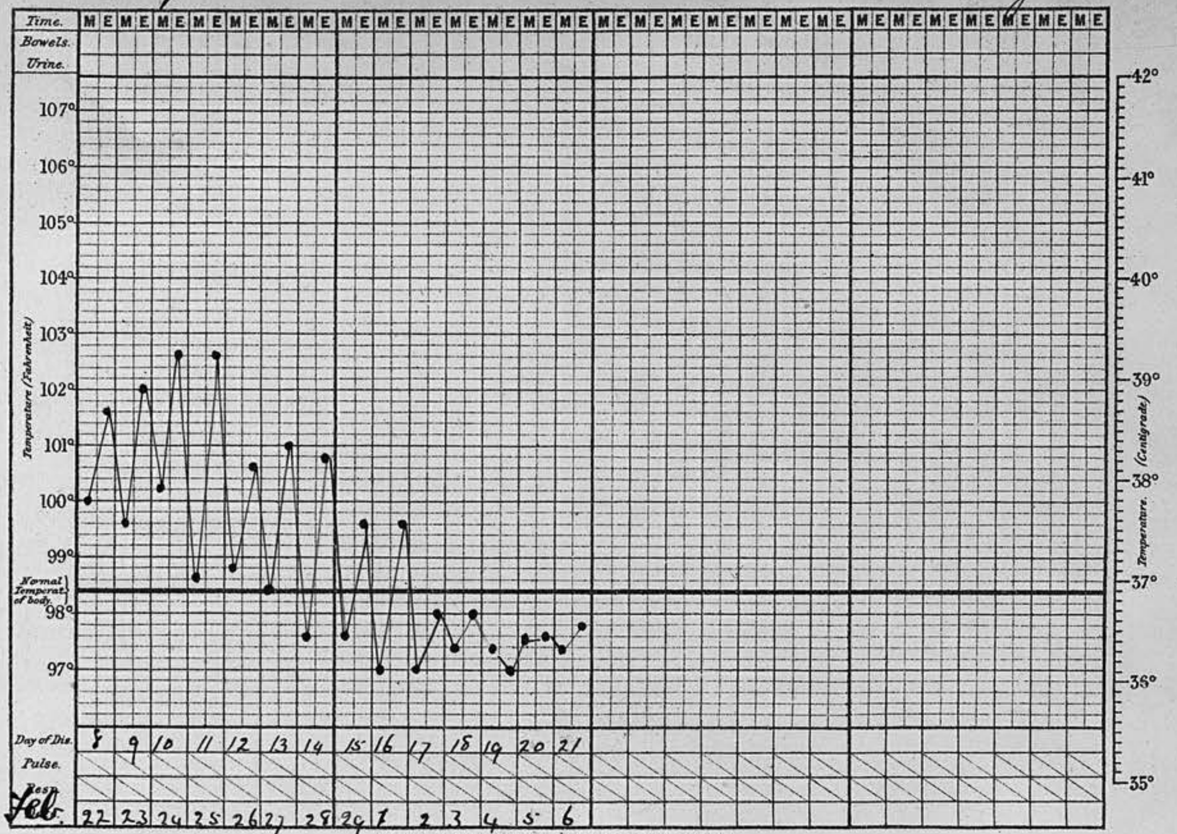
Blood culture.

Course of illness. Mild.

Result. Recovery.

Notes of Case.

Name George B. Age 10 Disease Enteric Result Recovery



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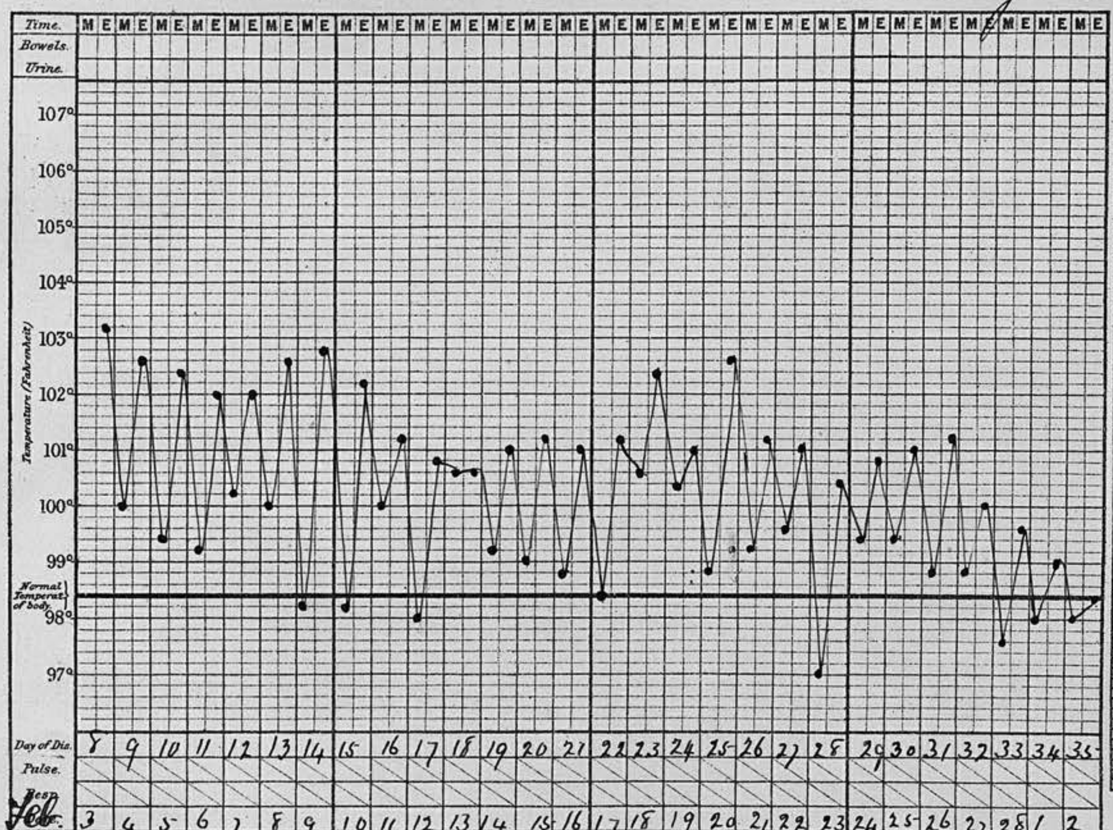
NO 28 ENTERIC FEVER.

George B-	Age 10.
Admitted	Feb.. 22nd 1910.
Day of illness.	8th.
Onset.	gradual, Pain in legs, Headache, slight cough.
On Admission.	Temp.. 100. Pulse. 80. Dicrotic. Resp.. 24.
Tongue.	Dry and clean.
Throat.	
Lungs.	Slight Cough.
Skin.	(2 Rose spots Feb.. 23rd.)
Abdomen.	Not distended.
Spleen.	Palpable.
Bowels.	Constipation.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive. 1 in 60.
Blood culture.	

Course of illness.	Mild.
Result.	Recovery.

Notes of Case.

Name Mabel McC Age 22 Disease Enteric Result Recovery



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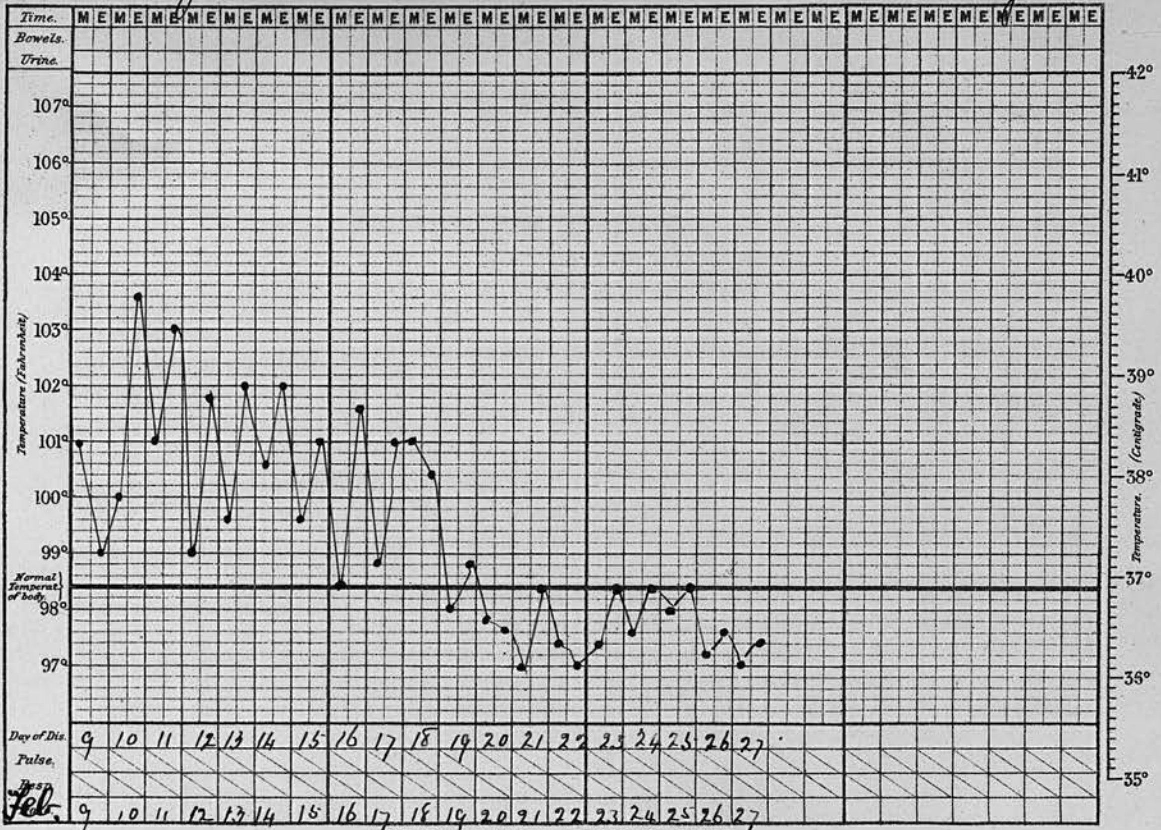
NO 29 ENTERIC FEVER.

Mabel Mc C.	Age 22 years Trained Nurse.
Admitted.	Feb.. 3rd 1910.
Day of illness.	8th.
Onset.	gradual, Headache, Vomiting, Diarrhoea, Shivering, Cough.
On Admission.	Temp.. 103. Pulse. 104. Resp.. 25.
Tongue.	Furred and moist.
Throat.	
Lungs.	
Skin.	Numerous Rose spots on trunk and extremities.
Abdomen.	Distended.
Spleen.	Enlarged (not Palpable.)
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue .	Positive.
Widal reaction.	Positive.
Blood culture.	Positive.

Course of illness.	Delirium, Oedma ankles , sweats ~~Severe~~. Diarrhoea, Abdominal pain
Result.	Recovery.

Notes of Case.

Name Henry P. Age 6 Disease Result Recovery.



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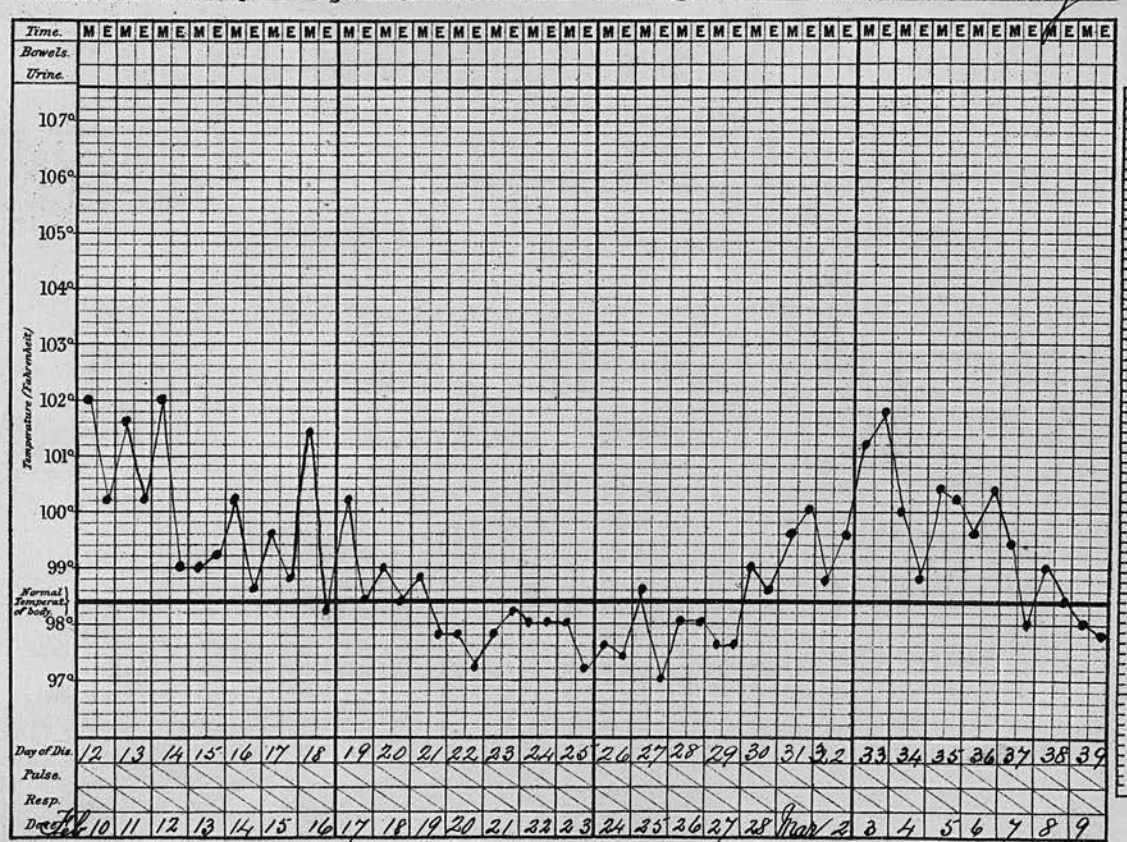
NO 30 ENTERIC FEVER.

Henry P.	Age 6 years School boy.
Admitted.	Feb.. 9th 1910.
Day of illness.	9th.
Onset.	Sudden, Vomiting, Abdominal pain, Cough and Shivering.
On Admission.	Temp.. 101. Pulse 112. Dicrotic. Resp..32.
Tongue.	Furred and moist.
Throat.	
Lungs.	Cough, Rhonchi in both Lungs.
Skin.	
Abdomen.	Distended.
Spleen.	Palpable.
Bowels.	
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive.
Blood culture.	Positive.

Course of illness. Severe.
Conjunctivities.
R and L Adentis
Albuminuna.
Profuse sweats.

Notes of Case.

Name Catherine R. Age 26 Disease Uterine Result Recovery.



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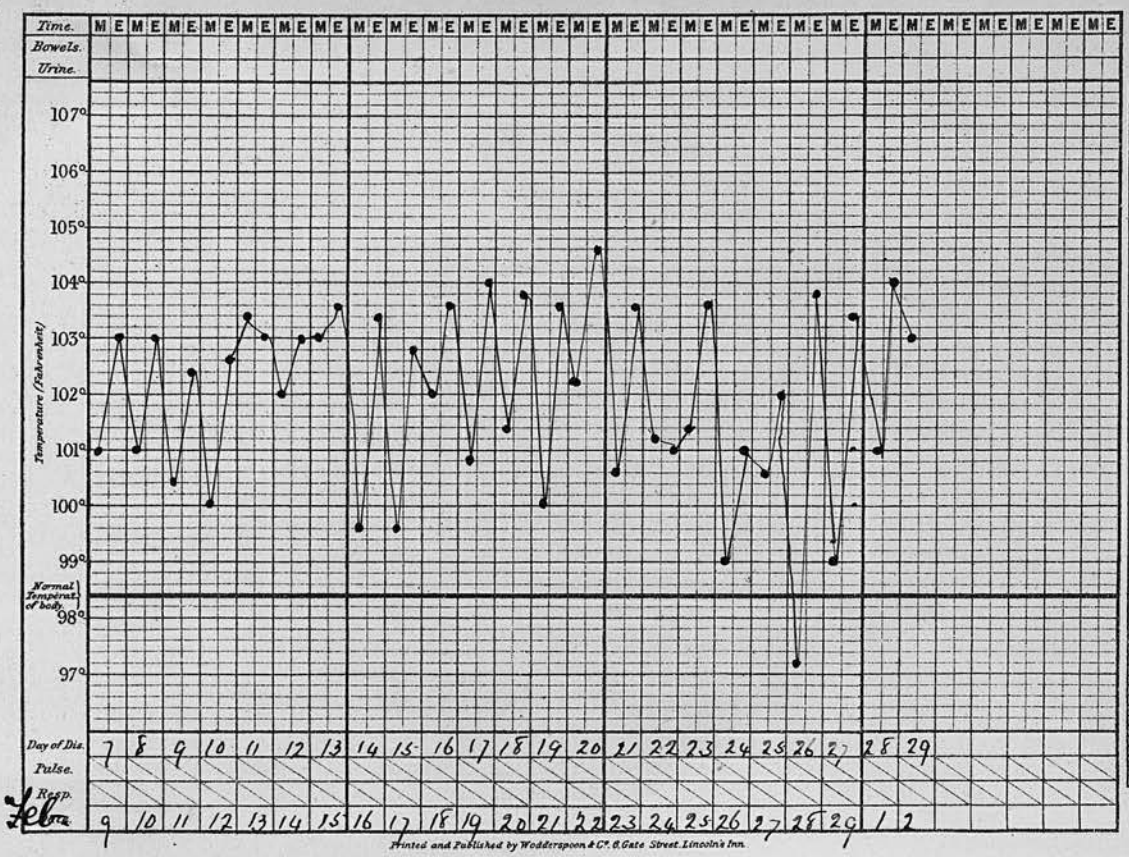
NO 31 ENTERIC FEVER.

Catherine R.	Age 26 Housewife.
Admitted.	Feb.. 10th 1910.
Day of illness.	12th.
Onset.	gradual, Headache, Vomiting, Diarrhoea, Shivering, Cough, Abdominal pain.
On Admission.	Temp.. 102. Pulse 112. not Dicrotic Resp.. 28.
Tongue.	Dry and furred.
Throat.	
Lungs.	Cough, Rhonchi in both lungs,
Skin.	Numerous Rose spots on chest and abdomen.
Abdomen.	Distended.
Spleen.	Not palpable.
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive.
Blood culture.	Positive.

Course of illness.	Moderately severe. Relapse. Left Otorrhoea. Profuse sweats.
Result.	Recovery.

Notes of Case.

Name Walter B. Age 15 Disease Enteric Result Died



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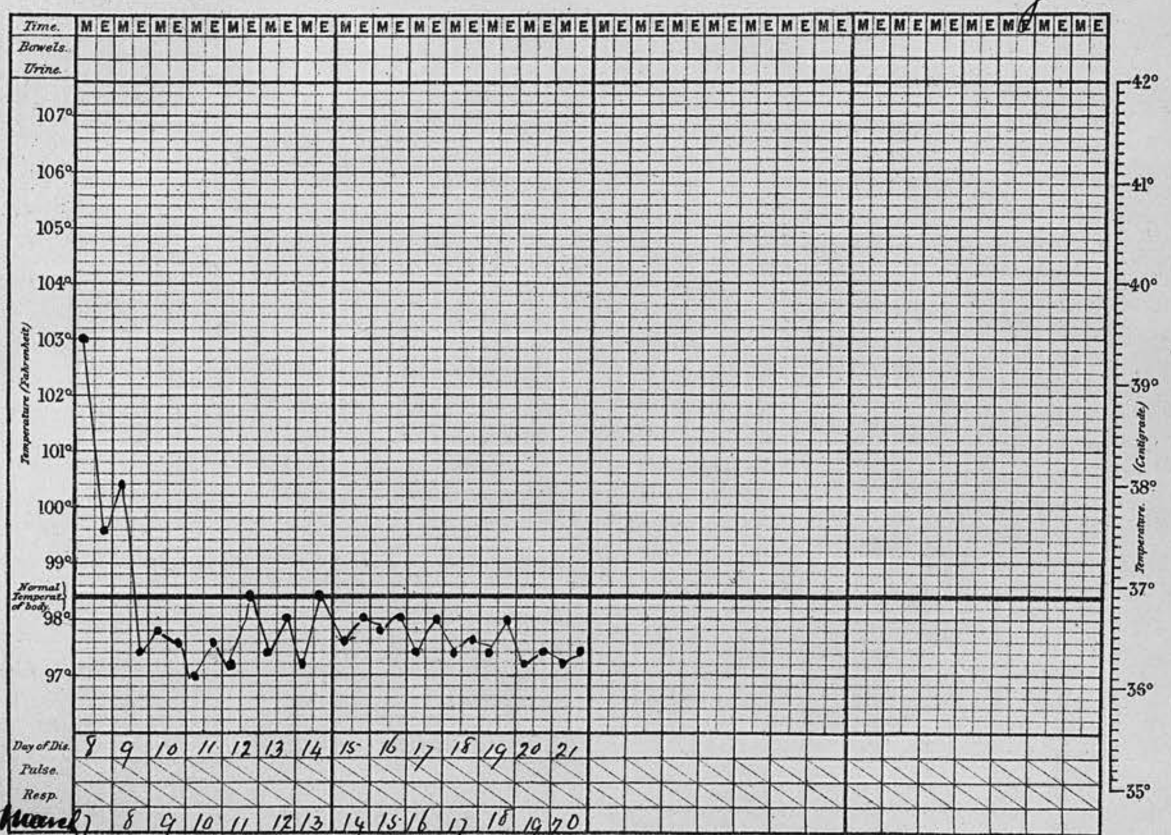
NO 32 ENTERIC FEVER.

Walter B-	Age 15 Apprentice Ironmonger.
Admitted	Feb.. 9th 1910.
Day of illness.	7th.
Onset.	Sudden, Shivering, Sore throat, Cough.
On Admission.	Temp.. 101.2 Pulse 96. Resp.. 24.
Tongue.	Moist and furred.
Throat.	Inflamed.
Lungs.	
Skin.	(Rose spots later)
Abdomen;	Not distended.
Spleen.	Palpable.
Bowels.	Constipation.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Blood culture	Positive.

Course of illness.	Very severe. Delirium. Severe Haemorrhage. Left basal Pneumonia. Gangrene of Lungs.
Result.	Death.

Notes of Case.

Name Austin McC Age Disease Pneumonia Result Recovery.



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NO 33. PNEUMONIA.

Austin Mc C Age 7

Admitted. March 7th 1910.

Day of illness. 8th.

Onset. Sudden, Headache, Vomiting, .Cough, Pain in abdomen& back. Diarrhoea, Shivering,

On admission. Temp 103. Pulse 120 dicrotic. Resp43

Tongue. Furred.

Throat.

Lungs. Well marked, left basal Pneumonia.

Skin.

Abdomen.

Spleen.

Bowels.

Ehrlichs reaction. Positive.

Methylene Blue. Negative.

Widal reaction. Positive.

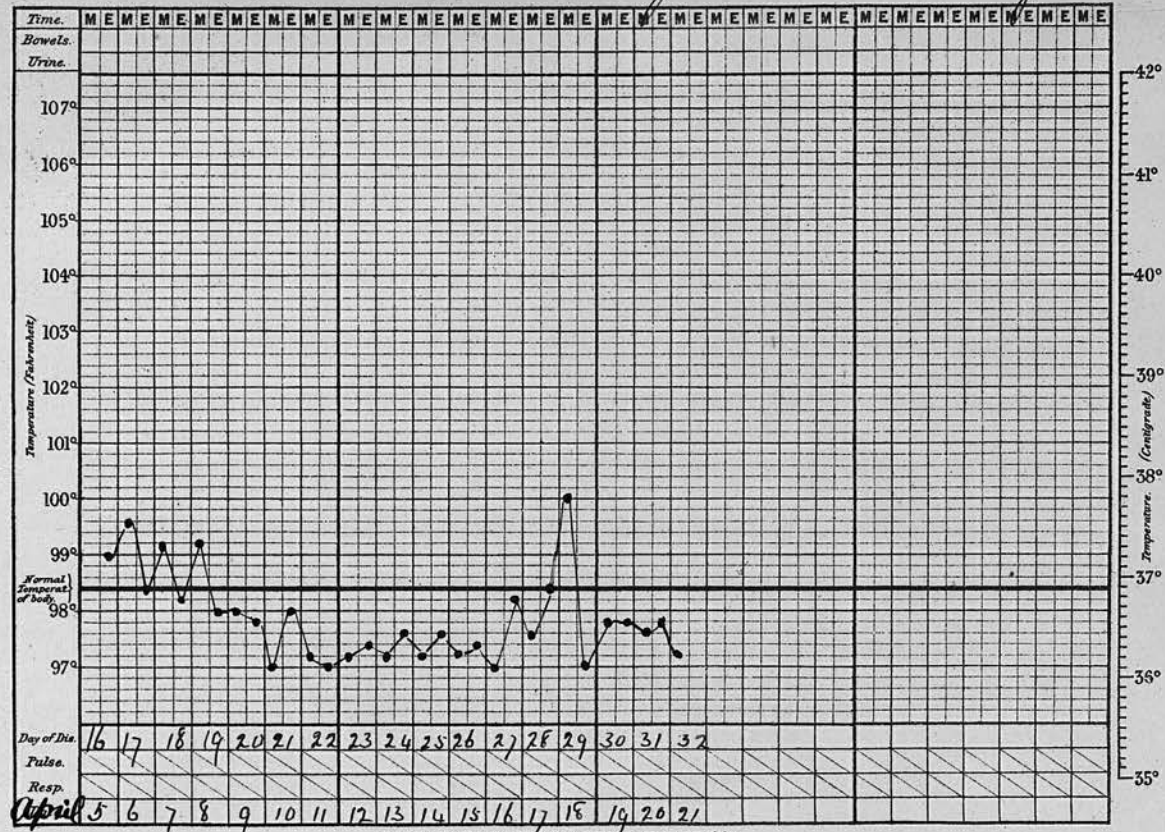
Blood culture.

Course of illness. Crisis 9th day.

Result. Recovery.

Notes of Case.

Name *Leslie S* Age *20* Disease *Pulmonary T.B.* Result *Recovery.*



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NO 34. PULMONARY TUBERCULOSIS.

Leslie I	Age 20 Clerk.
Admitted.	April 5th 1910.
Day of illness.	16th.
Onset.	Malaise, Shivering, Slight Cough.
On Admission.	Temp..99 Pulse 100. Resp.. 30.
Tongue.	
Throat.	
Lungs.	Slight comparative dullness at left apex.
Skin.	
Abdomen.	
Spleen.	
Bowels.	
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction	Negative.
Blood culture.	

Course of illness. Slight cough.

Result. Discharged (with a cough.)

Notes of Case.

Name Walter G. Age 16 Disease T.B. Meningitis Result Died

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NO 35 Tuberculous Meningitis.

Walter G. Age 16.

Admitted. April 18th 1910.

Day of illness. 11th.

Onset. Gradual, Headache, Vomiting, Shivering Slight, Cough, Abdominal pain.

On Admission. Temp.. 101 Pulse 80 not Dicrotic.
Resp.. 20.

Tongue. Furred.

Throat.

Lungs.

Skin. No Rose spots.

Abdomen. Not distended.

Spleen. Not enlarged.

Bowels. Constipation.

Ehrlichs reaction. Positive.

Methylene Blue. Positive.

Widal reaction. Positive. 1 in 60.

Blood culture. Negative.

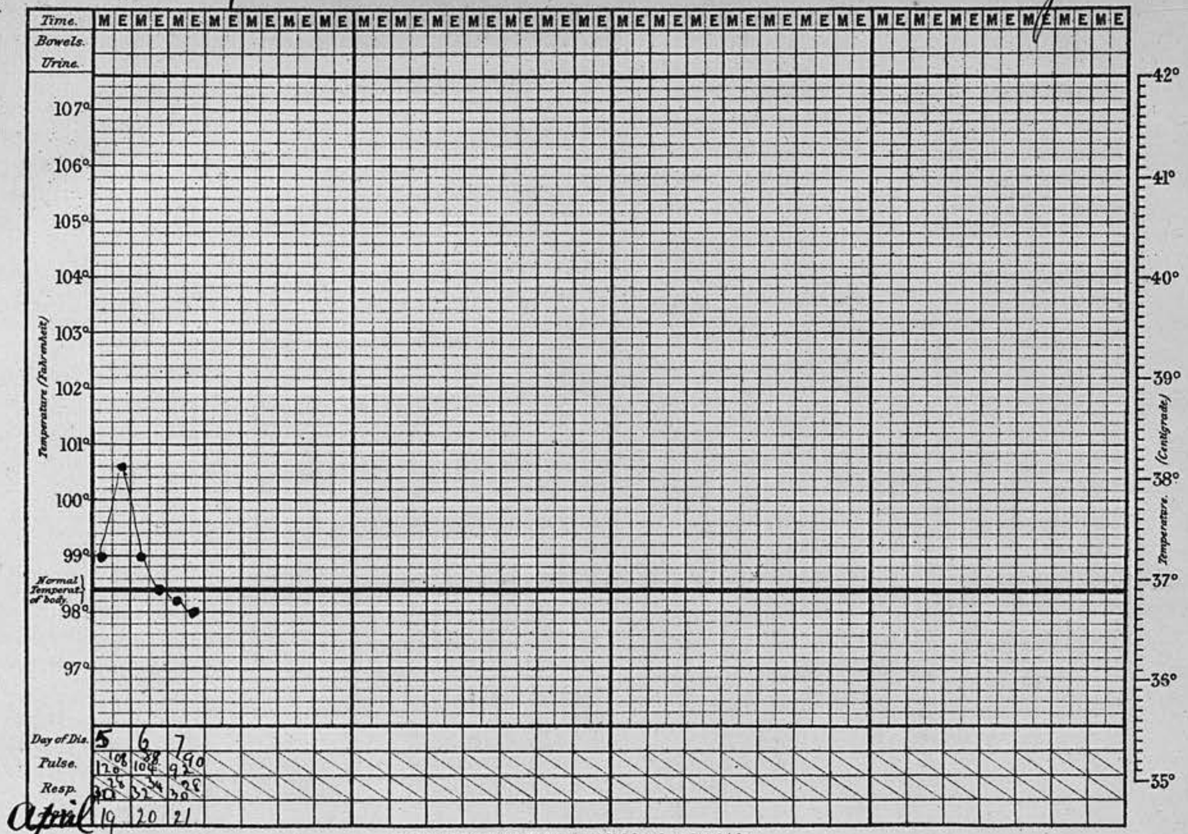
Course of illness. Wild delirium.
Retention of urine.
Later semi coma and crying out.
at intervals followed by coma.
Pupils widely dilated. No reaction to light. Tache cérébrale present
Lumbar punct.= large lymphocytes.
Knee jerks absent, Kernig's sign present. Abdomen retracted. Marked head retraction. Convulsions.

Result. Death.

P. Mortem Miliary tubercles in Lungs T.B. Ulcers in intestines.
Basal Meningitis.

Notes of Case.

Name Phillips T. Age 8 Disease Pneumonia Result Recovery.



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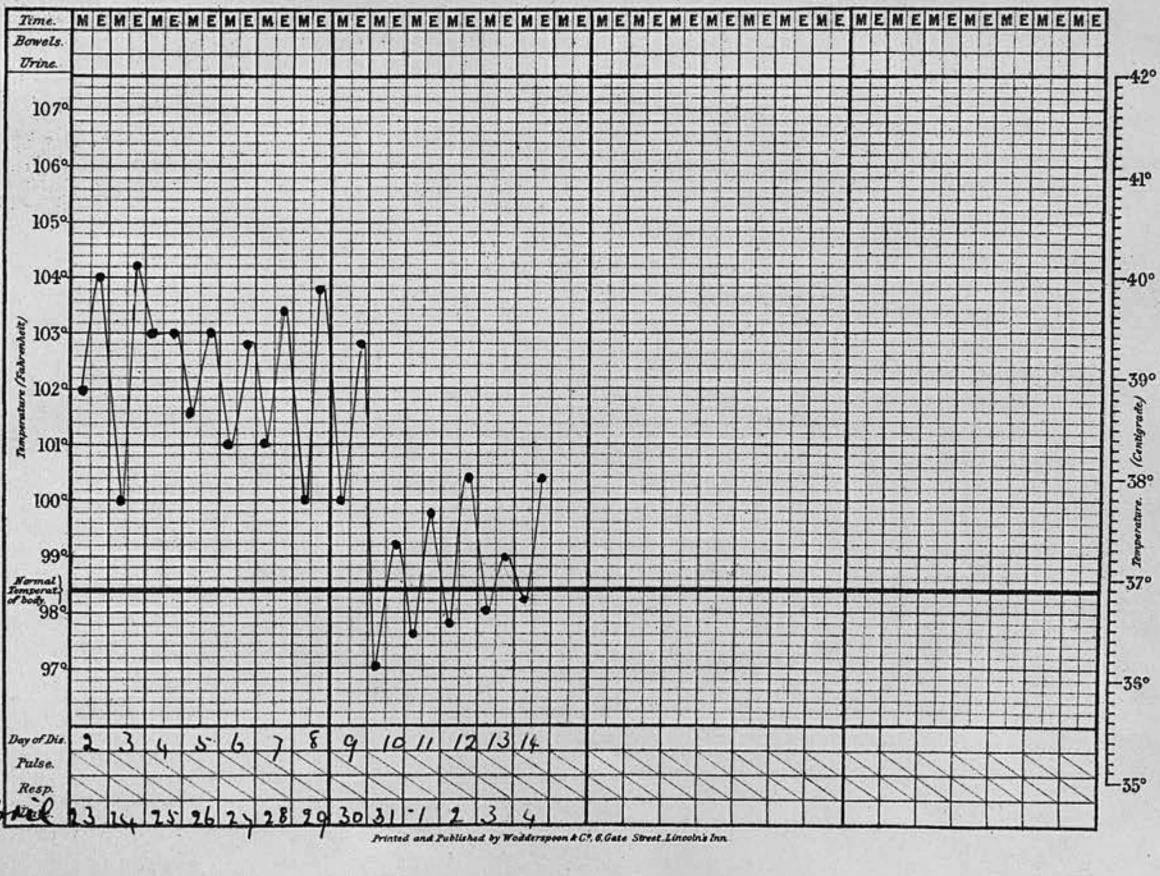
NO 36 PNEUMONIA.

Phillip T.	Age 8
Admitted.	Ap.. 19th 1910.
Day of illness.	(?)5th.
Onset.	No history obtainable. Taken ill at sea.
On Admission.	Temp.. 100.6 Pulse 120. Resp.. 32.
Tongue.	
Throat.	
Lungs.	R. Apical Pneumonia.
Skin.	
Abdomen.	Slight distension.
Spleen.	Not enlarged.
Bowels.	
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Negative.
Blood culture.	

Course of illness.	Termination by Lysis(about) 6th day.
Result.	Recovery.

Notes of Case.

Name Catherine V. Age 6 Disease Pneumonia, & Meningitis Result Died.



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NO. 37. Broncho-PNEUMONIA.

Catharine V. Age 6 years School girl.

Admitted. April. 21st 1910.

Day of illness. 2nd.

Onset. No history obtainable.

On Admission. Temp.. 102. Pulse 136.
Resp.. 36.

Lungs Broncho Pneumonia.

Skin.

Abdomen.

Spleen.

Bowels.

Ehrlichs reaction.

Methylene Blue.

Widal reaction.

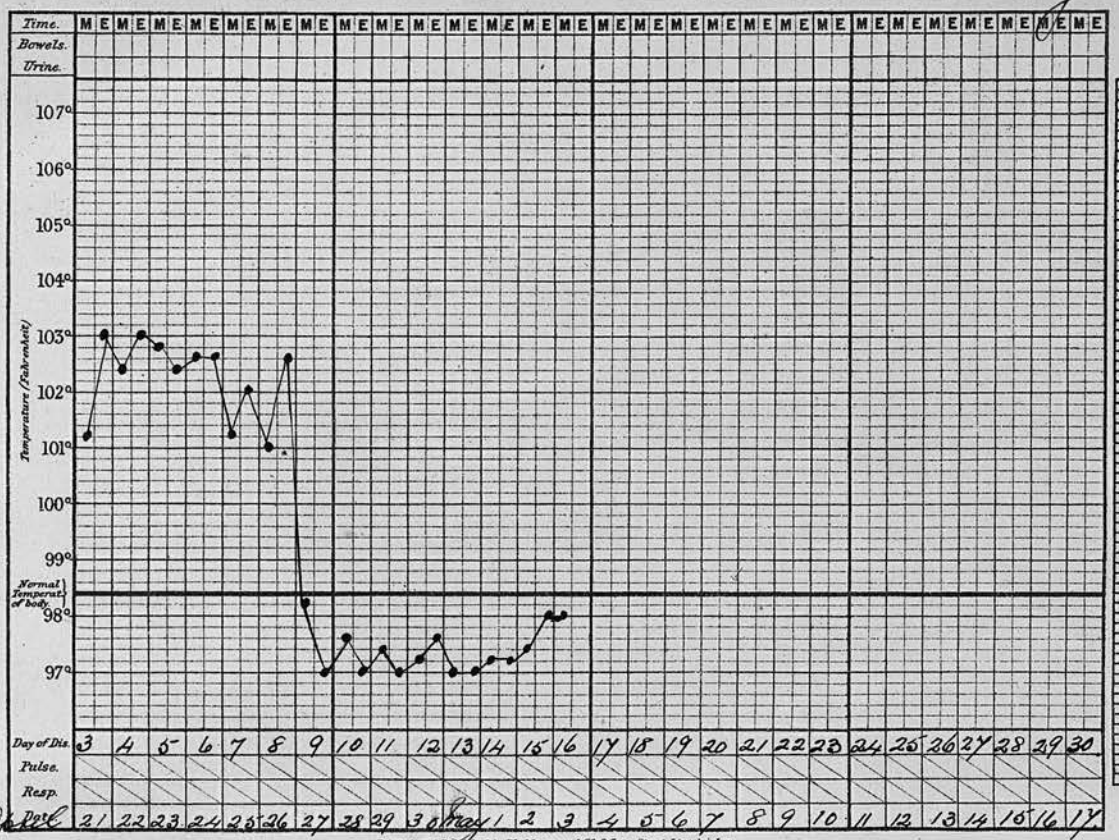
Blood culture.

Course of illness. Temp.. fell by crisis 10th day
Two days late. Well marked.
basal Meringitis.

Result. Death.
P Mortem Examination.
Confirmed diagnosis.

Notes of Case.

Name Arthur G. Age 15 Disease Pneumonia Result Recovery



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NO 38. PNEUMONIA.

Arthur C. Age 15 years Coal Hawker.

Admitted. April 21st 1910.

Day of illness. 3rd.

Onset. Sudden Headache Rigors,

Pains all over body.

On Admission. Temp.. 101.2 Pulse 140 Resp..36

Tongue. FURRED

Throat.

Lungs. Slight cough, otherwise nothing to note.

Skin.

Abdomen.

Spleen.

Bowels.

Ehrlich reaction. Positive.

Methylene Blue. positive.

Widal reaction. Negative.

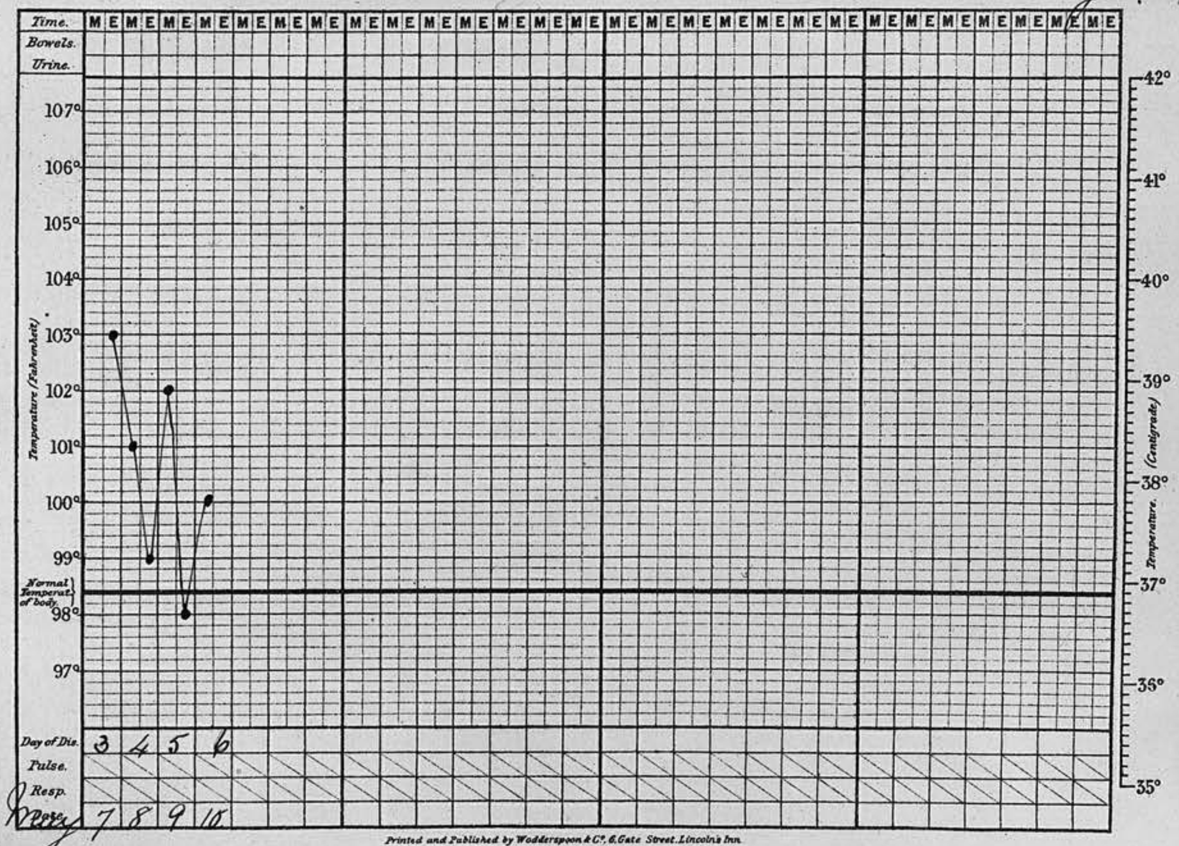
Blood culture.

Course of illness. Ap 24 Right apical pneumonia. Delirium.

Result. Recovery.

Notes of Case.

Name *Ida L.* Age ____ Disease *General Peritonitis* Result *Recovery (Transfer*



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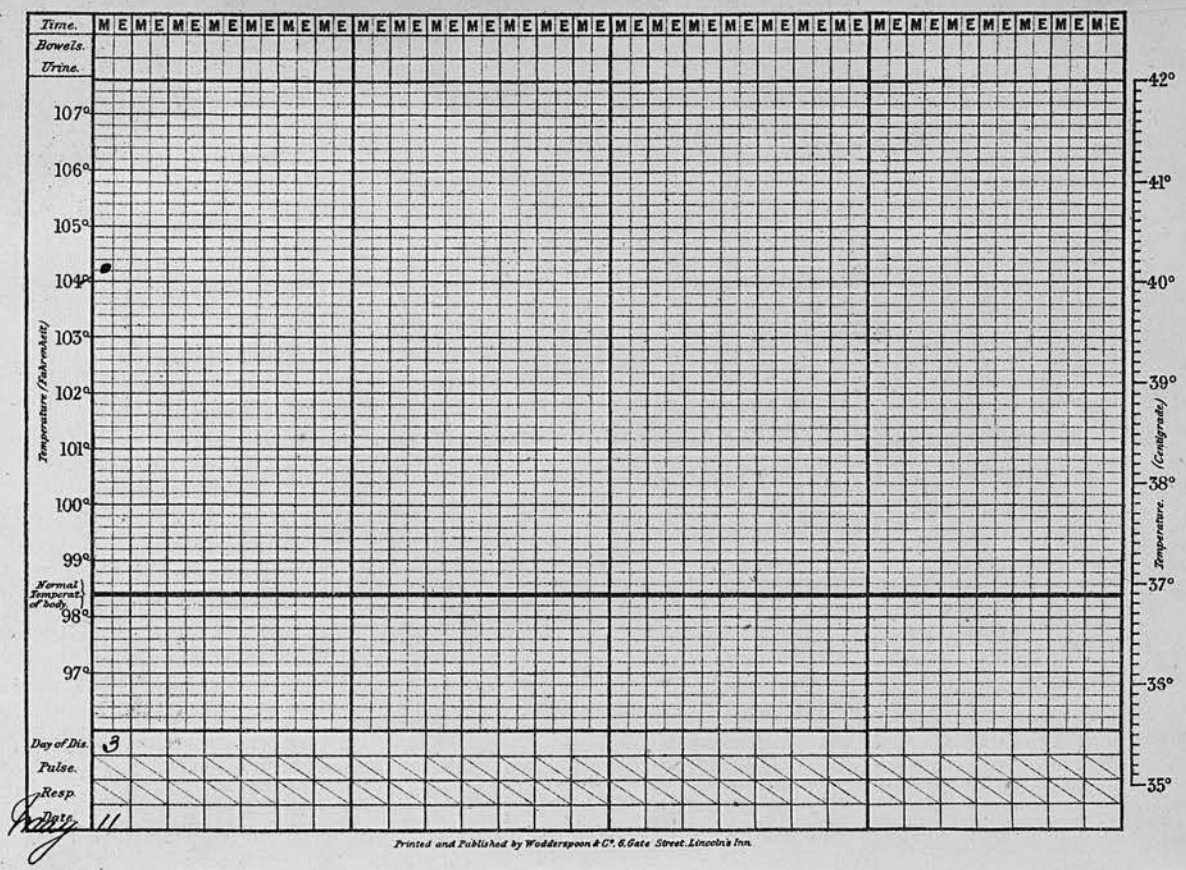
NO 39 GENERAL PERITONITIS.

Ida L.	Age 11 years. School girl.
Admitted.	May 7th 1910.
Day of illness.	3rd.
Onset.	Sudden, Vomiting, Diarrhoea, Pain in Abdomen.
On Admission	Temp.. 103.4 Pulse 126 Resp.. 36.
Tongue.	Furred and moist.
Throat.	
Lungs.	Normal.
Skin.	
Abdomen.	Distended and tympanitic.
Spleen.	
Bowels.	Loose.
Ehrlichs reaction.	Positive.
Methylene Blue.	Positive.
Widal reaction.	Positive 1 in 50.
Blood culture.	

Course of illness.	Laparotomy. Pneumococcus. isolated from pus.
Result.	Death.

Notes of Case.

Name William W Age 11 Disease Pneumonia Result Died.



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NO 40. PNEUMONIA.

William W. Age 11 years. School boy.

Admitted. May 11th

Day of illness. 3/rd.

Onset. Sudden, Vomiting, Shivering,

On Admission. Temp.. 104.2 Pulse 130. Resp.. 28

Tongue.

Throat.

Lungs. Well marked left basal Pneumonia with cyanosis and failing heart.

Abdomen.

Skin.

Spleen.

Bowels.

Ehrlichs reaction.

Methylene Blue.

Widal reaction.

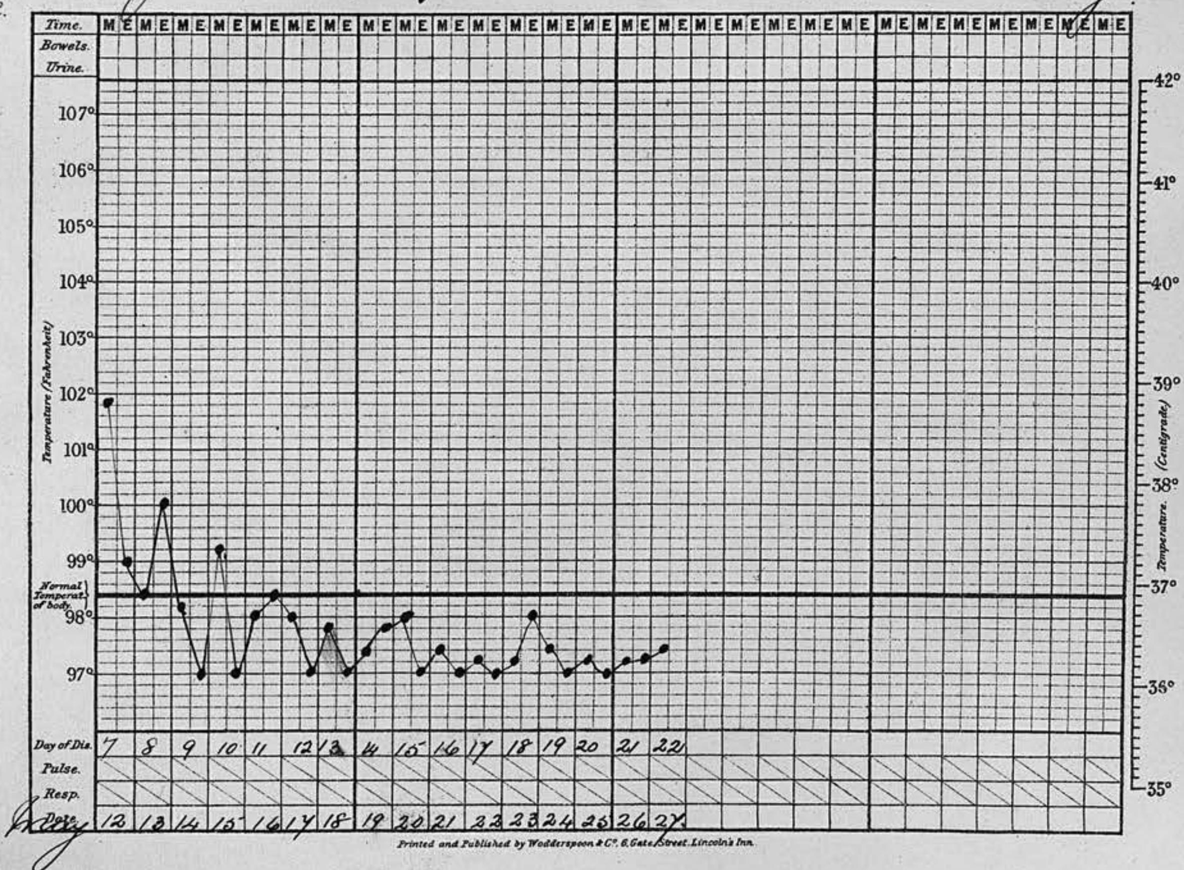
Blood culture.

Course of illness.

Result. Death.

Notes of Case.

Name John T. Age 37 Disease Pneumonia Result Recovery



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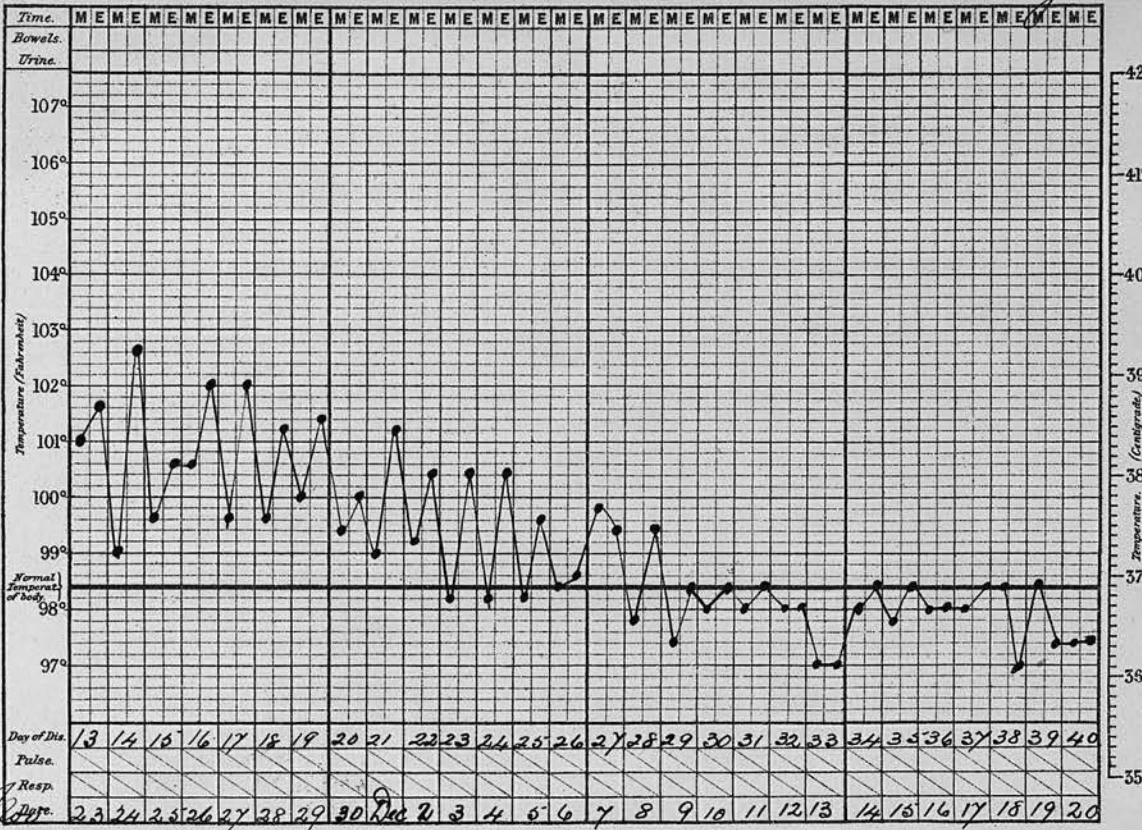
NO 41 PNEUMONIA.

John T.	Age 37 years. Dock Labourer.
Admitted.	May 12th 1910.
Day of illness.	7th.
Onset.	Headache, Rigors, Cough, Pain in side.
On Admission.	Temp.. 101.8 Pulse 120. Resp.. 44.
Tongue.	Furred.
Throat.	
Lungs.	Well marked, left basal Pneumonia.
Skin.	
Abdomen.	
Spleen.	
Bowels.	
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Negative.
Blood culture.	

Course of illness.	Crisis 8th day.
Result.	Recovery.

Notes of Case.

Name: Hans K. Age: 30 Disease: Enteric Result: Recovery



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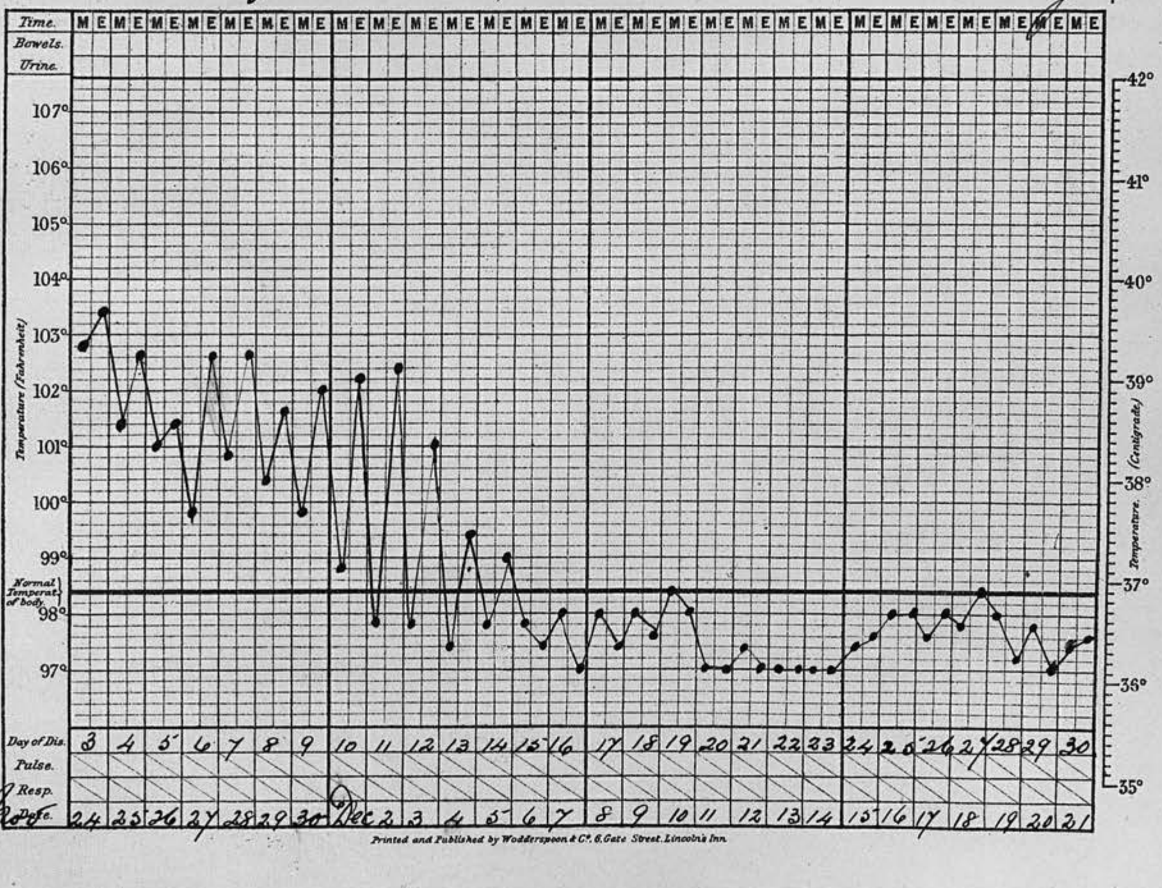
NO 42 ENTERIC FEVER.

Hans K-	Age 30 years Sailor.
Admitted.	Nov.. 23rd 1910.
Day of illness.	13th.
Onset.	Slight Malaise, followed by severe Headache.
On admission.	Temp.. 101. Pulse 100. Dicrotic. Resp.. 20.
Tongue.	Furred.
Throat.	
Lungs.	
Skin.	Numerous Rose spots on trunk and extremities.
Abdomen.	
Spleen.	Palpable.
Bowels.	Constipated.
Ehrlichs reaction.	
Methylene. Blue.	
Widal reaction.	Positive.
Blood culture.	Positive.

Course of illness.	Moderately severe. Slight Haemorrhage following abdominal pain. Epistaxis.
Result.	Recovery.

Notes of Case.

Name Gerald G. Age 14 Disease Enteric Result Recovery



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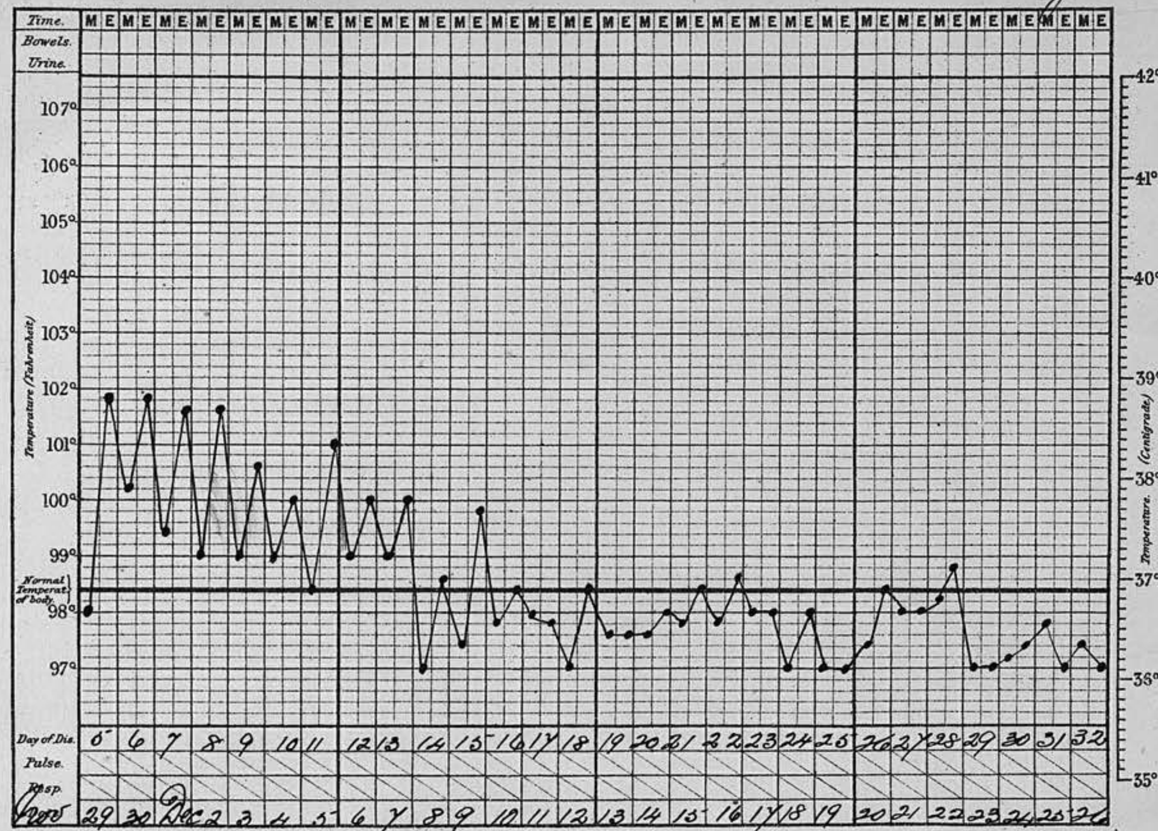
NO 43. ENTERIC FEVER.

Gerald Q.	Age 14 years Sailor boy.
Admitted.	Nov.. 24th 1910.
Day of illness.	3rd.
Onset.	Sudden, Headache, Cough, "Feverish".
On admission.	Temp.. 102.8 Pulse 124. Dicrotic. Resp.. 24.
Tongue.	Furred.
Throat.	
Lungs.	Cough.
Skin.	No Rose spots (Crops later Nov.. 28th and 30th.)
Abdomen.	Distended.
Spleen.	Not Palpable (Nov.. 27th Palpable.)
Bowels.	Constipation.
Ehrlichs reaction.	
Methylene Blue.	
Widals reaction.	Not positive (some clumping 1. in 50. 45 minutes.)
Blood culture.	Positive.

Course of illness.	Mild. Sudaminal rash. Profuse sweats.
Result.	Recovery.

Notes of Case.

Name Gerald M. Age 14 Disease Enteric Result Recovery



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NO 44 ENTERIC FEVER.

Gerald M. Age 14 years, SAILOR boy

Admitted. Nov.. 29th 1910.

Day of illness. 5th

Onset. Sudden, Cough, Pain in abdomen, Shivering.

On admission. Temp.. 98 Pulse 94 poor
Resp.. 20

Tongue. Furred and moist.

Throat.

Lungs.

Skin. Cyanosis lips and face and extremities.

Abdomen. Slightly distended.

Spleen. Not palpable.

Bowels. Constipated.

Ehrlichs reaction.

Methylene Blue.

Widal reaction. Not positive, slight clumping, 1 in 60 1 hour.

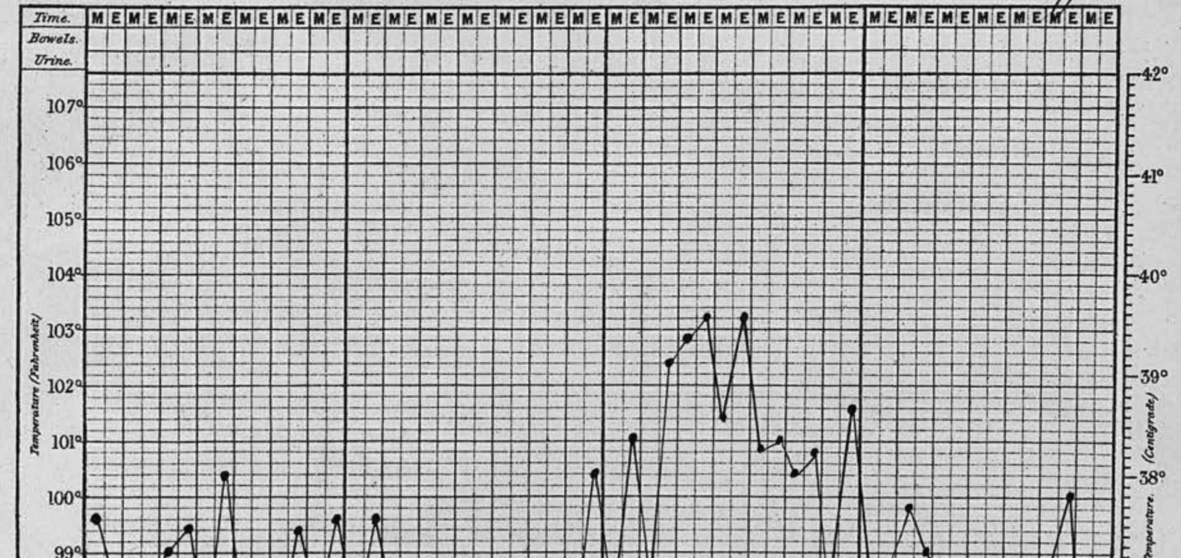
Blood culture. Positive.

Course of illness. Mild.

Result. Recovery.

Notes of Case.

Name Susan. B. Age 21 Disease Enteric Result Recovery



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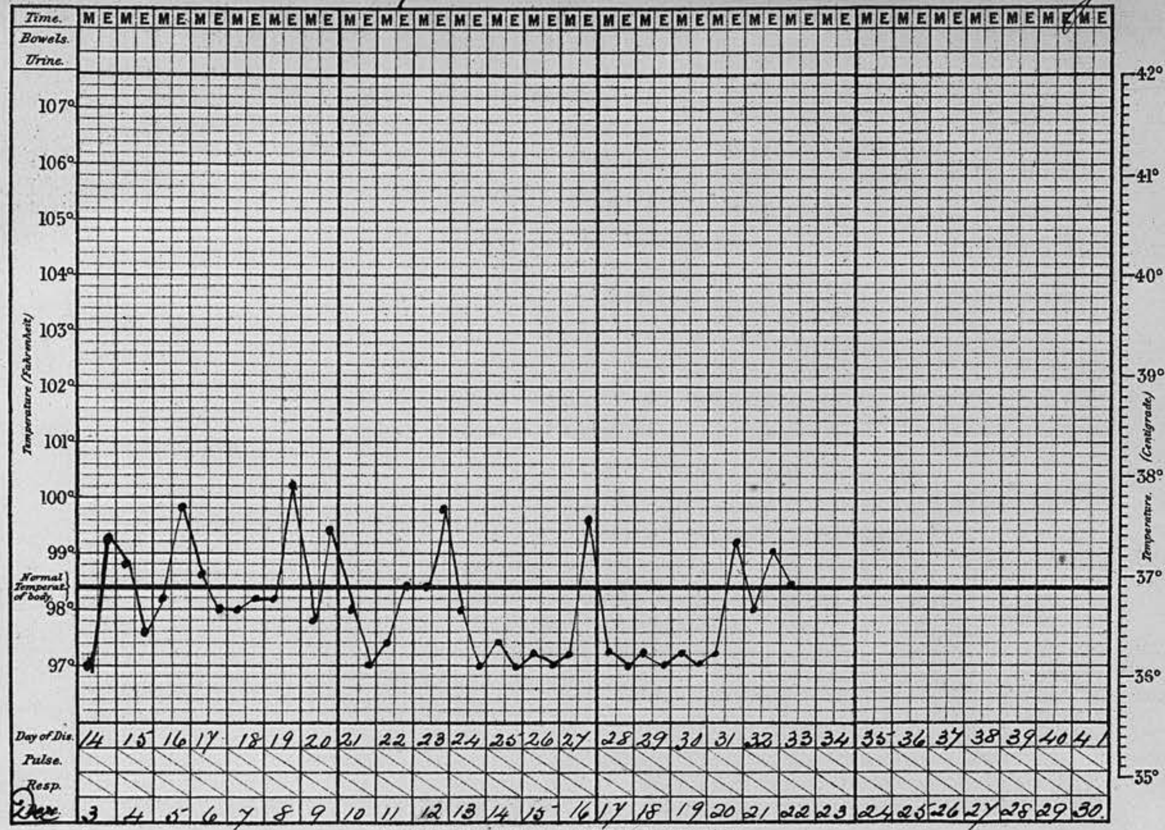
NO 45 ENTERIC FEVER.

Susannah B-	Age 21 years. Housekeeper.
Admitted.	Nov.. 29th 1910.
Day of illness.	14th.
Onset.	Gradual, Malaise, Headache, Vomiting, Rigors, Pains in abdomen.
On admission.	Temp.. 99.5, Pulse 112. Resp.. 22.
Tongue.	Furred and moist.
Lungs.	
Skin.	Several Rose spots on abdomen also subsequent crops.
Abdomen.	Distended.
Spleen.	Not Palpable
Bowels.	Loose.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	Positive.

Course of illness.	Severe. Relapse. Abdominal pain. Phlebitis.
Result.	Recovery.

Notes of Case.

Name Edward H. Age 37 Disease Pneumonia Result Recovery



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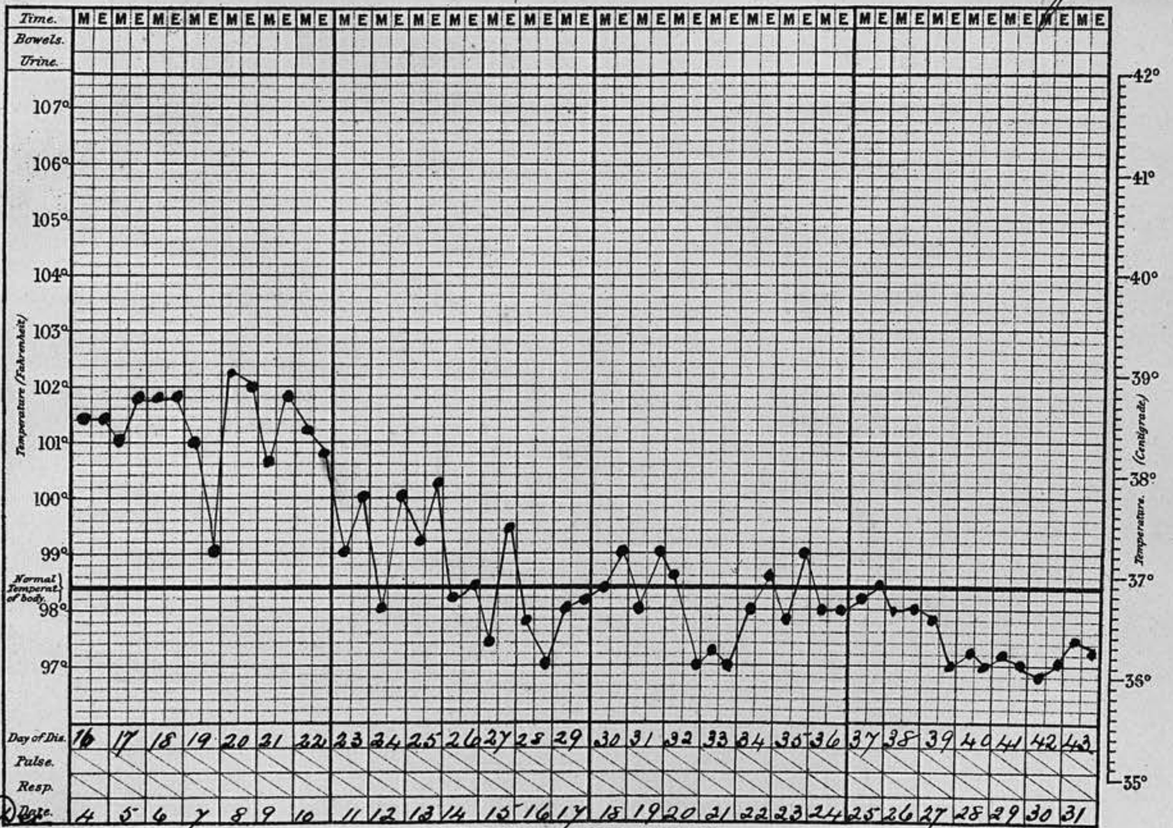
NO 46. PNEUMONIA.

Edward H.	Age 37 years Carpet maker.
Admitted.	Dec.. 3rd 1910.
Day of illness.	14th.
Onset.	Sudden, Headache, Vomiting, Diarrhoea, Cough, Abdominal pain.
On Admission.	Temp.. 92.2 Pulse 96. Resp.. 30.
Tongue.	Furred.
Throat.	Marked dullness with numerous coarse creps R base.
Lungs.	
Skin.	? Rose spots on abdomen.
Abdomen.	Adipose.
Spleen.	Not Palpable.
Bowels.	Loose.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Negative.
Blood culture.	Negative.

Course of illness.	Crisis before admission.
Result.	Recovery.

Notes of Case.

Name *Archibald F.* Age *31* Disease *Enteric* Result *Recovery*



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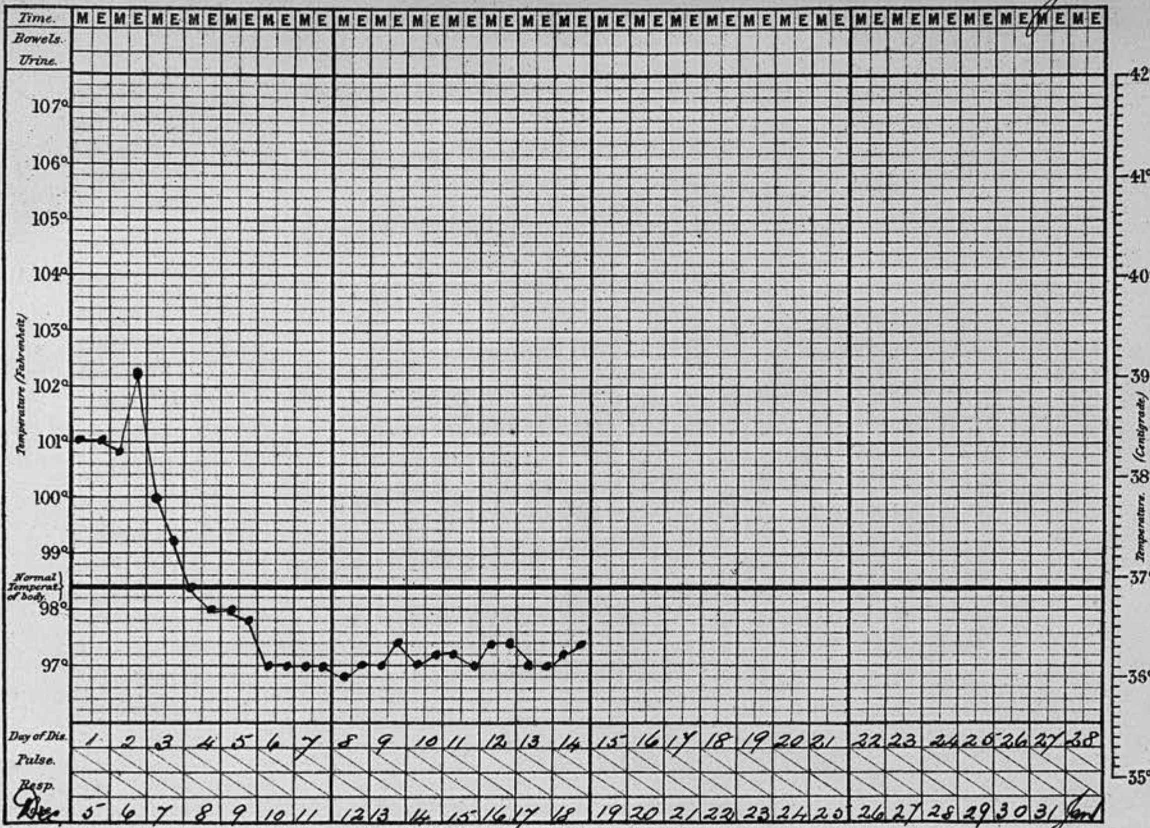
NO 47 ENTERIC FEVER.

Archibald F.	Age 31 years. Sailor.
Admitted.	Dec.. 4th 1910.
Day of illness.	16th.
Onset.	Gradual, Malaise & Shivering followed by collapse at work.
On Admission.	Temp.. 100 Pulse 100. Dicrotic. Resp.. 20.
Tongue	Furred and moist.
Throat.	Inflamed
Lungs.	
Skin.	(Dec.. 8th Rose spots on Chest and Abdomen)
Abdomen.	Slight distension.
Spleen.	Palpable.
Bowels.	Loose.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	Positive.

Course of illness.	Moderately severe. Sleeplessness. Abdominal pain.
Result.	Recovery.

Notes of Case.

Name Frank. D Age 34 Disease Tonsillitis Result Recovery



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NO 48. TONSILLITIS.

-

Frank D. Age 34 years. Sailor.

Admitted. Dec.. 5th 1910.

Day of illness. 2nd.

Onset. Sudden, Headache, Shivering, Sore throat, Frontal headache.

On Admission. Temp.. 101. Pulse 104. Resp.. 20

Tongue. Furred.

Throat. Inflamed. Deposit on each tonsil.

Lungs.

Skin.

Abdomen. Not distended.

Spleen. Not enlarged.

Bowels. Constipation.

Ehrlichs reaction.

Methylene Blue.

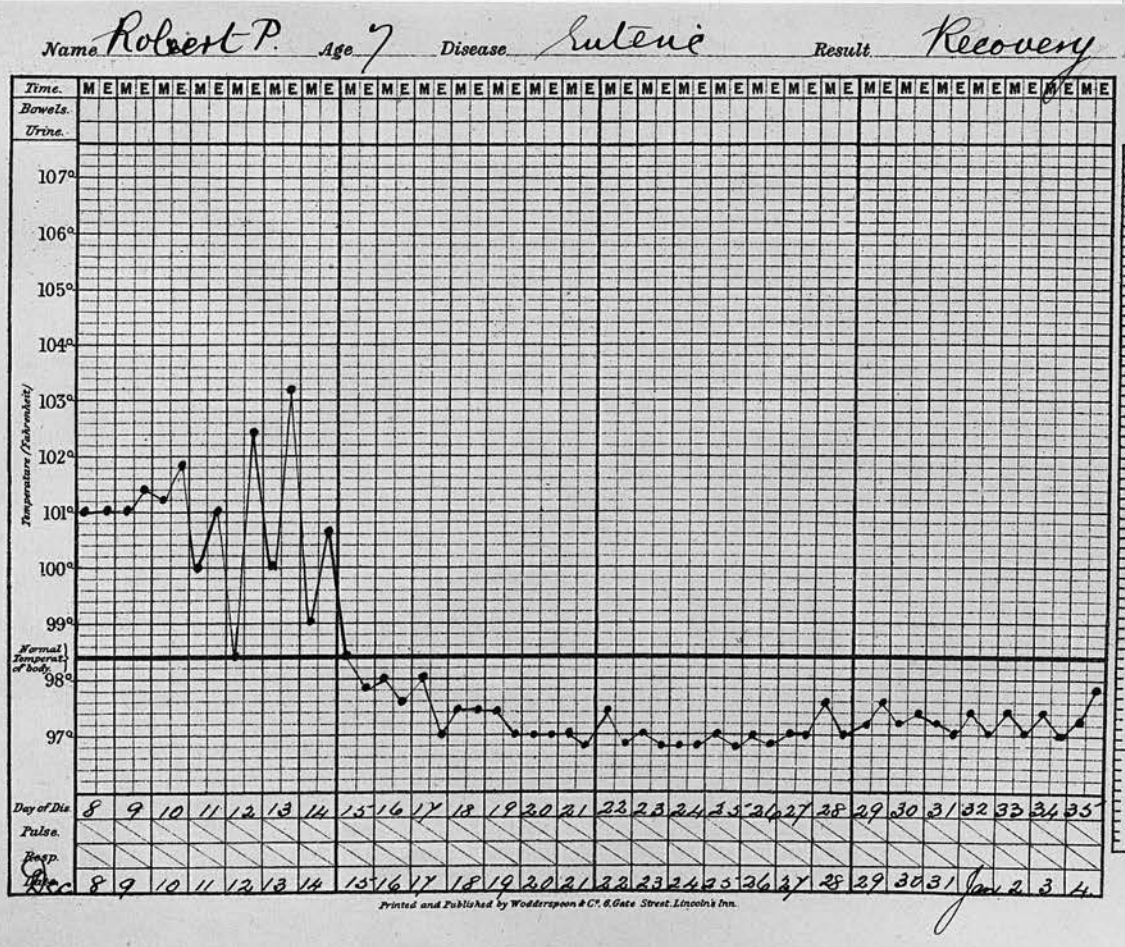
Widal reaction. NEGATIVE

Blood culture. Negative.

Course of illness.

Result. Recovery.

Notes of Case.



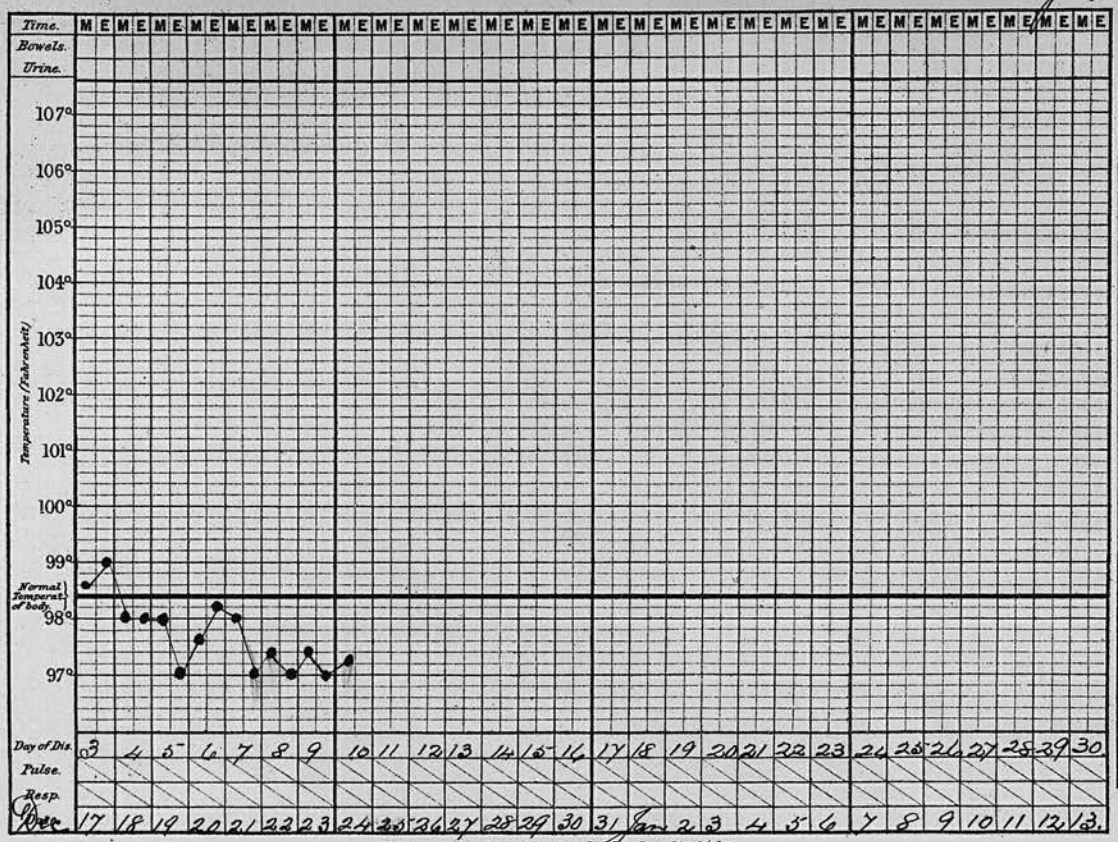
NO 49 ENTERIC FEVER.

Robert Conrad P.	Age 7 years. School boy.
Admitted.	Dec.. 8th 1910.
Day of illness.	8th.
Onset.	Gradual, Malaise, Headache, Rigor, Slight Cough.
On Admission.	Temp.. 101.2 Pulse 116. Dicrotic. Resp.. 26.
Tongue.	Furred.
Throat.	
Lungs.	Slight Cough.
Skin.	Two? Rose spots on Abdomen.
Abdomen.	Somewhat distended. Abdominal pain.
Spleen.	(Palpable Dec.. 11th.)
Bowels.	Constipation.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	Positive.

Course of illness.	Mild.
Result.	Recovery.

Notes of Case.

Name Leonard H Age 13 Disease Malaise Result Recovery



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NO 50 MALAISE.

Leonard H-	Age 13 years, Sailor boy.
Admitted	Dec.. 17th 1910.
Day of illness	3rd.
Onset.	Sudden, Headache, Vomiting, Pain in abdomen, Rigor.
On Admission.	Temp.. 98.6 Pulse 100. not Dicrotic. Resp.. 20.
Tongue	Moist.
Throat.	
Lungs.	
Skin.	No Rose spots.
Abdomen.	
Spleen.	Palpable.
Bowels.	
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Negative.
Blood culture.	Negative.

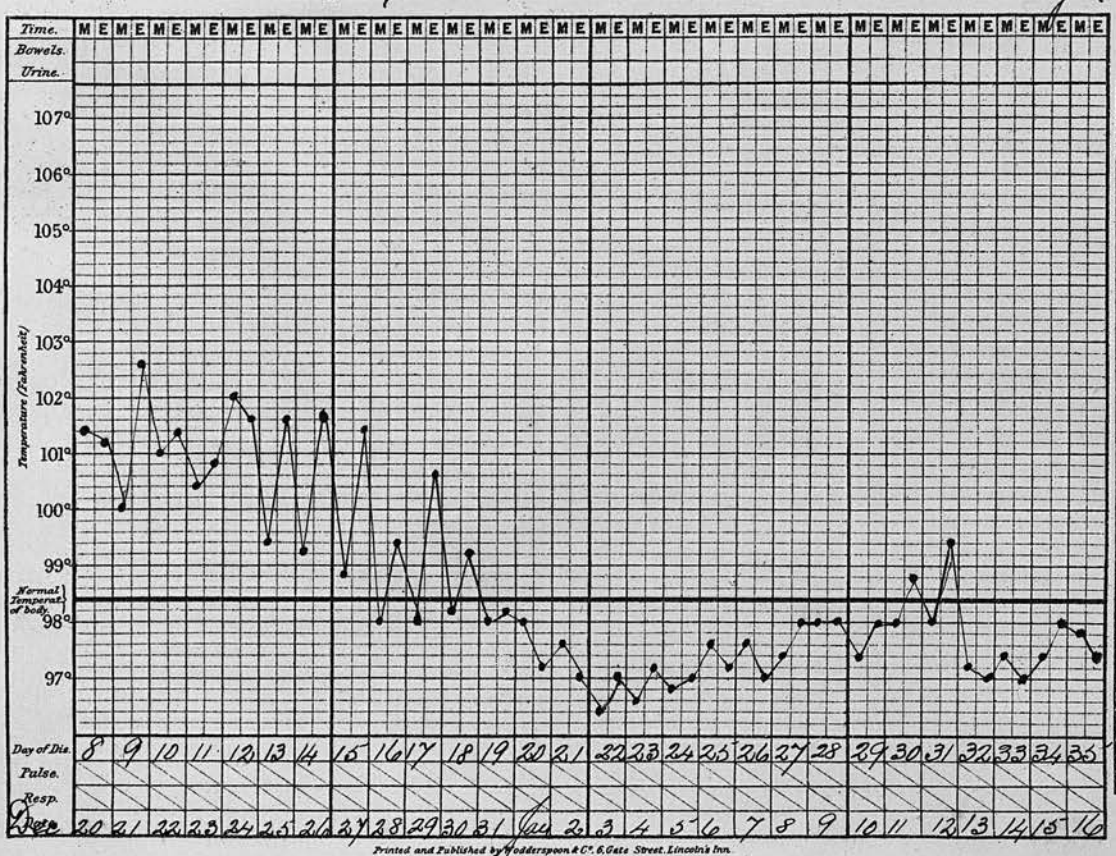
Course of illness.

Result. Recovery.

-

Notes of Case.

Name Frank. W. Age 19 Disease Enteric Result Recovery.



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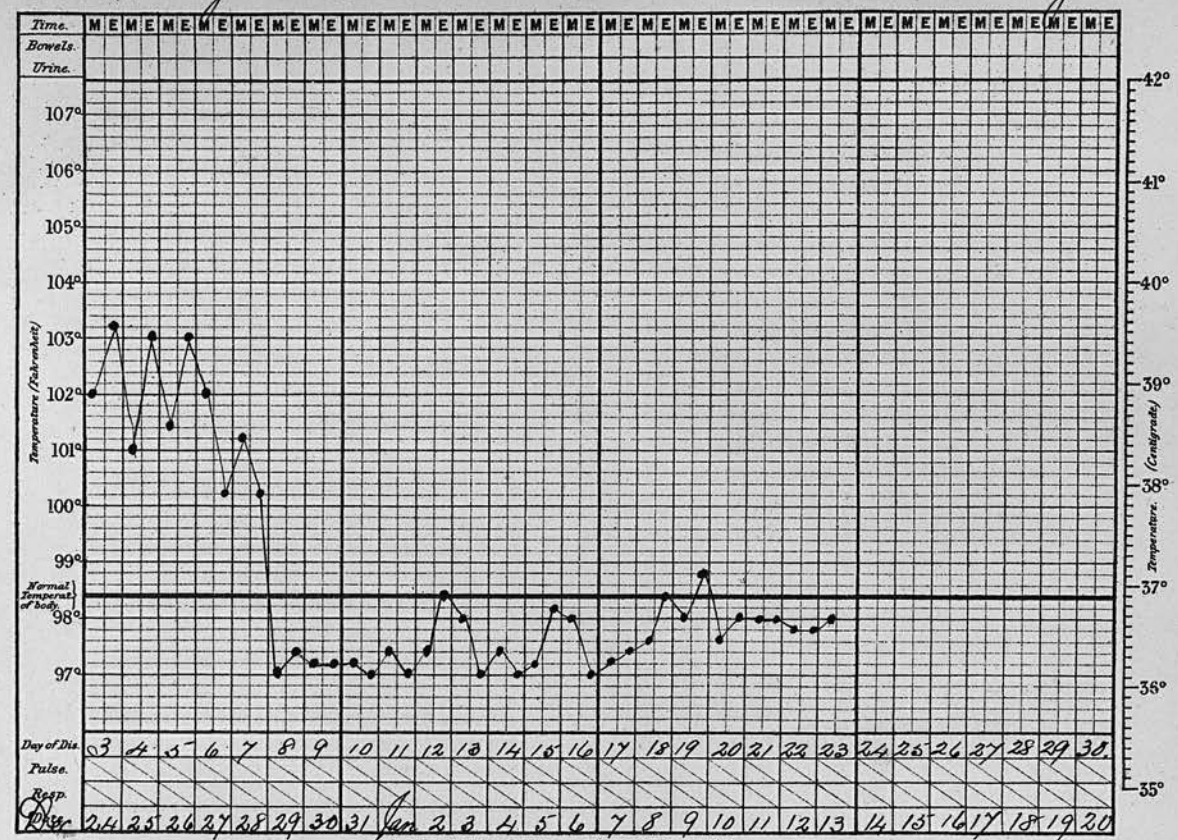
NO 51 ENTERIC FEVER.

Frank W-	Age 19 years. Clerk
Admitted.	Dec.. 20th 1910.
Day of illness.	8th.
Onset. gradual	Malaise, Rigors, Diarrhoea, Sore throat, Pain in abdomen.
On admission.	Temp, 101. 4. Pulse 100 Dicrotic, Resp 20
Tongue.	Brown furred and dry.
Throat.	Inflamed.
Lungs.	
Skin.	Numerous Rose spots on trunk and limbs
Abdomen.	Not distended.
Spleen.	Not palpable, (Dec.. 21st) Spleen palpable.
Bowels.	Loose.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Positive.
Blood culture.	Positive.
Course of illness.	Severe. Delirium
Result.	Recovery.

Notes of Case.

Name Henry D. Age 11 Disease Pneumonia Result Recovery



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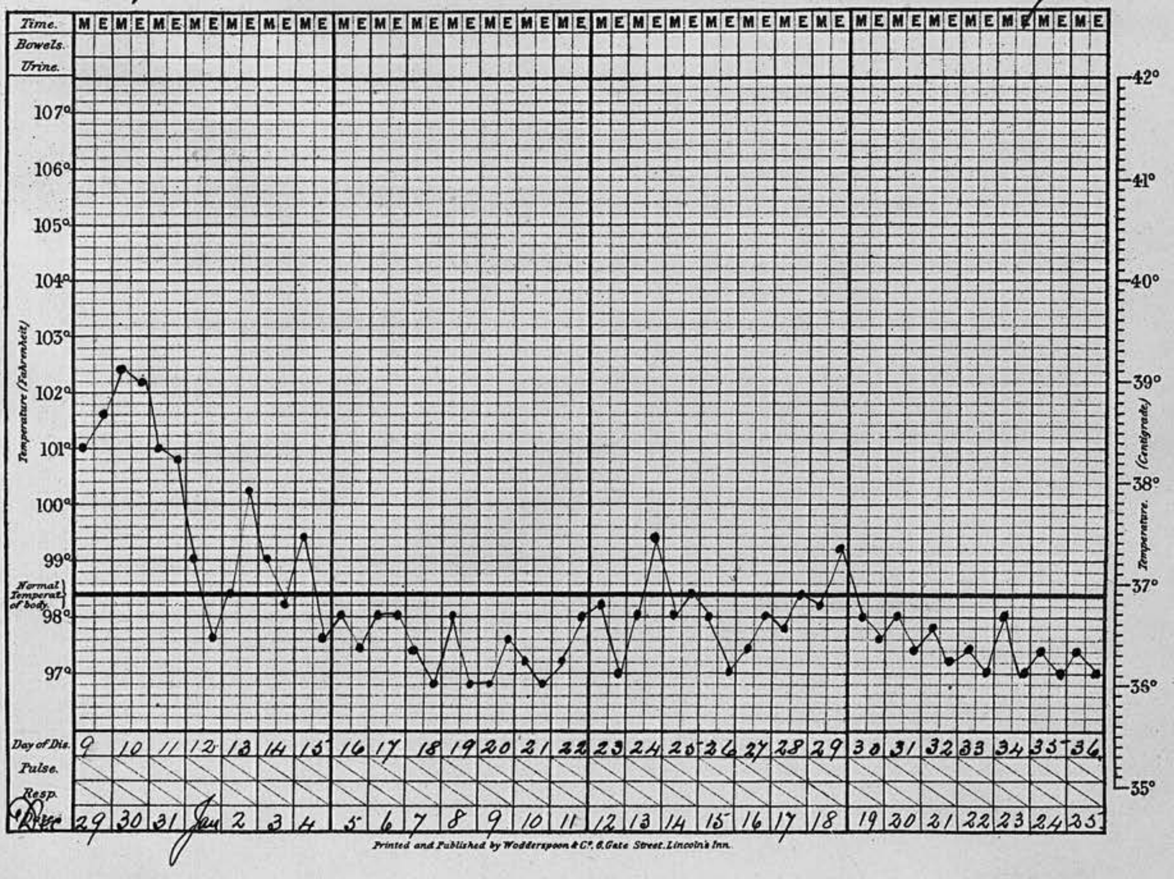
NO 52. PNEUMONIA.

Henry D.	Age 11 years. School boy.
Admitted.	Dec.. 23rd 1910.
Day of illness.	3rd.
Onset.	Sudden, Headache. Vomiting, Diarrhoea, Rigors, Cough, Pain in chest.
On Admission.	Temp.. 102 Pulse 140. Resp.. 42.
Tongue.	Furred.
Throat.	
Lungs.	Comparative dullness R apex.
Skin.	
Abdomen.	Not distended.
Spleen.	Palpable.
Bowels.	Constipated.
Ehrlichs reaction.	
Methlene Blue.	
Widal reaction.	Positive.1 i 60(45 minutes.)
Blood culture.	Negative.

Course of illness.	Dec.. 26th Well marked apical Pneumonia. Slight delirium Crisis 8th day.
Result.	Recovery.

Notes of Case.

Name Cyril O'D Age 3 Disease Enteric Result Recovery



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NO 53. ENTERIC FEVER%

Cyril O'D Age 3 years.

Admitted. Dec..29th L910.

Day of illness. 9th.

Onset. Vomiting, Diarrhoea.

On Admission. Temp.. 101. Pulse 140 Resp.. 24

Tongue. Furred.

Throat.

Lungs

Skin. a few rose spots on abdomen.

Abdomen. Distended.

Spleen. Palpable.

Bowels. Diarrhoea.

Ehrlichs reaction.

Mehtylene Blue.

Widal reaction. Positive.

Blood culture.

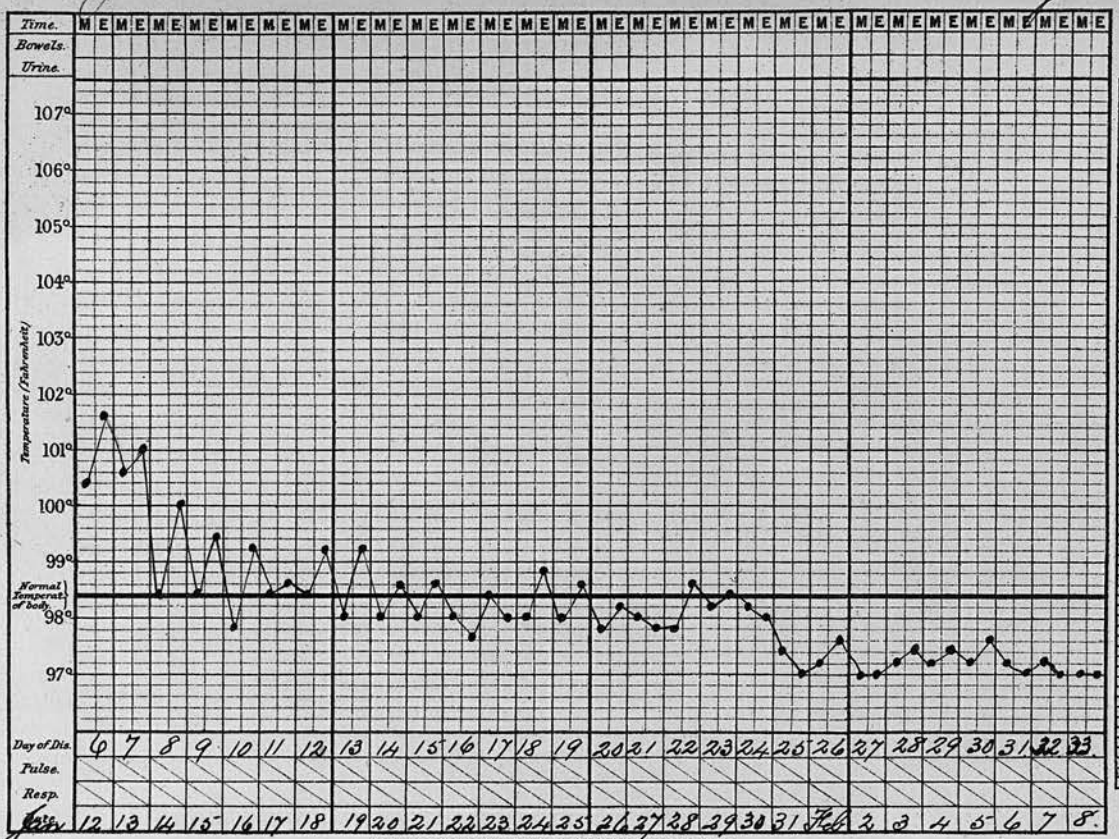
Course of illness. Mild.

R and L Otrrhoea

Diarrhoea.

Notes of Case.

Name John. S. Age 16 Disease Enteric Result Recovery.



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NO 54 ENTERIC FEVER.

John S.	Age 16 years. Sailor boy.
Admitted.	Jan.. 12 th 1910.
Day of illness.	6th.
Onset.	gradual, Malaise, Rigors, Vomiting, Pain in abdomen.
On admission.	Temp 100.4. Pulse 106. Not dicrotic. Resp.. 20
Tongue.	Slight fur, Moist.
Throat.	
Lungs.	
Skin.	one? Rose spot.
Abdomen.	Not distended, Complains of pain.
Spleen.	Palpable.
Bowels.	Constipated.
Ehrlichs reaction.	
Methylene Blue.	
Widal reaction.	Negative, partial clumping in 1/60 1 hr
Blood culture.	Positive.

Course of illness.	Mild.
Result.	Recovery.

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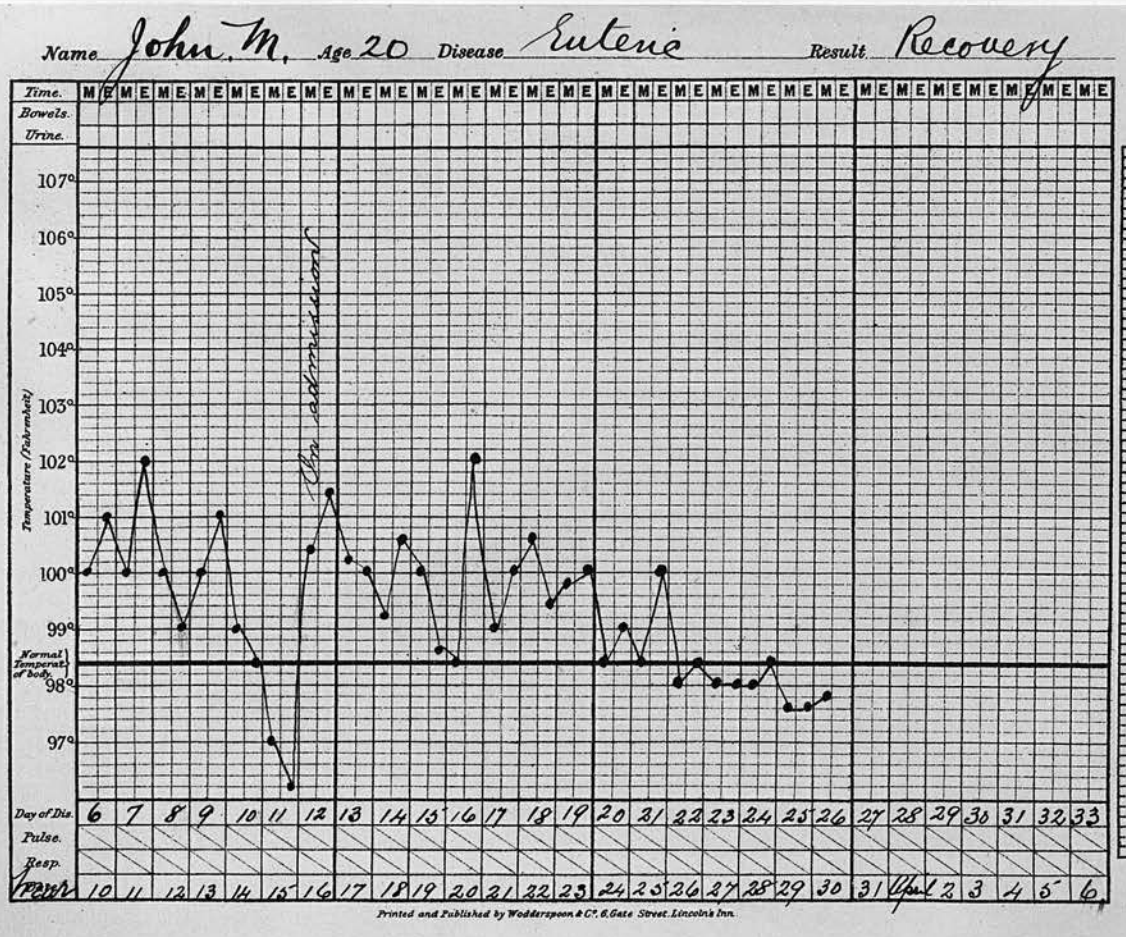
Notes of Case.



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NO 55. ENTERIC FEVER.

John M- Age 20 years. Sailor.

Admitted. March 16th 1911.

Day of illness. 12th .

Onset. Severe, Frontal Headache, Malaise.

On admission. Temp 100.6 Pulse 80, Resp.. 20

Tongue. Furred, Moist.

Throat.

Lungs.

Skin. Numerous small spots on abdomen.

Abdomen. Not distended.

Spleen. palable.

Bowels. Constipation.

Ehrlichs reaction.

Methylene Blue.

Widal reaction. not positive. (Slight clumping 1 in 60. 1 hour.)

Blood culture. Negative.

Course of illness. Mild.

Result. Recovery.