

SOME OBSERVATIONS UPON INTESTINAL DISEASE IN THE  
NEW ZEALAND EXPEDITIONARY FORCE IN EGYPT AND THE  
DARDANELLES, WITH SPECIAL REFERENCE TO THE  
ENTERICA GROUPS, FROM JULY 1915 TO MARCH 1916.

BY

FRED T. BOWERBANK, MAJOR, N.Z.M.C.

h. D. 1917.



SOME OBSERVATIONS UPON INTESTINAL DISEASE IN THE  
NEW ZEALAND EXPEDITIONARY FORCE IN EGYPT AND THE  
DARDANELLES, WITH SPECIAL REFERENCE TO THE  
ENTERICA GROUPS, FROM JULY 1915 TO MARCH 1916,

BY FRED T. BOWERBANK, MAJOR, N.Z.M.C.

The extreme importance of Intestinal Disease among the New Zealand troops may be gauged by an analysis of the admissions of New Zealanders to the No.1 New Zealand General Hospital, Cairo, from July 1915 to March 1916.

Before, however, examining this summary, I shall give a short history of the medical arrangements prior to July 1915.

The New Zealand Expeditionary Force arrived in Egypt in December 1914, and consisted of the "Main Body" (8000 men) plus the 1st Reinforcements (2000 men). They were stationed in Cairo until April 1915, their numbers meanwhile having been increased by the 4000 men of the 2nd & 3rd Reinforcements. After the departure of the Expeditionary Force to Gallipoli, Zeitoun Camp became the Base for all fresh drafts from New Zealand. During this period we had neither Stationary nor Base Hospitals, though early in 1915 the Sirdar of Egypt very generously handed over the Egyptian Army Hospital, Pont de Koubbeh, to the New Zealand Government. The Staff, until our arrival in July 1915, consisted of the Senior Medical Officer, Major Byam, R.A.M.C., with R.A.M.C. & N.Z.M.C. Medical Officers and orderlies and a few N.Z.A.N.S. Nurses. When we arrived in Cairo in July, we had the establishment of a two hundred bedded Stationary Hospital, the No.1 New Zealand Stationary Hospital, which had



arrived about a month earlier being stationed at Port Said. We immediately took over the Pont de Koubbeh Hospital, retaining only Major Byam who was acting in the interests of the Egyptian Army, and who was invaluable to us in every way, and the twenty-five Sisters and Staff Nurses of the N.Z.A.N.S. The Hospital was designed to accommodate two hundred and fifty patients, but owing to the excellence of the latrine arrangements etc. we were enabled to increase our bed accommodation by making use of the wide balconies and by the erection of E.P.I.P. Tents etc., and within less than five weeks after our arrival we had accommodation for eight hundred patients. In Sept. 1915 our bed accommodation was increased to nine hundred, and in January 1916 we were definitely established as a thousand and forty bedded Hospital (under the 1915 War Establishment).

Appendix 1, Chart A, gives the Daily Bed State and Weekly Admission Rate. This digression is important, as it explains the absence of Records during the period December 1914 till June 1915, but during this period only a small percentage of the New Zealand sick and wounded were admitted to the Pont de Koubbeh Hospital. For some months after our arrival the number of sickness and casualty cases from Gallipoli was so great that a proportion (which became less and less) of the New Zealanders was sent to Alexandria, Malta and England, though many of these were later transferred to us for Boarding and grading purposes.

The foresight of the D.M.S., Egypt, in establishing a central Pathological and Bacteriological Laboratory in Cairo was invaluable to us, as our own Bacteriologist did not arrive till October.

After his arrival, however, we were able to improve our arrangements for the examination of Blood, Faeces, etc., with the result that the Bacteriological records reached a very high standard.

AN ANALYSIS OF THE ADMISSIONS FROM INTESTINAL DISEASES FOR THE PERIOD JULY 1st., 1915 TO MARCH 31st., 1916.

During this period we admitted a total of 6,836 patients from all causes. Of these:-

DISEASES OF THE ALIMENTARY SYSTEM:- 2524 or 36.9%

(a) The Enterica Group	accounted for	489	or	7.2%
(b) The Dysentery Group	" "	188	or	2.7%
(c) Infective Enteritis	" "	968	or	14.2%
(d) Catarrhal Jaundice	" "	328	or	4.8%

(e) The balance consisted of Gastritis, acute and chronic, and Debility after Intestinal Disease, and accounted for 8%. The latter were patients who were admitted with this diagnosis and in whom there were then present no signs or symptoms of active Intestinal Disease, but only a history of previous Diarrhoea. For the monthly incidence of each of the four chief Intestinal Diseases see Appendix 2, Chart B. For a comparison of these with the monthly incidence of admissions to the Medical Division for sickness due to other causes see Appendix 3, Table A.

During August, Infective Enteritis was at its highest point, falling at first rapidly and then more gradually, with the exception of a slight rise during December. This rise was caused by the reception of the slightly sick from Gallipoli prior to the withdrawal of the troops.

A great proportion of these patients (December) stated that when they paraded sick in Gallipoli they were immediately "Passed down" to the Beach. At the time we wrongly interpreted this as a preparation for a big attack.

THE ENTERICA GROUP showed the greatest incidence in August and gradually fell each month, the apparent increase from November to February being due to transfers of convalescents from Alexandria and Malta. Of the 93 cases of Enterica admitted in January, 66 were transfers.

THE DYSENTERY GROUP admissions were highest in August and gradually fell until March, the apparent increase in January being due to the transfer of 28 convalescent Dysentery patients from Alexandria.

X CATARRHAL JAUNDICE, on the other hand, was lowest in August and was at its height during December and January. In other words, the Jaundice figures followed the thermometer, increasing in the colder weather and disappearing in the hot summer. The possible causal relationship of this disease with Infective Enteritis and the Enterica was considered, but no evidence could be adduced of any common factor. In spite of the large number of cases of Infective Enteritis in August 1915, the monthly incidence of Jaundice during that and the following month did not rise over nine cases, while the steady rise in the Jaundice figures during the three winter months was contemporaneous with a steady fall in the figures from Infective Enteritis.

ANALYSIS OF CASES BOARDED TO NEW ZEALAND.

An analysis of patients boarded and discharged to New Zealand from August 1st. 1915 to June 19th 1916.

Appendix 4, Table B, gives these in detail.

During this period 1445 patients from all causes were discharged to New Zealand, out of a total of 6,836 admitted up to March 31st., being 21.1%. (The admissions during April and May were few in number and negligible, owing to the New Zealand troops having embarked for France in April).

INTESTINAL DISEASES accounted for .. 506 or 35.7%

Of these, (a) the Enterica Group accounted for .. .. 362 or 25%.

One reason for this very large percentage was the regulation brought in in August 1915, and to which I refer on page 31 .

(b) The Dysentery Group accounted for .. .. 76 or 5.3%

A number of Dysentery cases were, however, sent to England, i.e., 22, and the balance during the winter months to Cyprus and Luxor.

(c) Infective Enteritis accounted for only .. 34 or 2.3%

and these were boarded on account of persistent and irregular Diarrhoea and Disordered Action of the Heart.

ETIOLOGY.

Much has been written on the causes of the various Intestinal Diseases from which the troops, and the New Zealanders in particular, suffered, but no reference has been made to what I consider the most important, viz.- The widely different conditions met with in Egypt as compared with

life in New Zealand. New Zealand has an equable climate, it is sparsely populated and it has few factories, the industries being practically wholly concerned in the export of farm produce. Consequently, congestion and overcrowding in the towns is practically unknown. Poverty, in the Continental sense, does not exist, and even the poorest classes are accustomed to a fresh and wholesome dietary. The rigid inspection of foodstuffs has reduced adulteration, which in Egypt means contamination, to a minimum. In a sense, this was a handicap to the New Zealanders, as the very conditions of life and hygiene which had produced men of a physique equal to any troops in the world, rendered them less resistant under the laws of acquired immunity to the contaminated food of Egypt. The sanitation of the camps was certainly good, but in the immediate vicinity there were native villages which were filthy to the last degree, and the inevitable and most justly maligned fly was in evidence everywhere, as these native villages were most ideal breeding places for these filthy and deadly pests. At the Pont de Koubbeh Hospital every precaution was taken to protect or burn all garbage etc., and yet we were periodically visited by swarms of flies.

In spite of repeated warnings and orders by the Military Authorities, the soldiers were extremely careless in their choice, not only of the numerous eating houses which abound in Cairo, but in the food and drink which they partook of there. Though they were in every sense keen to become efficient as a fighting force, their utter disregard of all warnings regarding the



dangers lurking in the average Cairo Restaurant was lamentable. I quite acknowledge that such conditions did not exist on the Peninsula, but a large number of the men who went over to Anzac were suffering from varying degrees of Intestinal Disease, and with the advent of the fly (there were no flies on Anzac for a short time after the troops landed) and the conditions prevailing in the matter of sanitation during the first three months, the spreading of disease was inevitable.

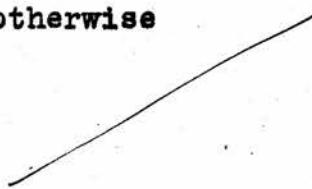
About the end of September we received a convoy of British sick from Suvla Bay, portions of regiments from Manchester and Glasgow. In physique and physical fitness they were much inferior to the New Zealand troops, but they were practically all factory hands and had lived all their lives in congested districts, and compared with New Zealand, unhealthy surroundings. It is noteworthy that though practically all were medical cases, only 20% were suffering from Enteritis, and this in a milder degree than the New Zealanders who were being admitted about the same time, and enquiry as to a previous history of Diarrhoea elicited that but few of those suffering from other complaints had had any Diarrhoea. As I have stated above, it was the exception to find a New Zealander who did not give a previous history of Diarrhoea, whatever the complaint he might be suffering from when admitted.

Again, of 255 cases of Dysentery admitted to the No.5 Indian General Hospital, Alexandria, to October 1915, the vast majority came from Gallipoli. The mortality among these Indians

was nil, and the type of cases was, generally speaking, of slight severity. In a considerable number the symptoms were so mild that rest, Castor oil and Salines, and appropriate diet was all the treatment required. Only 15 cases or 6% were severe.

Of 660 cases (direct admissions) of Enterica and Dysentery at the No.1 N.Z. Gen. Hospital, 33% to 40% were severe, and the mortality was 2.5%.

It was our experience that in the more serious Intestinal Infections, the prognosis was much more grave if the patient were wounded. Many of the cases of Dysentery and Enteric appeared to date from the time of injury, probably owing to decreased resistance through exposure, shock and loss of blood, and these cases were more refractory to treatment, symptoms were more severe, the disease ran a longer course and in some cases death occurred in patients who would otherwise have been expected to recover.



NOTES ON THE ENTERICA GROUP.PROPHYLAXIS:-

In the New Zealand Camps and in Egypt, the Military Authorities were alive to the dangers of Enteric Epidemics such as devastated the troops in previous wars, and all precautions were taken, both in camp sanitation and in the supervision of water supplies and food. In view of these facts, it is difficult to understand why more importance has not been attached to the great danger of "Carriers". It is, of course, impossible, practically, to examine the stools of all recruits, but it would be quite feasible to examine periodically, the faeces of all Regimental cooks.

(All cooks and cookhouse fatigues were paraded daily by the Sanitary Officer of the day, but it was merely a cursory examination and no attempt was made to place under special observation any men connected with the Cookhouse who paraded sick.)

A soldier who has once been diagnosed as suffering from one of the Enterica Infections is not permitted to return to duty for several months, and until repeated examinations have been made, and yet a cook may have a mild attack of Paratyphoid A, which is diagnosed as Influenza, and return to duty to infect the food of hundreds of soldiers. By the periodic examination of all military cooks, the danger of failing to diagnose a mild Enteric attack would be thereby reduced to a minimum.

PROPHYLACTIC INOCULATION:-

The D.M.S., New Zealand, Colonel Purdy, recognised the necessity for systematic and

universal inoculation, and it was largely due to his advice that the New Zealand Government made prophylactic inoculation against Typhoid Fever compulsory, but unfortunately many men had been attested before this regulation was embodied in the Attestation Form. Unfortunately, <sup>too</sup> little was then known of Paratyphoid A. & B. as a potential source of danger, these diseases being considered and referred to in even the up-to-date text books as mild types of Enteric Fever, similar in many respects to Typhoid Fever but of minor importance. Many of the cases of Paratyphoid A treated in the N.Z. Hospital were severe, and although the mortality rate was nil, the wastage can be realised by the following extract from the Report of our Bacteriologist:- "The incidence of Paratyphoid A. & B. varied at different periods and places, and since October 1915 the results obtained in Cairo, and in particular among N.Z. troops at the N.Z. General Hospital, show that Paratyphoid A was by far the most frequent cause of Enterica, constituting in the case of our Hospital over 80%." Of the 93 cases in which the causative organism was isolated 88 or 92.4% were due to Paratyphoid A. & B. The Main Body and 1st Reinforcement Draft which left New Zealand in October 1914, were not inoculated until they were nearing Egypt, but all later drafts up to the 9th Reinforcements, were inoculated within a short time after going into training at Trentham Training Depot (N.Z.). Owing to the interference with training due to the effects of the inoculation, later drafts have been inoculated on the Transports after leaving New Zealand. During my period of training at the Trentham Training Depot, I

See cases  
Murray 2.  
Clark 3.

assisted in the double inoculation of about six thousand men, and it is interesting to note that in only one case did a man refuse inoculation. A few days of sanitary duty, however, converted him to the great advantages of prophylactic inoculation.

Serious after effects were practically unknown, and it was rare for a soldier to be off duty longer than forty-eight hours.

#### IMMUNITY CONFERRED BY N.Z. VACCINE.

Shortly after our arrival in Egypt in July 1915, a Commission which had been sent out from England to Egypt and the Dardanelles, issued a report in which they condemned the New Zealand Vaccine and recommended that all N.Z. troops should be re-inoculated with the R.A.M.C. Vaccine. The following is an extract from the Report of the Advisory Committee for the Prevention of Epidemic Disease - Mediterranean Exped. Force.

#### \*ANTI-TYPHOID INOCULATION.

In one of our earliest enquiries (report on Cairo, 10th August, 1915) we were struck by the severe type of Enteric Fever amongst the cases who had been inoculated in New Zealand. We were informed that these inoculations had been made with a vaccine prepared from a culture obtained from a bone abscess of some 14 years duration (i.e. an enfeebled strain of organism) and had given rise to little or no reaction.

We therefore recommended that it would be a wise precaution to re-inoculate the New Zealand troops with a stronger vaccine such as used by the Home Army.

In a report on Camps in Alexandria, Oct. 5th, it was again noted in connection with certain



Camps (Sidi Bishr & Zahriah) where there had been a considerably increased incidence of Enteric Fever cases, that a relatively large proportion of the cases of Typhoid had occurred amongst the New Zealand troops. We found that the exceptional prevalence and severity of Enteric Fever amongst New Zealand troops was fully realised also in the Hospitals at Mudros. ✓

Returns have been kindly furnished to us, at our request, by the Record Office of the New Zealand Forces relating to the incidence of Enteric amongst their troops. These show that no fewer than 453 cases of Enteric Fever had been reported to have occurred among the New Zealand troops in Egypt, Mudros and on the Peninsula, since their arrival in Egypt early in the year.

The proportion to strength as compared to that of the British Forces cannot here be given but there is no doubt that the New Zealand incidence has been quite exceptionally heavy. Moreover the Enteric cases in question have shown an exceptional case-mortality (viz. 93 cases out of the 453 cases or a fatality of 20.5 per cent).

This fatality rate may be compared with that of 6.5% for the cases of Enteric in No. 21 Genl. Hospital, Alexandria, in which large numbers of Enteric cases from the British Forces generally have been received. It may be noted, though the figures are small that among 240 New Zealanders who had joined from England and been inoculated there, only three had developed Enteric Fever.

We therefore strongly recommend that all troops coming from New Zealand should be inoculated before leaving or on their passage to Egypt

with an Army strain of Anti-typhoid vaccine.

As regards the troops already out, we understand that inoculations have been or are being carried out among the New Zealanders now in Rest Camps in Mudros. It would be well if the exact position in connection with this re-inoculation could be ascertained so that any gaps in the scheme for general re-inoculation could be filled in as soon as possible.

At present the vaccine used by the Army is, we believe, solely an anti-typhoid vaccine.

Should it be decided to issue a vaccine prepared against Paratyphoid Fever as well as against Typhoid, we think that the double protection should be given to all troops hitherto un-inoculated, or inoculated only with New Zealand strain.

The diseases most prevalent on the Peninsula (including Anzac) at the present time are those due to infections of Intestinal origin (Dysentery, Enteric, Diarrhoea, etc.)

The bulk of the Dysentery hitherto has been Amoebic, the Enteric cases have included a material portion of Paratyphoid Fever. The Diarrhoea cases when not incipient or mild Dysentery or Enteric are attributable to a variety of infections. Any of the ordinary causes of spread of diseases of this group may operate at the front and have to be dealt with by suitable precautions - (see in particular those referred to in section 3 above) and by the supply of necessary wood and other material for latrines and other sanitary requirements."

I have no hesitation in saying that the premises on which this opinion was formed were

incorrect and the conclusions misleading and unjust, and ~~was~~ a grave reflection on the Government Bacteriologist at Wellington, N.Z., who was responsible for the N.Z. Anti-typhoid vaccine.

Firstly:- The immunising power of a vaccine depends entirely on the method of preparation by the Bacteriologist. Although at one time it was considered necessary to use a strain of high virulence, there is no evidence that this is necessary.

In the method approved by the Army Council for use in the British Army, a special strain is used which has lost almost all its virulence, even for animals. Satisfactory immunising power in an Anti-typhoid vaccine, as perhaps in all bacterial vaccines, depends greatly on the method of sterilisation, as heating to a temperature exceeding 54 degrees Centigrade is found to decrease seriously the immunising power, while any method at all of sterilisation by heat diminishes the keeping qualities.

Secondly:- I did not notice any marked difference in the severity of the reaction between those men inoculated six months later with the R.A.M.C. vaccine. In some there was practically no reaction, while in others the reaction was severe. The dosage in each case was the same, viz.- 500 millions for the first dose and 1000 millions eight days later.

Thirdly:- Figures obtained from the Central Pathological Institute, Cairo, for the British, New Zealand and Australian troops, gave an incidence of 7% and for New Zealand troops alone 7.6%.

Fourthly:- Case Mortality. Out of 410 (the remaining 79 were convalescent transfers from other hospitals) cases of Enterica Infection admitted during the period under review, we had only 13 deaths, viz.- 3.1%.

Fifthly:- The figures given by the Commissioners were for the Enterica Group, not for Typhoid, and it is quite acknowledged that our incidence from the Paratyphoids was extremely high.

The following analysis of 303 consecutive cases admitted to and treated in the New Zealand General Hospital, was prepared by Capt. Armitage the Bacteriologist, and not only proves the incalculable benefits of Prophylactic Inoculation, but also settles once and for all the charges brought against the immunity conferred by the N.Z. vaccine.

INCIDENCE.

Total cases examined	303
Causative organism isolated in	93 - 30%
Total examinations made by culture	1160

Of the 93 cases in which the organism was isolated there were due to -

TYPHOID	7 = 7.6%
PARATYPHOID A.	75 = 80.6%
" B.	11 = 11.8%

The figures given in a recently issued memorandum of the combined results of the Laboratories of Cairo, Alexandria and Mudros, of the examinations of British, Australian & N.Z. troops gave:-

TYPHOID	11%
PARATYPHOID A.	44%
" B.	45%

The latest return I have of the figures obtained at the Central Laboratory for all the Military Hospitals of Cairo are:-

TYPHOID	7%
PARATYPHOID A.	69%
" B.	24%

The results obtained at Alexandria and Mudros show a much higher percentage of Paratyphoid B. namely 45%, as against 11.8%, and a little higher Typhoid, viz.- 11% as against 7.6%. The incidence of Paratyphoid A. and B. varied at different periods and places, and since October 1915 the results obtained in Cairo, and in particular among N.Z. troops at the N.Z. General Hospital, show that Paratyphoid A. was by far the most frequent cause of Enterica, constituting in the case of our Hospital over 80%. The amount of Typhoid compares favourably with the incidence in British and Australian troops, being 7.6% of the total Enterica cases.

The diagnosis of the N.Z. General Hospital cases quoted as positive were restricted to those in which the causative organism was isolated, opinions formed from Agglutination Tests not being included.

<u>PLACE OF ORIGIN.</u>	<u>Total</u>	<u>Due to</u>		
		<u>Typhoid</u>	<u>Para A.</u>	<u>Para B.</u>
From Gallipoli	151	4	34	1
From Egypt	152	3	26	10
	<u>303</u>	<u>7</u>	<u>60</u>	<u>11</u>

Our cases came in practically equal numbers from Egypt and Gallipoli respectively, with the exception of the Paratyphoid B. of which 10 out of 11 originated in Egypt.

ANTI-TYPHOID INOCULATION of the 303 cases of Enterica:-



140 = 46.2% had been inoculated against Typhoid with N.Z. Vaccine only.

149 = 49.1% had N.Z. vaccine and were re-inoculated with R.A.M.C. vaccine.

2 = 0.7% had never been inoculated at all.

12 = 4.0% had no record.

Of the 7 TYPHOID CASES:-

2 Had been inoculated with N.Z. vaccine only.

3 Had N.Z. vaccine and had been re-inoculated with R.A.M.C. vaccine.

1 Had the initial dose of N.Z. vaccine only.

1 Had never been inoculated at all.

Four cases of Enterica in patients who had been inoculated with Typhoid and Paratyphoid vaccine showed one Typhoid, one Paratyphoid A. and two undiagnosed.

Unfortunately, 12 cases from Gallipoli had no record of inoculation, their <sup>RE</sup> were no entries in their paybooks, and the Medical History Sheets were not accessible.

The great majority of the 303 cases undoubtedly were Paratyphoid, and against this neither the N.Z. nor the R.A.M.C. Anti-typhoid vaccine could afford any protection; but with regard to the Typhoid cases the figures indicate that whatever may have been the protection afforded by the N.Z. vaccine, the R.A.M.C. vaccine afforded no appreciably better result.

In short, our men were successfully inoculated against Typhoid, the incidence of that disease under perfectly appalling conditions was extremely low. The men were not inoculated against Paratyphoid until November and December 1915, with the result that we had a great number of cases up to that date but so few since that Enterica infection has become of quite minor importance.

MORTALITY.

The small percentage of Typhoid cases and extraordinarily low mortality speak volumes, both for the protection afforded by inoculation and for the treatment, and it is only reasonable to assume that but for efficient Anti-typhoid inoculation, the incidence of Typhoid would have been as great as Paratyphoid, with a proportionately high mortality.

THE COURSE OF THE DISEASE AS MET WITH IN EGYPT.

A general survey of the different types of Enterica diagnosed as such, emphasises the importance of Bacteriological examination; not only in all cases of Pyrexia of unknown origin, but more particularly in the differential diagnosis of the diseases under review. This, however, will be considered later under Differential Diagnosis.

Attached are a number of selected Case Sheets and Temperature Charts illustrating the signs and symptoms of interest met with and specially referred to in this section.

INCUBATION PERIOD:- Information on this is valueless, as even close enquiry from those of our own unit who contracted the disease failed to give any indication of the interval between the infection and the period of invasion. Only four of the Staff, numbering about 300, (this includes reinforcements and Officers, Nurses and men who were temporarily attached) contracted Enteric Fever during nearly twelve months in Cairo, and this I attribute to their better education on medical matters and their realisation of the dangers of indiscriminate eating and drinking.

SIGNS & SYMPTOMS DURING THE FIRST WEEK OF THE DISEASE.

THE PERIOD OF INVASION I wish to emphasise, as it differed very considerably from the classical type. In all cases it was considerably shortened, and in the great majority the onset was sudden - the patient on admission giving a history of three,

Appendix. Case. four, or five days illness, which commenced with

Putsey	1	
Booman	4	Diarrhoea, headache, malaise, etc, This sudden
Clarke	3	
Murray	2	onset was especially noticed in Paratyphoid Fever.
Slylop	6	



Tenderness of the Splenic Flexure and the Spleen, elicited by deep palpation, was unusual, though occasionally noticed. Pain & tenderness on palpation in the right Iliac Fossa was, however, also extremely common in the Dysenteries and in Epidemic Enteritis.

SORE THROAT was common, the fauces and pharynx being congested. It was, however, more common in Paratyphoid Fever.

COUGH was a by no means unusual symptom in the Typhoid cases, but only occasionally in the Paratyphoid. The physical signs were a few scattered rhonchi only, although in a few cases Broncho-Pneumonia supervened.

Case. JAUNDICE in the early stage and on admission was uncommon, though in a small proportion there was a history of previous jaundice, e.g. one or two weeks before the onset of the illness. The pulse, even in the early stage was slow, though it was not so characteristic as later (see 2nd week).

TEMPERATURE:- The degree of Pyrexia on admission was very variable, was of little value, and was no indication of the severity of the disease. In the most minor complaints, a temperature of 100° and 101° was very usual, a condition naturally due to the climate.

SIGNS & SYMPTOMS DURING THE SECOND AND THIRD WEEK

OF THE DISEASE:- These were so extremely variable, especially in the Paratyphoids, that I shall <sup>emphasise</sup> refer to those signs and symptoms only which differed from the classical types met with in temperate climates.

Appetite was poor or absent at first, the tongue was furred and moist, though later covered with dry brown sordides. The abdomen was

Case.

5

isso

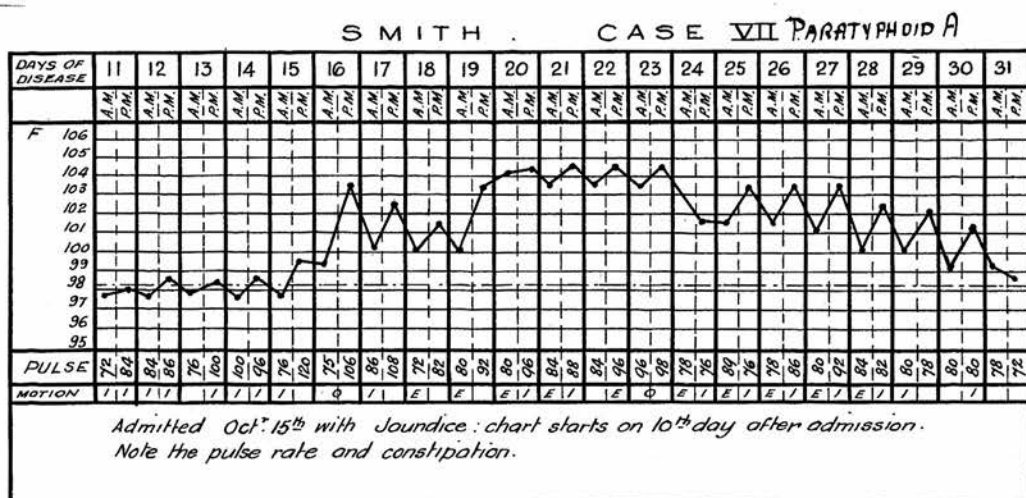
Smith 7  
Thompson 8



tumid, and on palpation "doughy" and tender. The abdominal reflex was nearly always absent.

Constipation:- was present in 85 to 90% of all cases of Enterica Infection. This was especially interesting in view of the fact that two and even three motions per day was the rule in patients suffering from other diseases, Jaundice being the only exception. Even in normal health it was the exception to find a man suffering from Constipation. The characteristic "pea soup" motion was therefore uncommon, although the faeces was frequently of a yellowish colour. The measures adopted to combat this persistent constipation are referred to under Treatment.

Case.  
pping 16  
cketts 13  
ith 7



Enlargement of the Spleen was met with in only about 60% of the cases. Where present it was usually first noticed about the end of the second week.

The Typhoid Rash was frequently absent, e.g. in about 50%, and usually only two or three of the characteristic "rose" spots would appear well on in the disease. In three cases, however, (two of which were Paratyphoid A) a profuse Typhoid Rash distributed over the trunk and face, appeared about the end of the first week. In these cases the spots were larger, more raised, a deeper red

Case.  
pping 16

than the typical Typhoid spots, and tended to run into one another, producing a "blotchy" appearance not unlike measles.

The Typhoid state varied greatly in degree, and depended on the severity of the attack. In Paratyphoid Fever, however, it was much less marked and very frequently absent, the patient being mentally alert and answering questions readily and promptly.

Headache:- A characteristic dull pain usually occipital, but extending to <sup>the</sup> front in many cases. The more grave cerebral symptoms were occasionally met with, and the Maoris were peculiarly prone to them.

Insomnia, however, was a frequent symptom (see Treatment).

The Pulse, during the stage of Fastigium and usually throughout the disease, was almost

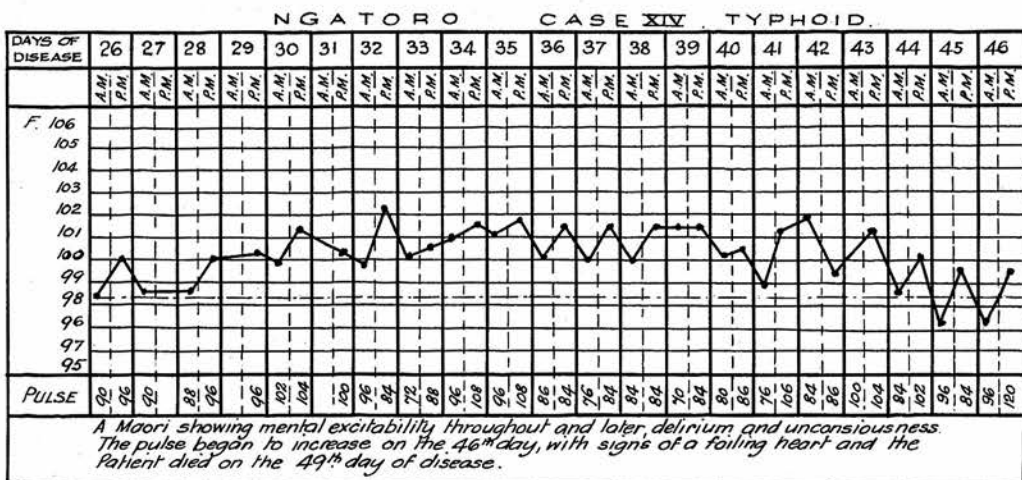
invariably slow, and was probably the most consistent and important sign. Even in the severe cases this "slowness", which did not correspond with the rise and fall of the temperature, was characteristic during the early days of the disease and no anxiety was felt until the pulse began to "run up". In probably the most serious case we had, which recovered, the rate of the pulse did not rise above a hundred until 14 days after admission or 16 days

after the onset.

Case.  
Tolly 15  
atoro 14  
pping 16  
rray 2

Case.  
Lacey 12

Case.  
cketts 13



In the preceding case, Pte. Ngatoro, in which the patient died, and post mortem showed the characteristic Typhoid ulcers, the pulse though quicker than usual, did not appreciably increase in rate until three days before he died, i.e. in the forty-fifth day of the disease. The temperature, which was at its lowest on the twenty-second day of the disease, gradually rose again, indicating recrudescence, though as I have mentioned, the pulse did not vary. Associated with this slow rate was a varying degree of dirotism, though otherwise the pulse was normal.

Temperature:- In very few cases did the

Case.

ook

9

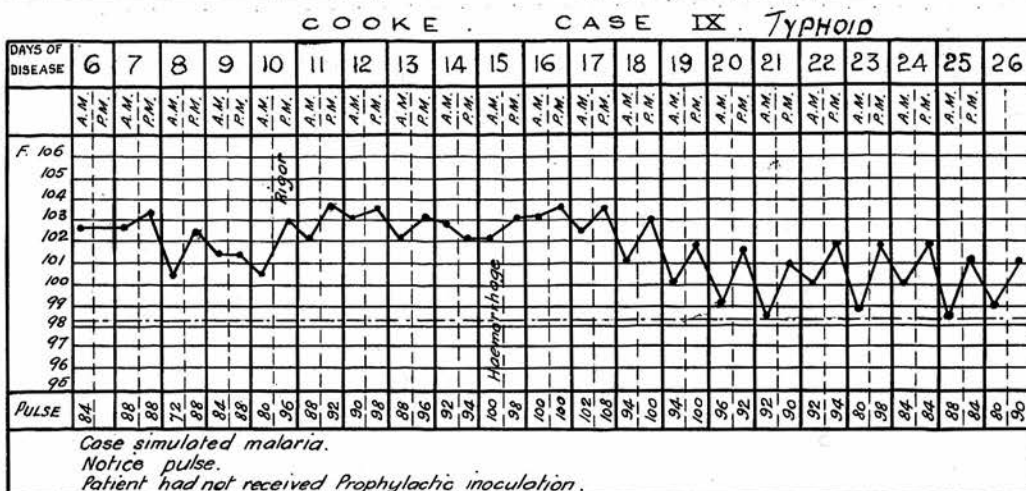
temperature conform to the classical type, even in those Enterica in which there had been no previous inoculation. In some cases it fell to

Case.

olton

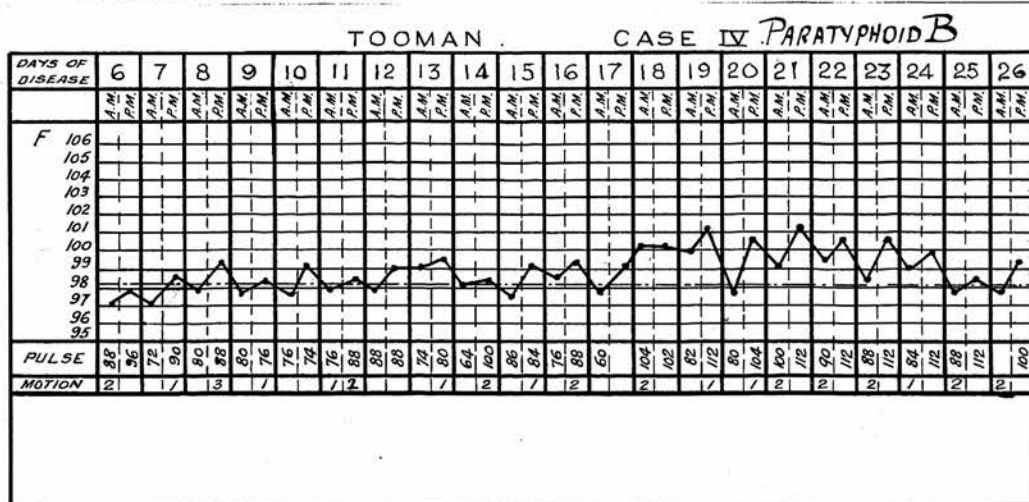
10

normal one or two days after admission. In the majority, owing to the comparative suddenness of onset, the disease was well advanced and the patient was in the second or third day of what is termed the Fastigium. This stage was variable and lasted from one or two to eight or ten days. Towards the end of the second week the temperature gradually fell to normal, though it was not at all unusual to have relapses and recrudescences.



Kelly Case. 11

After the temperature had fallen to normal it usually swung for a varying time, even after the patient was "up" and on ordinary diet. In some of the cases where the temperature remained swinging, the patient was kept in bed and his diet considerably reduced, but with no appreciable effect on the irregular temperature. Examination, both chemical and bacteriological, of the faeces and urine in these cases practically always gave negative results.



Bronchitis, which I have already alluded to as a not infrequent precursor, usually persisted, and in the more severe cases went on to Broncho-Pneumonia.

COMPLICATIONS were comparatively few, and with one exception, similar to that met with elsewhere.

Broncho-Pneumonia.

Hypostatic Pneumonia.

Case. 17

Endocarditis. Haemic bruits were not uncommon, but could hardly be looked on as a complication.

Haemorrhage from the Bowel.

Perforation of the Bowel. We had three cases only, and all died. In one case an operation was performed and the bowel resected, but the patient



died about twelve hours later.

Case.  
Lloyd 18

Phlebitis.

Jaundice.

Bond 21

Dysentery, Amoebic & Bacillary.

Watson 17

Sparrow 19

Diphtheria. Two cases, one of which died.

Grace 20

Abscesses were very frequent, were usually

superficial, and due to Paratyphoid B. infection,

herland 24

Haenga 22

except one most interesting case, viz. that of

a Maori named Haenga (Case 22) who was admitted

with an abdominal tumour in the Umbilical region

and extending up and to the right. It was diag-

nosed by Lt-Col. Barnett as a Hydatid abscess of

the Liver (Hydatid disease being very common in

New Zealand). A vertical incision splitting the

right Rectus exposed a cyst, not very tense and

with roughened surface. A large trocar was

inserted and pints of a brownish pus drawn off.

Then incision and exploration. Not Liver but

probably Pancreatic was the conclusion at the time,

but an examination of the fluid by Capt. Armitage

showed that it had no Proteolytic or Amylolytic

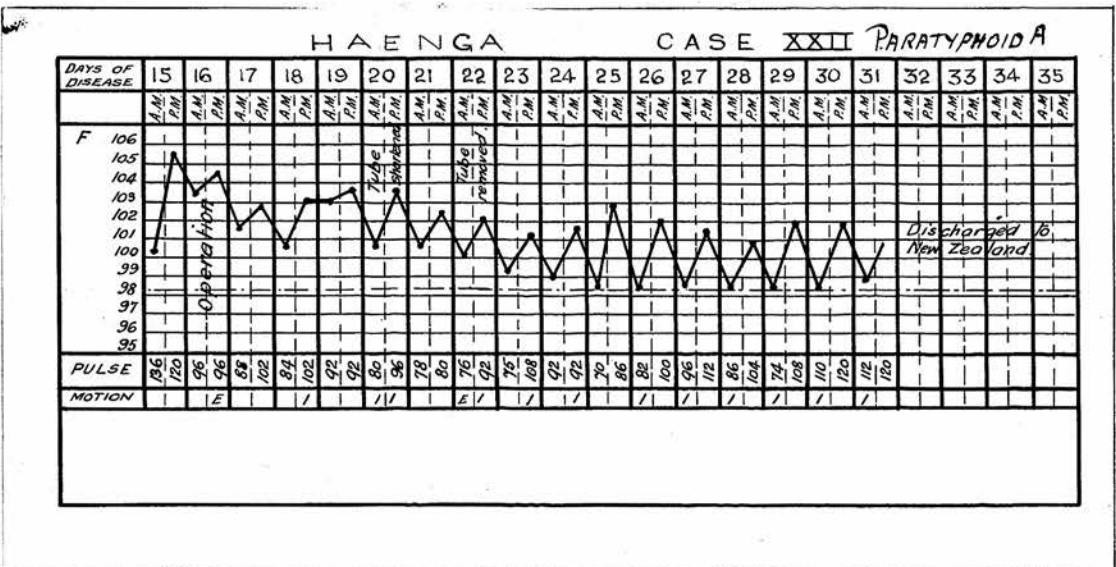
action. It appeared to be degenerate pus. Cultures

settled the whole question, however, by giving a

pure growth of Paratyphoid A. The patient made

an uninterrupted recovery and was discharged to

New Zealand.



DIAGNOSIS:- Diagnosis of the Enterica Group, on admission and even during or after the first day or two, was extremely difficult. The majority were walking cases, no notes whatsoever accompanied them, and they were usually labelled "Enteritis", "Diarrhoea", "Influenza", "Sore Throat", "Bronchitis", etc. This is in no sense intended as a reflection on the Medical Officers at the local camps or Field Ambulances, as I realise the very adverse conditions under which they were working, and the lack of facilities for observation. It would have been better, however, had such cases been diagnosed as "Pyrexia of Uncertain Origin" instead of diagnosing them from a prominent symptom. As this fanciful nomenclature was so common, it was our rule to accept for record purposes only the diagnosis of the Medical Officer in charge of the case. A provisional diagnosis was sent down to the office by the Medical Officer immediately after he had examined the patient, and was corrected or confirmed as soon as the diagnosis was definitely arrived at. As the different types of Enterica so closely resembled one another, the provisional diagnosis was therefore simply "Enteric Fever" and this it remained until a Bacteriological report which gave a positive finding was received. The clinical diagnosis was based on the symptoms and signs enumerated above. The diseases for which it was most commonly mistaken were, Sun or Heat Stroke, Influenza & Respiratory Catarrh, Enteritis, Dysentery and Malaria. We did not have a case of either Typhus Fever or Relapsing Fever, though we were on the lookout for both owing to their prevalence in the Eastern Mediterranean .



The Enterica differed from:-

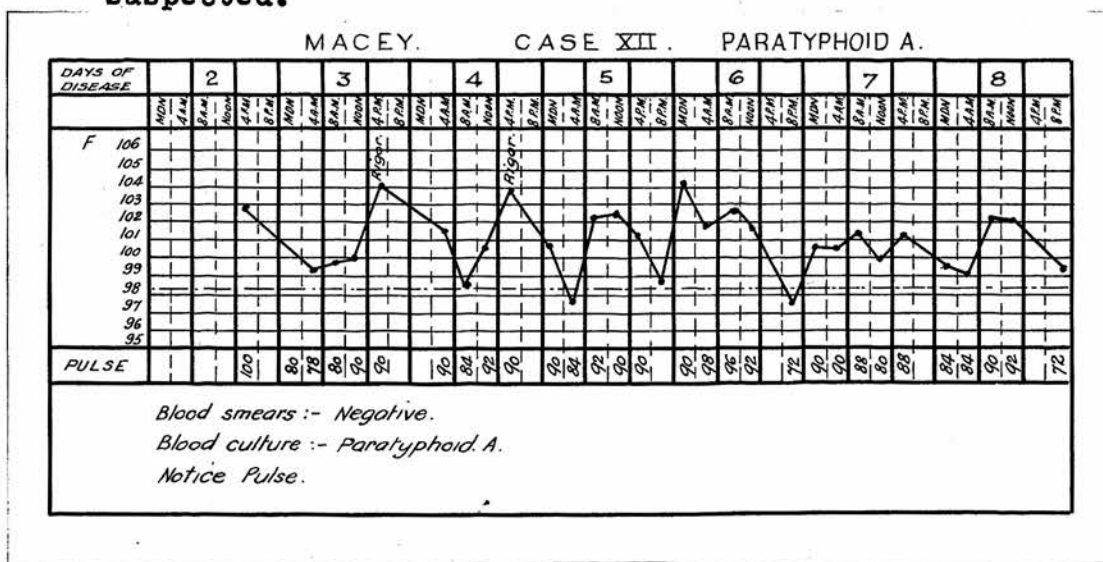
- (1) Heatstroke in history of onset, slow pulse and continued temperature <sup>of moderate degree</sup>, and comparatively cool moist skin.
- (2) Influenza & Respiratory conditions by the general malaise, pulse, tumidity and tenderness of the abdomen. I have elsewhere mentioned Bronchitis as an early and by no means infrequent symptom, but after 24 to 48 hours the fact of this being only secondary was clearly established.
- (3) Infective Enteritis by the general malaise, increased and increasing temperature, especially by comparison with the slow characteristic pulse, the comparative and often marked Constipation, and the Splenic enlargement and Rash when present in the middle and later stages. Diarrhoea was, however, such a common precursor, that in the early stages it was often very difficult to eliminate "Infective Enteritis" with any degree of assurance.
- (4) Dysentery. This was easily distinguishable, but a small proportion of the cases were affected by both diseases, Enteric usually showing its characteristic signs and symptoms and being diagnosed as such, after treatment for Dysentery. In a few cases, however, Dysentery developed as a complication of Enteric Fever, but in these cases the Enteric Fever had already been diagnosed and the presence of the characteristic signs and symptoms of Dysentery rendered the diagnosis easy, nor could it be mistaken for haemorrhage from the bowel ~~resulting from perforation of~~ an Enteric ulcer.
- (5) Malaria, which was somewhat difficult in only two cases. In one the patient (Capt. Cook Case 9) was admitted from Zeitoun Camp with the

Case.  
lowe 23

Case.  
Bond 21

Case.  
Cook 9  
Cecy 12

diagnosis of Malaria, with a history of Malaria in East Africa and a short history of his illness previous to admission which accompanied him, pointed to Malaria. Examination of blood smears, however, was negative, and after 48 hours the diagnosis was changed. This was confirmed by the blood culture being positive to Bacillus Typhosus. This case is interesting, in that he had had no previous inoculation against Typhoid. The possibility of a double infection was suspected.



(6) Cerebro-Spinal Meningitis. One case simulated

Case.

Murray 2

this disease so closely in the early stages that an intra-theccal puncture was made.

(7) As regards the Differential Diagnosis of

Typhoid Fever, Paratyphoid A. & B., I must confess that we depended entirely on the Bacteriological finding, although when making the diagnosis of Enteric it was common to put in brackets Typhoid or Paratyphoid with an interrogation mark.

Certainly the Paratyphoids as a class were milder than Typhoid, and I have mentioned a few symptoms which were common to each, but there were very

Case.

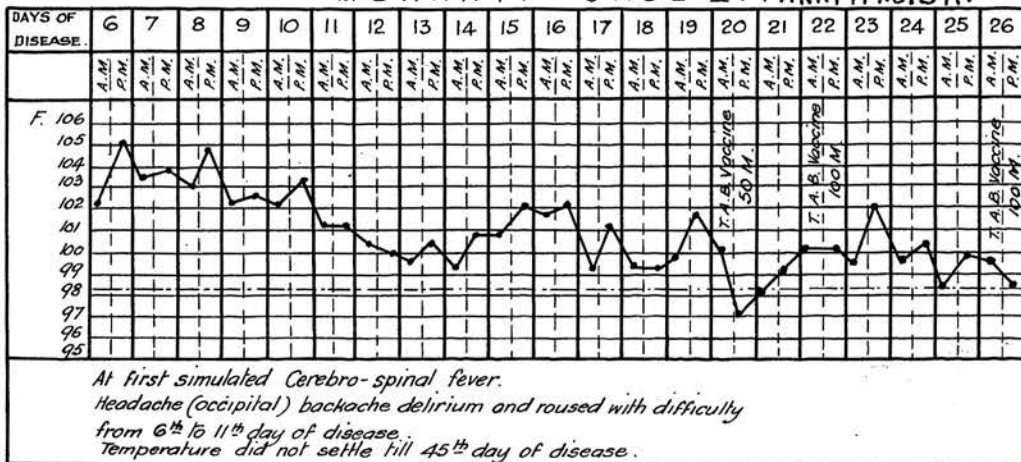
Murray 2

Masso 5

Opping 17

many cases which equalled in severity that of Typhoid and were indistinguishable clinically.

## MURRAY. CASE II. PARATYPHOID A.

THE DIFFERENTIAL DIAGNOSIS OF TYPHOID AND PARATYPHOIDA. & B. BY BACTERIOLOGICAL EXAMINATION:-

I have already referred to the great importance attached to the Bacteriological examinations, not only in the mild and aberrant types but for the purpose of differentiating between Typhoid, Paratyphoid A. & B.

If, on examination, the patient presented the signs and symptoms of Enteric, or if the Medical Officer was unable to definitely eliminate Enteric, 5 c.c. of Blood (later increased to 10 c.c.) were withdrawn from a vein (the Median Basilic usually) and run into a tube containing about 10 c.c. of sterile Bile. At the same time 2 c.c. were introduced into a Widal pipette. These were sent to the Central Laboratory, Cairo, together with a report form containing the patient's number, name, dates of prophylactic inoculations, and any brief notes deemed necessary.

N.B. The Central Pathological Laboratory, Cairo, was taken over by the D.M.S. in August 1915, firstly for the purpose of standardising the results of the various military hospitals in the Cairo District. It was satisfactory from that point of view, though owing to the large number of specimens sent in from the different hospitals

there was frequently some delay in receiving reports. Secondly, because of the impossibility of equipping the various hospitals with Laboratories, appliances and Bacteriologists.

After an interval of 10 to 14 days, specimens of faeces and urine were sent of all cases in which the report was positive, and also in those cases in which the report was negative but where the clinical signs and symptoms still suggested Enteric Fever. After a further 8 to 10 days interval, more specimens of faeces and urine were sent if deemed advisable. If, however, the specimen of faeces or urine proved positive, an interval of a few weeks was allowed, usually after the temperature had settled to normal. This was followed by two more specimens at intervals of a week, until three consecutive negatives of Faeces and urine had been obtained. The reasons for so many examinations were two:- Firstly, because it was found that a case might not be "proved" to be Enteric until several specimens had been examined (see later "Relative importance of different bacteriological methods"). Secondly, in July or August 1915, orders were issued as a result of the recommendation of the Special Commission sent out to Egypt, that all cases diagnosed as Enteric, whatever their degree of severity, and even if the diagnosis was only made on the clinical signs, should be sent back to their port of embarkation. This rule, though good theoretically was bad practically, as it meant the invaliding to New Zealand for a period of from four to six months, with consequent wastage to the fighting force, of a large number of men who had only suffered from a mild attack, who were in every

way physically fit, who were not "Carriers", and who, moreover, were now practically immune to at least one of the Enterica. However, as a result of strong and continued representations by the Deputy Director of Medical Services for the N.Z.E.F., this order was cancelled, and the following orders came into force in January, 1916:-

(1) "ENTERICA.

In order to bring the examination and diagnosis of Enteric cases into conformity with the new order of Jan. 26th 1916 issued by the D.G.A.M.S., the following regulation will take effect forthwith:- All cases admitted to the Hospital with a positive or provisional diagnosis of Enteric (including Paratyphoid) and all cases developing symptoms of Enteric subsequent to admission for other causes, must have specimens of faeces and urine sent to the Laboratory for examination for Typhoid and Paratyphoid at the earliest possible opportunity. Two further specimens of each must be sent in at intervals of not less than three days unless a positive diagnosis is arrived at.

N.B. As hitherto, if the case be of not more than fourteen days duration, a blood culture must be sent in immediately on admission; the faeces and urine examination being postponed.

This regulation includes all convalescent Enteric cases, whether transferred from other hospitals or originating here.

These examinations include, and are not in addition to, examinations already made in any individual case, in this or any other Hospital.

(Sgd) W.H.PARKES, Colonel.

Feb. 17th 1916.

D.D.M.S., N.Z.E.F. "



(2) "CLASSIFICATION OF ENTERIC CONVALESCENTS."

- |  | <u>Destination.</u>              |
|--|----------------------------------|
| 1. Cases that on clinical evidence are unfit for further service or require prolonged convalescence, whether diagnosed bacteriologically or not: | New Zealand<br>or<br>England     |
| 2. The cases diagnosed bacteriologically as Typhoid or Paratyphoid if subsequently proved "Carriers" if not " " "                                | New Zealand<br>Convalescent Home |
| 3. The cases <u>not</u> bacteriologically diagnosed during the disease as Typhoid or Paratyphoid   |                                  |
| (a) but subsequently proved to be "Carriers"   | New Zealand                      |
| (b) The cases in whom at least three consecutive examinations of both faeces & urine prove to be negative  | Convalescent Home                |

(Sgd) W. H. PARKES, Colonel.

Feb. 17th 1916.

D.D.M.S., N.Z.E.F. "



THE RELATIVE IMPORTANCE OF THE DIFFERENT  
BACTERIOLOGICAL METHODS IN ENTERICA.

A single negative result by any of the above methods was useless, and it was only possible to eliminate with any degree of certainty the bacteriological diagnosis of the Enterica by repeated examinations at definite intervals.

(1) BLOOD CULTURE, FAECES, URINE.

By far the best results were obtained from Blood Culture, 26% being positive, while only 6.3% of Faeces and 2.7% of Urine cultures were successful. Blood culture was not usually attempted in those patients who were in the third or fourth week of the disease when admitted, as we found that after the end of the second week the blood examination gave negative results, whereas the third and fourth weeks were most favourable periods for the growth of the Bacillus Typhosus or Paratyphoid A. or B. from the faeces and urine. In one case, however, it was not until three months after the onset of the disease and after nine negative tests had been made that a positive result was obtained (Musso, Case 5).

Case.

Cook 9

Case.

Kelly 11  
Nutsey 1

In 11 out of 93 cases in which cultures gave a positive result, the first examination of faeces or urine was negative.

(2) WIDAL TEST (Single).

The single Widal and Agglutination test was found to be so unreliable that an order was issued by the D.M.S., Egypt in January 1916 "that specimens of blood for Widal examination will not be sent unless they are asked for by the Laboratory." (See Appendix 5 Instructions).

(3) AGGLUTINATION TESTS BY DREYER'S METHOD.

A series of Agglutination tests by Dreyer's

Method was unfortunately not feasible, owing to the great labour which it would have involved for the very under-staffed Laboratory, but I shall take extracts of a few cases from the report of our own Bacteriologist, and shall also give the procedure recommended at the meeting of Cairo Bacteriologists on March 15th 1916, and adopted by the Medical Advisory Committee for Egypt.

As a means of diagnosing TYPHOID in patients who have been inoculated with anti-typhoid vaccine, the Agglutination Test, even when carried out by Prof. Dreyer's Method, has proved of little value as far as our results go. Of four cases of undoubted Typhoid, as proved by the isolation of the organism, only one gave Typhoid Agglutination, while two gave a Paratyphoid agglutination, and one was negative to all three. The two that gave Paratyphoid B. may have been cases of double infection. In any case, however, thanks to the protection of our troops by inoculation, our cases of Typhoid are too few in number for opinions based upon these few results to carry any weight; but as regards PARATYPHOID infection, the results undoubtedly are of great value provided sufficient estimations are made at suitable intervals till a diagnosis can be arrived at. The method entails considerable delay in coming to a conclusion, and the patients are often convalescent before the diagnosis can be made; but it requires much less work and trouble than isolation of the causative organism, and gives a result in nearly every case instead of in about 30% as in cultures.

The difficulty lies, not in obtaining the results, but in the correct interpretation of them when obtained.

In healthy individuals inoculated against Typhoid, the serum shows a Typhoid agglutination titre varying from nil to 800, with an average of 200. As in many cases of Paratyphoid infection in patients inoculated against Typhoid, there is a temporary rise in the patient's Typhoid agglutination titre before the rise in the Paratyphoid titre takes place; and as such rise in the Paratyphoid titre may not occur till the third week of the disease or later, it is obvious that not only may several estimations of the titre be necessary, but that the findings have to be read with care and judgment in forming a diagnosis.

It is much to be regretted that all our cases could not be worked out by Dreyer's Method, but the enormous amount of work entailed was so great that orders were issued early in January to discontinue agglutination tests and to depend upon cultural methods. From that time, therefore, agglutination tests were made only in selected cases. Now, however, that our troops are inoculated against Paratyphoid as well as Typhoid, the difficulty of interpreting results may still further be increased, and while it is possible that the agglutination test as now elaborated will prove of little value, there has not yet been sufficient experience of the new conditions to justify one in forming any opinion on this point.

AGGLUTINATION TESTS FOR ENTERICA, OF CASES IN

No. 1 N. Z. GEN. HOSPITAL, PONT-DE-KOUBBEH.

<u>WIDALS</u>	<u>TOTAL</u>	<u>TYPHOID</u>	<u>PARA A.</u>	<u>PARA B.</u>	<u>NEGATIVE &amp; DOUBTFUL.</u>
In cases in which causative organism was isolated	46	1	17	6	22
In cases in which causative organism was never isolated	50	2	21	6	21
<u>TOTAL CASES</u> 96	<u>96</u>	<u>3</u>	<u>38</u>	<u>12</u>	<u>43</u>
<u>TOTAL TESTS MADE</u> 170					

Agglutination Tests in 45 cases in which  
the Infecting Organism was Isolated from  
the Blood, Faeces or Urine.

The Agglutination Test agreed with the Bacteriological finding in 24 cases; 1 Typhoid, 17 Paratyphoid A., and 6 Paratyphoid B. These were cases in which, when a negative or doubtful result was obtained, the tests were repeated at intervals until the Agglutinative power was developed and a diagnosis arrived at.

The Agglutination test did not agree in 22 cases. Of these, in 1 Typhoid, 16 Paratyphoid A. and 1 Paratyphoid B. the Agglutination test was negative to all three organisms. In these cases only one test was made, and probably in most of these the test was made too early in the disease, i.e., before the Agglutinating power had developed.

Of the remaining four cases, 2 cases of Typhoid gave a Paratyphoid B. agglutination, a case of Paratyphoid A. gave Paratyphoid B. and a case of Paratyphoid A. was positive to Typhoid, Paratyphoid A. and Paratyphoid B. Any of these may of course have been cases of mixed infection, in which case the result is not so contradictory as at first appears.

Agglutination Tests in 50 cases in which  
the Infecting Organism was not isolated.

Diagnosis arrived at in 29 cases, of which there were 2 Typhoid, 21 Paratyphoid A. and 6 Paratyphoid B.

With regard to the two Typhoid cases:-

CASE 1. At 7 days was negative to Typhoid, Para A, Para B.

At 10 " " " " " " " "

At 18 " gave Typhoid XXXX, Para A.-0, Para B.-0.

CASE 2. At 15 days gave Typhoid XXXX, Para A.-0, Para B.-0.

Twenty-one cases were negative or undiagnosed for want of sufficient estimations. Of these, 5 were negative, 7 gave a trace of Typhoid, and 9 gave varying degrees of Typhoid Agglutination, but not sufficient to justify diagnosis. Possibly some of these were not Enterica at all.

Scheme for the performance of the Agglutination Test in cases of Enterica, as recommended at the Meeting of Cairo Bacteriologists on March 15th 1916, and adopted by the Medical Advisory Committee for Egypt.

Following discussion at Meetings of Bacteriologists in the Cairo and Alexandria area, the following scheme for the performance of Agglutination Tests in cases of Typhoidal disease was recommended to all workers in the Eastern Mediterranean. In view of the complications that might arise in connection with this test owing to previous inoculation with the Triple Vaccine now being issued to the troops, it was considered of great importance that a uniform scheme such as that detailed below should be employed, so as to facilitate comparison between the data gathered by various workers on this subject.

#### S C H E M E .

Materials required:- Small test tubes for Agglutination work.

Formalised emulsions of A, B, and Typhoid.

#### Preparation of Formalised Emulsions.

Tested strains of Paratyphoid A. and Paratyphoid B. and B. Typhosus will be sent to all Laboratories. Strains are grown on ordinary agar slopes (or Roux bottles) for 18 - 24 hours. Each slope is washed off with a small quantity of saline containing 1 in 1,000 Formalin. The thick emulsion resulting,



is centrifuged for a few minutes to deposit any clumps or agar particles. The supernatant fluid is pipetted off and transferred to a large Test tube or flask. Formalised saline is then added gradually till the standard opacity corresponding to about 2,000 organisms per c.c. is obtained. (It is convenient to have at hand a line of print which can be read through a test tube containing the emulsion of 2000 million organisms per c.c. actually counted by Thoma-Zeiss or otherwise. Thereafter it is only necessary to use a test tube of exactly similar dimensions in which to effect the standardisation of the formalised emulsion). These emulsions should be tested before use, with the respective anti-sera and also at the end of a fortnight. They should be discarded after a month's use.

If a large supply is being prepared, a small fixed quantity, e.g. 1 c.c. of the thick emulsion is placed in the Test Tube of standard dimensions and the amount of the formalised saline which requires to be added to give the desired opacity is measured. With this knowledge, the bulk of the thick emulsion can be placed in a flask and the correct amount of diluting fluid added directly.

METHOD:- Blood from finger is collected in a bent capsule, and after clotting, centrifuged so that 3 or more drops of clear serum are available. Use a drop pipette standardised to drop 50 drops of serum to the c.c.

Then 4 drops of serum in 2 c.c. saline will give an initial dilution of 1 in 25. Set up three rows of test tubes, five in each row, A.B.C.D.E., A', B', etc., A'', B'', etc. It is convenient to have in each test tube a total volume of about



0.4 c.c. consisting of bacterial emulsion and serum dilution in equal parts. Use a capillary tube with a rubber teat and fiducial mark delivering a quantity of the order of 0.2 c.c.

Into B, C, D, E, place 0.2 c.c. saline.

Into A, place 0.2 c.c. of initial dilution.

Into B, place 0.2 c.c. of initial dilution, mix thoroughly and remove 0.2 c.c. of mixture into C. Mix thoroughly and remove 0.2 c.c. of mixture into D. Mix thoroughly and remove 0.2 c.c. of mixture into E. Mix thoroughly and discard 0.2 c.c. of mixture. Then to each tube inject 0.2 c.c. of Bacillary emulsion.

Similarly for the other two rows.

Thus get final dilutions of 1 in 50, 1 in 100, 1 in 200, 1 in 400, 1 in 800.

#### READING.

First reading (by eye or lens) after two hours at 37° C.

Second reading after standing at room temperature overnight, say 12 - 18 hours. This second reading will usually be a sediment reading, but in those cases which are being tested under Note re Research it is recommended that a microscopic reading of the sediment be made.

For this purpose, the sediment is shaken up by rolling each tube a definite number of times (say 5) between the hands. By means of a capillary pipette a drop is withdrawn from each tube (beginning with the lowest dilution, i.e. 1, in 800) laid in a row on a slide without cover slip. The row of drops is then examined with the low power of the microscope. Degrees of Agglutination to be recorded will be xxxx, xxx, xx, x, trace or 0.

By this method, finer differences between tubes as regards degree of agglutination can be recorded, and the end point more clearly defined. In all cases which are being examined for Research, the reaction should be carried to the end point.

Cairo,

27th March, 1916.

T R E A T M E N T .

This was in the main, active.

Sulphate of Soda in doses of Grains 15 to 60 was given as routine treatment, usually three times a day, but in some cases oftener. It was undoubtedly beneficial, as it counteracted the great tendency to Constipation, prevented the faeces from becoming offensive, and assisted in the elimination of toxins.

Pulv. Hydrarg c Cret. or Pulv. Calomel in small doses hourly for say six doses, at regular intervals of one to two days, was given in the later stages in those cases where the faeces was offensive or the Constipation had not been overcome by the Sod. Sulph.

Intestinal Antiseptics and Astringents, viz.- Bism. Subnit. and Salol, were only used in very exceptional cases, and had no apparent effect.

Case.  
utsey 1  
ook 9

Morphia hypodermically to allay restlessness and insomnia was frequently given. It was found to be much more certain and satisfactory than the common hypnotics, and I never saw a case in which administration was followed by bad results. The dose was from 1/6 to 1/4 of a grain. It was frequently given combined with Atropinae Sulphas.

Case.  
son 17

Anti-pyretics were seldom used, as we depended on sponging, and in one or two cases of hyper-pyrexia, on ice trays. So long as the patient's general condition was satisfactory, I did not attach much importance to the height of the temperature. One of the most severe cases never had a high temperature. Before we realised the secondary importance of a high temperature,

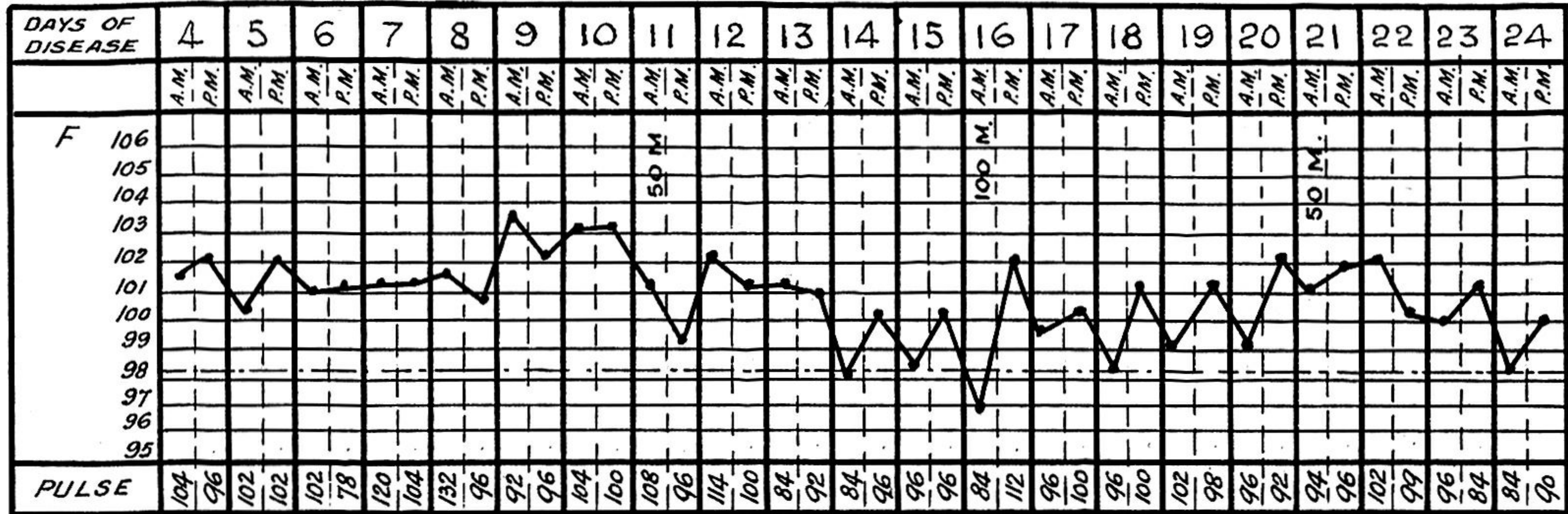






JOLLIE.

CASE XV PARATYPHOID A



Inoculations of Paratyphoid A Vaccine in doses and on days indicated. Patient was restless and wandering. Slept after each dose of vaccine, and on awakening general condition was improved. Temperature then fell to Normal.





rise before giving the second injection. If the initial dose of 50 millions was not followed by an immediate rise, a dose of 100 millions was administered on the following day. In all cases it was injected either into the arm below the insertion of the Deltoid muscle or into the left or right Infra-clavicular regions.

Although treatment by vaccine appreciably shortened the course of the disease in a majority of the cases, it distinctly modified it in all cases in which there was a definite reaction.

The patients undergoing vaccine treatment were brighter and showed less marked cerebral manifestations (toxic effects) than those not so treated; they looked better and said they felt better except during the reaction. I have already mentioned the improvement in the headache, the diminished restlessness, the more natural sleep, and the stronger pulse.

I attach a number of temperature charts for the purpose of illustrating the reaction. One of these, Thompson (8), was especially severe. He was unconscious for several days and was passing faeces and urine involuntarily. His condition was so desperate that repeated intravenous and subcutaneous salines were resorted to, his pulse being barely perceptible; and yet on the day following each injection of vaccine there was a definite improvement in his condition. After the third injection there was continued gradual improvement, though he had two slight relapses and stimulants were constantly administered owing to Endocarditis, and Hypostatic Pulmonary congestion. Albumin was present in the urine during the height of the attack, but disappeared on convalescence.

Then

\*

now

chemotherapy -  
chloramphenicol  
specific



After each drink mouth swabbed lightly with Glys. Borax & Lemon Juice or Peroxide 1 - 8. Then small quantity of water to drink to take away taste of food and leave mouth clean.

In 24 hours tongue and lips were usually moister and cleaner, and the bowels acted, either as result of saturation with fluid or by Enemata. Allowing as much rest as possible, fluids continued every hour or half hour while awake.

This was varied with:-

Small quantity	}	Milk diluted with water or	{	Discontinued
		Soda-water. Cream added if	{	if curd in
		patient could take it.	{	stools.

The mouth was treated and a small quantity of water given after each drink.

As the condition of the teeth, skin, tongue and lips improved, the following as fluids or as semi-solids:-

(a) Prepared Foods, i.e.,

Glaxo  
Horlick's Malted Milk  
Benger's Food  
Beaten egg with iced water  
& salt or flavouring.  
Cocoa - Calves Foot Jelly -  
Clear Jelly.

(b) Custard, Cornflour, Arrowroot, Beaten egg in milk, Mellin's Food, (if bowels were acting and no marked abdominal pain).

Even although the temperature were high, if the condition of the abdomen, tongue, skin and teeth warranted it, any light diet craved for was given in addition to the diet already mentioned, i.e.,

Small quantities of Thin Bread & butter  
(without crusts)

Toast - if taken carefully.  
 Lightly poached eggs.  
 Finely minced chicken.  
 Fish, boned and steamed.  
 Easily masticated plain biscuits,  
 or crackers.

After the temperature had settled to about normal, the above diet was increased in quantity, and ten days later chicken (unminced), fish, and bread & milk, were given, gradually progressing to ordinary diet - vegetables last.

(2) Diet in Ordinary cases of Enterica, i.e., those admitted during the first week of the disease with temperature rising to 103° about seven days after admission.

From admission the following were given ad lib, varied as much as possible, every two hours - more often if wished.

Beef Tea  
 Chicken Broth  
 Brandy's Essence  
 Broths (plain)  
 Tea  
 Coffee  
 Cocoa  
 Beaten egg in water, with salt or flavouring and cream.  
 Milk diluted (only given if there were no abdominal pain or discomfort and no subsequent curd in stool).  
 Orange juice - Water.

When the bowel movements were only slightly relaxed, the following were added:-

Mellin's Food  
 Horlick's Malted Milk  
 Bengers Food  
 Beaten egg in milk  
 Calves Foot Jelly, Plain Jelly, Wine Jelly,  
 (if allowed by M.O.)



Then as the bowel movements and condition of the tongue, teeth, abdomen and skin indicated, small quantities of the following were included:-

Custard	(These
Cornflour	(were
Arrowroot	(continued
Bread & Butter without crusts	(or
Lightly poached eggs	(restricted
Junket	(as
Biscuit - dry or soaked in hot milk	(temperature
Minced chicken	(etc.
Boned and steamed fish	(indicated.

After the temperature had settled down about normal for a few days, these foods were gradually increased and added to, till the patient was on ordinary diet.

A FEW NOTES ON DYSENTERY, INFECTIVE ENTERITIS,  
AND CATARRHAL JAUNDICE.

DYSENTERY.

From July to October the majority of cases was due to the Entamoeba Histolytica, from Nov. to March they were practically all Bacillary. Of the two forms of Bacillary Infection met with, Shiga's Bacillus was the most frequent cause, and as usual, the effects were much more severe than those cases due to Flexner's Bacillus.

DIAGNOSIS and TREATMENT.

On admission, specimens of faeces were immediately sent to the Central Laboratory for examination, but owing to the disease in the early and acute stage necessitating active treatment, the need for a fully equipped laboratory of our own was felt very markedly during the summer months, as the differential diagnosis of Amoebic & Bacillary by clinical signs and symptoms was impossible. Our procedure therefore, was to give an initial dose of Castor Oil and follow it up with Sulphate of Soda in doses of 15 to 60 grains every four hours until the motions became normal.

As soon as possible after admission, hypodermic injections of Emetine Hydrochloride were given in doses of from  $1/3$  to  $1/2$  a grain three times a day for nine days, or until we received a report from the Laboratory giving a diagnosis of Shiga or Flexner Infection.

This method of treatment was in itself diagnostic, as a simple Amoebic Dysentery rapidly and markedly improved, whereas a Bacillary Dysentery showed no definite improvement. If the patient's condition were dangerous,



days after the onset of the disease, and yet the Post Mortem showed no ulceration of the Intestine, although the inflammation of the mucous membrane extended throughout the whole of the large intestine and for some two feet up the small intestine. I append this patient's Case Sheet, Temperature Chart and Post Mortem Report.

Case.  
Smith 33

Hiccough was the only noteworthy symptom, its presence indicating a bad prognosis. Out of four patients in whom this symptom developed early in the disease, three died, though in each case the patient's general condition at the onset of the hiccough was by no means grave. All four were probably Bacillary Dysentery, though in only two was Shiga's Bacillus isolated.

As it was our policy to transfer all convalescent Dysentery patients out of Egypt, except in those cases where the attack had been slight and the recovery complete, we were unable to observe their after history; and in the light of later experience it is probable that a certain number of the Amoebic Dysentery convalescents relapsed subsequently.

INFECTIVE ENTERITIS.

Reference has already been made to the great incidence of this disease, but the figures given are only for those cases admitted with this diagnosis and they do not include those cases suffering from a mild degree of Infective Enteritis that were admitted with gunshot wounds or other diseases such as Debility, Neurasthenia, and Disordered Action of the Heart, which were indirectly attributable to it.

So widespread was the disease, not only in the summer but well into the winter, that only the more severe and persistent cases reached us. Of the remainder, comprising 70% to 80% of the troops, many were treated by the Regimental Medical Officer, and others did not even parade sick. In a case of average severity the patient was weak and debilitated. The motions varied from four to twelve or even more, and were preceded by griping of a varying degree. Frequently this griping and diarrhoea was worse at night, and in a small proportion of cases the patient would have no pain or diarrhoea during the day. In character the faeces were pale brown and watery, and very rarely blood was present. The abdomen was slightly tender on pressure all over, though most noticeable over the Caecum. The daily temperature usually ranged between 98° and 100° and rarely exceeded the latter. The pulse was almost invariably rapid and was seldom below 100. Even when the patient was convalescent the pulse ran up on the slightest exertion, and in character was regular, small and easily compressible, the maximum and minimum force being lower than



normal. On inspection of the praecordial region there was a varying degree of diffuse pulsation in the 4th & 5th interspaces and in the Epigastrium. The left border extended outwards to the nipple line in the 5th interspace. The heart sounds were clear, the systolic mitral being "forceful", and there was accentuation of the Pulmonary Diastolic sound. Although this cardiac condition was to a great extent brought about as a result of exertion in a man weakened by the Diarrhoea, there was undoubtedly some degree of Myocardial degeneration caused by the long continued toxic absorption, as it was noticeable that the heart recovered quickly only in those cases in which the disease had been of comparatively short duration. The results of treatment were, without doubt, unsatisfactory. In some cases the signs and symptoms persisted in spite of treatment and dieting, while others frequently relapsed. Many of the cases sent out as cured to the local Convalescent Hospitals, were returned to us with the diarrhoea as bad as ever. The various Laboratories worked unceasingly to discover the cause, with the result that various organisms protozoal and bacterial came under the ban. Colonel Wenyon of Alexandria did valuable work in this connection, and in his opinion, Protozoa such as Trichomonas, Tetramitus and Lamblia were frequent causes of the condition. Undoubtedly many cases were of bacterial origin, due to various organisms of the B. Coli Group. Unfortunately, no specific could be discovered. Emetine Hydrochloride, which was tried extensively, occasionally acted brilliantly, but I fear that in those rare cases the cause of the condition was

the Amoeba Histolytica, and the disease a mild and persistent Amoebic Dysentery. Numerous methods of treatment were tried, viz.- purgatives, astringents, intestinal antiseptics and bowel irrigation. In the majority of cases we gave an initial dose of Castor Oil combined with fifteen to twenty minims of Tinct. Opii and followed by Sulphate of Soda fifteen to sixty grains three times daily. If the diarrhoea still persisted after two or three days, we gave a mixture containing Subnitrate of Bismuth, Salol and Tincture of Catechu. High irrigations of Calcium Permanganate Solution were given daily in the more persistent cases, and though they at first caused some pain and discomfort they aided very greatly in reducing the number of motions. In those cases with "night" diarrhoea and Colic, the use of a cholera belt was of undoubted benefit.

The diet consisted during the first 24 hours of water, albumen water or Soda water, as thirst was usually great. It was then gradually extended by the addition of Benger's Food, Horlick's Malted Milk and Glaxo, and later the patient was put on chicken diet.

Great care had to be taken, however, not to increase the diet too quickly, as many cases relapsed as soon as they were given ordinary diet.

CATARRHAL JAUNDICE. (Epidemic Catarrhal Jaundice).

Although the number of admissions amounted to 328 during the period under review, they were all of a mild type as compared with those admitted to Hospitals in Alexandria. In a discussion on cases of Jaundice in Military Hospitals at Alexandria, the following conclusions were arrived at by the Chairman, Lt-Col. Sir Ronald Ross, R.C.B., F.R.S.

(a) A large number of the Jaundice cases are probably only secondary or symptomatic, occurring in the course of Dysentery, Typhoid, etc.

(b) Many cases, however, appear to be due to specific disease. There are two types of this specific Jaundice known to occur in Egypt, one a mild type - Icterus Levis - with practically no mortality, and the other a very severe type - Icterus Gravis - with a mortality of 30% and over.

(c) That the cases of Jaundice from Gallipoli were different and not so severe as those from the Chatby Camp, Alexandria.

-----

This is perhaps explained by the fact that Catarrhal Jaundice has been epidemic in Alexandria for many years, whereas in the rest of Egypt it has been comparatively uncommon. All our cases came from Gallipoli, Cairo District and the Canal Zone.

Colonel — who had seen many of the most severe cases in Alexandria, and who had examined the livers of two soldiers who had died, was of opinion that it was caused by a toxin producing organism which caused a

catarrhal condition of the Bile Ducts, not near the Duodenum but high up, with secretion of mucus which caused an obstruction to the flow of Bile, and that in the fulminating type there was Autolysis owing to depression of the Liver cells by the toxin, with consequent fatty degeneration; and that death was due to the toxic bile getting into the general circulation.

In a series of cases in December & January, blood cultures were made but all were sterile. Blood counts were taken, the only striking characteristic being a pronounced relative Lymphocytosis varying from 40% to 75%, a degree of Lymphocytosis continuing throughout convalescence. Examination of the urine showed the presence of Oxalates in all, of a trace of Blood in four, of finely granular casts in one; but none of them showed albumin.

The prominent signs and symptoms were lassitude, nausea, anorexia, and more or less marked icterus. There was a slight rise of temperature to about 100° F. with a corresponding increase in the pulse rate. In only a few cases was there any enlargement of the Liver or Gall Bladder, and it was rare to elicit tenderness of those organs. There was usually marked constipation, although the patient gave a history of diarrhoea followed by constipation, usually about two or three weeks before admission and always some days before the first signs of Jaundice.

The treatment consisted in the administration of mild saline laxatives, plenty of alkaline drinks and a Milk Diet.

SUMMARY OF THE MAIN POINTS ADDUCED.

(1) The large amount of Intestinal Disease in New Zealand troops was due, apart from climatic conditions, to the great susceptibility of the men, to the disregard of orders and warnings as to the danger of indiscriminate eating and drinking, to the effect of the abnormal conditions prevailing at Gallipoli, on troops, many of whom were already infected with the causative organisms of Dysentery, Enterica and Infective Enteritis, and during the Egyptian Campaign to the drinking of water from untested wells and illicit supplies.

(2) As the number of Enterica, Dysentery, and Infective Enteritis cases decreased during the winter months, the figures for Catarrhal Jaundice gradually rose, only to fall again as the hot weather approached and the other Intestinal Diseases increased.

A similar seasonal relation was noticed by Rogers and described in "The Dysenteries", between Amoebic Dysentery and Tropical (Amoebic) Abscess of the Liver.

(3) The Enterica Group.

(a) The prophylactic inoculation against Typhoid Fever was undoubtedly successful. The results with regard to the Entericas would have been very much more marked had the Anti-typhoid vaccine been combined with the Paratyphoids A. and B. as was eventually done early in 1916 with perfectly satisfactory effect.

(b) The incidence rate of Typhoid Fever compared favourably with that of British and Australian troops under similar conditions.



(c) Though over a large number of cases the Paratyphoids were milder than Typhoid, there were many cases of Paratyphoid that were serious, and some which in the severity of their course were quite indistinguishable from Typhoid.

(d) The onset, noticeably in Paratyphoid, was usually sudden and accompanied by Diarrhoea, shivering, and symptoms resembling Influenza.

(e) The course of the disease was noticeable for a slow full pulse, constipation, and an irregular and atypical temperature.

(f) The result of vaccine treatment was gratifying, and apparently influenced favourably the course of the disease and the severity of the symptoms.

(g) Differential diagnosis of the Entericas could only be made by examinations of the blood, faeces and urine, and often several examinations of the faeces and urine were necessary before the causative organism could be isolated.

(h) In patients inoculated against Typhoid, single agglutination tests were quite useless in Typhoid infections, and, except in the third week or later, in Paratyphoid.

#### (4) Dysentery.

(a) Treatment of acute Amoebic Dysentery by Emetine was successful in practically every case, but it was not possible to follow up these apparent cures to see if they were permanent or if they relapsed or became "Carriers".

(b) Treatment of Bacillary Dysentery to be successful, necessitated large and repeated doses of Polyvalent Anti-Dysenteric Serum, by intramuscular or, preferably, intravenous injections.

(5) Infective Enteritis.

(a) Of the various treatments tried, none seemed to be satisfactory.

(b) There was a noticeable tendency to relapse after apparent cure.

(c) Myocardial changes were the rule in the more persistent and refractory cases.

(6) Catarrhal Jaundice.

The type was mild compared with that experienced among British troops stationed at Alexandria.

*was  
Chemist  
Sulphoquinoline*

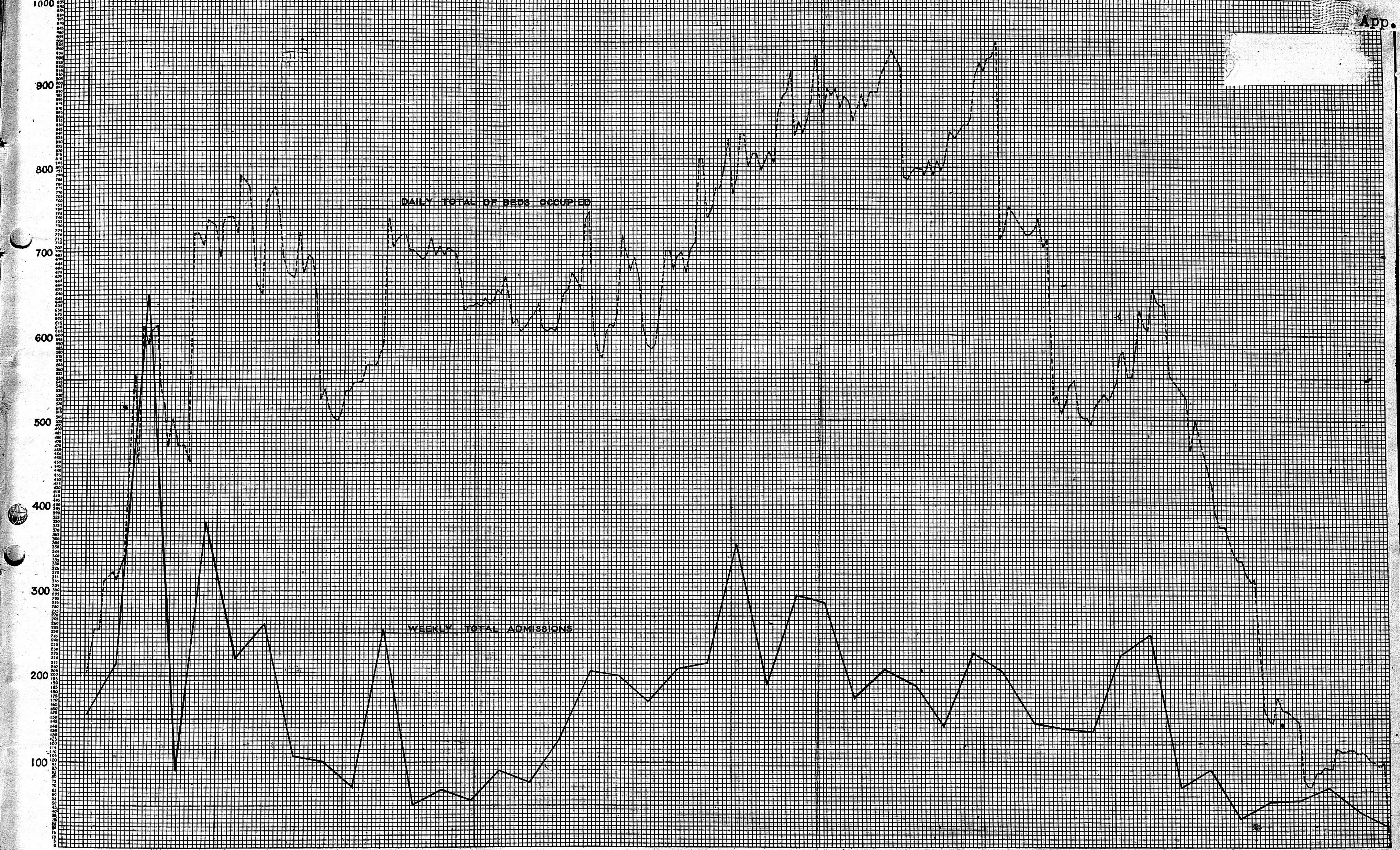


# NEW ZEALAND GENERAL HOSPITAL CAIRO.

## DAILY TOTAL OF PATIENTS AND WEEKLY ADMISSIONS.

26<sup>TH</sup> JULY 1915 TO 4<sup>TH</sup> JUNE 1916.

NUMBER OF PATIENTS    JULY    AUG    SEPT    OCT    NOV    DEC    JAN.    FEB.    MARCH.    APRIL.    MAY    JUNE.



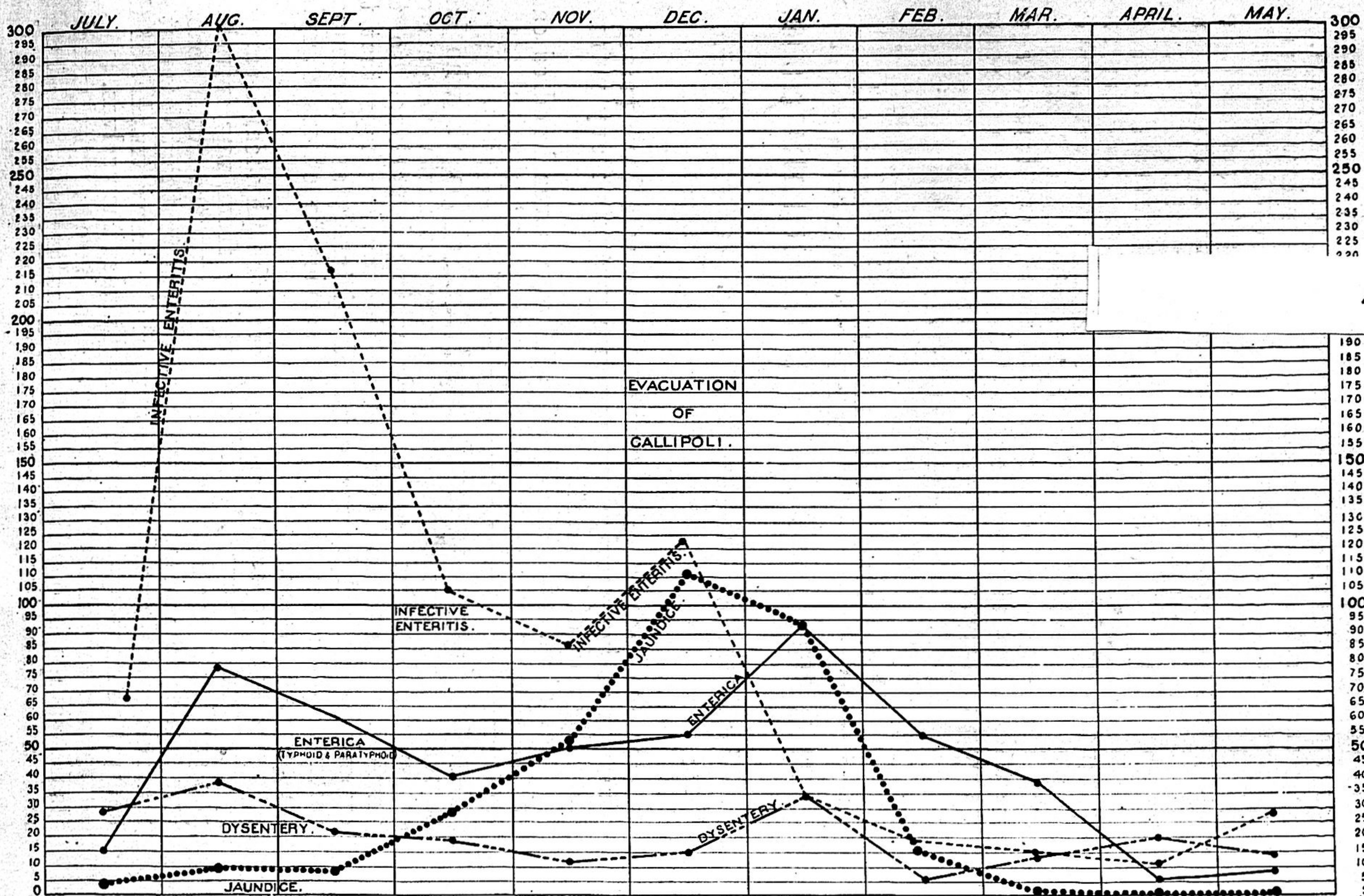
App. 1.



# NEW ZEALAND GENERAL HOSPITAL . CAIRO .

## ADMISSIONS OF CHIEF INFECTIOUS DISEASES

1st JULY. 1915 TO MAY. 1916



Ap



MONTHLY CLASSIFICATION OF PATIENTS ADMITTED TO MEDICAL DIVISION.

INCIDENCE OF DISEASES OF THE ALIMENTARY SYSTEM.

	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb	March	Total	APP.
Enterica Group	15	78	62	41	51	56	93	54	39	489	
Dysentery Group	28	38	22	19	12	15	34	6	14	188	
Infective Enteritis	67	305	217	105	86	123	33	18	14	968	
Catarrhal Jaundice	3	9	8	28	53	111	94	16	6	328	
General Digestive Diseases	27	108	67	38	58	89	69	44	51	551	
	140	538	376	231	260	394	323	138	124	2524	

DISEASES OF OTHER SYSTEMS (MEDICAL).

(Not enumerated in above).

	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
Infectious Diseases	4	14	12	14	22	14	14	5	19	118
<u>Diseases of:-</u>										
Nervous System	14	49	34	23	14	24	26	24	37	245
Eye, Ear & Nose	10	22	11	11	17	37	46	67	45	266
Circulatory System	4	7	17	16	5	19	11	23	30	132
Respiratory System	26	73	44	27	63	163	202	125	110	833
Urinary System	3	2	1	3	2	5	23	12	23	74
Organs of Locomotion	12	43	20	27	26	85	74	53	42	382
Skin & Connective Tissue	10	42	18	22	26	71	76	53	39	357
	83	252	157	143	175	418	472	362	345	2407



RETURN OF DISEASES AND INJURIES FOR WHICH PATIENTS  
WERE BOARDED AND INVALIDED TO NEW ZEALAND, FROM  
AUGUST 1915 to MAY 1916.

App.

Total number from all causes			1445
Alimentary System =			515 or 35.7%
(a) Enterica Group	362	or 25%	
(b) Dysentery	76	or 5.2%	
(c) Infective Enteritis	34	or 2.3%	
(d) Catarrhal Jaundice	1		
(e) Gastric etc.	42		
Nervous System .. ..			129 or 9%
Circulatory System .. ..			114 or 8%
Respiratory System .. ..			91 or 7%
Urinary & Generative System ..			33
Skin & Connective Tissue .. ..			13
Lymphatic System .. ..			13
Locomotor " .. ..			105
Infectious Fevers .. ..			5
General Surgical .. ..			39
Gunshot wounds .. ..			225
General injuries .. ..			81
Deformities, etc... ..			27
Diseases of Eye & Ear .. ..			55

DIAGNOSIS OF ENTERIC FEVER.

Amended instructions for the transmission of specimens to the Central Bacteriological Dept.

-----

1. Specimens of blood for Widal examination will not be sent unless they are asked for by the Laboratory.
2. In exceptional cases where for special reasons in the opinion of the M.O. an agglutination test is essential this will be made but in this case a specimen should be accompanied by a letter from the M.O.
3. From cases in which there is evidence that the patient is in the first two weeks of his illness a blood culture only will be sent immediately on admission to Hospital, and such specimens of urine and faeces as may be asked for by the Laboratory subsequently.
4. From cases which have been ill more than two weeks one specimen of faeces and one of urine will be sent immediately on admission. A blood culture at this stage of the disease appears to be of no value.
5. From cases in which it is impossible to obtain evidence of the duration of the illness, blood culture and one specimen each of urine and faeces will be sent immediately on admission.
6. The method of collecting material and the particulars to be sent with the specimens are as in Form G issued by the Central Bacteriological Laboratory.
7. In addition to the particulars detailed in Form B it should be stated where possible where the patient appears to have received his infection, e.g. Egypt, Salonika, etc.

It is important that careful enquiries should be made in all cases to obtain information on this point.

Headquarters,  
Cairo, 1st Jan. 1916.

(Sgd) R. W. FORD.  
Surgeon General.  
D.M.S. Force in Egypt.











**CLINICAL CHART.**

(To be attached to Case Sheet.)

Military Hospital N.Z. General

Corps N.Z. A.N.S.

Rank and Name Sister Nutkey

Age Service

Disease: \_\_\_\_\_ Date of Admission: 10. 3. 16. Date of Discharge: \_\_\_\_\_ Result: \_\_\_\_\_

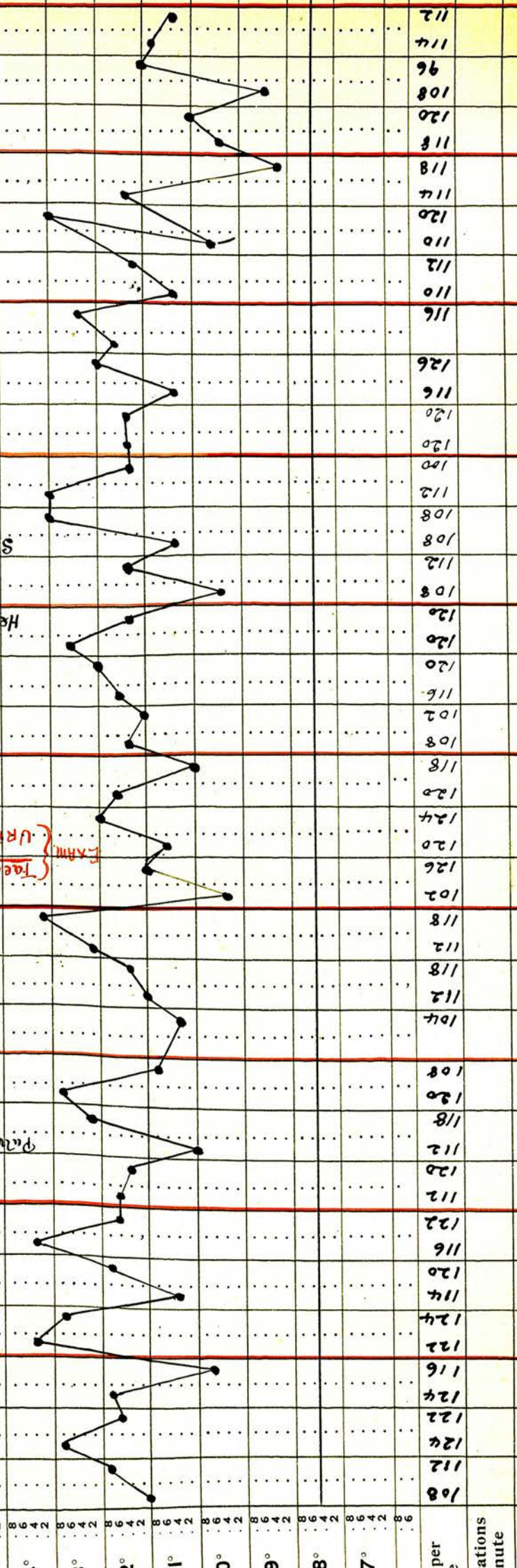
Dates of Observation	March		April		5		6		7		8		9	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Days of Disease	26	27	28	29	30	31	1	2	3	4	5	6	7	8
Time	6	10	6	10	6	10	6	10	6	10	6	10	6	10
Temperature Fahrenheit.	108	112	116	120	124	128	132	136	140	144	148	152	156	160
107°														
106°														
105°														
104°														
103°														
102°														
101°														
100°														
99°														
98°														
97°														
Pulse per Minute	108	112	116	120	124	128	132	136	140	144	148	152	156	160
Respirations per Minute														
Motions per 24 hours														

Urine: Negative  
 Faeces: Positive  
 B. Typhi

Heroin hyd gr $\frac{1}{2}$

Sol<sup>l</sup> gr $\frac{1}{2}$

Pin Sol<sup>l</sup> gr $\frac{1}{2}$





CLINICAL CHART.

(To be attached to Case Sheet.)

Military Hospital N 2 General.

Corps N 2. A. N. S.

No. 2740

Rank and Name Sister Nabeey

Age Service

Date of Admission 10. 3. 16. Date of Discharge Result

Disease

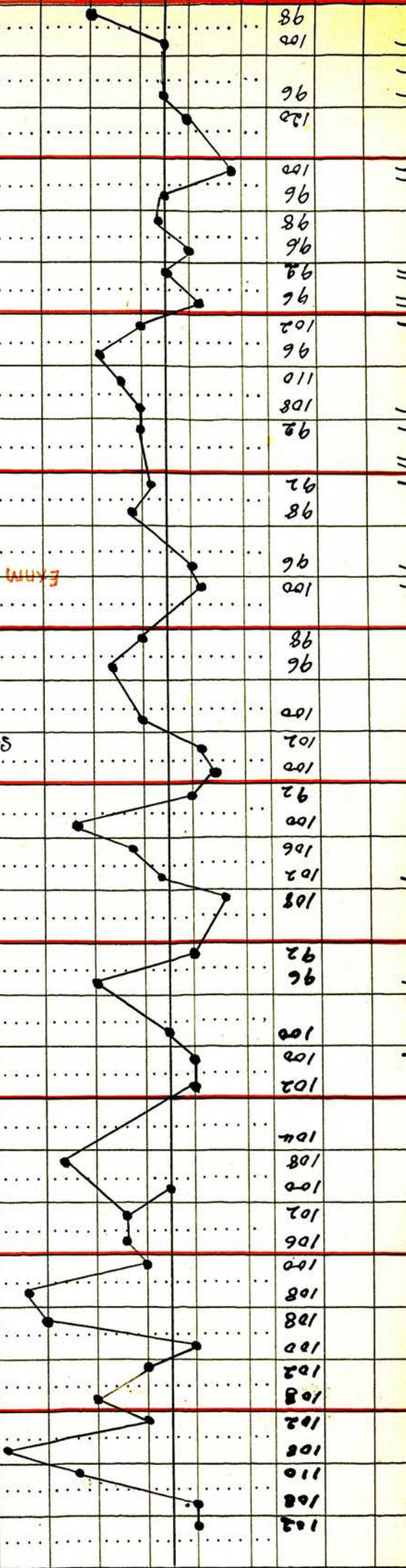
Dates of Observation	April 10		11		12		13		14		15		16		17		18		19	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Days of Disease	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6
Temperature Fahrenheit.	102	108	102	108	102	108	102	108	102	106	102	108	102	98	102	108	98	102	108	98
107°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
106°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
105°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
104°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
103°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
102°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
101°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
100°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
99°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
98°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
97°	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2	8	6	4	2
Pulse per Minute	102	108	102	108	102	108	102	108	102	106	102	108	102	98	102	108	98	102	108	98
Respirations per Minute																				
Motions per 24 hours	11																			

EXM (Urine - negative)  
faeces - negative

Syr. Euston 3/4 tds

1/4 gr. Paraffin 3/4 tds

Poly-Dover grx









**MEDICAL CASE SHEET.\***

No. in Admission and Discharge Book.	Regimental No.	Rank.	Surname.	Christian Name.
	22/40	Nursing Sister	Nutsey	Emily
		Unit.	Age.	Service.
Year	N.Z.A.N.S.		28	12/12
1916				
Station and Date.	<u>Extracts of Notes:-</u> (See also temperature chart).			
Z. Gen. HP. Cairo. 26/4/16	<u>Disease</u> Typhoid Fever. (Bac. Typhosus)			
	<u>History of present illness:-</u> Commenced suddenly with headache,			
	backache, nausea, 9/3/16. Remained on duty till 5 p.m. During			
	the night feelings of malaise increased and were accompanied			
	by shivering and profuse perspirations. No diarrhoea or			
	constipation, slight cough.			
	<u>Examination:-</u> Tongue slightly furred. Abdomen normal.			
	<u>Respiratory System:-</u> An occasional rhonchus not local.			
	All other systems normal.			
	Examination of urine - normal.			
	<u>History of past illnesses etc.</u> Bronchitis & acute Nasal			
	Catarrh, January 1915. Scarlet fever 6 years ago.			
	<u>Inoculated :-</u> Feb. 1915 (twice) Typhoid in N.Z.			
	Jan. 1916 (twice) T. A. B. Cairo.			
March 12th.	Temperature still running between 104° & 105°.			
	<u>Pulse</u> rapid, 120 to 126.			
	Headache & Backache improving.			
	Tongue more furred, nausea increased.			
	Otherwise no further signs or symptoms.			
	<u>Examination for Malaria</u> - negative.			
March 15th.	Tongue dry & Brown. A few rose coloured spots. Faeces			
	slightly yellow. No tumidity of abdomen, no enlargement			
	of spleen.			
March 18th.	Abdomen tumid. Spots fresh crop. Spleen slight enlargement!			
	<u>Insomnia &amp; Restlessness.</u> Condition generally about the same.			
March 30th.	<u>Recrudescence of fever.</u> Rose coloured spots (fresh) on			
	abdomen. Mentally bright. (Sgd) F. T. Bowerbank.			
	Major, N.Z.M.C.			

The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.

## MEDICAL CASE SHEET.\*

No. in Admission and Discharge Book.	Regimental No.	Rank.	Surname.	Christian Name.
5210	7/1270	Tpr.	Murray	R. D.
Year	Unit.		Age.	Service.
1915	C. M. R.		20	8/12
Station and Date.	<b>Disease</b> Paratyphoid A.			
N.Z.Gen.HP.	Admitted 26/11/15 from Zeitoun, Egypt.			
Cairo.	Typhoid Inoc. - N.Z. March, 1915.			
26/11/15	Egypt. Oct. 1915.			
	<u>Present illness</u> - Diarrhoea $3\frac{1}{2}$ days ago.			
	Vomited yesterday.			
	Sore throat two days.			
	Difficult to arouse. Some delirium. Complains of headache, pain in back. Is apparent slight head retraction.			
	No Kernig sign present.			
	Tongue furred and dry in centre. Throat congested.			
	Abdomen no distension or apparent change from normal.			
	Lungs normal. Heart normal. Urine normal.			
7/12/15	No change in mental condition. Tongue brown and dry.			
	Face flushed. Abdomen distended and "doughy". Rose spots, a few on abdomen. Spleen slightly enlarged. Pulse weak, irregular and dicrotic. Heart sounds poor in quality.			
14/12/15	T.A.B. Vaccine (50 millions) given hypodermically, otherwise no change.			
18/12/15	T.A.B. Vaccine (100 millions) given.			
19/12/15	Much improved. Pulse stronger and more regular. Heart sounds improved.			
22/12/15	Mental condition dull, and tendency to "wander".			
23/2/16	<u>Heart.</u> First sound in mitral area soft in quality. Soft blowing bruit (systolic) in pulmonary area.			
	Pulse rate 96 - 104.			
	(Sgd) W. F. Findlay.			
	Capt. N.Z.M.C.			

\*The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.



Corps **C. M. R.**

**CLINICAL CHART.**  
(To be attached to Case Sheet).

**Case**

Military Hospital **N. H. General**

Rank and Name **Booper Murray R. W.**

Age **20** Service

Date of Admission **26. 11. 15**

Date of Discharge

Result

Disease **Paratyphoid A fever**

Dates of Observation	Time	Temperature Fahrenheit	Notes	Pulse per Minute	Respirations per Minute	Motions per 24 hours
November 27	5 A.M.	107	Onset: 23/11/15 Stomach milk diarrhea vomiting constipation	101	96	
November 28	6 P.M.	106		114	111	
November 29	7 A.M.	105	(at first simulated Cerebro spinal fever) THB vaccine on 12-14-1910	102	92	
November 30	8 A.M.	104	A severe type of Paratyphoid A See Case sheet over	104	110	
December 1	9 P.M.	103		108	114	
December 2	10 P.M.	102		108	108	
December 3	11 P.M.	101		104	102	
December 4	12 A.M.	100	Immunological Puncture - Sterile Report received 11-12-15 Blood Culture - Positive Paratyphoid A Paratyphoid A fever	102	102	
December 5	13 P.M.	99		98	110	
December 6	14 P.M.	98		116	112	
December 7	15 P.M.	97	Good. Sufferer Investigation on 14 & 15 102	102	94	
December 8	16 P.M.	96		100	118	







CLINICAL CHART.

Corps C. M. R.

Military Hospital N. 2 General

(To be attached to Case Sheet.)

Rank and Name Trooper Murray, R. D.

Age 20 Service

No. 7/1270

Date of Admission 26. 11. 15 Date of Discharge Result

Dates of Observation	Time	Temperature Fahrenheit.	Notes	Pulse per Minute	Respirations per Minute	Motions per 24 hours
December 18	6 A.M.	108	Prothelin discontinued	108	24	1
	10 A.M.	108		108	24	1
	2 P.M.	106		116	24	1
	6 P.M.	104		112	24	1
	10 P.M.	102		116	24	1
19	6 A.M.	104	Sad Sucta qrx qra	108	20	1
	10 A.M.	104		108	20	1
	2 P.M.	104		104	24	1
	6 P.M.	108		112	28	1
20	6 A.M.	108		112	20	1
	10 A.M.	108		112	20	1
	2 P.M.	108	Sad Sucta qrx	108	20	1
21	6 A.M.	108		108	20	1
	10 A.M.	108		108	24	1
	2 P.M.	108		108	20	1
22	6 A.M.	108	Excess (Urine) Negative	108	20	1
	10 A.M.	108		108	20	1
	2 P.M.	108		96	20	1
23	6 A.M.	108		108	24	1
	10 A.M.	108		108	16	1
	2 P.M.	108		104	24	1
24	6 A.M.	108		108	20	1
	10 A.M.	108		112	28	1
	2 P.M.	108		112	20	1
25	6 A.M.	108		108	20	1
	10 A.M.	108		112	20	1
	2 P.M.	108		104	24	1
	6 P.M.	108		108	24	1
27	6 A.M.	108		108	20	1
	10 A.M.	108		108	20	1
	2 P.M.	108		108	24	1
	6 P.M.	108		108	24	1















**CLINICAL CHART.**

(To be attached to Case Sheet.)

Corps **C. M. R.**

Military Hospital **N. F. General**

Age **20** Service

Rank and Name **Sapper Murray R. B.**

No. **7/1270**

Date of Discharge

Result

Date of Admission

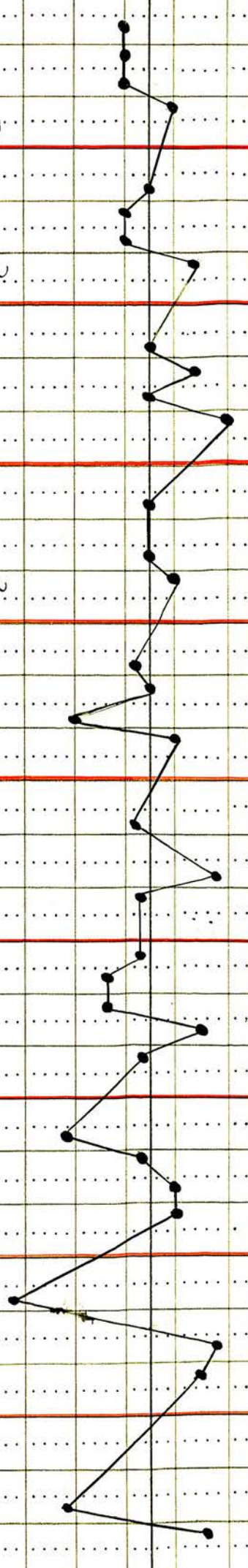
26. 11. 15.

Dates of Observation	January 1916.		27		28		29		30		31		February 1		2		3		4		5	
	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.	Time.	Temp.
Days of Disease	2	6	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10
Temperature Fahrenheit.	94	96	88	112	84	98	92	116	120	96	112	112	88	100	100	112	112	100	88	98	84	78
Pulse per Minute	94	96	88	112	84	98	92	116	120	96	112	112	88	100	100	112	112	100	88	98	84	78
Respirations per Minute	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Motions per 24 hours	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

Meal dinner clear  
3 p.m.

Meal dinner clear  
3 p.m.

Meal dinner clear  
3 p.m.





























(To be attached to Case Sheet.)

Corps. N. B. M. C.

Rank and Name

Private Toomey J. J.

Age 20 Service

Military Hospital N. T. General

Disease

Date of Admission 7. 12. 15.

Date of Discharge

Result

Dates of Observation	Time	Temp.	Pulse	Respirations	Motions	Remarks
Jan 7	2.6	107	80	22	1	
	6.10	106	84	24	1	
	10.2	105	80	22	1	
	2.6	104	82	22	1	
	6.10	103	88	22	1	
	10.2	102	80	22	1	
	2.6	101	80	22	1	
	6.10	100	80	22	1	
	10.2	99	84	22	1	
	2.6	98	84	22	1	
	6.10	97	84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2		84	22	1	
	2.6		84	22	1	
	6.10		84	22	1	
	10.2					







CLINICAL CHART.

(To be attached to Case Sheet.)

Corps N. L. M. C.

Rank and Name

Private Tooman, S. J.

Age 20

Service Military Hospital N. 2 General

Disease

Date of Admission

Date of Discharge

Result

Dates of Observation	February		March		Date of Discharge	Result																			
	23	24	25	26			27	28	29	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Days of Disease	85										95					100					105				
Temperature Fahrenheit.	98	96	92	88	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
107°																									
106°																									
105°																									
104°																									
103°																									
102°																									
101°																									
100°																									
99°																									
98°																									
97°																									
Pulse per Minute	88	96	92	88	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Respirations per Minute	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Motions per 24 hours	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

Throat Caecar 3/6

Blasennine most acie

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Throat Caecar 3/6

Philo. Colonne qrtll inqtr for hydro

Discharged to M. 2.











Corps **W. M. R.**

Military Hospital **N 2 General**

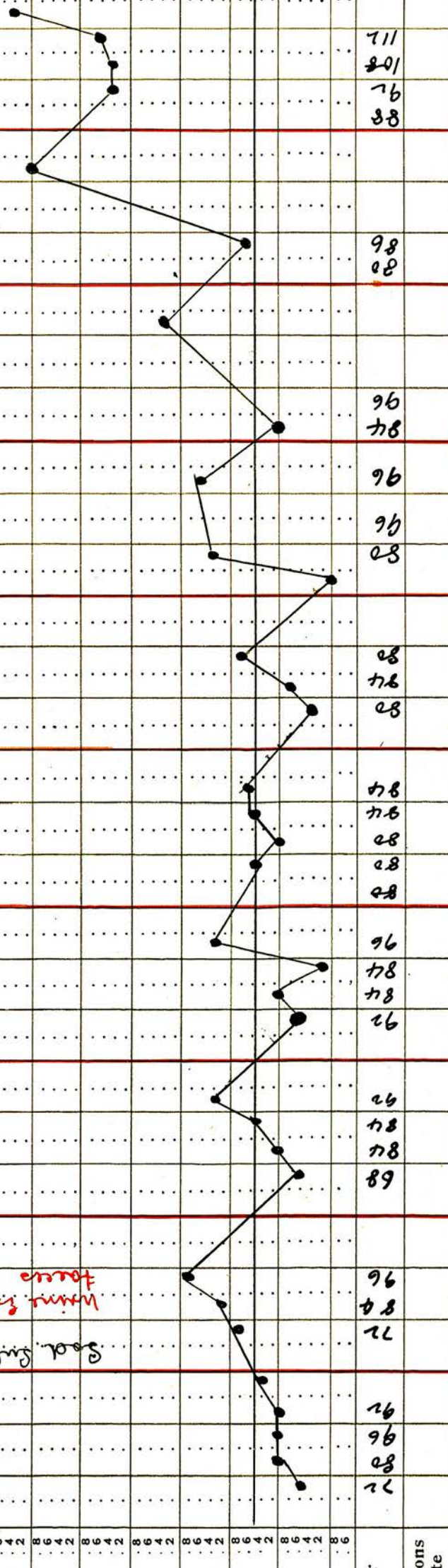
Rank and Name **Sarasin Mess. S.**

Age **28** Service

Disease \_\_\_\_\_ Date of Admission **6 12 15.** Date of Discharge \_\_\_\_\_ Result \_\_\_\_\_

Dates of Observation	December 28		29		30		31		January 1		2		3		4		5		6		
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
Days of Disease	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10
Temperature Fahrenheit.	107	106	105	104	103	102	101	100	99	98	97										
Pulse per Minute	72	88	96	92	72	84	96	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Respirations per Minute	22	28	36	32	22	28	36	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Motions per 24 hours	4																				

Soil. Sulfur. cr. vi. 99g.  
 Urine. Exam. - negative  
 faeces " - negative









Army Form B. 181.		Military Hospital N. 7 General.		Age 28 Service	
CLINICAL CHART.		(To be attached to Case Sheet.)		Rank and Name	
Corps W. M. R.		No. 11794		Janvier Mours E.	
Disease		Date of Admission		Date of Discharge	
Result		6. 12. 15.			
Dates of Observation	Time.	Time.	Time.	Time.	Time.
Days of Disease	Time.	Time.	Time.	Time.	Time.
Temperature Fahrenheit.	Time.	Time.	Time.	Time.	Time.
107°	8				
	6				
	4				
	2				
106°	8				
	6				
	4				
	2				
105°	8				
	6				
	4				
	2				
104°	8				
	6				
	4				
	2				
103°	8				
	6				
	4				
	2				
102°	8				
	6				
	4				
	2				
101°	8				
	6				
	4				
	2				
100°	8				
	6				
	4				
	2				
99°	8				
	6				
	4				
	2				
98°	8				
	6				
	4				
	2				
97°	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				
	6				
	4				
	2				
	8				







CLINICAL CHART.

Corps 2nd Cavalry Bde

(To be attached to Case Sheet.)

Military Hospital N 7 General

Age 26 Service

Rank and Name *Squad Hypoc. J.W.*

Date of Admission 21. 12. 15.

Date of Discharge

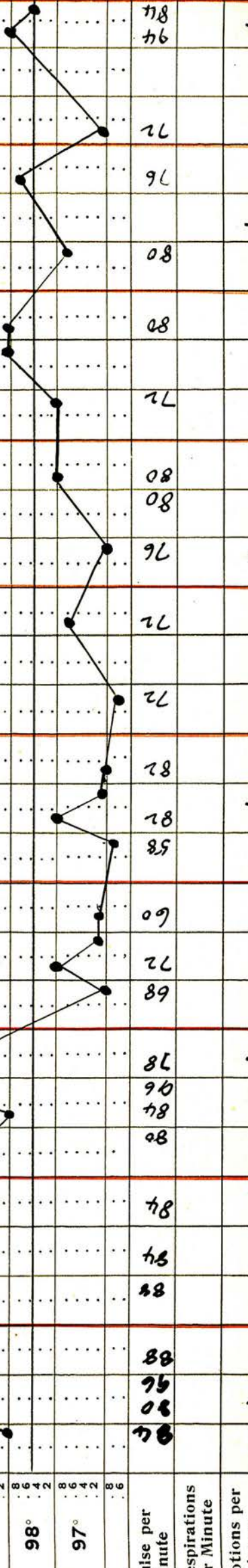
Disease

Result

Dates of Observation	January 1916		2		3		4		5		6		7		8		9		10	
	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.
Days of Disease	14	15	16	17	18	19	20	21	22	23										
Temperature Fahrenheit.	96	98	98	98	96	96	96	98	98	98	98	98	98	98	98	98	98	98	98	98
Pulse per Minute	74	80	80	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82
Respirations per Minute	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

*beam force negative*

*beam force negative*















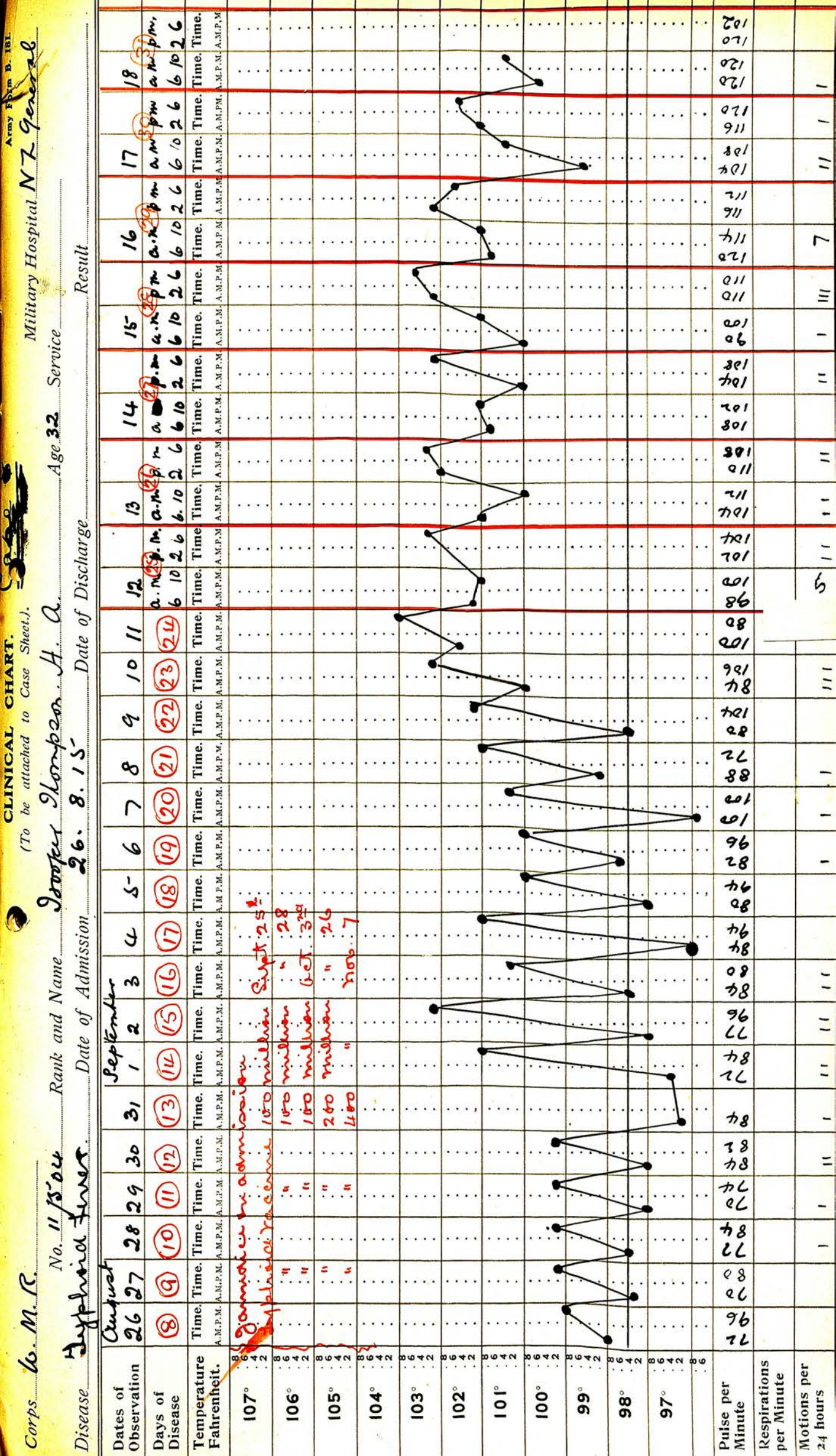


























CLINICAL CHART.

(To be attached to Case Sheet.)

Military Hospital N. T. General

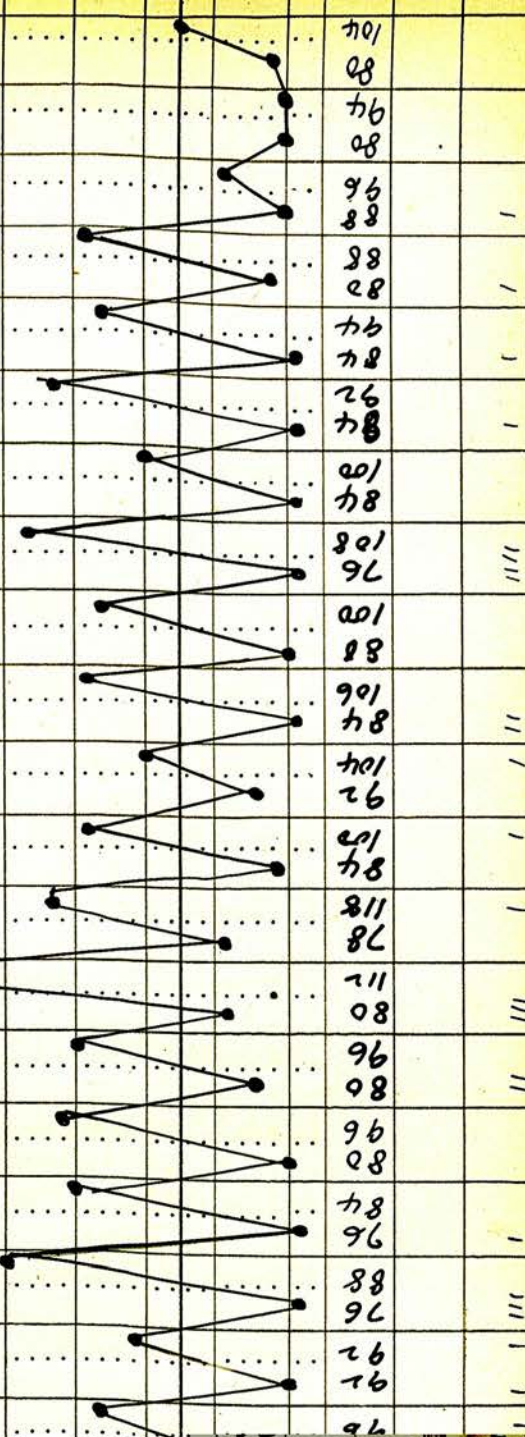
Age 32 Service

Stompson, H. A.

26. 18. 15 Date of Discharge Result

Time	Temp.	Pulse	Respiration	BP	Sp. O <sub>2</sub>	Other
3						
4						
5						
6	80					
7	*					
8						
9						
10	85					
11						
12						
13						
14						
15	90					
16						
17						
18						
19						
20						
21	95					

Typhoid vaccine 1000 m.u.

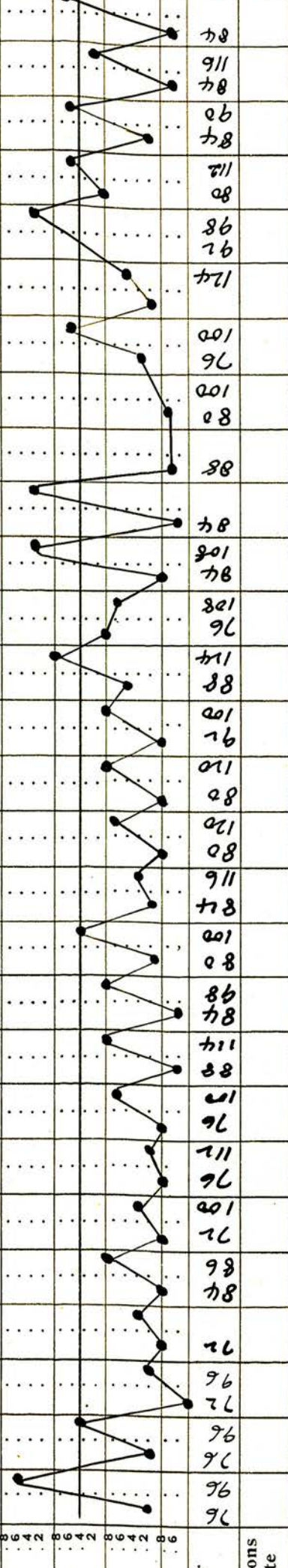








Disease	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22.				
Dates of Observation	December	23	24	25	26	27	28	29	30	January	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22.		
Days of Disease																																		
Temperature Fahrenheit.																																		
107°																																		
106°																																		
105°																																		
104°																																		
103°																																		
102°																																		
101°																																		
100°																																		
99°																																		
98°																																		
97°																																		
Pulse per Minute	96	96	96	96	96	98	96	96	98	96	98	96	96	96	96	96	96	96	96	98	98	96	96	96	96	96	96	96	96	96	96	96	96	96
Respirations per Minute																																		
Motions per 24 hours																																		



135  
 140  
 145  
 150  
 155



**MEDICAL CASE SHEET.\***

No. in Admission and Discharge Book.	Regimental No. --	Rank. Capt.	Surname. Cooke	Christian Name. T.
Year	Unit. Conn. Rangers		Age. 27½	Service. 8½ yrs.
Station and Date.	<b>Disease</b> Typhoid Fever (Bacterial)			
Gen. Hosp. Cairo.	On admission Jan. 25/16 complaining of attacks of shivering, headache and general malaise.			
2/16	<u>History of present illness.</u> Has been out of sorts for some weeks, but did not go to bed till Jan. 20th. The symptoms resembled malaria of which he had an attack in South Africa in 1913-14.			
	<u>Other illness.</u> Was sent over to France in Sept. 1914 and invalided back with Eczema, Otorrhoea, Chronic Cough and Neuritis. Was boarded and sent out to Egypt.			
	<u>Symptoms.</u> At first had attacks of shivering at intervals of a day but without regularity. Headache, a heavy type but not localised. Very depressed.			
	Examination of blood for Malaria - negative.			
	Tongue furred. Abdomen slightly tumid and very slight distension. No enlargement of spleen. Pulse slow (84 to 90) and dicrotic. Temp. 102° to 104°. Bowels:- regular. Colour brown.			
31/16	Temp. & pulse remain as above, otherwise the same. Blood culture taken - Report = Typhoid culture.			
4/16	Haemorrhage from bowel preceded by a severe pain in left hypochondriac region.			
5/16	Small haemorrhage. Pulse rate increased on each occasion to 100.			
10/16	Rose coloured spots appeared on chest & back - the first appearance of any rash			

\*The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.



Army Form B. 131		Case 9		Military Hospital N. H. General		Age 27 Service 9 years		Result	
CLINICAL CHART.		(To be attached to Case Sheet.)		Rank and Name		Date of Admission		Date of Discharge	
Corps Co: Rangers		No. 251		Capt. Cooke, J. A. S.		25. 1. 16		25. 1. 16	
Disease Typhoid fever		No. 251		Rank and Name		Date of Admission		Date of Discharge	
Dates of Observation	Time.	Temperature Fahrenheit.	Time.	Time.	Time.	Time.	Time.	Time.	Time.
25. 1. 16	P.M. 6.0	107	8.0	26	10.0	88	26	10.0	88
	A.M. 2.6	106	76	①	10.2	88	26	10.2	88
	P.M. 6.10	105	88	②	10.2	80	26	10.2	80
	A.M. 2.6	104	88	③	10.2	88	26	10.2	88
	P.M. 6.10	103	88	④	10.2	88	26	10.2	88
	A.M. 2.6	102	88	⑤	10.2	88	26	10.2	88
	P.M. 6.10	101	88	⑥	10.2	88	26	10.2	88
	A.M. 2.6	100	88	⑦	10.2	88	26	10.2	88
	P.M. 6.10	99	88	⑧	10.2	88	26	10.2	88
	A.M. 2.6	98	88	⑨	10.2	88	26	10.2	88
	P.M. 6.10	97	88	⑩	10.2	88	26	10.2	88
	A.M. 2.6			⑪	10.2		26	10.2	
	P.M. 6.10			⑫	10.2		26	10.2	
	A.M. 2.6			⑬	10.2		26	10.2	
	P.M. 6.10			⑭	10.2		26	10.2	
	A.M. 2.6			⑮	10.2		26	10.2	
	P.M. 6.10			⑯	10.2		26	10.2	
	A.M. 2.6			⑰	10.2		26	10.2	
	P.M. 6.10			⑱	10.2		26	10.2	
	A.M. 2.6			⑲	10.2		26	10.2	
	P.M. 6.10			⑳	10.2		26	10.2	
	A.M. 2.6			㉑	10.2		26	10.2	
	P.M. 6.10			㉒	10.2		26	10.2	
	A.M. 2.6			㉓	10.2		26	10.2	
	P.M. 6.10			㉔	10.2		26	10.2	
	A.M. 2.6			㉕	10.2		26	10.2	
	P.M. 6.10			㉖	10.2		26	10.2	
	A.M. 2.6			㉗	10.2		26	10.2	
	P.M. 6.10			㉘	10.2		26	10.2	
	A.M. 2.6			㉙	10.2		26	10.2	
	P.M. 6.10			㉚	10.2		26	10.2	
	A.M. 2.6			㉛	10.2		26	10.2	
	P.M. 6.10			㉜	10.2		26	10.2	
	A.M. 2.6			㉝	10.2		26	10.2	
	P.M. 6.10			㉞	10.2		26	10.2	
	A.M. 2.6			㉟	10.2		26	10.2	
	P.M. 6.10			㊱	10.2		26	10.2	
	A.M. 2.6			㊲	10.2		26	10.2	
	P.M. 6.10			㊳	10.2		26	10.2	
	A.M. 2.6			㊴	10.2		26	10.2	
	P.M. 6.10			㊵	10.2		26	10.2	
	A.M. 2.6			㊶	10.2		26	10.2	
	P.M. 6.10			㊷	10.2		26	10.2	
	A.M. 2.6			㊸	10.2		26	10.2	
	P.M. 6.10			㊹	10.2		26	10.2	
	A.M. 2.6			㊺	10.2		26	10.2	
	P.M. 6.10			㊻	10.2		26	10.2	
	A.M. 2.6			㊼	10.2		26	10.2	
	P.M. 6.10			㊽	10.2		26	10.2	
	A.M. 2.6			㊾	10.2		26	10.2	
	P.M. 6.10			㊿	10.2		26	10.2	
	A.M. 2.6			1	10.2		26	10.2	
	P.M. 6.10			2	10.2		26	10.2	
	A.M. 2.6			3	10.2		26	10.2	
	P.M. 6.10			4	10.2		26	10.2	
	A.M. 2.6			5	10.2		26	10.2	
	P.M. 6.10			6	10.2		26	10.2	
	A.M. 2.6			7	10.2		26	10.2	
	P.M. 6.10			8	10.2		26	10.2	
	A.M. 2.6			9	10.2		26	10.2	
	P.M. 6.10			10	10.2		26	10.2	
	A.M. 2.6			11	10.2		26	10.2	
	P.M. 6.10			12	10.2		26	10.2	
	A.M. 2.6			13	10.2		26	10.2	
	P.M. 6.10			14	10.2		26	10.2	
	A.M. 2.6			15	10.2		26	10.2	
	P.M. 6.10			16	10.2		26	10.2	
	A.M. 2.6			17	10.2		26	10.2	
	P.M. 6.10			18	10.2		26	10.2	
	A.M. 2.6			19	10.2		26	10.2	
	P.M. 6.10			20	10.2		26	10.2	
	A.M. 2.6			21	10.2		26	10.2	
	P.M. 6.10			22	10.2		26	10.2	
	A.M. 2.6			23	10.2		26	10.2	
	P.M. 6.10			24	10.2		26	10.2	
	A.M. 2.6			25	10.2		26	10.2	
	P.M. 6.10			26	10.2		26	10.2	
	A.M. 2.6			27	10.2		26	10.2	
	P.M. 6.10			28	10.2		26	10.2	
	A.M. 2.6			29	10.2		26	10.2	
	P.M. 6.10			30	10.2		26	10.2	
	A.M. 2.6			31	10.2		26	10.2	
	P.M. 6.10			1	10.2		26	10.2	
	A.M. 2.6			2	10.2		26	10.2	
	P.M. 6.10			3	10.2		26	10.2	
	A.M. 2.6			4	10.2		26	10.2	
	P.M. 6.10			5	10.2		26	10.2	
	A.M. 2.6			6	10.2		26	10.2	
	P.M. 6.10			7	10.2		26	10.2	
	A.M. 2.6			8	10.2		26	10.2	
	P.M. 6.10			9	10.2		26	10.2	
	A.M. 2.6			10	10.2		26	10.2	
	P.M. 6.10			11	10.2		26	10.2	
	A.M. 2.6			12	10.2		26	10.2	
	P.M. 6.10			13	10.2		26	10.2	
	A.M. 2.6			14	10.2		26	10.2	
	P.M. 6.10			15	10.2		26	10.2	
	A.M. 2.6			16	10.2		26	10.2	
	P.M. 6.10			17	10.2		26	10.2	
	A.M. 2.6			18	10.2		26	10.2	
	P.M. 6.10			19	10.2		26	10.2	
	A.M. 2.6			20	10.2		26	10.2	
	P.M. 6.10			21	10.2		26	10.2	
	A.M. 2.6			22	10.2		26	10.2	
	P.M. 6.10			23	10.2		26	10.2	
	A.M. 2.6			24	10.2		26	10.2	
	P.M. 6.10			25	10.2		26	10.2	
	A.M. 2.6			26	10.2		26	10.2	
	P.M. 6.10			27	10.2		26	10.2	
	A.M. 2.6			28	10.2		26	10.2	
	P.M. 6.10			29	10.2		26	10.2	
	A.M. 2.6			30	10.2		26	10.2	
	P.M. 6.10			31	10.2		26	10.2	
	A.M. 2.6			1	10.2		26	10.2	
	P.M. 6.10			2	10.2		26	10.2	
	A.M. 2.6			3	10.2		26	10.2	
	P.M. 6.10			4	10.2		26	10.2	
	A.M. 2.6			5	10.2		26	10.2	
	P.M. 6.10			6	10.2		26	10.2	
	A.M. 2.6			7	10.2		26	10.2	
	P.M. 6.10			8	10.2		26	10.2	
	A.M. 2.6			9	10.2		26	10.2	
	P.M. 6.10			10	10.2		26	10.2	
	A.M. 2.6			11	10.2		26	10.2	
	P.M. 6.10			12	10.2		26	10.2	
	A.M. 2.6			13	10.2		26	10.2	
	P.M. 6.10			14	10.2		26	10.2	
	A.M. 2.6			15	10.2		26	10.2	
	P.M. 6.10			16	10.2		26	10.2	
	A.M. 2.6			17	10.2		26	10.2	
	P.M. 6.10			18	10.2		26	10.2	
	A.M. 2.6			19	10.2		26	10.2	
	P.M. 6.10			20	10.2		26	10.2	
	A.M. 2.6			21	10.2		26	10.2	
	P.M. 6.10			22	10.2		26	10.2	
	A.M. 2.6			23	10.2		26	10.2	
	P.M. 6.10			24	10.2		26	10.2	
	A.M. 2.6			25	10.2		26	10.2	
	P.M. 6.10			26	10.2		26	10.2	
	A.M. 2.6			27	10.2		26	10.2	
	P.M. 6.10			28	10.2		26	10.2	
	A.M. 2.6			29	10.2		26	10.2	
	P.M. 6.10			30	10.2		26	10.2	
	A.M. 2.6			31	10.2		26	10.2	
	P.M. 6.10			1	10.2		26	10.2	
	A.M. 2.6			2	10.2		26	10.2	
	P.M. 6.10			3					



















Disease		Date of Admission		Date of Discharge		Result	
Corps <u>10. H. 2.</u>		No. <u>15/142.</u>		Rank and Name <u>Capt. Bolton.</u>		Age <u>Service</u>	
Military Hospital <u>N 2. General</u>		Army Form B. 181.					
CLINICAL CHART.		(To be attached to Case Sheet.)					
Dates of Observation	Time	Time	Time	Time	Time	Time	Time
Days of Disease	Time	Time	Time	Time	Time	Time	Time
Temperature Fahrenheit.	Time	Time	Time	Time	Time	Time	Time
107°	8						
	6						
	4						
	2						
106°	8						
	6						
	4						
	2						
105°	8						
	6						
	4						
	2						
104°	8						
	6						
	4						
	2						
103°	8						
	6						
	4						
	2						
102°	8						
	6						
	4						
	2						
101°	8						
	6						
	4						
	2						
100°	8						
	6						
	4						
	2						
99°	8						
	6						
	4						
	2						
98°	8						
	6						
	4						
	2						
97°	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						
	4						
	2						
	8						
	6						



**MEDICAL CASE SHEET.\***

No. in Admission and Discharge Book.	Regimental No.	Rank.	Surname.	Christian Name.
	15/142	Capt.	Bolton	S. J.
Year	Unit.	Age.	Service.	
	N.Z. Army Pay Dept.	42	20 yrs.	
Station and Date.	Disease <u>Paratyphoid A.</u>			
Gen. Hosp. Cairo.	Admitted from Zeitoun Camp Nov. 21/15.			
	<u>Prev. History.</u>			
	Six days ago felt "out of sorts" - headache, no diarrhoea, no appetite and general malaise.			
	Last <u>three days</u> has had a little diarrhoea. Headache is no worse and generally feels better than before.			
	<u>Present condition:-</u> Feels well. Slight headache. No drowsiness. Tongue furred and moist.			
	Abdomen distended and tumid - no tenderness, no enlargement of spleen, no rash.			
	Slight diarrhoea - stools not characteristic.			
	Temperature runs up to 103° at night and pulse 84.			
Nov. 24/15	Temperature normal, pulse normal. Patient's general condition good. Feels well, is bright.			
	Culture & Widal taken.			
Nov. 26/15	All symptoms and signs have cleared up. Everything negative.			
Dec. 1/15	Result of Culture Paratyphoid A +.			
	Widal " " +.			
Dec. 16/15	Result of Faeces Exam. " " +.			
	Patient is well and has been "up" since Dec. 2/15 and is now on ordinary diet.			
	(Sgd) Fred T. Bowerbank Capt. NZMC.			







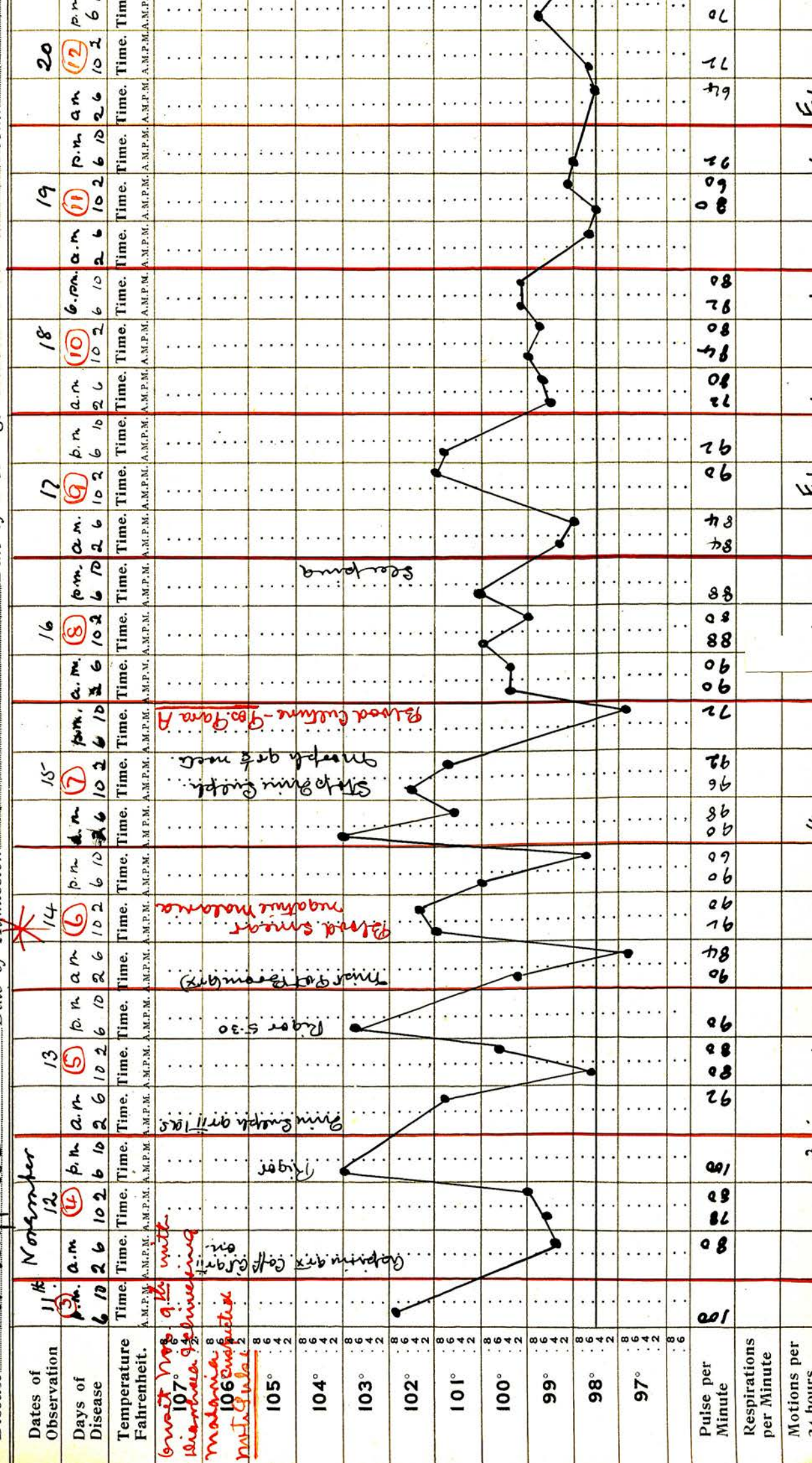








Dates of Observation	Time	Temperature Fahrenheit.	Pulse	Respirations per Minute	Motions per 24 hours	Date of Discharge		Result
						Time	Time	
11th Nov	6 p.m.	107°	100	100				
Days of Disease	12	107°	80	78				
	13	105°	86	80				
Temperature Fahrenheit.	14	104°	90	80				
	15	103°	92	80				
Temperature Fahrenheit.	16	102°	90	80				
	17	101°	90	80				
Temperature Fahrenheit.	18	100°	90	80				
	19	99°	90	80				
Temperature Fahrenheit.	20	98°	90	80				
	21	97°	90	80				



11th Nov 6 p.m. 107° with  
 12th Nov 10 a.m. 107° with  
 13th Nov 10 a.m. 105° with  
 14th Nov 10 a.m. 104° with  
 15th Nov 10 a.m. 103° with  
 16th Nov 10 a.m. 102° with  
 17th Nov 10 a.m. 101° with  
 18th Nov 10 a.m. 100° with  
 19th Nov 10 a.m. 99° with  
 20th Nov 10 a.m. 98° with  
 21st Nov 10 a.m. 97° with

14th Nov 6 p.m. Rigor  
 14th Nov 10 a.m. Rigor  
 14th Nov 10 p.m. Rigor  
 15th Nov 10 a.m. Rigor  
 15th Nov 10 p.m. Rigor  
 16th Nov 10 a.m. Rigor  
 16th Nov 10 p.m. Rigor  
 17th Nov 10 a.m. Rigor  
 17th Nov 10 p.m. Rigor  
 18th Nov 10 a.m. Rigor  
 18th Nov 10 p.m. Rigor  
 19th Nov 10 a.m. Rigor  
 19th Nov 10 p.m. Rigor  
 20th Nov 10 a.m. Rigor  
 20th Nov 10 p.m. Rigor  
 21st Nov 10 a.m. Rigor

14th Nov 10 a.m. Rigor  
 14th Nov 10 p.m. Rigor  
 15th Nov 10 a.m. Rigor  
 15th Nov 10 p.m. Rigor  
 16th Nov 10 a.m. Rigor  
 16th Nov 10 p.m. Rigor  
 17th Nov 10 a.m. Rigor  
 17th Nov 10 p.m. Rigor  
 18th Nov 10 a.m. Rigor  
 18th Nov 10 p.m. Rigor  
 19th Nov 10 a.m. Rigor  
 19th Nov 10 p.m. Rigor  
 20th Nov 10 a.m. Rigor  
 20th Nov 10 p.m. Rigor  
 21st Nov 10 a.m. Rigor

14th Nov 10 a.m. Rigor  
 14th Nov 10 p.m. Rigor  
 15th Nov 10 a.m. Rigor  
 15th Nov 10 p.m. Rigor  
 16th Nov 10 a.m. Rigor  
 16th Nov 10 p.m. Rigor  
 17th Nov 10 a.m. Rigor  
 17th Nov 10 p.m. Rigor  
 18th Nov 10 a.m. Rigor  
 18th Nov 10 p.m. Rigor  
 19th Nov 10 a.m. Rigor  
 19th Nov 10 p.m. Rigor  
 20th Nov 10 a.m. Rigor  
 20th Nov 10 p.m. Rigor  
 21st Nov 10 a.m. Rigor











**MEDICAL CASE SHEET.\***

No. in Admission and Discharge Book. 4935 Year 1915	Regimental No. 7/226	Rank. L/C.  Unit. N.Z.A.S.C.	Surname. Macey	Christian Name.   Age. 27  Service. 15/12
Station and Date. Z.G. Hosp. Cairo.	Disease <u>Enteric - Paratyphoid A.</u>			
Admitted 11.11.15 from Maadi suffering from un-diagnosed fever.				
Previous health - illness in 1913 diagnosed as Rheumatic Dec.				
Pericarditis and in/1915 Scarlet Fever.				
<u>Health in Camp</u> - Arrived from N.Z. Dec. 3rd 1914 - went to Gallipoli on May 8th with horses but did not land. Returned in 3 weeks to Alexandria (Sidi Bishr). Sick parade once in Sidi Bishr for diarrhoea.				
<u>Present illness</u> - Paraded at hospital from Maadi on 11th and was admitted with severe backache and shivering.				
<u>On admission</u> - Patient's temperature 103°. Pulse 112.				
<u>Present condition.</u> - Since admission morning temperature has been low with an evening rise to 103° - 104°.				
Tongue moist & clean - slight sore throat, nasal catarrh and slight cough.				
<u>Heart</u> - Percussion area slightly enlarged out towards Lt.				
Systolic bruit mitral, at apex. Pulmonary <sup>2nd</sup> sound accentuated and re-duplicated. Heart irregular in rythm.				
<u>Lungs</u> - normal.				
<u>Abdomen</u> - Rather tumid. Liver & Spleen not palpable.				
<u>Skin</u> - Face <del>slightly</del> highly flushed, and also back & front of chest with suspicion of punctate eruption but no definite or typical rash.				
14/11/15	General condition slightly improved. Blood smear sent for exam. ? malaria - negative.			
Blood taken for culture typhoid & Widal reaction.				
Received reply from Laboratory:- Culture - positive (+) para-				

\*The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.



Station  
and Date.

typhoid. **A**

18/11/15

Temperature falling, condition much improved.

(Sgd). W. F. Findlay.

Capt., N.Z.M.C.







(To be attached to Case Sheet.)

Military Hospital N 7. General

Rank and Name *Plc Reddells, W. H.* Age *15* Service *Army*

Disease *Quarrel* Date of Admission *24. 7. 15* Date of Discharge *13* Result *pu.*

Dates of Observation	Time	Temp. Fahrenheit	Temp. Centigrade	Pulse	Respirations	Motions	Notes
4	A.M. 7.5	102	38.3	96	28	100	
	10.2	102	38.5	96	28	100	
	2.6	102	38.7	96	28	100	
	5.5	102	38.9	96	28	100	
	8.2	102	39.1	96	28	100	
	10.2	102	39.3	96	28	100	
	1.2	102	39.5	96	28	100	
	3.2	102	39.7	96	28	100	
	5.2	102	39.9	96	28	100	
	7.2	102	40.1	96	28	100	
	9.2	102	40.3	96	28	100	
	11.2	102	40.5	96	28	100	
	1.2	102	40.7	96	28	100	
	3.2	102	40.9	96	28	100	
	5.2	102	41.1	96	28	100	
	7.2	102	41.3	96	28	100	
	9.2	102	41.5	96	28	100	
	11.2	102	41.7	96	28	100	
	1.2	102	41.9	96	28	100	
	3.2	102	42.1	96	28	100	
	5.2	102	42.3	96	28	100	
	7.2	102	42.5	96	28	100	
	9.2	102	42.7	96	28	100	
	11.2	102	42.9	96	28	100	
	1.2	102	43.1	96	28	100	
	3.2	102	43.3	96	28	100	
	5.2	102	43.5	96	28	100	
	7.2	102	43.7	96	28	100	
	9.2	102	43.9	96	28	100	
	11.2	102	44.1	96	28	100	
	1.2	102	44.3	96	28	100	
	3.2	102	44.5	96	28	100	
	5.2	102	44.7	96	28	100	
	7.2	102	44.9	96	28	100	
	9.2	102	45.1	96	28	100	
	11.2	102	45.3	96	28	100	
	1.2	102	45.5	96	28	100	
	3.2	102	45.7	96	28	100	
	5.2	102	45.9	96	28	100	
	7.2	102	46.1	96	28	100	
	9.2	102	46.3	96	28	100	
	11.2	102	46.5	96	28	100	
	1.2	102	46.7	96	28	100	
	3.2	102	46.9	96	28	100	
	5.2	102	47.1	96	28	100	
	7.2	102	47.3	96	28	100	
	9.2	102	47.5	96	28	100	
	11.2	102	47.7	96	28	100	
	1.2	102	47.9	96	28	100	
	3.2	102	48.1	96	28	100	
	5.2	102	48.3	96	28	100	
	7.2	102	48.5	96	28	100	
	9.2	102	48.7	96	28	100	
	11.2	102	48.9	96	28	100	
	1.2	102	49.1	96	28	100	
	3.2	102	49.3	96	28	100	
	5.2	102	49.5	96	28	100	
	7.2	102	49.7	96	28	100	
	9.2	102	49.9	96	28	100	
	11.2	102	50.1	96	28	100	
	1.2	102	50.3	96	28	100	
	3.2	102	50.5	96	28	100	
	5.2	102	50.7	96	28	100	
	7.2	102	50.9	96	28	100	
	9.2	102	51.1	96	28	100	
	11.2	102	51.3	96	28	100	
	1.2	102	51.5	96	28	100	
	3.2	102	51.7	96	28	100	
	5.2	102	51.9	96	28	100	
	7.2	102	52.1	96	28	100	
	9.2	102	52.3	96	28	100	
	11.2	102	52.5	96	28	100	
	1.2	102	52.7	96	28	100	
	3.2	102	52.9	96	28	100	
	5.2	102	53.1	96	28	100	
	7.2	102	53.3	96	28	100	
	9.2	102	53.5	96	28	100	
	11.2	102	53.7	96	28	100	
	1.2	102	53.9	96	28	100	
	3.2	102	54.1	96	28	100	
	5.2	102	54.3	96	28	100	
	7.2	102	54.5	96	28	100	
	9.2	102	54.7	96	28	100	
	11.2	102	54.9	96	28	100	
	1.2	102	55.1	96	28	100	
	3.2	102	55.3	96	28	100	
	5.2	102	55.5	96	28	100	
	7.2	102	55.7	96	28	100	
	9.2	102	55.9	96	28	100	
	11.2	102	56.1	96	28	100	
	1.2	102	56.3	96	28	100	
	3.2	102	56.5	96	28	100	
	5.2	102	56.7	96	28	100	
	7.2	102	56.9	96	28	100	
	9.2	102	57.1	96	28	100	
	11.2	102	57.3	96	28	100	
	1.2	102	57.5	96	28	100	
	3.2	102	57.7	96	28	100	
	5.2	102	57.9	96	28	100	
	7.2	102	58.1	96	28	100	
	9.2	102	58.3	96	28	100	
	11.2	102	58.5	96	28	100	
	1.2	102	58.7	96	28	100	
	3.2	102	58.9	96	28	100	
	5.2	102	59.1	96	28	100	
	7.2	102	59.3	96	28	100	
	9.2	102	59.5	96	28	100	
	11.2	102	59.7	96	28	100	
	1.2	102	59.9	96	28	100	
	3.2	102	60.1	96	28	100	
	5.2	102	60.3	96	28	100	
	7.2	102	60.5	96	28	100	
	9.2	102	60.7	96	28	100	
	11.2	102	60.9	96	28	100	
	1.2	102	61.1	96	28	100	
	3.2	102	61.3	96	28	100	
	5.2	102	61.5	96	28	100	
	7.2	102	61.7	96	28	100	
	9.2	102	61.9	96	28	100	
	11.2	102	62.1	96	28	100	
	1.2	102	62.3	96	28	100	
	3.2	102	62.5	96	28	100	
	5.2	102	62.7	96	28	100	
	7.2	102	62.9	96	28	100	
	9.2	102	63.1	96	28	100	
	11.2	102	63.3	96	28	100	
	1.2	102	63.5	96	28	100	
	3.2	102	63.7	96	28	100	
	5.2	102	63.9	96	28	100	
	7.2	102	64.1	96	28	100	
	9.2	102	64.3	96	28	100	
	11.2	102	64.5	96	28	100	
	1.2	102	64.7	96	28	100	
	3.2	102	64.9	96	28	100	
	5.2	102	65.1	96	28	100	
	7.2	102	65.3	96	28	100	
	9.2	102	65.5	96	28	100	
	11.2	102	65.7	96	28	100	
	1.2	102	65.9	96	28	100	
	3.2	102	66.1	96	28	100	
	5.2	102	66.3	96	28	100	
	7.2	102	66.5	96	28	100	
	9.2	102	66.7	96	28	100	
	11.2	102	66.9	96	28	100	
	1.2	102	67.1	96	28	100	
	3.2	102	67.3	96	28	100	
	5.2	102	67.5	96	28	100	
	7.2	102	67.7	96	28	100	
	9.2	102	67.9	96	28	100	
	11.2	102	68.1	96	28	100	
	1.2	102	68.3	96	28	100	
	3.2	102	68.5	96	28	100	
	5.2	102	68.7	96	28	100	
	7.2	102	68.9	96	28	100	
	9.2	102	69.1	96	28	100	
	11.2	102	69.3	96	28	100	
	1.2	102	69.5	96	28	100	
	3.2	102	69.7	96	28	100	
	5.2	102	69.9	96	28	100	
	7.2	102	70.1	96	28	100	
	9.2	102	70.3	96	28	100	
	11.2	102	70.5	96	28	100	
	1.2	102	70.7	96	28	100	
	3.2	102	70.9	96	28	100	
	5.2	102	71.1	96	28	100	
	7.2	102	71.3	96	28	100	
	9.2	102	71.5	96	28	100	
	11.2	102	71.7	96	28	100	
	1.2	102	71.9	96	28	100	
	3.2	102	72.1	96	28	1	











CLINICAL CHART.

(To be attached to Case Sheet.)

Corps. N. 2. 8. a.

No. 2/1374

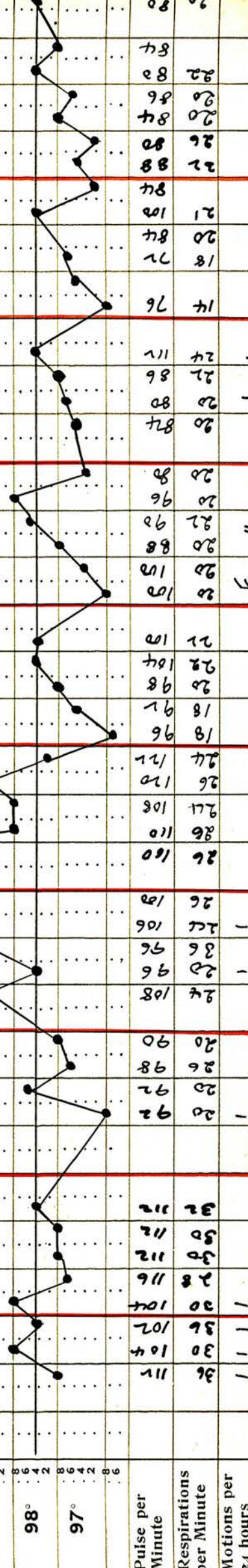
Rank and Name Private Reellets, W. H.

Military Hospital N. 2. General

Age Service Date of Admission 24.7.15 Date of Discharge Result

Dates of Observation	September 3		4		5		6		7		8		9		10		11		12		13		14		15	
	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
Days of Disease	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Temperature Fahrenheit.	107°	106°	105°	104°	103°	102°	101°	100°	99°	98°	97°	98°	99°	100°	101°	102°	103°	104°	105°	106°	107°	108°	109°	110°	111°	112°
Pulse per Minute	111	104	102	104	108	96	106	120	112	108	92	104	112	120	108	96	106	112	120	108	92	104	112	120	108	92
Respirations per Minute	36	30	30	30	30	36	32	36	36	36	32	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

continuous rigidity }  
 pharynx }  
 pharynx not given

































Dates of Observation	Time	Temp.	Pulse	Respirations	Motions
December 6	2 a.m.	107°	96	104	
	6 a.m.	106°	96	104	
	10 a.m.	105°	96	104	
	2 p.m.	104°	96	104	
	6 p.m.	103°	96	104	
	10 p.m.	102°	96	104	
	2 a.m.	101°	96	104	
	6 a.m.	100°	96	104	
	10 a.m.	99°	96	104	
	2 p.m.	98°	96	104	
	6 p.m.	97°	96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.		96	104	
	6 p.m.		96	104	
	10 p.m.		96	104	
	2 a.m.		96	104	
	6 a.m.		96	104	
	10 a.m.		96	104	
	2 p.m.				



Disease		Date of Admission		Date of Discharge		Result	
Corps. N. 2. A. S. C.		No. 6/2674		25. 11. 15.			
Rank and Name		Lower Jolly, J. D.					
Age		40		Service		7/14	
Military Hospital		N. 2 General					
Army Form B. 161.							
Dates of Observation	Time	Time	Time	Time	Time	Time	Time
December 16	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.
17	26	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6
18	27	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6
19	28	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6
20	29	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6	10 2 6
21	30						
22							
23							
24							
25							
26	35						
27							
28							
29							
30	40						
31							
January 1							
2							
3							
4							
5	45						
Temperature Fahrenheit.							
107°	8						
	6						
	4						
106°	8						
	6						
	4						
105°	8						
	6						
	4						
104°	8						
	6						
	4						
103°	8						
	6						
	4						
102°	8						
	6						
	4						
101°	8						
	6						
	4						
100°	8						
	6						
	4						
99°	8						
	6						
	4						
98°	8						
	6						
	4						
97°	8						
	6						
	4						
	2						
Pulse per Minute	102	71	71	66	70	80	78
	94	96	96	96	96	96	96
Respirations per Minute	102	71	71	66	70	80	78
	94	96	96	96	96	96	96
Motions per 24 hours							



















































Dates of Observation	October		November							December																					
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Days of Disease	50					55				60					65					70					75						80
Temperature Fahrenheit.	99	99	98	97	97	99	97	99	99	98	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
107°	8	6	4	2																											
106°	8	6	4	2																											
105°	8	6	4	2																											
104°	8	6	4	2																											
103°	8	6	4	2																											
102°	8	6	4	2																											
101°	8	6	4	2																											
100°	8	6	4	2																											
99°	8	6	4	2																											
98°	8	6	4	2																											
97°	8	6	4	2																											
Pulse per Minute	69	69	68	72	62	79	72	68	69	88	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
Respirations per Minute	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Discharge to N. 2.































Corps W. A. M. R.

CLINICAL CHART  
(To be attached to Case Sheet.)

Military Hospital N. 2. General

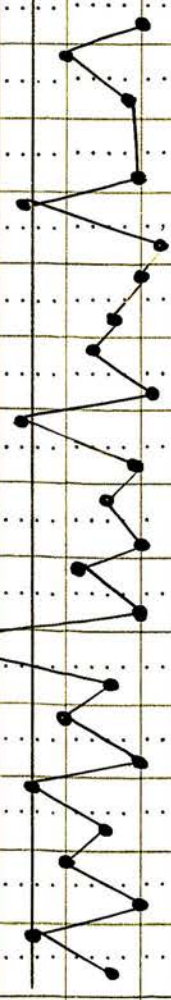
No. 13/668.

Rank and Name Srpr. Bond, L.

Age 35 Service 1 1/2

Disease..... Date of Admission 2. 9. 18. Date of Discharge..... Result.....

Dates of Observation	October		9	10	11	12	13	14	15	16	17	18	19	20	21	22.
	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.
Days of Disease						<u>55</u>					<u>60</u>					<u>65</u>
Temperature Fahrenheit.																
107°	8	6	4	2												
106°	8	6	4	2												
105°	8	6	4	2												
104°	8	6	4	2												
103°	8	6	4	2												
102°	8	6	4	2												
101°	8	6	4	2												
100°	8	6	4	2												
99°	8	6	4	2												
98°	8	6	4	2												
97°	8	6	4	2												
Pulse per Minute	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
Respirations per Minute	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1





No. 16/589 Rank and Name Private Seanga G.

Age 24 Service

Disease Abdominal Cyst Parathyroid A

Date of Admission 16. 2. 16 Date of Discharge Result

Dates of Observation	Days of Disease	Temperature Fahrenheit.	16		17		18		19		20		21		22		23		24		25	
			a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
107°			184	185	96	92	102	96	102	92	92	88	104	96	80	72	76	92	78	96	80	92
106°			26	28	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
105°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
104°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
103°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
102°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
101°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
100°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
99°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
98°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
97°			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92
			100	100	96	92	98	96	92	88	92	88	104	96	80	72	76	92	78	96	80	92



Dates of Observation	February		27		28		29		March 1		2		3.		Time.	Time.	Time.	Time.	Time.	Time.
	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.	Time.						
Days of Disease	26	25	26	26	27	27	28	28	29	29	30	30	31	31						
Temperature Fahrenheit.	107°	106°	105°	104°	103°	102°	101°	100°	99°	98°	97°	96	98	101	104	107	112	120	120	120
Pulse per Minute	80	84	86	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82
Respirations per Minute	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Discharged to N. 2.

Spinal meningitis.

General meningitis.











No. 7/1283

Rank and Name

Singer Rowe - J

Age 25 Service

Disease

Date of Admission

27. 10. 15. Date of Discharge

Result

Dates of Observation	November 19		20		21		22		23		24		25		26		27		28			
	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.	A.M.P.M.		
Days of Disease	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26		
Temperature Fahrenheit.	86	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84		
107°																						
106°																						
105°																						
104°																						
103°																						
102°																						
101°																						
100°																						
99°																						
98°																						
97°																						
Pulse per Minute	78	80	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	88	
Respirations per Minute																						
Motions per 24 hours																						

Nov 19

Nov 20

Nov 21

Nov 22

Nov 23

Nov 24

Nov 25

Nov 26

Nov 27

Nov 28

Nov 29

Nov 30

Dec 1

Dec 2

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.

26 P.M.

26 A.M.















C. M. R.

CLINICAL CHART  
(To be attached to Case Sheet.)

Military Hospital

Rank and Name Sergeant Rowe J.

Age 25 Service

Date of Admission 27.10.15

Date of Discharge

Disease

Dates of Observation	30		31		1		2		3		4		5		6		7		8		9		10		11		12		13		14			
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.				
Days of Disease	2	6	10	3	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	
Temperature Fahrenheit.	107°	107°	106°	106°	105°	105°	104°	104°	103°	103°	102°	102°	101°	101°	100°	100°	99°	99°	98°	98°	97°	97°	97°	97°	97°	97°	97°	97°	97°	97°	97°	97°	97°	
Pulse per Minute	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
Respirations per Minute	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

30

77

78

79

80

81

82

83

85

85

88

88

88

88

88

29

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88

26

77

78

79

80

81

82

83

85

85

88

88

88

88

88</



Disease		Date of Admission		Date of Discharge		Result	
Corps C. M. K.		No. 7/1283		Rank and Name		Inferior Range J.	
Military Hospital N. 2 General		Age 25		Service			
Disease		Date of Admission		Date of Discharge		Result	
Dates of Observation	Time	Time	Time	Time	Time	Time	Time
Days of Disease	Temperature Fahrenheit.						
14	107°	15	106°	16	105°	17	104°
15	106°	16	105°	17	104°	18	103°
16	105°	17	104°	18	103°	19	102°
17	104°	18	103°	19	102°	20	101°
18	103°	19	102°	20	101°	21	100°
19	102°	20	101°	21	99°	22	98°
20	101°	21	99°	22	98°	23	97°
21	100°	22	99°	23	98°	24	97°
22	99°	23	98°	24	97°	25	96°
23	98°	24	97°	25	96°	26	95°
24	97°	25	96°	26	95°	27	94°
25	96°	26	95°	27	94°	28	93°
26	95°	27	94°	28	93°	29	92°
27	94°	28	93°	29	92°	30	91°
28	93°	29	92°	30	91°	31	90°
29	92°	30	91°	31	90°	32	89°
30	91°	31	90°	32	89°	33	88°
31	90°	32	89°	33	88°	34	87°
32	89°	33	88°	34	87°	35	86°
33	88°	34	87°	35	86°	36	85°
34	87°	35	86°	36	85°	37	84°
35	86°	36	85°	37	84°	38	83°
36	85°	37	84°	38	83°	39	82°
37	84°	38	83°	39	82°	40	81°
38	83°	39	82°	40	81°	41	80°
39	82°	40	81°	41	80°	42	79°
40	81°	41	80°	42	79°	43	78°
41	80°	42	79°	43	78°	44	77°
42	79°	43	78°	44	77°	45	76°
43	78°	44	77°	45	76°	46	75°
44	77°	45	76°	46	75°	47	74°
45	76°	46	75°	47	74°	48	73°
46	75°	47	74°	48	73°	49	72°
47	74°	48	73°	49	72°	50	71°
48	73°	49	72°	50	71°	51	70°
49	72°	50	71°	51	70°	52	69°
50	71°	51	70°	52	69°	53	68°
51	70°	52	69°	53	68°	54	67°
52	69°	53	68°	54	67°	55	66°
53	68°	54	67°	55	66°	56	65°
54	67°	55	66°	56	65°	57	64°
55	66°	56	65°	57	64°	58	63°
56	65°	57	64°	58	63°	59	62°
57	64°	58	63°	59	62°	60	61°
58	63°	59	62°	60	61°	61	60°
59	62°	60	61°	61	60°	62	59°
60	61°	61	60°	62	59°	63	58°
61	60°	62	59°	63	58°	64	57°
62	59°	63	58°	64	57°	65	56°
63	58°	64	57°	65	56°	66	55°
64	57°	65	56°	66	55°	67	54°
65	56°	66	55°	67	54°	68	53°
66	55°	67	54°	68	53°	69	52°
67	54°	68	53°	69	52°	70	51°
68	53°	69	52°	70	51°	71	50°
69	52°	70	51°	71	50°	72	49°
70	51°	71	50°	72	49°	73	48°
71	50°	72	49°	73	48°	74	47°
72	49°	73	48°	74	47°	75	46°
73	48°	74	47°	75	46°	76	45°
74	47°	75	46°	76	45°	77	44°
75	46°	76	45°	77	44°	78	43°
76	45°	77	44°	78	43°	79	42°
77	44°	78	43°	79	42°	80	41°
78	43°	79	42°	80	41°	81	40°
79	42°	80	41°	81	40°	82	39°
80	41°	81	40°	82	39°	83	38°
81	40°	82	39°	83	38°	84	37°
82	39°	83	38°	84	37°	85	36°
83	38°	84	37°	85	36°	86	35°
84	37°	85	36°	86	35°	87	34°
85	36°	86	35°	87	34°	88	33°
86	35°	87	34°	88	33°	89	32°
87	34°	88	33°	89	32°	90	31°
88	33°	89	32°	90	31°	91	30°
89	32°	90	31°	91	30°	92	29°
90	31°	91	30°	92	29°	93	28°
91	30°	92	29°	93	28°	94	27°
92	29°	93	28°	94	27°	95	26°
93	28°	94	27°	95	26°	96	25°
94	27°	95	26°	96	25°	97	24°
95	26°	96	25°	97	24°	98	23°
96	25°	97	24°	98	23°	99	22°
97	24°	98	23°	99	22°	100	21°
98	23°	99	22°	100	21°	101	20°
99	22°	100	21°	101	20°	102	19°
100	21°	101	20°	102	19°	103	18°
101	20°	102	19°	103	18°	104	17°
102	19°	103	18°	104	17°	105	16°
103	18°	104	17°	105	16°	106	15°
104	17°	105	16°	106	15°	107	14°
105	16°	106	15°	107	14°	108	13°
106	15°	107	14°	108	13°	109	12°
107	14°	108	13°	109	12°	110	11°
108	13°	109	12°	110	11°	111	10°
109	12°	110	11°	111	10°	112	9°
110	11°	111	10°	112	9°	113	8°
111	10°	112	9°	113	8°	114	7°
112	9°	113	8°	114	7°	115	6°
113	8°	114	7°	115	6°	116	5°
114	7°	115	6°	116	5°	117	4°
115	6°	116	5°	117	4°	118	3°
116	5°	117	4°	118	3°	119	2°
117	4°	118	3°	119	2°	120	1°
118	3°	119	2°	120	1°	121	0°
119	2°	120	1°	121	0°	122	-1°
120	1°	121	0°	122	-1°	123	-2°
121	0°	122	-1°	123	-2°	124	-3°
122	-1°	123	-2°	124	-3°	125	-4°
123	-2°	124	-3°	125	-4°	126	-5°
124	-3°	125	-4°	126	-5°	127	-6°
125	-4°	126	-5°	127	-6°	128	-7°
126	-5°	127	-6°	128	-7°	129	-8°
127	-6°	128	-7°	129	-8°	130	-9°
128	-7°	129	-8°	130	-9°	131	-10°
129	-8°	130	-9°	131	-10°	132	-11°
130	-9°	131	-10°	132	-11°	133	-12°
131	-10°	132	-11°	133	-12°	134	-13°
132	-11°	133	-12°	134	-13°	135	-14°
133	-12°	134	-13°	135	-14°	136	-15°
134	-13°	135	-14°	136	-15°	137	-16°
135	-14°	136	-15°	137	-16°	138	-17°
136	-15°	137	-16°	138	-17°	139	-18°
137	-16°	138	-17°	139	-18°	140	-19°
138	-17°	139	-18°	140	-19°	141	-20°
139	-18°	140	-19°	141	-20°	142	-21°
140	-19°	141	-20°	142	-21°	143	-22°
141	-20°	142	-21°	143	-22°	144	-23°
142	-21°	143	-22°	144	-23°	145	-24°
143	-22°	144	-23°	145	-24°	146	-25°
144	-23°	145	-24°	146	-25°	147	-26°
145	-24°	146	-25°	147	-26°	148	-27°
146	-25°	147	-26°	148	-27°	149	-28°
147	-26°	148	-27°	149	-28°	150	-29°
148	-27°	149	-28°	150	-29°	151	-30°
149	-28°	150	-29°	151	-30°	152	-31°
150	-29°	151	-30°	152	-31°	153	-32°
151	-30°	152	-31°	153	-32°	154	-33°
152	-31°	153	-32°	154	-33°	155	-34°
153	-32°	154	-33°	155	-34°	156	-35°
154	-33°	155	-34°	156	-35°	157	-36°
155	-34°	156	-35°	157	-36°	158	-37°
156	-35°	157	-36°	158	-37°	159	-38°
157	-36°	158	-37°	159	-38°	160	-39°
158	-37°	159	-38°	160	-39°	161	-40°
159	-38°	160	-39°	161	-40°	162	-41°
160	-39°	161	-40°	162	-41°	163	-42°
161	-40°	162	-41°	163	-42°	164	-43°
162	-41°	163	-42°	164	-43°	165	-44°
163	-42°	164	-43°	165	-44°	166	-45°
164	-43°	165	-44°	166	-45°	167	-46°
165	-44°	166	-45°	167	-46°	168	-47°
166	-45°	167	-46°	168	-47°	169	-48°
167	-46°	168	-47°	169	-48°	170	-49°
168	-47°	169	-48°	170	-49°	171	-50°
169	-48°	170	-49°	171	-50°	172	-51°
170	-49°	171	-50°	172	-51°		































Corps

Military Hospital N. 2. General

No. 8/2403 Rank and Name Private Anderson

Age 21 Service

Disease \_\_\_\_\_ Date of Admission 11. 9. 15. Date of Discharge \_\_\_\_\_ Result \_\_\_\_\_

Dates of Observation	Sep 18		23		24		25		26		27		28		29		30		October 1		2		3		4		5		6		7	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		
Temperature Fahrenheit.	80	72	76	68	72	80	60	60	72	72	60	60	74	80	76	72	80	84	72	82	84	72	76	80	76	70	88	84	78	80	86	
Pulse per Minute	72	80	76	68	72	80	60	60	72	72	60	60	74	80	76	72	80	84	72	82	84	72	76	80	76	70	88	84	78	80	86	
Respirations per Minute	72	80	76	68	72	80	60	60	72	72	60	60	74	80	76	72	80	84	72	82	84	72	76	80	76	70	88	84	78	80	86	
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

Soldier's life eos.

High Colicoid q<sup>iv</sup> gr<sup>ss</sup> b<sup>dy</sup>.











Corps. W. S. K.

CLINICAL CHART  
(To be attached to Case Sheet.)

Military Hospital N. 2. General

No. 10/762

Rank and Name  
Corpl Lawley, J.

Age 22 Service

Date of Admission 11. 9. 15

Date of Discharge

Result

Disease	September 25	26	27	28	29	30	October 1	2	3	4
Dates of Observation	A.M. 26	P.M. 10	A.M. 26	P.M. 10	A.M. 26	P.M. 10	A.M. 26	P.M. 10	A.M. 26	P.M. 10
Days of Disease	17	18	19	20	21	22	23	24	25	26
Temperature Fahrenheit.	107°	106°	105°	104°	103°	102°	101°	100°	99°	98°
Pulse per Minute	84	84	84	84	84	84	84	84	84	84
Respirations per Minute	26	26	26	26	26	26	26	26	26	26
Motions per 24 hours	1	1	1	1	1	1	1	1	1	1

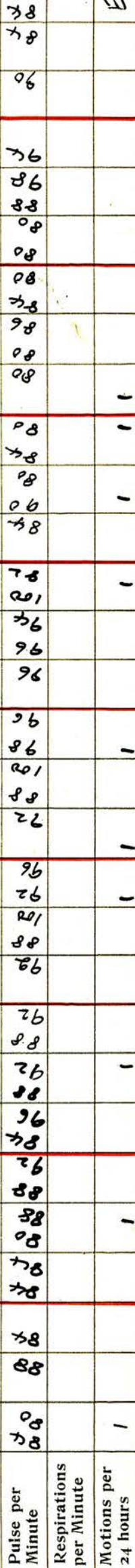
T.A.B. Vaccine 200milligrams

T.A.B. Vaccine 1000milligrams

Scarping

Scarping

Resting with diet









No. 6/2464 Rank and Name **Private Pollock, J.**

Age 32 Service

Disease **Dysphasia Nervosa.**

Date of Admission **11. 9. 15.**

Date of Discharge

Dates of Observation	Time	Temperature Fahrenheit.	Pulse	Respirations per Minute	Motions per 24 hours
September 11	5	107°	88	16	
12	7	106°	88	16	
13	8	105°	88	16	
14	8	104°	88	16	
15	9	103°	88	16	
16	10	102°	88	16	
17	11	101°	88	16	
18	12	100°	88	16	
19	13	99°	88	16	
20	14	98°	88	16	
21	15	97°	88	16	
22	16	96	88	16	

**Sept 6th**  
 Great Slight 6th with diarrhoea. Headache remaining. Spasms in abdomen.

**Sept 14th**  
 1000 million typhoid vaccine.

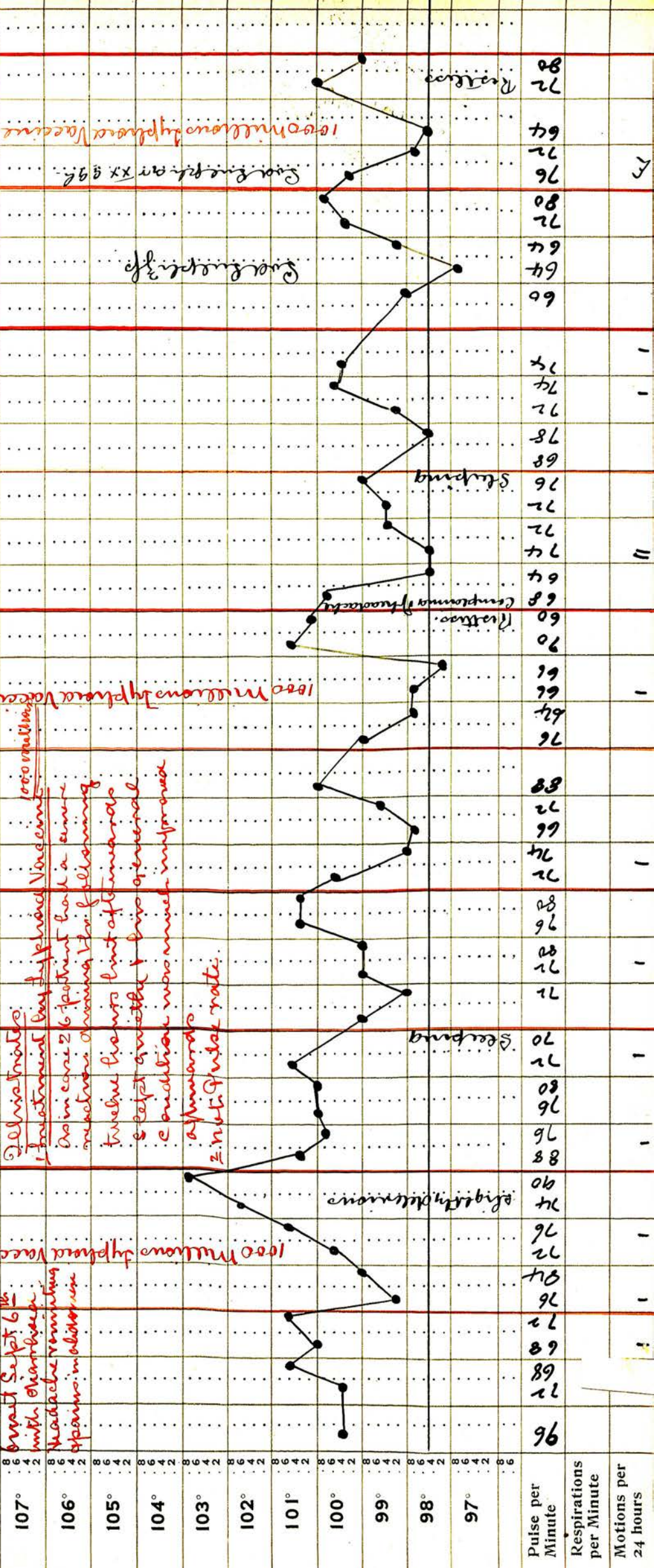
**Sept 15th**  
 Delirium treated by physical vaccine. As in case 26 patient had a course of infection during the following twelve hours but afterwards kept quiet & his general condition was much improved. Approximate 2. normal rate.

**Sept 18th**  
 1000 million typhoid vaccine.

**Sept 19th**  
 Sleeping

**Sept 21st**  
 Good sleep

**Sept 22nd**  
 1000 million typhoid vaccine

































No. 8/2108

Rank and Name Sawato Reid, G. R.

Age 28 Service

Disease Typhoid fever

Date of Admission 11. 10. 15

Date of Discharge

Result

Dates of Observation	Time	Temperature Fahrenheit.	Pulse per Minute	Respirations per Minute	Motions per 24 hours
October 11	15	98	88	28	3
October 12	6 a.m.	92	100	112	
October 12	6 p.m.	88	92	80	
October 13	6 a.m.	88	92	80	
October 13	6 p.m.	88	92	80	
October 14	6 a.m.	88	92	80	
October 14	6 p.m.	88	92	80	
October 15	6 a.m.	88	92	80	
October 15	6 p.m.	88	92	80	
October 16	6 a.m.	88	92	80	
October 16	6 p.m.	88	92	80	
October 17	6 a.m.	88	92	80	
October 17	6 p.m.	88	92	80	
October 18	6 a.m.	88	92	80	
October 18	6 p.m.	88	92	80	
October 19	6 a.m.	88	92	80	
October 19	6 p.m.	88	92	80	
October 20	6 a.m.	88	92	80	
October 20	6 p.m.	88	92	80	
October 21	6 a.m.	88	92	80	
October 21	6 p.m.	88	92	80	
October 22	6 a.m.	88	92	80	
October 22	6 p.m.	88	92	80	

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27



















Disease		Date of Admission		Date of Discharge		Result	
Corps W. M. R		Rank and Name		Date of Discharge		Result	
No. 11185		Sergeant McShaitt L. T.		November 1		58	
Age 27 Service		Military Hospital N. 2. General		November 2		58	
Army Form D. 181				November 3		58	
				November 4		58	
				November 5		58	
				November 6		58	
				November 7		58	
				November 8		58	
				November 9		58	
				November 10		58	
				November 11		58	
				November 12		58	
				November 13		58	
				November 14		58	
				November 15		58	
				November 16		58	
				November 17		58	
				November 18		58	
				November 19		58	
				November 20		58	
				November 21		58	
				November 22		58	
				November 23		58	
				November 24		58	
				November 25		58	
				November 26		58	
				November 27		58	
				November 28		58	
				November 29		58	
				November 30		58	
				December 1		58	
				December 2		58	
				December 3		58	
				December 4		58	
				December 5		58	
				December 6		58	
				December 7		58	
				December 8		58	
				December 9		58	
				December 10		58	
				December 11		58	
				December 12		58	
				December 13		58	
				December 14		58	
				December 15		58	
				December 16		58	
				December 17		58	
				December 18		58	
				December 19		58	
				December 20		58	
				December 21		58	
				December 22		58	
				December 23		58	
				December 24		58	
				December 25		58	
				December 26		58	
				December 27		58	
				December 28		58	
				December 29		58	
				December 30		58	
				January 1		58	
				January 2		58	
				January 3		58	
				January 4		58	
				January 5		58	
				January 6		58	
				January 7		58	
				January 8		58	
				January 9		58	
				January 10		58	
				January 11		58	
				January 12		58	
				January 13		58	
				January 14		58	
				January 15		58	
				January 16		58	
				January 17		58	
				January 18		58	
				January 19		58	
				January 20		58	
				January 21		58	
				January 22		58	
				January 23		58	
				January 24		58	
				January 25		58	
				January 26		58	
				January 27		58	
				January 28		58	
				January 29		58	
				January 30		58	
				February 1		58	
				February 2		58	
				February 3		58	
				February 4		58	
				February 5		58	
				February 6		58	
				February 7		58	
				February 8		58	
				February 9		58	
				February 10		58	
				February 11		58	
				February 12		58	
				February 13		58	
				February 14		58	
				February 15		58	
				February 16		58	
				February 17		58	
				February 18		58	
				February 19		58	
				February 20		58	
				February 21		58	
				February 22		58	
				February 23		58	
				February 24		58	
				February 25		58	
				February 26		58	
				February 27		58	
				February 28		58	
				February 29		58	
				March 1		58	
				March 2		58	
				March 3		58	
				March 4		58	
				March 5		58	
				March 6		58	
				March 7		58	
				March 8		58	
				March 9		58	
				March 10		58	
				March 11		58	
				March 12		58	
				March 13		58	
				March 14		58	
				March 15		58	
				March 16		58	
				March 17		58	
				March 18		58	
				March 19		58	
				March 20		58	
				March 21		58	
				March 22		58	
				March 23		58	
				March 24		58	
				March 25		58	
				March 26		58	
				March 27		58	
				March 28		58	
				March 29		58	
				March 30		58	
				April 1		58	
				April 2		58	
				April 3		58	
				April 4		58	
				April 5		58	
				April 6		58	
				April 7		58	
				April 8		58	
				April 9		58	
				April 10		58	
				April 11		58	
				April 12		58	
				April 13		58	
				April 14		58	
				April 15		58	
				April 16		58	
				April 17		58	
				April 18		58	
				April 19		58	
				April 20		58	
				April 21		58	
				April 22		58	
				April 23		58	
				April 24		58	
				April 25		58	
				April 26		58	
				April 27		58	
				April 28		58	
				April 29		58	
				April 30		58	
				May 1		58	
				May 2		58	
				May 3		58	
				May 4		58	
				May 5		58	
				May 6		58	
				May 7		58	
				May 8		58	
				May 9		58	
				May 10		58	
				May 11		58	
				May 12		58	
				May 13		58	
				May 14		58	
				May 15		58	
				May 16		58	
				May 17		58	
				May 18		58	
				May 19		58	
				May 20		58	
				May 21		58	
				May 22		58	
				May 23		58	
				May 24		58	
				May 25		58	
				May 26		58	
				May 27		58	
				May 28		58	
				May 29		58	
				May 30		58	
				June 1		58	
				June 2		58	
				June 3		58	
				June 4		58	
				June 5		58	
				June 6		58	
				June 7		58	
				June 8		58	
				June 9		58	
				June 10		58	
				June 11		58	
				June 12		58	
				June 13		58	
				June 14		58	
				June 15		58	
				June 16		58	
				June 17		58	
				June 18		58	
				June 19		58	
				June 20		58	
				June 21		58	
				June 22		58	
				June 23		58	
				June 24		58	
				June 25		58	
				June 26		58	
				June 27		58	
				June 28		58	
				June 29		58	
				June 30		58	
				July 1		58	
				July 2		58	
				July 3		58	
				July 4		58	
				July 5		58	
				July 6		58	
				July 7		58	
				July 8		58	
				July 9		58	
				July 10		58	
				July 11		58	
				July 12		58	
				July 13		58	
				July 14		58	
				July 15		58	
				July 16		58	
				July 17		58	
				July 18		58	
				July 19		58	
				July 20		58	
				July 21		58	
				July 22		58	































**MEDICAL CASE SHEET.\***

No. in Admission and Discharge Book.	Regimental No.	Rank.	Surname.	Christian Name.
	10/1164	Pte.	Smith,	C. P.
Year 1916	Unit.		Age.	Service.
	W. I. B.		21	14/12
Station and Date.	Disease <u>Bacillary Dysentery - Acute.</u>			
Gen. Hosp.	Admitted to this hospital on Apr. 6th 1916 with following			
de K.	history:-			
7th 1916	Invalided off Peninsula last July with Gastro Enteritis.			
	Went to Malta and from there on to England. There he was			
	said to have had Dysentery. Was 3 months ill. Had one			
	<u>relapse</u> while on furlough in England.			
4/16	Has been back from England for six weeks.			
	<u>Present illness.</u> This attack began suddenly one week ago.			
	Motions frequent and very loose. Vomiting began at beginning			
	of this attack and has continued off and on since. Was very			
	bad last night. Hiccough persistent.			
	Had Emetine Gr. 2/3 daily for 4 days in March. No result.			
	March 31st 1916. 40 c.c. Anti-Dysenteric Serum.			
	April 1st 1916. 20 c.c. Anti-Dysenteric Serum.			
	Patient improving.			
	Report attached to Transfer sheet showed B.Dysenteriae			
	(Shiga) isolated from stool.			
	Agglutinate with high <sup>time</sup> Anti serum (Shiga) up to 1 - 400.			
	Patient transferred from No.1 N.Z. Stat. Hospl. to N.Z.G.H.			
	April 6th 1916. On admission his condition was as follows:-			
	<u>Features</u> - pale and "pinched". Body covered with clammy			
	perspiration. Very restless, delirium at times. Could			
	answer questions. Temp. 98.8 pulse 100. Persistent hiccough.			
	<u>Exam.</u> Tongue dry and glazed. Sordies round teeth. Lips cracked.			
	<u>Abdomen</u> - tumid, distended.			
	Excessively tender to palpation or light percussion; especially			

The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.



## MEDICAL CASE SHEET.\*

No. in Admission and Discharge Book.	Regimental No.	Rank.	Surname.	Christian Name.
	10/1164	Pte.	Smith	C. P.
Year		Unit.		Age.
		W. I. B.		21
Station and Date.	<u>Disease</u> Bacillary Dysentery - acute.			
	in lower abdomen. Epigastric reflex lost. Dulness in lower abdomen. Patient catheterized 4 <sup>2</sup> 0 <sup>3</sup> drawn off.			
	Distension somewhat relieved.			
	<u>Circulatory system.</u> Pulse small and of low tension. Regular.			
	<u>Heart.</u> Diffuse cardiac impulse. Impulse beat felt best in 5th interspace just outside nipple line.			
	<u>Palpat.</u> - Thrill systolic in time at apex.			
	<u>Percus.</u> - Left border dulness extends just outside nipple line. Right border extends a little beyond normal limits of dulness.			
	<u>Auscultat.</u> - Systolic bruit in mitral area. Pulmonary 2nd sound triple reduplicat.			
	<u>Lungs.</u> - Normal in front.			
	<u>Treatment.</u> Morph. gr. 1/6.			
	Strych. gr. 1/30.		Statm.	
11 6th.	Anti-Dysenteric serum 30 c.c's. Intravenously.			
	Sodii Sulph. $\mathcal{Z}ii$ 2 hrly.			
	Turpentine Enema given. Result:- small greenish fluid motion. Quantity flatus.			
	<u>DIET.</u> Albumen water & <del>Whey</del> .			
	$\mathcal{Z}iv$ of each 2 hrly. alternat.			
11 7th.	Condition of patient improved.			
	Pulse full and regular. Patient still restless and wandering in speech. Temp. subnormal.			
	40 c.c's. Anti-Dysenteric Serum. 10 a.m.			
	Hiccough not so distressing.			

The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.



## MEDICAL CASE SHEET.\*

No. in Admission and Discharge Book.	Regimental No.	Rank.	Surname.	Christian Name.
	10/1164	Pte.	Smith	C. P.
Year	Unit.	Age.	Service.	
	W. I. B.	21	14/12	
Station and Date.	Disease <u>Bacillary Dysentery - acute.</u>			
7th.	40 c.c's. Anti-Dysenteric Serum at 9 p.m.			
	Enema given. Good faecal result. Flatus passed.			
	Catheter passed <del>3/XXI</del> 3/XXI			
8th.	40 c.c's. Anti-Dysenteric Serum at 10 a.m.			
	40 c.c's. " " " 10 p.m.			
	Catheter passed 3/XXX urine.			
9th.	40 c.c's. Anti-Dysenteric Serum at 10 a.m.			
	<u>Evening</u> - condition much worse. Catheter passed and urine drawn off. Cheyne Stokes breathing. Patient unconscious.			
10th.	Death.			
	(Sgd) W. S. WALLIS.			
	Capt. NZMC.			
	<u>POST MORTEM.</u>			
	Pte, Smith. Positive Shiga Dysentery.			
	<u>Right lung</u> :- Red hepatisation lower lobe.			
	<u>Heart</u> :- Right A. & V. dilated.			
	<u>Abdomen</u> :- Distended, especially Colon.			
	Colon contained a quantity of greenish liquid faeces. The mucous membrane had a dark purple appearance and was acutely inflamed throughout whole of its course. Sub. mucosa not affected. Inflammation extended up the small intestine for at least two feet beyond ileo-caecal valve, Peyer's patches being also involved in general inflammation.			
	<u>Stomach</u> contained a little glairy mucus but otherwise normal.			
	<u>Pancreas</u> :- enlarged.			
	<u>Liver</u> :- much enlarged and congested, showing signs of fatty degeneration.			

The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.



## MEDICAL CASE SHEET.\*

No. in Admission and Discharge Book.	Regimental No.	Rank.	Surname.	Christian Name.
	10/1164	Pte.	Smith	C. P.
Year		Unit.		Age.
		W. I. B.		21
				Service.
				14/12
Station and Date.	Disease <u>Bacillary Dysentery - acute.</u>			
	<u>POST MORTEM (Contd.)</u>			
	<u>Kidneys:-</u> Both enlarged and congested. Capsule did not strip readily.			
	<u>Spleen:-</u> Normal.			
	<u>Bladder:-</u> Partially distended.			
	<u>NOTE.</u> There was <u>NO</u> ulceration of the mucous membrane, although ill for 15 days.			

The first and last entries will be signed, and transfers from one Medical Officer to another, attested by their signatures.



SOME OBSERVATIONS UPON INTESTINAL DISEASE IN THE  
NEW ZEALAND EXPEDITIONARY FORCE IN EGYPT AND THE  
DARDANELLES, WITH SPECIAL REFERENCE TO THE  
ENTERICA GROUPS, FROM JULY 1915 to MARCH 1916.

BY FRED. T. BOWERBANK, MAJOR, N.Z.M.C.

The extreme importance of Intestinal Disease among the New Zealand troops may be gauged by an analysis of the admissions of New Zealanders to the No. 1 New Zealand General Hospital, Cairo, from July 1915 to March 1916.

Before, however, examining this summary, I shall give a short history of the medical arrangements prior to July 1915.

The New Zealand Expeditionary Force arrived in Egypt in December 1914, and consisted of the "Main Body" (8000 men) plus the 1st Reinforcements (2000 men). They were stationed in Cairo until April 1915, their numbers meanwhile having been increased by the 4000 men of the 2nd and 3rd Reinforcements. After the departure of the Expeditionary Force to Gallipoli, Zeitoun Camp became the Base for all fresh drafts from New Zealand. During this period we had neither Stationary nor Base Hospitals, though early in 1915 the Sirdar of Egypt very generously handed over the Egyptian Army Hospital, Pont de Koubbeh, to the New Zealand Government. The Staff, until our arrival, consisted of the Senior Medical Officer, Major Byam, R.A.M.C. with R.A.M.C. & N.Z.M.C. Medical Officers and orderlies and a few N.Z.A.N.S. Nurses. When we arrived in Cairo in July, we had the establishment of a two hundred bedded Stationary Hospital, the No. 1 New Zealand Stationary Hospital, which had arrived about a month earlier being stationed at Port Said. We immediately took over the Pont de Koubbeh Hospital, retaining only Major Byam who was acting in the interests of the Egyptian Army, and who was invaluable to us in every way, and the twenty-five Sisters and Staff Nurses of the N.Z.A.N.C. The Hospital was designed to accommodate two hundred and fifty patients, but owing to the excellence of the latrine arrangements etc., we were enabled to increase our bed accommodation by making use of the wide balconies and by the erection of





E.P.I.P. Tents etc., and within less than five weeks after our arrival we had accommodation for eight hundred patients. In September 1915 our bed accommodation was increased to nine hundred, and in January 1916 we were definitely established as a thousand and forty bedded Hospital (under the 1915 War Establishment). Appendix 1. Chart A, gives the Daily Bed **State** and Weekly Admission Rate. This digression is important, as it explains the absence of Records during the period December 1914 till June 1915, but during this period only a small percentage of the New Zealand sick and wounded were admitted to the Pont de Koubeh Hospital. For some months after our arrival the number of sickness and casualty cases from Gallipoli was so great that a proportion (which became less and less) of the New Zealanders was sent to Alexandria, Malta and England, though many of these were later transferred to us for Boarding and grading purposes. The foresight of the D.M.S. , Egypt, in establishing a central Pathological and Bacteriological Laboratory in Cairo was invaluable to us, as our own Bacteriologist did not arrive till October. After his arrival, however, we were able to improve our arrangements for the examination of Blood, Faeces, etc., with the result that the Bacteriological records reached a very high standard.

AN ANALYSIS OF THE ADMISSIONS FROM INTESTINAL DISEASES FOR THE PERIOD JULY 1st., 1915 TO MARCH 31st., 1916.

During this period we admitted a total of 6,836 patients from all causes. Of these:-

<u>DISEASES OF THE ALIMENTARY SYSTEM:-</u>		2524	or	36.9%
(a)	The Enterica Group accounted for	489	or	7.2%
(b)	The Dysentery Group       "       "	188	or	2.7%
(c)	Infective Enteritis       "       "	968	or	14.2%
(d)	Catarrhal Jaundice       "       "	328	or	4.8%

(e) The balance consisted of Gastritis, acute and chronic, and Debility after Intestinal Disease, and accounted for 8%. The latter were patients who were admitted with this diagnosis and in whom there were then present no signs or symptoms of active Intestinal Disease, but only a history of previous Diarrhoea. For the monthly incidence of each of the four chief Intestinal Diseases see Appendix 2, Chart B. For a comparison,



of these with the monthly incidence of admissions to the Medical Division for sickness due to other causes see Appendix 3, Table A.

During August, Infective Enteritis was at its highest point, falling at first rapidly and then more gradually, with the exception of a slight rise during December. This rise was caused by the reception of the slightly sick from Gallipoli prior to the withdrawal of the troops. A great proportion of these patients (December) stated that when they paraded sick in Gallipoli they were immediately "passed down" to the Beach. At the time we wrongly interpreted this as a preparation for a big attack.

THE ENTERICA GROUP showed the greatest incidence in August and gradually fell each month, the apparent increase from November to February being due to transfers of convalescents from Alexandria and Malta. Of the 93 cases of Enterica admitted in January, 66 were transfers.

THE DYSENTERY GROUP admissions were highest in August and gradually fell until March, the apparent increase in January being due to the transfer of 28 convalescent Dysentery patients from Alexandria.

CATARRHAL JAUNDICE, on the other hand, was lowest in August and was at its height during December and January. In other words, the Jaundice figures followed the thermometer, increasing in the colder weather and disappearing in the hot summer. The possible causal relationship of this disease with Infective Enteritis and the Enterica was considered, but no evidence could be adduced of any common factor. In spite of the large number of cases of Infective Enteritis in August 1915, the monthly incidence of Jaundice during that and the following month did not rise over nine cases, while the steady rise in the Jaundice figures during the three winter months was contemporaneous with a steady fall in the figures from Infective Enteritis.



ANALYSIS OF CASES BOARDED TO NEW ZEALAND.

An analysis of patients boarded and discharged to New Zealand from August 1st 1915 to June 19th 1916.

Appendix 4. Table B, gives these in detail.

During this period 1445 patients from all causes were discharged to New Zealand, out of a total of 6,836 admitted up to March 31st., being 21.1%. (The admissions during April and May were few in number and negligible, owing to the New Zealand troops having embarked for France in April).

INTESTINAL DISEASES accounted for ..... 515 or 35.7%

Of these, (a) the Enterica Group accounted for 362 or 25%

One reason for this very large percentage was the regulation brought in in August 1915, and to which I refer on page 31.)

(b) The Dysentery Group accounted for 76 or 5.3%

A number of Dysentery cases were, however, sent to England, i.e. 22, and the balance during the winter months to Cyprus and Luxor.

(c) Infective Enteritis accounted for only 34 or 2.3%.

and these were boarded on account of persistent and irregular Diarrhoea and Disordered Action of the Heart.

ETIOLOGY.

Much has been written on the causes of the various Intestinal Diseases from which the troops, and the New Zealanders in particular, suffered, but no reference has been made to what I consider the most important, viz - The widely different conditions met with in Egypt as compared with life in New Zealand. New Zealand has an equable climate, it is sparsely populated and it has few factories, the industries being practically wholly concerned in the export of farm produce. Consequently, congestion and overcrowding in the towns is practically unknown. Poverty, in the Continental sense, does not exist, and even the poorest classes are accustomed to a fresh and wholesome dietary. The rigid inspection of foodstuffs has reduced adulteration, which in Egypt means contamination, to a minimum. In a sense, this was a handicap to the New Zealanders, as the very



conditions of life and hygiene which had produced men of a physique equal to any troops in the world, rendered them less resistant under the laws of acquired immunity to the contaminated food of Egypt. The sanitation of the camps was certainly good, but in the immediate vicinity there were native villages which were filthy to the last degree, and the inevitable and most justly maligned fly was in evidence everywhere, as these native villages were most ideal breeding places for these filthy and deadly pests. At the Pont de Koubbeh Hospital every precaution was taken to protect or burn all garbage etc., and yet we were periodically visited by swarms of flies.

In spite of repeated warnings and orders by the Military Authorities, the soldiers were extremely careless in their choice, not only of the numerous eating houses which abound in Cairo, but in the food and drink which they partook of there. Though they were in every sense keen to become efficient as a fighting force, their utter disregard of all warnings regarding the dangers lurking in the average Cairo Restaurant was lamentable. I quite acknowledge that such conditions did not exist on the Peninsula, but a large number of the men who went over to Anzac were suffering from varying degrees of Intestinal Disease, and with the advent of the fly (there were no flies on Anzac for a short time after the troops landed) and the conditions prevailing in the matter of sanitation during the first three months, the spreading of disease was inevitable.

About the end of September we received a convoy of British sick from Suvla Bay, portions of regiments from Manchester and Glasgow. In physique and general fitness they were much inferior to the New Zealand troops, but they were practically all factory hands and had lived all their lives in congested districts, and compared with New Zealand, unhealthy surroundings. It is noteworthy that though practically all were medical cases, only 20% were suffering from Enteritis, and this in a milder degree than the New Zealanders who were being admitted about the same time, and enquiry as to a previous history of Diarrhoea elicited that but few of those suffering from other complaint



had had any Diarrhoea. As I have stated above, it was the exception to find a New Zealander who did not give a previous history of Diarrhoea, whatever the complaint he might be suffering from when admitted.

Again, of 255 cases of Dysentery admitted to the No. 5 Indian General Hospital, Alexandria, to October 1915, the vast majority came from Gallipoli. The mortality among these Indians was nil and the type of cases was, generally speaking, of slight severity. In a considerable number the symptoms were so mild that rest, Castor oil and Salines, and appropriate diet was all the treatment required. Only 15 cases or .6% were severe.

Of 660 cases (direct admissions) of Enterica and Dysentery at the No. 1. N.Z. Gen. Hospital, 33% to 40% were severe, and the mortality was 2.5%.

It was our experience that in the more serious Intestinal Infections, the prognosis was much more grave if the patient were wounded. Many of the cases of Dysentery and Enteric appeared to date from the time of injury, probably owing to decreased resistance through exposure, shock and loss of blood, and these cases were more refractory to treatment, symptoms were more severe, the disease ran a longer course and in some cases death occurred in patients who would otherwise have been expected to recover.



NOTES ON THE ENTERICA GROUP.PROPHYLAXIS.

In the New Zealand Camps and in Egypt, the Military Authorities were alive to the dangers of Enteric Epidemics such as devastated the troops in previous wars, and all precautions were taken, both in camp sanitation and in the supervision of water supplies and food. In view of these facts, it is difficult to understand why more importance has not been attached to the great danger of "Carriers". It is, of course impossible, practically, to examine the stools of all recruits, but it would be quite feasible to examine periodically, the faeces of all Regimental cooks.

(All cooks and cookhouse fatigues were paraded daily by the Sanitary Officer of the day, but it was merely a cursory examination and no attempt was made to place under special observation any men connected with the Cookhouse who paraded sick.)

A soldier who has once been diagnosed as suffering from one of the Enterica Infections is not permitted to return to duty for several months, and until repeated examinations have been made, and yet a cook may have a mild attack of Paratyphoid A, which is diagnosed as Influenza, and return to duty to infect the food of hundreds of soldiers. By the periodic examination of all military cooks, the danger of failing to diagnose a mild Enteric attack would be thereby reduced to a minimum.

PROPHYLACTIC INOCULATION\* -

The D.M.S. New Zealand, Colonel Purdy, recognised the necessity for systematic and universal inoculation, and it was largely due to his advice that the New Zealand Government made prophylactic inoculation against Typhoid Fever compulsory, but unfortunately many men had been attested before this regulation was embodied in the Attestation Form. Unfortunately too, little was then known of Paratyphoid A. & B. as a potential source of danger, these diseases being considered and referred to in even the up-to-date text books as mild types of Enteric Fever.



similar in many respects to Typhoid Fever but of minor importance ( See cases Murray 2, Clark 3.) Many of the cases of Paratyphoid A treated in the N.Z. Hospital were severe, and although the mortality rate was nil, the wastage can be realised by the following extract from the Report of our Bacteriologist:- "The incidence of Paratyphoid A. & B. varied at different periods and places, and since October 1915 the results obtained in Cairo, and in particular among N.Z. troops at the N.Z. General Hospital, show that Paratyphoid A was by far the most frequent cause of Enterica, constituting in the case of our Hospital over 80%". Of the 93 cases in which the causative organism was isolated 88 or 92.4% were due to Paratyphoid A. & B. The Main Body and 1st Reinforcement Draft which left New Zealand in October 1914, were not inoculated until they were nearing Egypt, but all later drafts up to the 9th Reinforcements, were inoculated within a short time after going into training at Trentham Training Depot (N.Z.) Owing to the interference with training due to the effects of the inoculation, later drafts have been inoculated on the Transports after leaving New Zealand. During my period of training at the Trentham Training Depot, I assisted in the double inoculation of about six thousand men, and it is interesting to note that in only one case did a man refuse inoculation. A few days of sanitary duty, however, converted him to the great advantages of prophylactic inoculation.

Serious after effects were practically unknown, and it was rare for a soldier to be off duty longer than forty-eight hours.

#### IMMUNITY CONFERRED BY N.Z. VACCINE.

Shortly after our arrival in Egypt in July 1915, a Commission which had been sent out from England to Egypt and the Dardanelles, issued a report in which they condemned the New Zealand Vaccine and recommended that all N.Z. troops should be re-inoculated with the R.A.M.C. Vaccine. The following is an extract from the Report of the Advisory Committee for the Prevention of Epidemic Disease - Mediterranean Exped. Force.

#### "ANTI-TYPHOID INOCULATION.

In one of our earliest enquiries (report on Cairo, 10th August,



1915) we were struck by the severe type of Enteric Fever amongst the cases who had been inoculated in New Zealand. We were informed that these inoculations had been made with a vaccine prepared from a culture obtained from a bone abscess of some 14 years duration (i.e. an enfeebled strain of organism) and had given rise to little or no reaction.

We therefore recommend that it would be a wise precaution to re-inoculate the New Zealand troops with a stronger vaccine such as used by the Home Army.

In a report on Camps in Alexandria, Oct. 5th, it was again noted in connection with certain Camps (Sidi Bishr & Zahriah) where there had been a considerably increased incidence of Enteric Fever cases, that a relatively large proportion of the cases of Typhoid had occurred amongst the New Zealand Troops. We found that the exceptional prevalence and severity of Enteric Fever amongst New Zealand troops was fully realised also in the Hospitals at Mudros.

Returns have been kindly furnished to us, at our request, by the Record Office of the New Zealand Forces relating to the incidence of Enteric amongst their troops. These show that no fewer than 453 cases of Enteric Fever had been reported to have occurred among the New Zealand troops in Egypt, Mudros and on the Peninsula, since their arrival in Egypt early in the year.

The proportion to strength as compared to that of the British Forces cannot here be given but there is no doubt that the New Zealand incidence has been quite exceptionally heavy. Moreover the Enteric cases in question have shown an exceptional case-mortality (viz. 93 cases out of the 453 cases or a fatality of 20.5 per cent.

This fatality rate may be compared with that of 6.5% for the cases of Enteric in No. 21 Genl. Hospital, Alexandria, in which large numbers of Enteric cases from the British Forces generally have been received. It may be noted, though the figures are small that among 240 New Zealanders who had joined from England and been inoculated there, only three had developed Enteric Fever.

We therefore strongly recommend that all troops coming from



New Zealand should be inoculated before leaving or on their passage to Egypt with an Army strain of Anti-typhoid vaccine.

As regards the troops already out, we understand that inoculations have been or are being carried out among the New Zealanders now in Rest Camps in Mudros. It would be well if the exact position in connection with this re-inoculation could be ascertained so that any gaps in the scheme for general re-inoculation could be filled in as soon as possible.

At present the vaccine used by the Army is, we believe, solely an anti-typhoid vaccine.

Should it be decided to issue a vaccine prepared against Paratyphoid Fever as well as against Typhoid, we think that the double protection should be given to all troops hitherto un-inoculated, or inoculated only with New Zealand strain.

The diseases most prevalent on the Peninsula (including Anzac) at the present time are those due to infections of Intestinal origin (Dysentery, Enteric, Diarrhoea, etc.)

The bulk of the Dysentery hitherto has been Amoebic, the Enteric cases have included a material portion of Paratyphoid Fever. The Diarrhoea cases when not incipient or mild Dysentery or Enteric are attributable to a variety of infections. Any of the ordinary causes of spread of diseases of this group may operate at the front and have to be dealt with by suitable precautions - (see in particular those referred to in section 3 above) and by the supply of necessary wood and other material for latrines and other sanitary requirements."

I have no hesitation in saying that the premises on which this opinion was formed were incorrect and the conclusions misleading and unjust, and a grave reflection on the Government Bacteriologist at Wellington, N.Z., who was responsible for the N.Z. Anti-typhoid vaccine

Firstly:- The immunising power of a vaccine depends entirely on the method of preparation by the Bacteriologist. Although at one time it was considered necessary to use a strain of high virulence, there is no evidence that this is necessary.

In the method approved by the Army Council for use in the British



Army, a special strain is used which has lost almost all its virulence, even for animals. Satisfactory immunising power in an Anti-typhoid vaccine, as perhaps in all bacterial vaccines, depends greatly on the method of sterilisation, as heating to a temperature exceeding 54 degrees Centigrade is found to decrease seriously the immunising power, while any method at all of sterilisation by heat diminishes the keeping qualities.

Secondly:- I did not notice any marked difference in the severity of the reaction between those men inoculated six months later with the R.A.M.C. vaccine. In some there was practically no reaction while in others the reaction was severe. The dosage in each case was the same, viz:- 500 millions for the first dose and 1000 millions eight days later.

Thirdly:- Figures obtained from the Central Pathological Institute, Cairo, for the British, New Zealand and Australian troops, gave an incidence of 7% and for New Zealand troops alone 7.6%.

Fourthly:- Case Mortality. Out of 410 (the remaining 79 were convalescent transfers from other hospitals) cases of Enterica Infection admitted during the period under review, we had only 13 deaths viz:- 3.1%.

Fifthly:- The figures given by the Commissioners were for the Enterica Group, not for Typhoid, and it is quite acknowledged that our incidence from the Paratyphoids was extremely high.

The following analysis of 303 consecutive cases admitted to and treated in the New Zealand General Hospital, was prepared by Capt Armitage the Bacteriologist, and not only proves the incalculable benefits of Prophylactic Inoculation, but also settles once and for all the charges brought against the immunity conferred by the N.Z. vaccine.

INCIDENCE.

Total cases examined	303.
Causative organism isolated in	93 - 30%
Total examinations made by culture	1160

-----



Of the 93 cases in which the organism was isolated there were due to

- TYPHOID	7 = 7.6%
PARATYPHOID A.	75 = 80.6%
" B.	11 = 11.8%

-----

The figures given in a recently issued memorandum of the combined results of the Laboratories of Cairo, Alexandria and Mudros, of the examinations of British, Australian and N.Z. troops gave:-

TYPHOID.	11%
PARATYPHOID A.	44%
" B.	45%

The latest return I have of the figures obtained at the Central Laboratory for all the Military Hospitals of Cairo are:-

TYPHOID	7%
PARATYPHOID A.	69%
" B.	24%

The results obtained at Alexandria and Mudros show a much higher percentage of Paratyphoid B. namely, 45%, as against 11.8%, and a little higher Typhoid, viz - 11% as against 7.6%. The incidence of Paratyphoid A. and B. varied at different periods and places, and since October 1915 the results obtained in Cairo, and in particular among N.Z. troops at the N.Z. General Hospital, show that Paratyphoid A. was by far the most frequent cause of Enterica, constituting in the case of our Hospital over 80%. The amount of Typhoid compares favourably with the incidence in British and Australian troops, being 7.6% of the total Enterica cases.

The diagnosis of the N.Z. General Hospital cases quoted as positive were restricted to those in which the causative organism was isolated, opinions formed from Agglutination Tests not being included

<u>PLACE OF ORIGIN.</u>	<u>Total.</u>	<u>Due to Typhoid.</u>	<u>Para A.</u>	<u>Para B.</u>
From Gallipoli	151	4	34	1
From Egypt	152	3	26	10
	303	7	60	11



Our cases came in practically equal numbers from Egypt and Gallipoli respectively, with the exception of the Paratyphoid B. of which 10 out of 11 originated in Egypt.

ANTI-TYPHOID INOCULATION of the 303 cases of Enterica:-

140 = 46.2% had been inoculated against Typhoid with N.Z. Vaccine only

149 = 49.1% had N.Z. vaccine and were re-inoculated with R.A.M.C. vaccine.

2 = 0.7% had never been inoculated at all.

12 = 4.0% had no record.

Of the 7 TYPHOID CASES:-

2 Had been inoculated with N.Z. vaccine only.

3 Has N.Z. vaccine and had been re-inoculated with R.A.M.C. vaccine.

1 Had the initial dose of N.Z. vaccine only.

1 Had never been inoculated at all.

Four cases of Enterica in patients who had been inoculated with Typhoid and Paratyphoid vaccine showed one Typhoid, one Paratyphoid A, and two undiagnosed.

Unfortunately, 12 cases from Gallipoli had no record of inoculation, there were no entries in their paybooks, and the Medical History Sheets were not accessible.

The great majority of the 303 cases undoubtedly were Paratyphoid and against this neither the N.Z. nor the R.A.M.C. Anti-typhoid vaccine could afford any protection; but with regard to the Typhoid cases the figures indicate that whatever may have been the protection afforded by the N.Z. vaccine, the R.A.M.C. vaccine afforded no appreciably better result.

In short, our men were successfully inoculated against Typhoid, the incidence of that disease under perfectly appalling conditions was extremely low. The men were not inoculated against Paratyphoid until November and December 1915, with the result that we had a great number of cases up to that date but so few since that Enterica Infection has become of quite minor importance.



MORTALITY.

The small percentage of Typhoid cases and extraordinarily low mortality speak volumes, both for the protection afforded by inoculation and for the treatment, and it is only reasonable to assume that but for efficient Anti-typhoid inoculation, the incidence of Typhoid would have been as great as Paratyphoid, with a proportionately high mortality.



APPENDIX III. TABLE A.

(page 3.)

MONTHLY CLASSIFICATION OF PATIENTS ADMITTED TO MEDICAL DIVISION  
INCIDENCE OF DISEASES OF THE ALIMENTARY SYSTEM.

	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
Enterica Group	15	78	62	41	51	56	93	54	39	489
Dysentery Group	28	38	22	19	12	15	34	6	14	188
Infective Enteritis	67	305	217	105	86	123	33	18	14	968
Catarrhal Jaundice	3	9	8	28	53	111	94	16	6	328
General Digestive Diseases.	27	108	67	38	58	89	69	44	51	551
	140	538	376	231	260	394	323	138	124	2524

DISEASES OF OTHER SYSTEMS (MEDICAL)

(Not enumerated in above.)

	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Infectious Diseases	4	14	12	14	22	14	14	5	19	118
<u>Diseases of:-</u>										
Nervous System	14	49	34	23	14	24	26	24	37	245
Eye, Ear & Nose.	10	22	11	11	17	37	46	67	45	266
Circulatory System.	4	7	17	16	5	19	11	23	30	132
Respiratory System.	26	73	44	27	63	163	202	125	110	833
Urinary System	3	2	1	3	2	5	23	12	23	74
Organs of Locomotion	12	43	20	27	26	85	74	53	42	382
Skin & Connective Tissue	10	42	18	22	26	71	76	53	39	357
	83	252	157	143	175	418	472	362	345	2407