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<b>Title</b>	Relapsing fever in Ferozepore District, Punjab
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**THESIS**



**RELAPSING FEVER**

**IN**

**FEROZEPORE DISTRICT**

**PUNJAB**

**1923**



THE S I S

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R E L A P S I N G F E V E R .

I N

F E R O Z E P O R E D I S T R I C T .

P U N J A B .

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C I V I L S U R G E O N .

F E R O Z E P O R E .

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I N D I A .



1924

C O N T E N T S .

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## RELAPSING FEVER.

### 1. INTRODUCTION.

General. The relapsing fevers are caused by different species of spirochaetes and may therefore be grouped according to the vector or carrier as follows:-

#### A. Louse Group.

- (1) European Relapsing Fever
- (2) North African Relapsing Fever.
- (3) Indian Relapsing Fever.
- (4) Manchurian Relapsing Fever.

#### B. Tick Group.

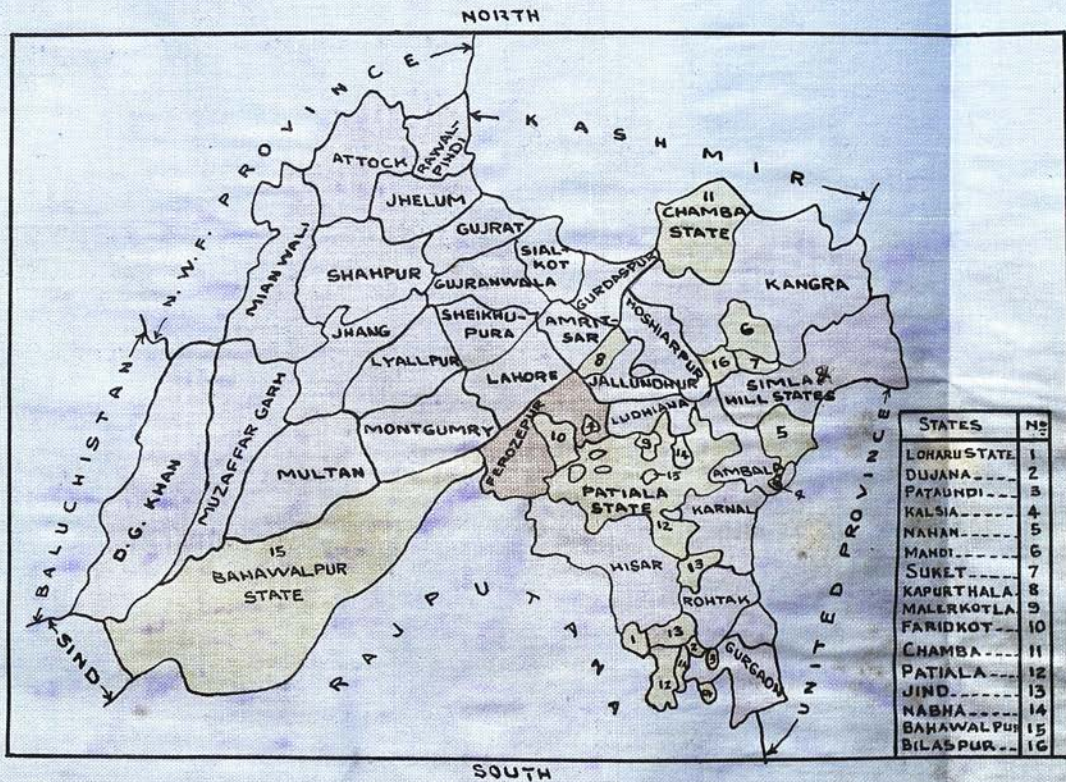
- (1) Tropical African Relapsing Fever.
- (2) American Relapsing Fever.
- (3) Persian Relapsing Fever.

I am however concerned with the Indian variety of the relapsing fever caused by Spiroschaudinnia Carteri and which is most probably spread by louse- "Pediculus Humanus- (both Corporis and Capitis)." I shall discuss this point later on but at this place I may mention that the experiments of Nicolle and others who worked on this subject favour this view.

Definition. This fever may be defined as an acute infectious fever caused by some particular variety of spirillum and characterised by a febrile paroxysm of sudden onset lasting for variable number of days but generally from three to twelve. This is usually followed by a remission of about equal length and one or more relapses of similar paroxysms and remissions. In this connection I would note that in some exceptional but otherwise authenticated cases of this variety of fevers, there is no relapse of the fever at all as might be understood by the term "RELAPSING FEVER". To call such cases as "Relapsing Fever" when there was no relapse is misleading and therefore I would suggest "Spirillum Fever" as being more appropriate.

The term "Relapsing Fever or Spirillum Fever" includes several varieties of the disease in accordance with the different varieties of the causative

# MAP OF PUNJAB



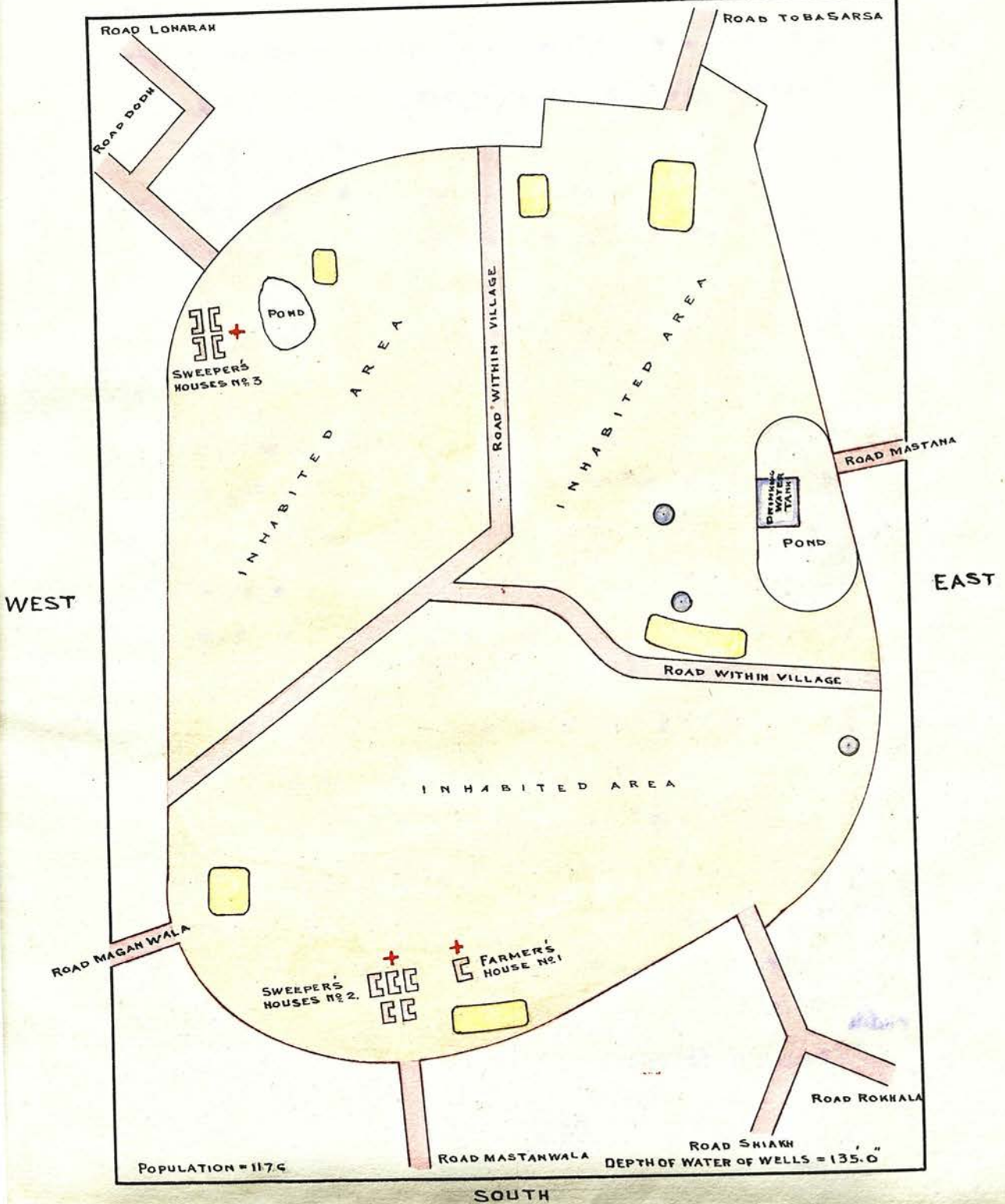
REFERENCES	
BRITISH TERRITORY	
NATIVE STATES	
FEROZEPUR DIST.	

# SKETCH OF VILLAGE SUKHNA ABLOO

## TEHSIL MUKTSAR DIST. FERROZEPUR

NORTH

PLATE No 1



SOUTH

REFERENCES	
VILLAGE SITE	□
ROADS & STREETS	—
SITE OF SWEEPER'S HOUSES	⌂
WELLS	○
VILLAGE POND & TANK	◻
MANURE HEAPS	■
INFECTED PLACES	+

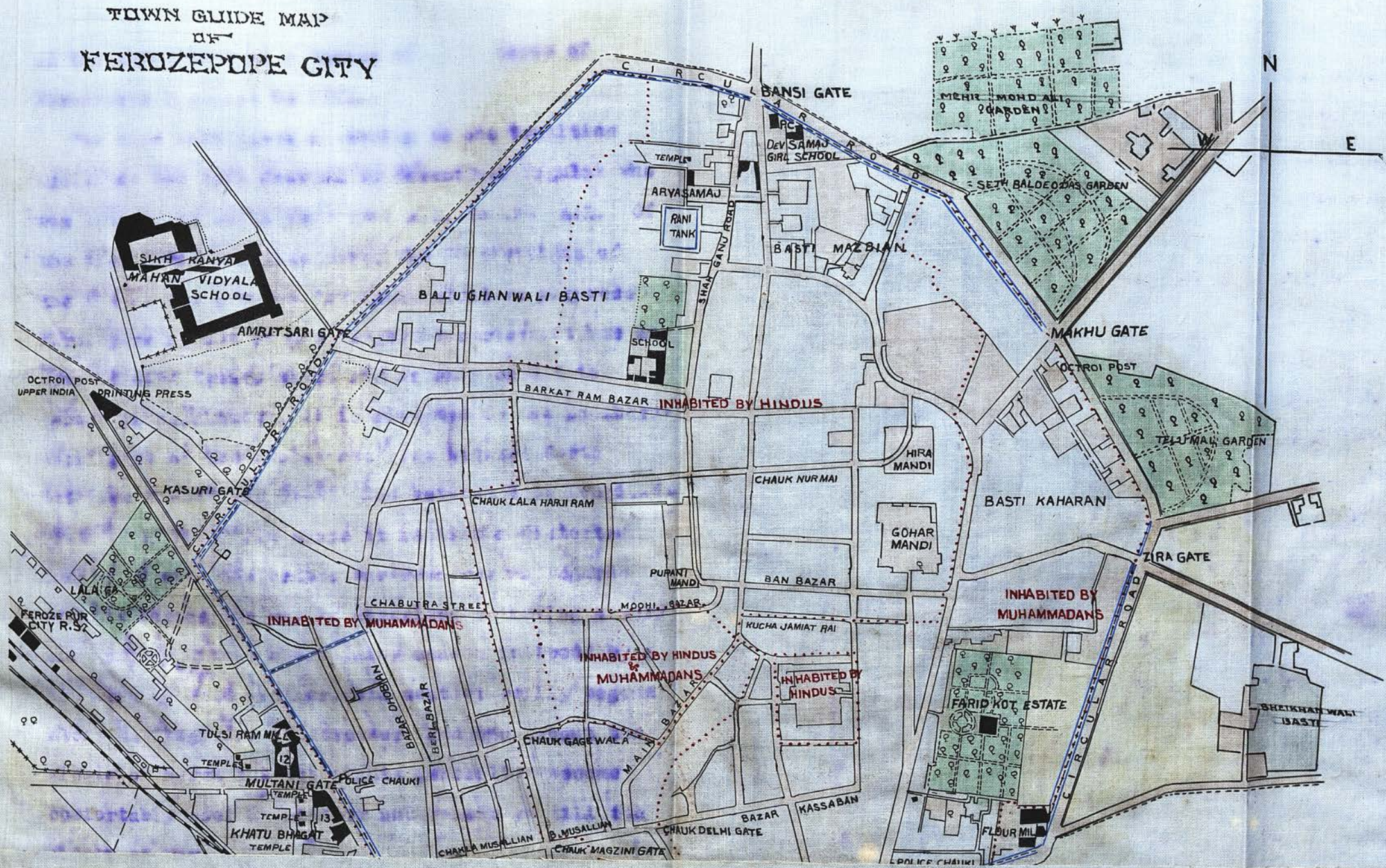
spirillum, e.g. the European variety is caused by Spiroschaudinnia Recurrentis, the North American by S. Novyi, the West African by S. Duttoni but the Indian variety which is the subject matter of this thesis is caused by S. Carteri.

Synonyms. Chronic Relapsing fever, Recurrent Fever, Famine fever, Seven Day Fever, Tick Fever and Spirillum Fever. In Ferozepore district it is generally known by its Hindustani name of 'Haire Phera Ka Beekhar'.

Ferozepore District Variety. The preceding year 1922 was generally speaking an exceptionally healthy one in the Punjab. From the economic point of view, meteorological conditions were favourable; rainfall was timely and harvests were on the whole good. The prices of food grains were lower than those prevailing in 1921 and the general level of prosperity was higher than in the previous year. Relapsing fever in a mild epidemic form appeared in four villages of Hissar District and two of Rawalpindi district. In Muzaffergarh district, however it broke out in a severe form. So far as this district is concerned it was practically unknown or perhaps I may say that it remained unidentified in this district till about

February 1923 when a report was received from Sub-Inspector in charge of the Police Station at Koat Bhai. It was stated in this report that a furious kind of fever or plague was raging at Sukana Abloe village of this District. On the receipt of this report one Sub-Assistant Surgeon was sent to this village to investigate the epidemic but he reported that the cases were due to Influenza. This Diagnosis did not appear satisfactory and so an Assistant Surgeon was sent to this village for further report. His description of the cases showed these to be due to "Spirillum Fever" and the examination of the slides being examined by the Provincial Bacteriologist Lahore settled the diagnosis in favour of "Spirillum Fever". All this happened just before my arrival here on transfer from Sialkote about the end of March 1923. Immediately on arrival here, I started a small laboratory at the Headquarter Hospital in Ferozepore city and commenced regular investigation with a view to prophylaxis and treatment. My Assistant Surgeons and Sub-Assistant Surgeons visited the infected villages and supplied me the necessary details and blood slides. In the present thesis I propose to give a resume of our knowledge of the subject based

# TOWN GUIDE MAP OF FEROZEPUR CITY



on the experience of a series of 108 cases of Ferozepore District in 1923.

The name Ferozepore according to one tradition indicates the town founded by Ferozshah Tughlak who was Emperor of Delhi from 1351 A.D. to 1387 A.D. Of the five divisions into which the 29 districts of the Panjab are grouped for administrative purposes, Ferozepore is one of the largest districts. It has an area of 4054 Square Miles and is only second to Lahore in population. It is situated in the Southern-most part of the Panjab and lies between North Latitude 29-56' and 31-11' and between East Longitude 73-55' and 75-37'. In shape it is like a distorted Capital M with the centre bar removed. As regards climate Ferozepore may be described as having a very hot summer with a short rainy season followed by a dry bracing cold weather. Cold weather really begins about the beginning of November and ends about the middle of March but the nights generally become comfortably cool in October and remain so till the middle of May.

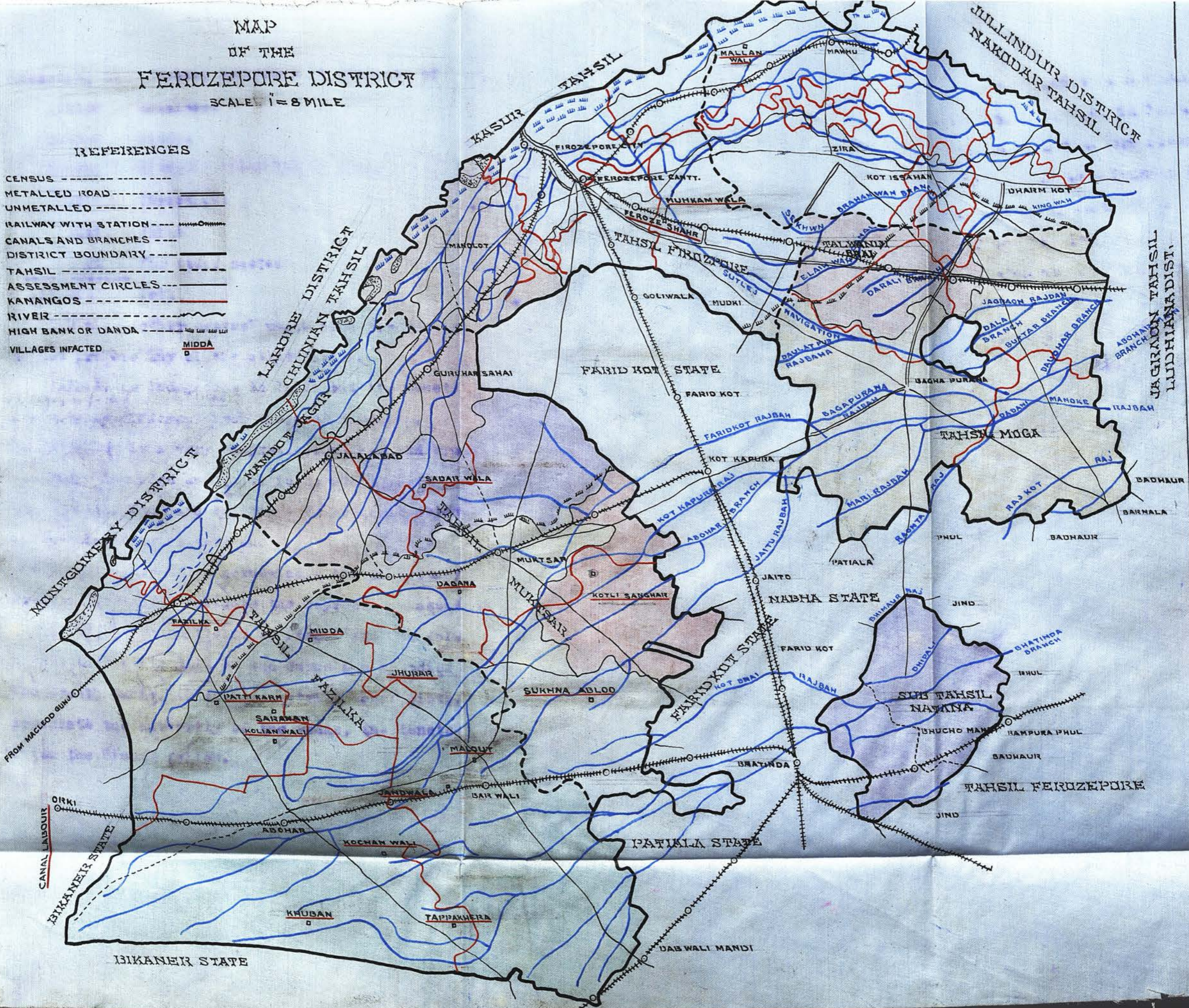
According to the census of India Report 1921, the total population of this district is 1,028,248.

MAP  
OF THE  
FEROZEPUR DISTRICT

SCALE 1" = 8 MILE

REFERENCES

- CENSUS - - - - -
- METALLED ROAD - - - - -
- UNMETALLED - - - - -
- RAILWAY WITH STATION - - - - -
- CANALS AND BRANCHES - - - - -
- DISTRICT BOUNDARY - - - - -
- TAHSIL - - - - -
- ASSESSMENT CIRCLES - - - - -
- KANANGOS - - - - -
- RIVER - - - - -
- HIGH BANK OR DANDA - - - - -
- VILLAGES INFACED MIDDA



According to different religions, it consists of

482540 Musalmans

306350 Hindus

302781 Sikhs

5369 Christians

1211 Jains

21 for other castes

-----  
1098248 Total

The term 'other castes' means such persons as do not profess any of the above castes.

JAINISM is indigenous to India but its tenets are totally different from those of Hinduism.

HINDUISM is a very comprehensive term and broadly speaking includes among its followers these:-

(1) Who have religious or economic objection to the slaughter of kine and

(2) Those who acknowledge the supremacy of Brahamans. It also includes the depressed classes.

SIKHISM IS A RELIGION by itself and its followers accept the tenets held by the Gurus and embodied in the Granth Sahib. As they are strict monotheists, they repudiate the authority of the vedas, the tenets of which the Hindus follow.

ECONOMIC IMPORTANCE OF THIS DISEASE.

The importance of relapsing fever as it occurs in this province may best be considered under the following heads:-

A. Public Health Point of View. The

experience of the past epidemic in this and other tropical countries clearly shows that the disease is accompanied by high mortality which tends to rise still higher during extensive epidemic spread. Text Books on medicine usually fix the mortality rate at about 5% but this is really for European countries and not for the tropics where according to Castellani and Chalmers it is about 18% and Robert Lyall in his investigation of this fever in Usafzai valley near Peshawar found the mortality to have been as high as 30%. In the epidemic which forms the subject matter of this thesis, it was 16%. From this it would be apparent that a disease which is attended with such high mortality must be of very considerable interest and import to the vital statistician. This is more so during the epidemic periods as the vital statistics are then subjected to such violent fluctuations without there being any

concomitant meteorological or telluric conditions apparent to account for the high death rate as has been the case in this district during 1923 when the meteorology and climate of the place had been quite good. The high mortality, especially affecting the adult population as it did here, must have naturally tended to reduce the 'Man Power' of the district.

B. "State Point of View". The importance of this disease from the State point of view is too obvious to need any comment. Taking into consideration the occupation of the population which mostly consists of agriculturists in this district, the importance of high mortality on the one hand and the disability and weakness following the sickness on the other, it becomes obvious that the agricultural industry must receive a very serious setback. The affected population finds it exceedingly difficult to pay the land revenue due to the State. The poverty thus caused produces the heart burning, agitation and all which come in train, with this state of affairs. Besides this "Relapsing Fever" epidemic in these parts, causes such serious dislocation of the most important

industry(Agriculture) that it is fraught with very grave consequences which may be brought about as follows:-

The food material in this country is prepared direct from the product of the agriculture. If this be not forthcoming in adequate amount, the prices naturally go up and this in turn reacts on the general population and conditions resembling famine are thus produced. These in turn conduce to the still wider prevalence of relapsing fever and this is set up a vicious cycle with its baneful results. From what has been said above, it would be obvious that the early detection, suitable prophylaxis and appropriate treatment are of paramount importance to safeguard the prosperity of the general public and with this the smooth working of the established Government.

## 2. HISTORICAL OUTLINE.

History of Relapsing Fever. This disease was not unknown to Hippocrates who in describing the epidemic of relapsing fever in Thasos had mentioned the splenic enlargement, the jaundice, and the miscarriages in women and the tendency to menorrhagia. This reference was, however, not properly understood till the eighteenth century when something more definite came to be known about it in subsequent epidemics. In 1826-27 epidemic of fever in the United Kingdom two distinct types of typhus were recognised viz. a mild and a severe type. This disease continued to be thus described with typhus fever till in 1843 Henderson of Edinburgh differentiated the mild type of fever as distinct from typhus. It was, not, however, till the Berlin epidemic of 1868 that Obermeyer, one of

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Virchow's assistants, first saw the specific spirochaete of spirillum fever. As he was not quite certain about it, he did not publish any account of it till 1873. It was Munch of Moscow who has the credit of proving this spirochaete as the causative factor in relapsing fever. It was he who successfully inoculated blood containing the spirochaetes <sup>into</sup> healthy human beings. In this country the first outbreak which was recognised as relapsing fever was that described by Robert Lyall in the Usafzai Valley in the extreme North West of the Punjab in 1852-53 but the causative spirochaete was not seen by any one in India till the Bombay Presidency relapsing fever epidemic of 1876-77. This was very ably investigated by Vandyke Carter. He was the first to find the spirillum in India. Since his discovery of the Spirochaete, other investigators have found this germ in the subsequent epidemics; notably L.J. Pisani I.M.S in 1890-91, Lt. Col. Sir Leonard Rogers I.M.S in 1899, Schillotch in 1907, Stott in 1911 and other observers since then.

### 3. AETIOLOGY & PATHOGENESIS.

Aetiology. Experiments and observations in India have proved beyond doubt that the relapsing fever in this country is caused by Spiroschaudinnia Carteri named after the original discoverer Vandyke Carter. This Sp. Carteri is distinct from Sp. Duttoni by the latter being far more easily inoculable in animals and producing numerous relapses whilst the former sometimes had no relapse at all as noted before but when it had, as was usually the case, these were not numerous. This spirochaete can also be differentiated from the others by means of immunisation and agglutination tests. These differences show that Sp. Carteri is a distinct variety.

It is inoculable into man as was shown by Carter on his own person by twice inoculating himself

Comparative table of symptomatology etc of  
"Relapsing Fever"

	Egyptian Sp. ?	Algerian Sp. berbera	European Sp. ober- meiri (recurrents)	African Sp. Duttoni	American Sp. novyi	Asiatic Sp. carteri
Minimal length	13.5 u but pos- sibly some coiled forms only 12 u.	12 u . .	12 u	13 u	7-9 u	12 u.
Shape	Irregular open flexures	Irregular open flexures	Spiral	Open flexures	Regularly spiral	Open flexures
Flagella	?	?	Peritrichous	Peritrichous	? Terminal (Novy); Peritrichous (Frankel)	?
Animals susceptible	Gerbils, but only slightly; monkeys (Cercopithe- cus)	Rats and mice with difficul- -ty; monkeys (Macacus; Cynocephalus)	Small rodents <del>and mice</del> only <del>and mice</del> <del>and mice</del> after passage through monkeys	Small rodents and many animals very susceptible	Small rodents very susceptible	Small rodents infected with difficulty
Course in animals	Very mild	As a rule, mild.....	Mild .. ..	Very severe	Severe	Very mild
Sub-inoculations in animals	Gerbil to gerbil positive; monkey to monkey pro- bably nega- tive	Rat to rat or mouse to mouse with difficulty; monkey to monkey nega- tive	Monkey to monkey and mouse to mouse positive (Fulleborn & Meyer)	Monkey to monkey positive; same for most animals (Breinl, Kinghorn and Garrett)	Monkey to monkey and mouse to mouse positive	Monkey to monkey and mouse to mouse positive (Mackie)
Course in man	Fairly severe	Fairly severe	One, some- times two, relapses	Severe, four or five relapses	?	Severe, one or two relapses.

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	Egyptian Sp?	Algerian Sp. berbera	European Sp. Ober- meiri (recurrents)	African Sp. Duttoni	American Sp. novyi	Asiatic Sp. carteri
Parasites in human blood.	Variable	Variable	Heavy infection	Very sparse	?	Variable
Natural transmission	By lice?	By lice?	?	By ticks	?	By lice(?)
Serum-reaction	?	Immune serum possibly without effect Sp. recurrentis (russian strain)	Immune serum without any effect on novyi and duttoni	Immune serum without effect on novyi or obermeieri	Immune serum without effect on obermeieri duttoni or carteri	Immune serum without effect on novyi.
Incubation period in man	Doubtful possibly more than 12 days.	Not stated	5-7 days	7-10 days	5-7 days	7 days
Duration of 1st:attack	2-8 days	5-7 days	5-6 days	Average 3 days (rarely 4-5)	5-6 days	5-7 days
Duration of apyrexia	2-9 days 6 apparent- usually the most common.	6-16 days usually 7-8 days	7-10 days	1-8 days (occasionally 10-18)	7-10 days	5-13 days occasionally up to 19 days
Number of relapses	One or two, possibly three	One or two certainly possibly others, but very slight	1-2 days	3-5 (sometimes up to 11)	One (rarely 2-5)	1 relapse in 40 per cent. 2 in 7 per cent and 3 more in 3 per cent.
Relapses absent	In one case	?	?		Not uncommon.	In 50 per cent
Rigors and sweating	Present; Rigors only in one case.	Rigors not mentioned; sweating marked.	Present	Rigors in 50 per cent only sweating present.	Present	Very frequent.
Pains in limbs, muscles etc.	Present	Frequent	"	Frequent	"	"

	Egyptian Sp.	Algerian	European	Indian	American	African
Toxaemia (bilious- typhus type)	Possibly in one case	Absent	Mentioned	present in 10-20 per cent.	Mentioned	?
Low pulse rate after crisis	Apparently not noted	No mention	Present	Almost invariably present	Present	?
The tongue	White and furred	Moist, white and furred in centre	Large & moist except in grave infection	Large, flabby and moist except in grave infection	Large and moist except in grave infection.	?
Appetite	Not mentioned probably therefore never voracious	Not mentioned probably therefore never voracious.	Poor, sometimes voracious.	poor, rarely voracious.	Poor	?
Jaundice	Absent	Exceptional and slight	Mild except in grave infection	Present in 70-80 per cent grave in toxaemia	Mild except in grave infection	Infrequent in Uganda.
Vomitting of bile.	Not mentioned vomitting present.	Not mention- ed, vomitting present	Not uncommon.	Present in 70-80 per cent	Not uncommon	Not usual
Diarrhoea	Absent	rare	Of brief duration.	Present in 12 per cent	Moderate	Always in the Congo; infrequent elsewhere.
Tympanites	Not mentioned	common	Grave in toxaemia	Invariably associated with toxaemia	Grave in toxaemia	?
Hiccough	"	Not mentioned	Present	Often present	present	mentioned
Haemorrhage from stomach and intestines	"	"	Not fre- quent	More frequent than in the other varieties	Not frequent	?
The liver	Tender but not markedly enlarged	Enlarged and tender	Enlarged	Enlarged and tender	Enlarged	Enlarged.

	Egyptian	Algerian	European	Indian	American	African.
The spleen	Enlarged & tender	Enlarged & tender	Enlarged	Enlarged and tender	Enlarged	Enlarged
Parotitis	?	?	Mentioned	Present in about 10 %	?	?
The Urine	No albuminuria	Dark; excess of Urobilin; slight albuminuria	High-coloured, scanty	High, bilious Scanty	High coloured	?
Haematuria	Absent	Absent	?	? more frequent than other Haemorrhages.	Present	?
Epistaxis	Mentioned	Mentioned	Mentioned	Present in 10 to 15%	More frequent than other Haemorrhages	Mentioned
Pulmonary symptoms	Mentioned	"	"	Present; more so in toxaemia	Present "	"
Delirium (violent)	Absent	Absent	"	Not uncommon; Also maniacal	"	Infrequent
Facial Paralysis	"	"	?	Not observed	?	mentioned.
Eye effections	"	Slight conjunctival injection	Mentioned	Present in about 1%	mentioned	Frequent (Moffat, harrord, and Cook)
Herpes Labialis	May occur	May occur	Not uncommon	Not uncommon	?	?
Mortality rate	Nil (8 cases)	Nil (42 cases)	Very low, under 5%, except in grave infection.	30 to 40% in all cases, if toaemic cases are excluded 15 to 20%	2 to 4%, rarely 10% higher in toxaemia	13.6% (?); about 50% on the Zambesi (?), probably lower.

successfully with the blood from infected patients during the febrile stage. The table appended hereunder will indicate the main characteristics of Sp. Carteri as distinguished from the Spirochaetes found to cause relapsing fever in other parts of the world viz. Sp. Obermeieri. Sp. Duttoni and Sp. Novyi etc.

Transmission. The relationship of the verminous insects as carriers was long suspected but F.P. Mackie I.M.S was the first to prove this relationship in this country. It was he who noted a close relationship between the prevalence of body-lice and an outbreak of relapsing fever in India and found 24% of the lice infected with the spirillum. He found that the spirochaetes chiefly multiplied in the stomach and also in the secretions expressed from the mouth, the upper intestine and the ovaries. He did not think that the head lice acted as a carrier but Stefansky later on incriminated these also with the body lice. Nicolle, Blaizot and Conseil working with Algerian strain showed that lice infected with the spirochaudinnia did not convey the disease by their bites but from their experiments they concluded that the disease was transmitted by the 'contaminative' method i.e. by the spirochaetes of

of the crushed lice entering through minute abrasions in the skin caused by scratching. They also demonstrated the very important fact of the hereditary transmission of infection in the body louse.

The ordinary vector in India is certainly the louse but in African variety of relapsing fever ticks -The Ornithodoros ~~Mabata~~ were found to be responsible for conveying the disease. Bed bugs may also carry the disease to man but this needs further investigation as regards India. In 1894 Tictin infected monkeys by injecting pounded up bugs recently fed on a relapsing fever patient. Rogers, however, thinks that mosquitoes may also be found to be more infective than bugs but this theory needs further investigation.

Owing to want of apparatus and material and exigencies of the service, detailed investigation regarding the vector in the relapsing fever of this district could not be carried out but there are many indications to show that the carrier in this district was most probably Lice.

The reasons for my incriminating the lice are:-

- (1) All cases of relapsing fever seen occurred among persons who were heavily infested with lice.

(2) The outbreak of relapsing fever coincided with the season when lice infestation usually occurs among the poor and dirty. The season for the maximum lice infestation in this district is from December to April.

(3) Bug infestation season extends from May to September in this district. During this time the relapsing fever outbreak was practically at an end.

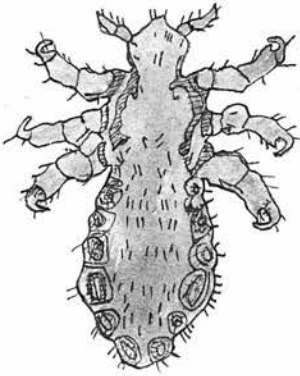
(4) Sandflies or Mosquitoes were negligible during the outbreak.

(5) No relapsing fever case occurred among my assistants who though frequently coming in contact with the infected patients, took pains to remain free from lice.

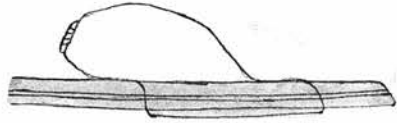
LICE. Seeing that lice are the usual vector in the Indian variety of relapsing fever, it would be interesting to note a few points about this insect here. Lice are small, whitish or brownish insects seen along the seams of clothings, on the hair and the armpits and the pubis where 'they dig themselves in'. They have six legs with large claws. Their nits or eggs are small, white and glistening bodies. Each female lays about

two hundred eggs and each egg takes 10 days to hatch. The usual span of life for a fed louse is about 30 days but it dies in about a couple of days if left unfed. Eggs can live up to six weeks. Removal of clothes often kills the lice but not the nits.

The fate of Spirochaetes ingested by lice. By means of daily dissections and examination of specimens both by staining and by dark ground observations, latterly also by sections of lice stained by the Cagal-Levaditi method, Nicolle and his colleagues found that the Spirochaetes became rapidly immobilized in the stomach, altered in appearance and staining, and disappeared altogether after 24 hours. No further trace of them could be found until on or soon after the sixth day, when they suddenly re-appeared in great numbers in the body cavity of the louse. These new spirochaetes were actively motile, typical in shape though at first thinner and shorter than those of the blood. Later they became identical with the blood forms. Having made their appearance in the body cavity of the louse, they may persist up to the 22nd day. The examination by means of stained sections of lice showed that the original spirochaetes were taken into the stomach cells but they could see no trace of them



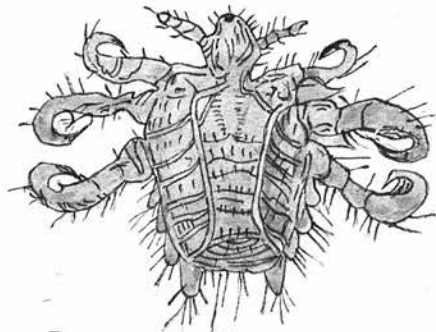
PEDICULUS CAPITIS X 28



OVUM OR NIT OF PEDICULUS CAPITIS  
ON A HAIR X 70.



PEDICULUS VESTIMENTI X 28.



PEDICULUS PUBIS

there later than forty hours after the feed on the infected blood. When the young spirochaetes made their appearance in about 148 hours, sections showed that they were absent from the lumen of the gut and from the biting parts but abundant in the body cavity. Taking the infectivity by inoculation from crushed lice at various periods after the infecting feeds and employing in these tests not only monkeys but men, they showed that

- (1) up to the fifth day successful infection is inconstant;
- (2) on the sixth day, in spite of invariable absence of demonstrable spirochaetes, infection is constant: after this, infection is again inconstant, and may not result even when the spirochaetes are actually demonstrated. They conclude that there is an invisible pre-spirillar stage of the spirochaetes in the louse and that it is during this stage and at the moment just before the sudden appearance in great numbers of young spirochaetes that the louse is most dangerously infective although it may also prove infective at any time from just after the feed on spirochaete blood up to the fifteenth day.

In man, however, they found that infection by the bite of the louse does not occur. Sargent and Foley have also shown that the blood of the infected louse may, at a certain stage, be highly virulent in spite of the absence of spirochaetes. In general they consider that the only active form of the spirochate, whether in man or louse, is the 'invisible' form which alone is virulent and capable of division. From the works of Nicolle and his colleagues, Sargent and Foley, observations of Kennedy in Baghdad and other workers on the subject, it would appear that after the spirochaetes enter the intestinal tract of the louse, it gradually loses its motility and undergoes structural changes such as the formation of granules and the extrusion of buds. These granules present themselves as small clumps embedded chiefly in the cells lining the Malpighian tubules and in the genital tissues. This latter may also explain the hereditary transmission of the spirochaete in the lice.

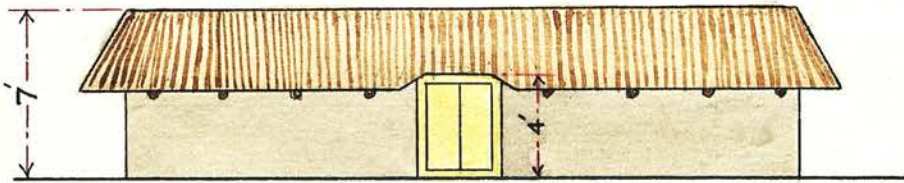
Rural Sanitation. To get an idea of the sanitary condition of houses in villages in this district, the

following description will be instructive:-

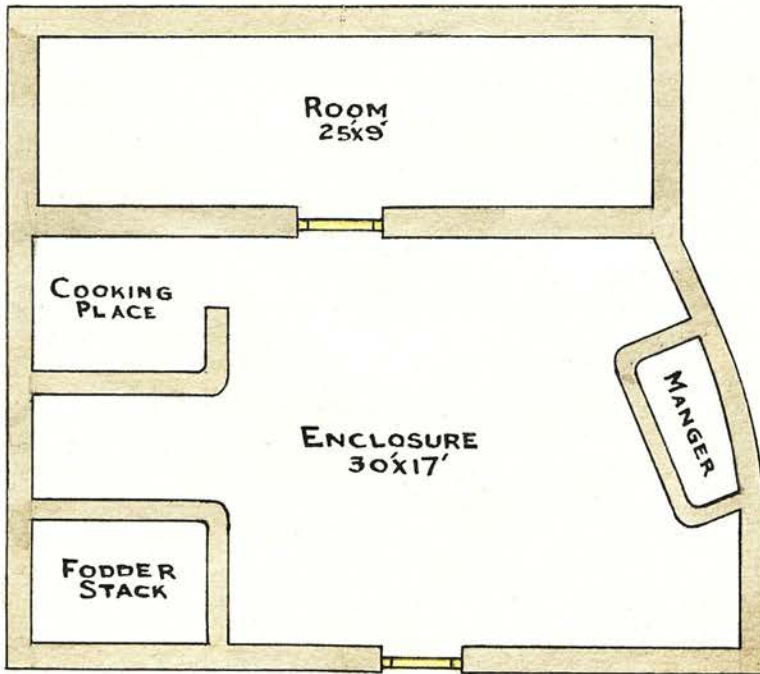
The houses in the villages are generally "Kutchas" i.e. made up of sunbaked (unburnt) brick masonry- the bricks being cemented together by mud. The inside and often the outside of walls is plastered with mud. Such ventilating conveniences as windows or clerestorey windows are generally lacking. ~~The roofs are generally lacking.~~ The roofs are generally low about 7-8 feet being common enough. They are flat in many cases the mud being deposited on beams and thatch work. In very poor class houses, the roofs are slanting just as is the case with pentroofing in England. The roof in such cases consists of thatch and hence liable to remain wet during the rains. The effect of cold and consequent overcrowding and hugging together is obvious in such cases. It is significant to note that relapsing fever most commonly breaks out first in such houses and tends to keep up the infection in the inter-epidemic period.

Again the house consists in a majority of cases of only one room which serves at once as a sitting and sleeping room and kitchen.

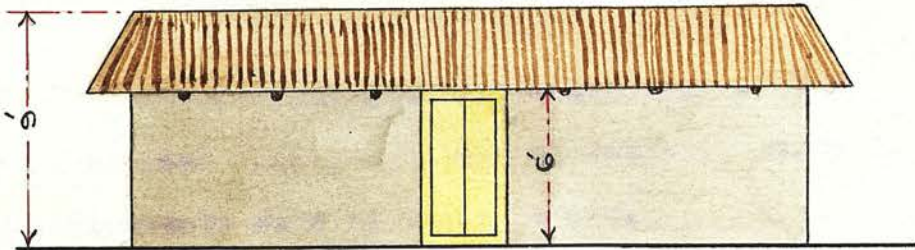
FRONT ELEVATION



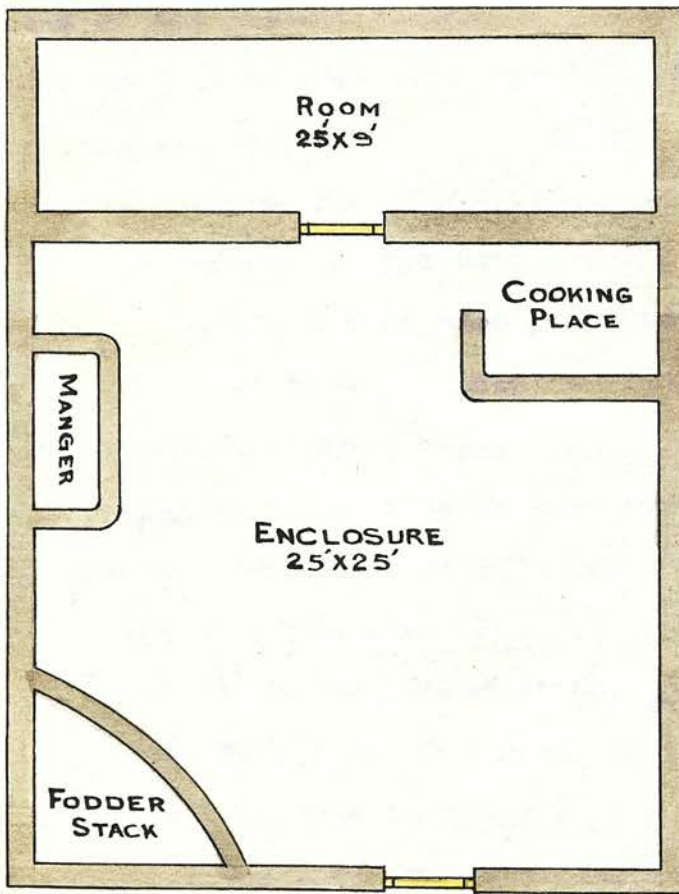
PLAN A.



FRONT ELEVATION



PLAN B.



Domestic animals such as cows and buffaloes are sometimes accommodated therein along with the inmates.

The following notes explanatory of the subjoined "plans" and elevations will serve to illustrate some of these points.

Plan A. House occupied by a sweeper, one of the poorest person in the village. The roof is of thatch pattern (Chappar) and not water proof.

Note the height is only 7' and the height of the door barely 4'.

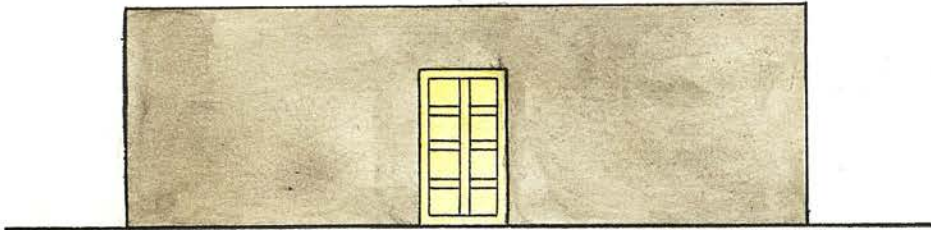
This little room in winter is occupied by 4 persons (2 adults and 2 children) and 2 cows.

Plan B. This house is also occupied by a sweeper who is better off than the occupant of house plan A.

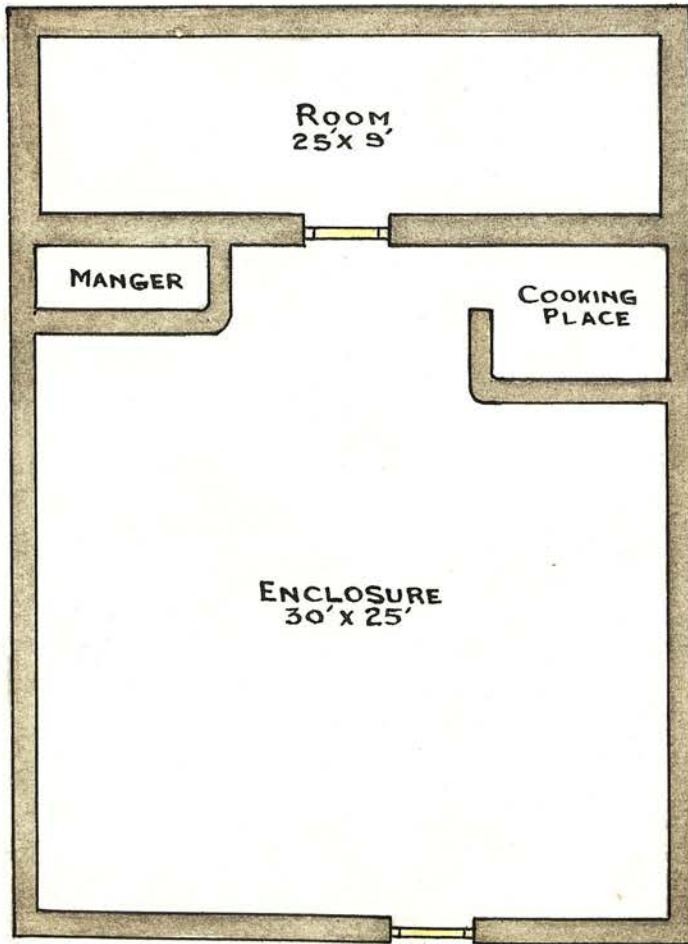
Note the height of the "thatch roofing". It is 9' whereas in the previous case it was 7'.

The door too is higher; about 6'. This room was occupied this winter by 4 adults 2 children and one baby, plus

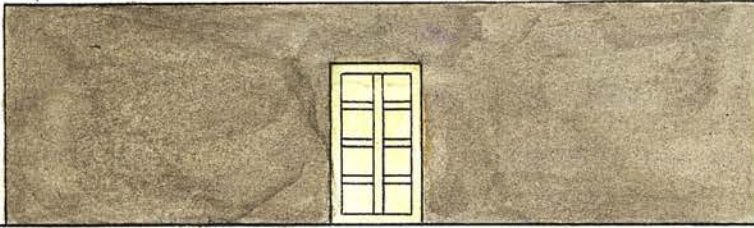
FRONT ELEVATION



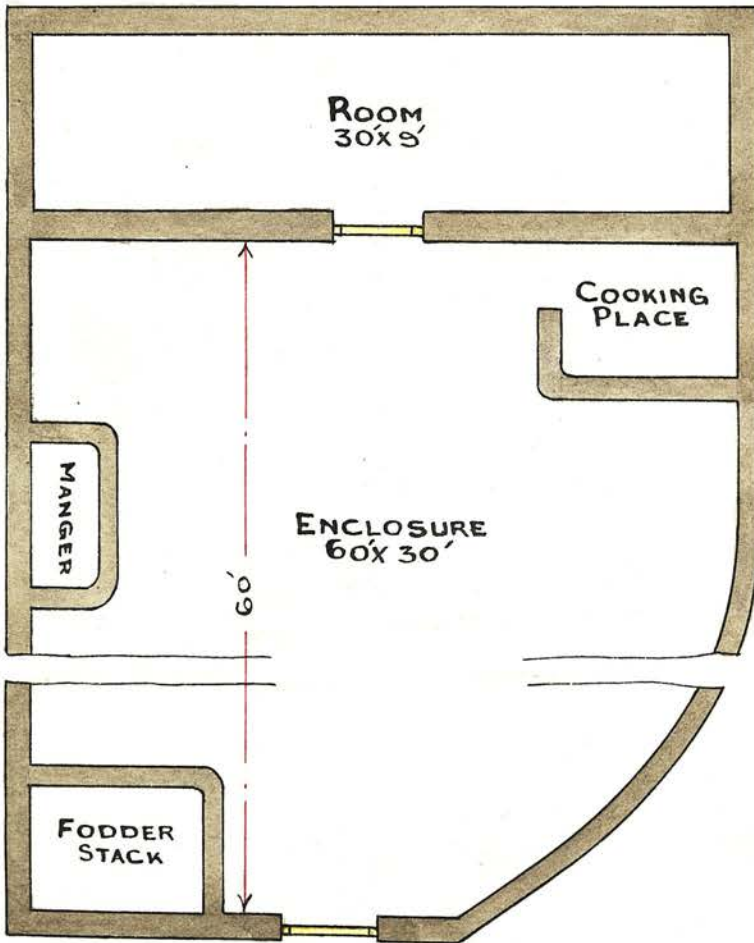
PLAN C.



FRONT ELEVATION



PLAN D.



one buffalo.

Plan C. This house is occupied by a man cobbler by caste, but by occupation he is a land cultivator.

He is better off than the occupant of house Plan B.

Note the panelled door and its height.

The roof is a flat one and not a sloping thatch as in the case of A and B.

This is occupied by three adults and three children.

No animals are kept inside this they are kept separate.

Plan D. This house is occupied by an Arain i.e. a land cultivator.

He is better off than the one who occupies house Plan C.

Note the well made panelled door. The enclosure is very much larger.

This room is occupied by 4 adults and one child.

The cattle are kept in a separate room.



Village Fakir  
or Medicant.



Village Weaver  
or Jolaha.



Village Carpenter  
or Tarkhan.



Village Barber  
at his work.

#### 4. SYMPTOMATOLOGY AND DIAGNOSIS.

Incubation period. Owing to various reasons I was not able to determine the exact incubation period during the Ferozepore Epidemic but Manson puts it down at 7-14 days; Bousfield at about 12 days and Daniel and Wilkinson mention 5-7 days as incubation period.

Prodromal signs. Of the cases seen, overwhelming majority complained of no prodromal signs i.e. out of about 100 only three or four complained of general malaise, headache, fugitive pains or aches in the body and limbs.

Actual Attack. The onset in a majority of cases was abrupt with rigor and pains in the back and in some cases in the limbs also: the temperature attaining its maximum within a few hours of the onset. The patient

takes to bed and is seen lying in a lethargic state. The temperature goes up to 104F. or there-about, and in some cases higher still. The pulse becomes rapid in proportion to the height of pyrexia. It is generally full and bounding. The patient's face is flushed and conjunctivae injected. He is seen lying listless in bed. He may complain of varying degrees of headache and pains over the body but epigastric oppression is specially complained of in a majority of cases and this may be considered to be fairly characteristic of the disease. Vomiting next sets in in a very large number of cases. The vomit may consist of any food the patient may have partaken of shortly before the attack; or if this stomach be empty, he may bring out acid mucoid fluid which later on may be replaced by bile coloured material. The bowels are found to be generally constipated but in a few cases it is just the reverse and profuse diarrhoea may be noticed especially towards the end of the attack. In a few cases slight diarrhoea remains throughout. The tongue is large, moist and flabby with prominent red papillae in the early stage of the fever but later on it is seen coated with fur. In severe cases the tongue becomes dry brown and cracked and sordes might

appear on the teeth. The spleen, on palpation, were ~~xxx~~ usually found to be enlarged and occasionally tender. The enlargement attains its maximum towards the close of the pyrexial period when it will be felt two or three fingers below the costal margin. In Berozepore epidemic some of the cases showed considerable enlargement of the spleen due presumably to pre-existing or con-committant malaria. The liver was found to be tender and full but appreciable enlargement could only be detected in a few cases. Nervous ~~system~~ symptoms were generally present in the form of delirium when the temperature approximated 104F. Jaundice appears on the third or fourth day of the fever and is observed in more than half the number of cases. Owing to the dark colour of the skin, the Orbital conjunctiva showed it to the best advantage and so was always looked for in that situation. Bleeding from the nose-epistaxis- was very frequently noticed especially towards the close of the febrile stage when it usually heralded the onset of the crisis. No other complications were observed in this epidemic except slight bronchial catarrh in a few cases. The temperature all this time remains high with very slight diurnal variations until the

Termination of the fever. This comes about on the 7th day or so unless previously aborted by intravenous injection of the specific. The temperature generally comes down by crisis accompanied by profuse/diaphoresis diuresis or diarrhoea. The patient now feels comfortable, his tongue begins to clean up, the pains disappear and the patient, though weak, regains the feeling of well being which continues throughout the period of APYREXIA. This stage lasts for about a week during which period the patient, recovers his appetite. This may at times become voracious. He slowly regains his strength. The general condition of the patient goes on improving till about the 14th: day of the commencement of the fever when in untreated case, the patient may get the

RELAPSE. The disease may now come to an end but more frequently, on or about the fourteenth day from the first commencement of the fever, the patient gets the relapse of pyrexia with all or most of its concomitants. The fever this time is of a shorter duration, often coming down the eighteenth or twentieth day with crisis accompanied by diaphoresis etc. as before and thus the illness may come to an end or he may have a second and in rare cases even a third relapse. Death

may occur either during the pyrexial stage from toxæmia or excessive blooddestruction and asthenia, or the patient may suddenly collapse during the crisis. Death may also occur during apyrexia or convalescence, as the case may be, from complications e.g. Pneumonia but these were generally absent in this epidemic. In untreated cases, the

MORTALITY, varied in the different villages. Thus out of 57 cases in Sukhna Abloo village, the mortality was as 21% and in Jhorar village 59% and so the average for all infected villages, the mortality was 20%.

Diagnosis, In these days, the microscope is the best guide for arriving at a sure and speedy diagnosis and its use is absolutely essential for that purpose. The spirillum is present in the blood during the pyrexial period and can usually be observed in fresh blood preparations. If these cannot be resorted to, staining by simple stains e.g. Methylene Blue or by compound Stain e.g. Leishman's may be had recourse to. The parasites are generally present in large numbers and considering their size, it was not difficult to find them in most cases. Without a microscope, however, and especially in the first pyrexial period, the diagnosis is difficult. The separation of the various

diseases which it may simulate may best be considered under

DIFFERENTIAL DIAGNOSIS. Though the finding of the spirillum in the blood film at once conclusively proves the nature of the fever as relapsing fever, yet this fever may be mistaken for the followings:-

1. Typhoid fever
  2. Paratyphoid
  3. Malaria
  4. Erysipelas
  5. Septicaemia
  6. Diphtheria
  7. Pneumonia
  8. Scarlet fever
  9. Small pox
  10. Typhus fever.
  11. Influenza
  12. General Tuberculosis
  13. Uraemia
  14. Sand-Fly fever
  15. Cerebro-Spinal Meningitis
  16. Plague
  17. Heat Stroke.
- The differential diagnosis may however, be made by observing the following points of difference:-

1. Typhoid Fever. If in a case of obscure fever in which a continued pyrexia is associated with a relatively slow pulse and the rise of the temperature is seen to go up two degrees in the evening with the fall of about one degree the next morning till the temperature, step by step, reaches 103 or 104F or even higher and if associated with an enlargement of spleen but with no definite abnormal physical signs except perhaps

a few rhonchi in the chest, the diagnosis of typhoid is very likely; especially if the characteristic rash becomes apparent about the sixth day of thereafter. The Widal's agglutinating test is positive in a dilution of one in 100 in half an hour. Besides this Leukopenia with relative increase of small lymphocytes also indicates typhoid in its first week's duration before the Widal's reaction becomes positive i.e. which generally happens after the 10th: day.

2. Paratyphoid. This can easily be distinguished by the Agglutinating test with Bacillus Paratyphosis A and Bac. Paratyphosis B.

3. Malaria. This can be readily distinguished by microscopical examination of the blood in its fresh or stained specimen and also by the influence of quinine.

4. Erysipelas. In this besides the fever and the rigors, there is slightly raised red spreading infection of the skin which is quite characteristic of this disease.

5. Septicaemia. In this there would be obvious source of infection but if these should be absent in any obscure case, haemo-culture will settle the diagnosis.

6. Diphtheria. ~~Sx~~ )

7. Pneumonia )

8. Scarlet fever )

9. Small Pox )

The course of the disease is

generally characteristic but bacteriological

examination of the throat swab, physical signs in the lungs and character of the sputum and the skin rash will point to the correct diagnosis.

10. Typhus fever. The rash which appears about the fifth day and the mousy smell from the patient's surroundings are characteristic and the absence of the spirillum in the blood will settle the diagnosis.

11. Influenza. The sudden onset, the extreme prostration, the high pulse rate as well as the temperature indicate the diagnosis. The blood will be free from the spirillum. It may also be noted that there is no leucocytosis.

12. General Tuberculosis. Absence of rash or leucocytosis or the spirillum, persistently negative Widal's test, Cerebral symptoms and positive finding from the lumbar puncture will all differentiate this from the relapsing fever.

13. Uraemia Previous history of Bright's disease, oliguria or anuria, examination of catheter urine are characteristic. There will also be urinous smell from the patient.

14. Sand Fly fever. Sudden onset of high fever, red eyes, orbital headache and slow pulse ~~with~~ <sup>with</sup> short duration (two or three days) are sufficiently diagnostic.

15. Cerebro-spinal Meningitis. With the fever, there will be cerebro-spinal symptoms and the lumbar puncture fluid which comes out with force will be found to be turbid containing Meningococci.

16. Measles . Macular eruption and even before their appearance, the presence of Koplik's spots on the Buccal Mucous membrane are distinctive features of this disease.

17. Plague. Bubonic form is characterised by the glandular swelling, which on puncture reveals the presence of the B. Pestis (Kitasato), in the Pneumonic form, the germ will be present in the sputum and the coagul-ability of the blood will be considerably reduced so that liquid blood may be seen in the sputum; in the septicaemic form Haemoculture will settle the diagnosis.

18. Heat Stroke. History of exposure to heat, sudden onset and quickly rising temperature and the absence of spirillum in the blood are sufficient for the diagnosis.

## 5. TREATMENT.

The treatment may be divided into A. Prophylactic and B. Curative.

A. PROPHYLACTIC TREATMENT. This may be summarised in one word, 'Lousing' i.e. the destruction of lice and nits on the person and clothings by all possible measures known to science and acceptable by the people, the latter of which is often a matter of very great difficulty when dealing with masses specially in a country like India.

As far as personal lousing is concerned, the best plan would be as follows:-

The person concerned should be stripped naked and made to enter in another room where he is shaved of all hair and sprayed with petroleum emulsion and thereafter gets into the bath room

where he is given good soap and hot water bath. After his body has been thus cleaned, he is made to put on clothings which are free from lice and nits. While the person is thus being treated his lice infested clothing should be disinfected by heat, preferably steam under pressure or if this be not available, by boiling them in water to which washing soda has been added for detergent purposes. The infected bedding e.g. quilts, mattresses etc. which cannot be treated by boiling should be steamed or ironed with very hot iron: the seams and joints which are favourable places for this vermin should receive special attention.

In actual practice, in this part of India unfortunately, this simple method indicated above cannot be carried out on account of various local prejudices. The Sikhs for example, attach great religious reverence to their hair and therefore will not under any circumstances acquiesce in any interference in their hair, much less their removal. The Muslims similarly will not part with their beard. The Jains again will not under any circumstances allow a single

louse to be killed in their presence, much less would they submit to being a party to this act.

Taking these prejudices into consideration the method of 'Lousing' adopted in this district was as follows:-

1. Preaching the relation of louse to to relapsing fever.
2. Preaching the different methods of lousing e.g. boiling in water, baking in sun, starving the lice by stowing away the clothes for at least ten days, sprinkling of Naphthaline etc.
3. Personal cleanliness and daily baths.
4. Anointing of hairy parts with the pediculicides e.g. Ungt. Hydrarg. Ammoniat., Kerosine oil pure or mixed with equal parts of mustard oil, Creosol etc.
5. The articles of clothing were to be boiled for about an hour.
6. Quilts, mattresses and such articles as could not be boiled were ironed.

Serbial barrels were used here in the earliest part of the epidemic for disinfecting

the clothes but these had to be abandoned as being unsatisfactory. Local utensils e.g. Karahas, big iron pans, petroleum containers, Degs (Cauldrons) etc. were found more handy and efficacious. These had the further advantage of minimising transport difficulties and not affecting the popular feeling which the use of Serbian barrels aroused.

Fortunately what this country lacks in other respects and however much one may be inclined to curse the heat of the tropical sun, it goes without saying that the sun plays most important part *not* generally recognised, in the process of natural disinfection. In this connection a study of the subjoined table will be found to be both interesting and instructive. It will be observed that a temperature of about 120° F. corresponding to about 50° C. is available in this district even in the coldest months of the year. Exposure of lice infested clothing to this temperature for a period of two hours is generally affective in destroying the lice and longer exposure is sufficient to kill the nits. This fact was proved by Wanhil dealing successfully with an outbreak of relapsing fever by moving the troops attacked out into camp where

they could wash themselves and their clothing and use the sun to destroy the lice and eggs vide Indian Medical Gazette June 1920 page 214.

Table of Atmospheric Temperature For The  
Twelve Months Of The Year In Ferozepore District.

January	116 <sup>o</sup> F.
February	125 <sup>o</sup> F.
March	139 <sup>o</sup> F.
April	153 <sup>o</sup> F.
May	158 <sup>o</sup> F.
June	157 <sup>o</sup> F.
July	153 <sup>o</sup> F.
August	152 <sup>o</sup> F.
September	151 <sup>o</sup> F.
October	146 <sup>o</sup> F.
November	133 <sup>o</sup> F.
December	120 <sup>o</sup> F.

B. CURATIVE TREATMENT. This may be divided in (1) Specific Treatment and (2) Symptomatic Treatment.

1. Specefic Treatment. It is fortunate that we possess a specific for this disease in Salversan and its allied preparations. Of the different preparations, Novarsenobillon which is the best preparation was invariably used in this district. It is stated that after Novarsenobillon, Neosalvarsan, Luargoll, Kharsivan Galyl and Salversan are useful in a descending order of merit, Atoxyl, Antimony Tartarate, Mercury Salicylate, Quinine and Methylene blue are useless. A mixture called Satoxyl had acquired transitory reputation for African tick fever but recent reports do not confirm their utility.

Method of administering Novarsenobillon.

Novarsenobillon is sold as a brilliant yellow powder hermetically sealed in glass phials in different quantities from 15 cgram, to 90 cgram. It is best given

(a) Intravenously: failing which it may be given

(b) Intramuscularly.

(a) Intravenous injection. It is of great importance that the patient be prepared as for

operation under chloroform and the bowels should have been previously cleaned either with a dose of castor oil or enema. This is a good precaution as otherwise the patient is liable to suffer from troublesome attacks of vomiting and other undesirable sequellae.

Paraphernalia required.

1. Two 20 cc. all glass or record syringes with an assortment of well fitting needles.
2. One enamelled saucepan capable of holding two or three pints of water.
3. Three feet of No.10 India rubber tubing.
4. One dissecting and two artery forceps.
5. Sufficient supply of cold but freshly distilled water, Tr. Iodine and Methylated spirit.
6. One Primus stove or Angeethi i.e. Charcoal stove.
7. Sufficient supply of Boric Lint. Bandages, Nevarsenobillon and Absorbent cotton wool in sufficient quantity for the need.

Precautions.

Before sterilizing, it is essential to see that the needles fit the syringe well and every thing is in working order. Care should also be taken to see that there is no crack in the Novarsenobillon tube. Minute crack can be made evident by dipping the tube in spirit when, if present, the yellow drug will be seen adhering to the inside of the tube along the crack. If a crack is detected the tube ought to be condemned. Similarly any tube which does not contain bright yellow powder inside, should be discarded.

Technique of the operation. The patient being in the recumbant position and the apparatus having been previously sterilized, select the suitable arm with prominent veins. The operator cleans his hands as for a surgical operation and breaks the tube open. He fits up his syringe and draws 3cc. of distilled water — freshly boiled and cooled — and injects this into the freshly opened novarsenobillon tube.

The solution is effected by slowly sucking up and discharging the same in the tube two or three times. The solution is there-after drawn into the syringe and sufficient quantity of more distilled

water drawn to make up to 10cc. of the fluid, care being taken that no air bubbles are left inside the syringe. This is now ready for use. The India rubber tube having been tied round the arm of the patient, or there secured by means of an artery forceps, the operator iodizes the site of the operation and selects a suitable vein in the antecubital fossa while the joint is fully extended. In dark skinned persons it is better to use Methylated spirit which is as effective as Tr. Iodine but which has the advantage of not obscuring the veins as Tr. Iodine does. The operator proceeds to insert the needle in the selected vein and assures himself of the needle being inside the vein by drawing up a drop of blood. After he is thus assured of his needle being inside the vein he injects the contents of the syringe at the rate of 3cc. per minute or 10cc. in 3 minutes. In the end he draws a few drops of blood in the syringe and reinjects the same with a view to insure himself that when he finally withdraws his needle, no novarsenobillon solution will escape into either the coats of the vein or the surrounding tissues. By this manoeuvre he obviates the possibility of thrombosis in the vein and inflammation in the cellular tissues. When the

fluid is being injected, the operator should carefully observe that the fluid is going in quite easily without any undue resistance, that there is no local swelling and the patient feels no pain. Should there be any swelling or even sign of the swelling, the needle should be immediately removed and the solution from the swelling squeezed out, as otherwise it gives rise to very painful cellulitis and its undesirable sequelae with the possibility of this form of treatment becoming extremely unpopular in that vicinity. After the solution has been squeezed out, the parts should be dressed by hot boric compresses. If after the needle is inserted no drop of blood can be drawn in the syringe, it indicates that either the needle has not yet entered the vein or it has transixed it, which latter event is manifested by rapidly increasing local swelling. In the former case the needle may be withdrawn a little and another attempt made to enter the vein, and in the latter case restart the operation on some other vein.

#### Precautions.

Stock solution of Novarsenobillon does not keep and so the solution should be freshly prepared for each patient. Should the solution remain uninjected for more than ten minutes, it should be discarded and

fresh solution prepared.

2. The solution should be prepared in cold water as the drug decomposes in hot water.

3. The solution should not ~~be~~ be violently shaken as in this case also the drug has a tendency to decompose into poisonous arsenated.

4. Should the patient be suffering from albuminuria a dose of Mag. Sulph should be administered about one hour after the intravenous injection of Novarsenobillon so that the after-products of the drug may be excreted through the alimentary canal when they could not so well be disposed of by the Kidneys.

5. It is also of very great importance that the injection should not be given in the precritical period as very grave reaction due to the destruction of the spirochaetes and the liberation of their toxin may then occur with corresponding aggravation of the symptoms and, it may be, fatal collapse.

#### Dosage.

The conclusion drawn in the Ferozepore epidemic is that 45 Cgram. of Novarsenobillon was effective for the adults although with larger dose the temperature comes down within a shorter period but larger dose than 60 Cgram. should never be used

and that 60 Cgram. dose may only be used on the first day of the fever. With 40 Cgram. dose it was noticed that the temperature came down in 40 hours. With still smaller dose e.g. 30 Cgram. there is always the likelihood of the relapse.

After Treatment.

The patient should be kept in bed till the fever leaves him and no solid food given till then. Two hours after the injection, only cold water drinks may be given and if this does not start vomiting and the patient asks for it, milk, plain or diluted, may be given instead in small quantities and at frequent intervals. He should be suitably clad and his surroundings kept clean and tidy. He should be nursed on the usual lines.

## 6. SUMMARY AND CONCLUSIONS.

As in a small percentage of cases of this kind of fever there was no relapse, the term 'Relapsing Fever' appears to be misleading and so perhaps it would be preferable to call it 'Spirillum Fever' as more appropriate.

The Indian variety of spirillum fever is caused by a distinct variety of spirilla called Sp. Carteri after its discoverer Vandyke Carter's name. It can be differentiated from the other kinds of spirilla by means of immunization and agglutination tests.

This fever may have been present on former occasions also in this district but it remained undiagnosed as such till the beginning of 1923.

This disease is conveyed through the agency of lice; not by their bites but by the contaminative process i.e. the spirilla from the crushed lice finding entrance through the scratch abrasions.

Nicolle and his colleagues found that the infected lice were infective at any time from just after their feed on infected blood up to fifteen days but that these were dangerous only so in the pre-spirillar stage. That the spirilla after ingestion by the louse soon broke into granules and buds and disappeared from the lumen of the alimentary canal and that these re-appeared about the sixth day in the body cavity of the louse. It was just before their re-appearance in the body cavity that the louse was most infective.

The incubation period for this disease has been variously fixed by different observers but on the whole perhaps it is somewhere about ten days.

Generally speaking no prodromal signs were noted in the 108 cases seen in this district but the attack of the fever was sudden and abrupt in which the temperature very quickly reached its maximum of 104 F or more within a short time of its onset. This mode of onset, lethargic condition of the patient, epigastric oppression, slightly enlarged and tender spleen and in some cases jaundice were very characteristic of this fever. The fever lasted for 6 or 7 days and then

came down generally by crisis which was ushered in by epistaxis, diaphoresis, diuresis, or as was the case frequently, by diarrhgia. After an apyrexial remission of 5 or 6 days in untreated cases, the fever relapsed but followed a shorter course of milder form of fever than the first. There have been two relapses in untreated cases but more than this has not been seen in this district.

The spirilla are present in the blood stream during the pyrexial period but they disappear from it during the remission. The microscopical appearance of the spirillum is quite characteristic and these can not be mistaken for anything else. On an average the size of the spirilla seen in this district was about 18 to 22 micro. While this fever can be easily diagnosed with the help of a good microscope, it may be mistaken for a number of other febrile diseases without this help and this very probably accounts for its not having been diagnosed before this year.

The prophylactic treatment of this fever consists in 'Lousing' i.e. destruction of lice and their nits by all possible measures which do not interfere with the peculiar prejudices of the public. The prejudices

found in these parts are a serious factor to be considered when devising means. The curative treatment consists in the administration of salversan and its preparations of which Novarsenobillon was the only one used in this district and with specific effect. Intravenous injection of this drug was found to be very effective but failing this e.g. in very fat subjects or infants, intra-muscular injection was also found very useful. In injecting this drug, it is essential to bear in mind certain very important precautions e.g. the thorough sterilization of every thing as in surgical operation, purity of the drug that is to be used, cold distilled water and caution re. making of the solution, <sup>and</sup> above all the details of the technique of the method of the injection itself.

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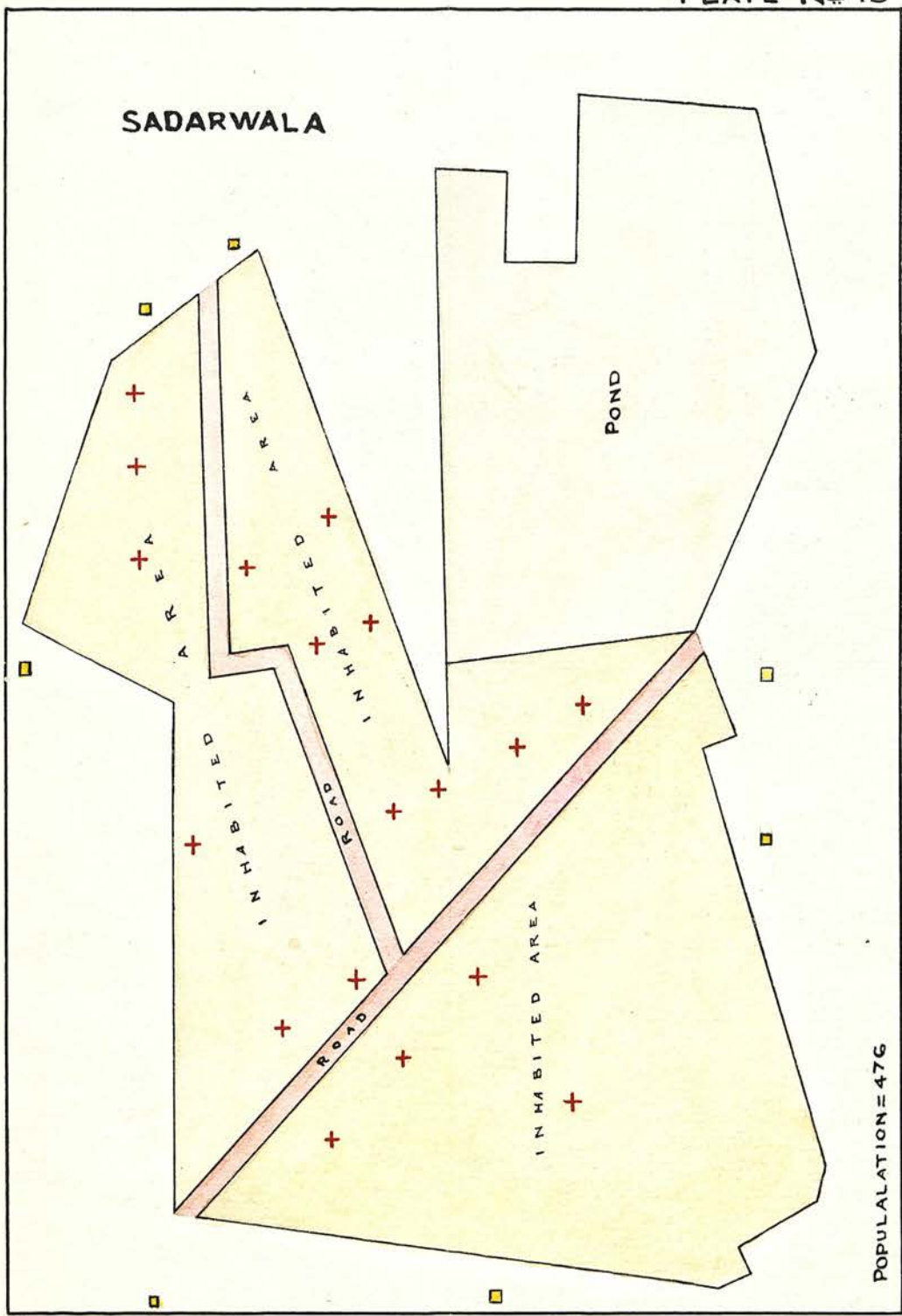
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SKETCH OF VILLAGE SADARWALA  
 TEHSIL MUKTSAR DIST. FEROREPUR

PLATE No 19

NORTH  
 EAST  
 WEST  
 SOUTH



POPULATION=476

REFERENCES

- VILLAGE SITE
- ROADS
- VILLAGE POND
- MANURE HEAPS
- INFECTED PLACES



No

Name **Fateh Bibi** W/o **Ghulam** Sex **Female** Age **20 Years** Caste **Bhati Jat**  
 Occupation **Agriculturist** Residence **Sadarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection **15.11.23, 1st: case of relapsing fever in the neighbouring houses viz. Damna**
2. Prodromal signs **Headache**
3. Actual invasion **On 24.12.23 abrupt rise of temperature with severe headache**
4. Pulse **120 per minute. Weak but regular.**
5. Temperature **102.6°F**
6. Enlargement of spleen **Two fingers below costal margin**
7. Perspiration **None**
8. Duration of Fever **5 days**
9. Gastric symptoms **None**
10. Delirium **None**
1. Intestinal complications **Diarrhoea**
2. Other manifestations: **Aching of back and limbs.**
3. Other complications **None.**
4. Duration of first attack **5 days**
5. How many attacks has  $\frac{\text{he}}{\text{she}}$  had **One**
6. (a) Did fever leave by crisis? **Crisis within 12 hours of injection.**  
 (b) Was there sweating or Diarrhoea? **Diarrhoea**
7. The patients personal hygiene **Filthy and Offensive**
8. Lice infestation of bedding **Yes. Full of lice**
9. The date of injection of Neo-Salvarsan **28.12.23** **0.45 Grammes**
10. Other remarks **Blood examination showed spirilla Carteri**

# Relapsing Fever in Ferozepore District 1923.

53

No

Name **Najan** s/o **Nura** Sex **Male** Age **8 Years** Caste **Bhati Jat** **Monu.**  
Occupation **Agriculturist** Residence **SadarWala** Tehsil **Muktsar**

1. Date of infection or exposure to infection **On 4.12.23 father got relapsing fever  
Viz. Nura.**
2. Prodromal signs **Headache**
3. Actual invasion **On 27.12.23 abrupt on set of high fever**
4. Pulse **135 per minute, full and regular.**
5. Temperature **104.8°F**
6. Enlargement of spleen **Not Palpable**
7. Perspiration **Skin dry and harsh**
8. Duration of Fever **Three days**
9. Gastric symptoms **None**
10. Delirium **None**
11. Intestinal complications **None**
12. Other manifestations: **Face flushed. Skin red, dry and harsh. Tongue  
dry and furred.**
13. Other complications **None**
14. Duration of first attack **Three days**
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had **One**
16. (a) Did fever leave by crisis? **Crisis within 24 hours of injection**  
(b) Was there sweating or Diarrhoea? **sweating**
17. The patients personal hygiene **Filthy**
18. Lice infestation of bedding **Yes, full of lice.**
19. The date of injection of Neo-Salvarsan **28.12.23 0.25 Grammes**
20. Other remarks **Blood examination showed spirilla Carteri.**

# Relapsing Fever in Ferozepore District 1923.

574

No

Name **Rahmat** s/o **Nura** Sex **Male** Age **18 Years** Caste **Bhati Jat Mohd.**  
Occupation **Agriculturist** Residence **Sadarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection On **4.12.1923** father got **relapsing fever.**
2. Prodromal signs **Headache**
3. Actual invasion on **27.12.1923** **Abrupt rise of temperature**
4. Pulse **125 per minute, full and regular**
5. Temperature **104° F**
6. Enlargement of spleen **Not Palpable**
7. Perspiration **None ~~xxxx~~ days**
8. Duration of Fever **Two days**
9. Gastric symptoms **None**
10. Delirium **None**
11. Intestinal complications **None**
12. Other manifestations: **Marked nervous depression, Skin red, dry and harsh. Face flushed bowels constipated Tongue dry and ~~xxxx~~ furred.**
13. Other complications **None**
14. Duration of first attack **Two days**
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had **One**
16. (a) Did fever leave by crisis? **Crisis within 12 hours of injection**
17. (b) Was there sweating or Diarrhoea? **Diarrhoea**
18. The patients personal hygiene **Filthy**
19. Lice infestation of bedding **Yes. Full of lice.**
20. The date of injection of Neo-Salvarsan **28.12.1923** **0.45 Grammes**
21. Other remarks **Blood examination showed spirilla Carteri.**

# Relapsing Fever in Ferozepore District 1923.

55

No

Name **Ramzan** s/o **Damma** Sex **male** Age **4 years** Caste **Bhati** at **Mohd.**  
Occupation **Agriculturist** Residence **Saddarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection **Father got relapsing fever on 15.11.1923**
2. Prodromal signs **None**
3. Actual invasion **On 27.12.23 sudden onset of high fever**
4. Pulse **150 per minute Full and regular**
5. Temperature **105°F**
6. Enlargement of spleen **Just Palpable**
7. Perspiration **None**
8. Duration of Fever **Two days**
9. Gastric symptoms **None**
10. Delirium **None**
11. Intestinal complications **None**
12. Other manifestations: **Face flushed skin red hot and dry. Bowels constipated. Tongue furred.**
13. Other complications **None**
14. Duration of first attack **Two days**
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had **One**
16. (a) Did fever leave by crisis? **Crisis within 12 hours of injection.**  
(b) Was there sweating or Diarrhoea? **Diarrhoea**
17. The patients personal hygiene **Filthy**
18. Lice infestation of bedding **Full of lice**
19. The date of injection of Neo-Salvarsan **28.12.1923 0.2. Grammes intramuscularly**
20. Other remarks **Blood examination showed spirilla Carteri**

# Relapsing Fever in Ferozepore District 1923.

56

No

Name Aziz s/o Bala Sex ~~Male~~ Age 8 years Caste Bhati Jat Mohd.  
Occupation agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.1923 when 1st: case of relapsing fever in the house viz. Lalla
2. Prodromal signs None
3. Actual invasion On 5.12.23 with sudden onset of high fever
4. Pulse 140 per minute full and regular.
5. Temperature 103°F
6. Enlargement of spleen Just Palpable
7. Perspiration None skin dry and harsh
8. Duration of Fever 5 days. Crisis on the 6th: 12 hours after injection.
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Face flushed. Skin red, dry and harsh, Bowels constipated, tongue furred at the base.
13. Other complications None
14. Duration of first attack 5 days
15. How many attacks has  $\frac{he}{she}$  had one
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection  
(b) Was there sweating or Diarrhoea? Sweating. No Diarrhoea
17. The patients personal hygiene Filthy .House crowded.
18. Lice infestation of bedding Yes; Full of lice
19. The date of injection of Neo-Salvarsan 9.12.23 0.25 Grammes intravenously
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

57

No

Name Lakha s/o Ghulam Sex Male Age 58 years Caste Bhati Jat Mohd.  
Occupation agriculturist Residence Saddarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.1923 when 1st: case of relapsing fever in the house viz. Lalla
2. Prodromal signs None
3. Actual invasion On 5.12.23 Sudden onset of high fever with headache and epigastric oppression.
4. Pulse 140 per minute. Full and regular
5. Temperature 103°F
6. Enlargement of spleen None. Not Palpable
7. Perspiration None
8. Duration of Fever 6 days
9. Gastric symptoms Marked oppression in the epigasticum
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Face flushed Skin dry red and hot Tongue dry and furred.
13. Other complications None
14. Duration of first attack 6 days aborted by injection of 914
15. How many attacks has <sup>he</sup> had one
16. (a) Did fever leave by crisis? Crisis within 24 hours of injection  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy. House crowded. Beddings dirty
18. Lice infestation of bedding Yes Full of lice
19. The date of injection of Neo-Salvarsan 9.12.1923
20. Other remarks Blood examination showed spirilla carteri

# Relapsing Fever in Ferozepore District 1923.

5-8

No

Name Bagh Ali s/o Kamal Din Sex Male Age 30 Years Caste Bhati Jat Mohd.  
Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection 1st: case of relapsing fever in the village on 15.11.23 Bagh Ali denies having gone to infected parts but h people have been going.
2. Prodromal signs Malaise and Headache.
3. Actual invasion On 5.12.23 with sudden onset of high fever with severe headache.
4. Pulse 120 per minute. Full and regular
5. Temperature 102.5°F
6. Enlargement of spleen Not Palpable
7. Perspiration None
8. Duration of Fever 6 days
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Patient apathetic and depressed. Face flushed. Tongue dirty.
13. Other complications None
14. Duration of first attack 6 days, aborted by an injection of 914
15. How many attacks has  $\frac{he}{she}$  had One
16. (a) Did fever leave by crisis? Crisis within 36 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Clean clothes and bedding. House not overcrowded.
18. Lice infestation of bedding Lice not detected.
19. The date of injection of Neo-Salvarsan 9.12.1923 0.4 Grammes
20. Other remarks Blood examination showed spirilla carteri.

# Relapsing Fever in Ferozepore District 1923.

59

No

Name Nura s/o Shada Sex Male Age 45 Years Caste Bhati Jat Mohd.  
Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.1923 neighbouring house infected with relapsing fever.
2. Prodromal signs None.
3. Actual invasion On 4.12.23 Sudden onset of high fever.
4. Pulse 120 per minute. Full and regular.
5. Temperature 102.8°F
6. Enlargement of spleen Not Palpable
7. Perspiration None Skin dry and harsh
8. Duration of Fever 6 days
9. Gastric symptoms None. No epigastric pain no vomiting.
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Face flushed. Tongue moist and furred.
13. Other complications None
14. Duration of first attack 6 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating. No diarrhoea
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Lice present
19. The date of injection of Neo-Salvarsan 9.12.23 0.45 grammes
20. Other remarks Blood examination showed spirilla Carteri.

# Relapsing Fever in Ferozepore District 1923.

60

No

Name Ghulam Qadiso Mohd. Bux Sex Male Age 45 Years Caste Bhati Jat Mohd.  
Occupation Hakim Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection On 15.11.23 1st. case of relapsing fever in the house viz. Damma
2. Prodromal signs None
3. Actual invasion On 3.12.23 sudden rise of temperature with vomiting
4. Pulse 130 per minute, Weak but regular
5. Temperature 101°F
6. Enlargement of spleen Not Palpable
7. Perspiration None
8. Duration of Fever 7 days
9. Gastric symptoms Marked oppression in the epigastrium
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Patient thin and weak. Tongue dry and furred. Bowels constipated.
13. Other complications None
14. Duration of first attack 7 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection.  
(b) Was there sweating or Diarrhoea? Diarrhoea due to purgative
17. The patients personal hygiene No sweating
18. Lice infestation of bedding Filthy
19. The date of injection of Neo-Salvarsan Lice present  
8.12.23 0.3 Grammes
20. Other remarks Blood examination showed Spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

61

No

Name Karemo      d/o Natha      Sex Female      Age 20 Years      Caste Bhati Jat Mohd.  
Occupation Agriculturist      Residence Sadarwala      Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.1923, 1st. case of relapsing fever in the vicinity.
2. Prodromal signs Malaise.
3. Actual invasion On 22.11.23 Abrupt onset of high fever.
4. Pulse 120 per minute. Full and regular
5. Temperature 102°F
6. Enlargement of spleen Three fingers below costal margin.
7. Perspiration None
8. Duration of Fever 7 days of 1st. attack, 6 days of remission and 5 of relapse.
9. Gastric symptoms None
10. Delirium None
- 11 Intestinal complications None
12. Other manifestations: Patient emaciated. Nervous depression, slowness of speech and inattentive.
13. Other complications Bowels constipated and tongue dry and furred.  
None
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had Two
16. (a) Did fever leave by crisis? Crisis on the 7th: day of the 1st. attack.  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Lice present
19. The date of injection of Neo-Salvarsan Not given as seen in the precritical stage.
20. Other remarks Blood examination showed spirilla Carteri.

# Relapsing Fever in Ferozepore District 1923.

62

No

Name Ala s/o Thanda Sex Male Age 11 Year Caste Bhati Jat Mohd.  
Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.23 when 1st. case
2. Prodromal signs of relapsing fever in the locality. None.
3. Actual invasion On 3.12.23 sudden onset of high fever with vomiting and pain ~~in~~ in the epigastricum.
4. Pulse 120 per minute Full and regular
5. Temperature 102°F
6. Enlargement of spleen Three fingers below costal margin
7. Perspiration None
8. Duration of Fever 7 days
9. Gastric symptoms Marked pain in epigastrium
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Thin weak boy dull and prostrated  
Bowels constipated Tongue dry and furred.
13. Other complications None
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan 8.12.23 0.2 Grammes intramuscularly
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

63

No

Name Sikandar s/o Johana Sex Male Age 10 Years Caste Bhati Jat Mohd.  
Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.1923 when 1st: case of relapsing fever in the adjoining house.
2. Prodromal signs None
3. Actual invasion On 4.12.23 Sudden onset of high fever with shivering
4. Pulse 120 per minute Full and regular
5. Temperature 102°F
6. Enlargement of spleen One finger below costal margin
7. Perspiration None
8. Duration of Fever 6 days
9. Gastric symptoms No pain in epigastrium
10. Delirium None
11. Intestinal complications None
2. Other manifestations: Thin weak boy. Face flushed. Skin hot and dry. Bowels constipated Tongue large and flabby
3. Other complications None
4. Duration of first attack 6 days
5. How many attacks has <sup>he</sup>/<sub>she</sub> had One
6. (a) Did fever leave by crisis? Crisis within 12 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating
7. The patients personal hygiene Filthy
8. Lice infestation of bedding Full of lice
9. The date of injection of Neo-Salvarsan 9.12.23 ~~at~~ 0.2 Grammes intramuscularly
10. Other remarks Blood examination showed Spirilla Carteri.

# Relapsing Fever in Ferozepore District 1923.

64



No  
Name Shafi s/o Bila Sex male Age 8 years Caste Bhati Jat Mohd.  
Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.1923 When 1st: case of relapsing fever in the house.
2. Prodromal signs Malaria
3. Actual invasion On 8.12.23 sudden onset of high fever with vomiting.
4. Pulse 150 per minute, Full and regular
5. Temperature 103°F
6. Enlargement of spleen Two fingers below costal margin
7. Perspiration None
8. Duration of Fever Two days
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Face flushed, skin red hot and dry. Bowels constipated -d  
Tongue large flabby.
13. Other complications None
14. Duration of first attack 2 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had one
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Lice present
19. The date of injection of Neo-Salvarsan 9.12.23 0.2 Grammes intramuscularly
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

65

No

Name Hayat s/o Kamala Sex Male Age 11 Years Caste Bhati Jat Mohd.

Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.23 when 1st case of re-lapsing fever in the house.
2. Prodromal signs None
3. Actual invasion On 5.12.23 sudden onset, of high fever with shivering and vomiting.
4. Pulse 130 per minute Full and regular
5. Temperature 102°F
6. Enlargement of spleen One finger breadth below costal margin
7. Perspiration None
8. Duration of Fever 5 days
9. Gastric symptoms Marked epigastric oppression
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Patient restless. Vomitting of food  
Much thirst. Constipation Tonguedry
13. Other complications None
14. Duration of first attack 5 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had one
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Yes. Lice present
19. The date of injection of Neo-Salvarsan 9.12.23 0.3 Grammes intra muscularly
20. Other remarks Blood examination showed spirilla carteri

# Relapsing Fever in Ferozepore District 1923.

66

No

Name **Majjan** s/o **Bala** Sex **Female** Age **6 years** Caste **Bhati** Jat Mohd.

Occupation **Agricult:** Residence **Saddarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection **About 18.11.23** When **1st: case of relapsing fever in the house.**
2. Prodromal signs **None**
3. Actual invasion **On 11.12.23 abrupt rise of temperature with shivering and vomiting.**
4. Pulse **125 per minute, full and regular.**
5. Temperature **102°F**
6. Enlargement of spleen **Just palpable**
7. Perspiration **None. Skin dry and harsh**
8. Duration of Fever **Three days**
9. Gastric symptoms **None**
10. Delirium **None**
11. Intestinal complications **None**
12. Other manifestations: **Bowels constipated**
13. Other complications **None**
14. Duration of first attack **Three days**
15. How many attacks has <sup>he</sup>/<sub>she</sub> had **one**
16. (a) Did fever leave by crisis? **Crisis within 24 hours of injection.**  
(b) Was there sweating or Diarrhoea? **Sweating**
17. The patients personal hygiene **Filthy**
18. Lice infestation of bedding **Lice present**
19. The date of injection of Neo-Salvarsan **12.12.23** **0.2 Grammes Intramuscularly**
20. Other remarks **Blood examination showed spirilla Carteri**

# Relapsing Fever in Ferozepore District 1923.

67

No

Name Inayat s/o Jhanda Sex Male Age 55 Caste Barber Mohd.  
Occupation Barber Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.23 when 1st. case of relapsing fever in the village. As a barber there are chances of lice getting to him.
2. Prodromal signs Malaise
3. Actual invasion On 10.11.23 abrupt rise of temperature to high fever with frontal headache.
4. Pulse 140 per minute, quick and weak but regular.
5. Temperature 102°F
6. Enlargement of spleen Not Palpable
7. Perspiration None
8. Duration of Fever 7 days
9. Gastric symptoms No pain in epigastrium, no vomiting
10. Delirium None
1. Intestinal complications Diarrhoea with 10-12 motions in the day for 3 days
2. Other manifestations: Patient thin and emaciated. Tongue glazed and coated, much prostrated.
3. Other complications Slight bronchitis
4. Duration of first attack 7 days
5. How many attacks has  $\frac{he}{she}$  had One
6. (a) Did fever leave by crisis? Crisis
- (b) Was there sweating or Diarrhoea? Diarrhoea
7. The patients personal hygiene Filthy. Offensive clothes and bedding
8. Lice infestation of bedding Yes Full of lice
9. The date of injection of Neo-Salvarsan Not given as seen in the precritical stage
10. Other remarks Blood examination showed spirilla Carteri.

Death on 20.12.23

# Relapsing Fever in Ferozepore District 1923.

68

No

Name Jamala s/o Lakha Sex Male Age 30 Caste Bhati Jat Mohd  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.23, 1st: case of relapsing fever in the house Viz. Lalla
2. Prodromal signs Headache. followed by many cases.
3. Actual invasion On 24.12.23 sudden rise of temperature, with frontal headache and shivering.
4. Pulse 100 per minute full and regular
5. Temperature 101°F
6. Enlargement of spleen Not Palpable
7. Perspiration Skin slightly moist
8. Duration of Fever 7 days of 1st: attack, 7 days remission and 5 days relapse
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications Diarrhoea
12. Other manifestations: Weak and prostrated
13. Other complications None
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had Two
16. (a) Did fever leave by crisis? Crisis on the 7th: day of fever and 5 of relapse  
(b) Was there sweating or Diarrhoea? Diarrhoea and a little sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan Not given as seen in the precritical stage
20. Other remarks Blood examination showed spirilla carteri

# Relapsing Fever in Ferozepore District 1923.

69

No

Name **Damma** s/o **Dulla** Sex **male** Age **20** Caste **Bhati Jat Mohd.**  
Occupation **Agricul.** Residence **Sadarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection In the **begining of November 1923.**  
**Some cases of high fever(Relapsing) in this locality, of 7 days**
2. Prodromal signs **None** duration.
3. Actual invasion On **15.11.23** **Abrupt onset of high temperature with**  
**severe headache and pain in the epigastrium.**
4. Pulse **120 per minute, Full and regular.**
5. Temperature **102°F**
6. Enlargement of spleen **Not Palpable**
7. Perspiration **None**
8. Duration of Fever **7 days**
9. Gastric symptoms **oppression in the epigastrium. No vomiting**
10. Delirium **None**
11. Intestinal complications **None**
12. Other manifestations: **Bowels constipated, Face flushed, Tongue large**  
**flabby and coated at the base.**
13. Other complications **Jaundice during relapse.**
14. Duration of first attack **7 days**
15. How many attacks has <sup>he</sup>/<sub>she</sub> had **Two. Seven days fever, followed by 7 days**  
**remission and 5 days relapse.**
16. (a) Did fever leave by crisis? **Crisis on the 7th: day of 1st. attack**  
(b) Was there sweating or Diarrhoea? **Sweating but no diarrhoea**
17. The patients personal hygiene **Filthy. Dirty skin and clothes**
18. Lice infestation of bedding **Overcrowded badly ventilated house.**  
**Yes but not marked.**
19. The date of injection of Neo-Salvarsan **Not given as seen in the pre-critical**  
**stage**
20. Other remarks **Spirilla carteri in the blood seen by microscopic**  
**examination.**

# Relapsing Fever in Ferozepore District 1923.

70

No

Name **Lalla** s/o **Manda** Sex **Male** Age **20** Caste **Bhati Jat Mohd.**  
Occupation **Agricul .** Residence **Sadarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection **father and brother died in the beginning of November of high fever(Relapsing)**
2. Prodromal signs **None**
3. Actual invasion **On 18.11.1923 with sudden onset of high fever with marked shivering and vomiting.**
4. Pulse **130 per minute Full and regular**
5. Temperature **103°F**
6. Enlargement of spleen **Not Palpable**
7. Perspiration **No visible perspiration**
8. Duration of Fever **7 days**
9. Gastric symptoms **Oppression in the epigastrium**
10. Delirium **Yes**
11. Intestinal complications **None**
12. Other manifestations: **Bowels constipated. Patient dull and listless  
Tongue large flabby and coated.**
13. Other complications **None**
14. Duration of first attack **7 days fever, followed by 6 days of remission and collapse and death on the 14th:day of**
15. How many attacks has <sup>he</sup> had **One** <sub>she</sub> **fever**
16. (a) Did fever leave by crisis? **Crisis on the 7th: day**  
(b) Was there sweating or Diarrhoea? **Sweating. No diarrhoea**
17. The patients personal hygiene **Dirty clothes. Skin coated with dirt**
18. Lice infestation of bedding **Yes. Full of lice**
19. The date of injection of Neo-Salvarsan **Not given as seen in the pre-critical stage**
20. Other remarks **Blood examination showed spirilla Carteri**

# Relapsing Fever in Ferozepore District 1923.

71

No

Name Jalal s/o Qaim Sex male Age 10 Caste Bhati Jat Mohd.  
Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection 15.11.23 the first case in the house (Viz Damma) of relapsing fever.
2. Prodromal signs None
3. Actual invasion On 20.11.23 Sudden onset of high fever with pains and aches in the back and limbs.
4. Pulse 120 per minute, full and regular
5. Temperature 102F
6. Enlargement of spleen Slightly Palpable
7. Perspiration None skin dry and harsh
8. Duration of Fever 7 days
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Patient restless with aches and pains in the body  
Bowels constipated Feels much ~~constipated~~ thirst
13. Other complications None
14. Duration of first attack 7 days of fever followed by 7 of remission and 5 of relapse.
15. How many attacks has <sup>he</sup> had Two <sub>she</sub>
16. (a) Did fever leave by crisis? Crisis
- (b) Was there sweating or Diarrhoea? Sweating
17. The patient's personal hygiene Filthy
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan Not given as seen in the pre critical stage
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

72

No

Name Chirag s/o Qaim Sex male Age 4 Caste -hati Jat Mohd.  
Occupation AGricul. Residence Sadarwala Tehsil Muktsar.

1. Date of infection or exposure to infection On 15.11.1923 1st: case of relapsing fever in the house viz Damma
2. Prodromal signs None
3. Actual invasion On 28.11.1923 with sudden onset of high fever
4. Pulse 130 per minute Full and regular
5. Temperature 103°F
6. Enlargement of spleen Just Palpable
7. Perspiration None Skin dry and harsh
8. Duration of Fever 7 days
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Bowels constipated Tongue red glazed and flabby
13. Other complications None
14. Duration of first attack 7 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis on 7th: day  
(b) Was there sweating or Diarrhoea? Sweating No diarrhoea
17. The patients personal hygiene Filthy Clothes dirty House overcrowded
18. Lice infestation of bedding Yes Full of lice
19. The date of injection of Neo-Salvarsan Not given called to Head quarters by telegram on the 29th:
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

73



No

Name Bala s/o Mahanda Sex Male Age 35 Caste Bhati Jat Mohd.  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.1923 when 1st: case of relapsing fever in the house of Lalla
2. Prodromal signs Frontal Headache
3. Actual invasion On 3.12.23 sudden onset of high fever with severe frontal headache
4. Pulse 120 per minute Full and regulare
5. Temperature 103F
6. Enlargement of spleen Not Palpable
7. Perspiration None skin dry and harsh
8. Duration of Fever 6 days
9. Gastric symptoms Epigastric oppression, No vomiting
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Face flushed Bowels constipated Tongue dry and furred
13. Other complications None
14. Duration of first attack 6 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had One
16. (a) Did fever leave by crisis? Crisis on the 7th: day 36 hours after injection  
(b) Was there sweating or Diarrhoea? Sweating No diarrhoea
17. The patients personal hygiene Filthy Dirty skin overerowedd house
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan 8.12.23 0.45 Grammes
20. Other remarks Blood examination showed spirilla carteri

# Relapsing Fever in Ferozepore District 1923.

74

No

Name Nuran w/o Lalla Sex Female Age 45 Caste Bhati Jat Mohd.  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection On 18.11.23 1st: case of relapsing fever in the house viz. Lalla
2. Prodromal signs None
3. Actual invasion On 3.12.23 sudden onset of high fever with marked frontal Headache.
4. Pulse 135 per minute Full and regular
5. Temperature 102F
6. Enlargement of spleen Not Palpable
7. Perspiration None Skin dry and harsh
8. Duration of Fever 6 days 12 hours after injection
9. Gastric symptoms None No epigastric pain. No vomiting
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Bowels constipated, Tongue large, flabby and coated.
13. Other complications None
14. Duration of first attack 6 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection  
(b) Was there sweating or Diarrhoea? Sweating. No diarrhoea
17. The patients personal hygiene Filthy, crowded badly ventilated room
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan 8.12.23 0.45 Grammes
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

75

No

Name **Bagh Ali s/o Lakha** Sex **Male** Age **21** - Caste **Bhati Jat Mohd.**  
Occupation **Agricul.** Residence **Sadarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection On 18.11.23 when 1st: case of ~~relapsing~~ relapsing fever in the house of Lalla
2. Prodromal signs **Malaise.**
3. Actual invasion On 5.12.23 sudden onset of high fever with severe frontal headache.
4. Pulse 115 per minute Full and regular
5. Temperature 103F
6. Enlargement of spleen Two fingers below costal margin
7. Perspiration None skin dry and harsh
8. Duration of Fever 5 days
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Skin flushed Bowels constipated Tongue dirty
13. Other complications None
14. Duration of first attack 5 days
15. How many attacks has  $\frac{he}{she}$  had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection  
(b) Was there sweating or Diarrhoea? Sweating No diarrhoea
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan 9.12.23 0.45 Grammes
20. Other remarks Blood examination showed spirilla Carteri.

# Relapsing Fever in Ferozepore District 1923.

76

No

Name **Karam Bibi &/o Pathana** Sex **Female** Age **10** Caste **Bhati Jat**  
Occupation **Agricul.** Residence **Sadarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection **About 15.11.1923** neighbouring houses were infected with relapsing fever and lots
2. Prodromal signs **None.** ( of cases had occurred there Viz **Damma Qain, Lalla etc.**)
3. Actual invasion  
On **12.12.23** with sudden onset of high fever and vomiting of food.
4. Pulse **140 per minute** Full and regular
5. Temperature **102F**
6. Enlargement of spleen **Not Palpable**
7. Perspiration **None** Skin dry and harsh
8. Duration of Fever **6 days**
9. Gastric symptoms **Epigastric pain**
10. Delirium **None**
11. Intestinal complications **None**
12. Other manifestations: **Bowels constipated. Tongue larged, red and glazed. Face flushed**
13. Other complications **None**
14. Duration of first attack **6 days, cut short by the injection of Novarsenobillon**
15. How many attacks has <sup>he</sup>/<sub>she</sub> had **One**
16. (a) Did fever leave by crisis? **Crisis on the 6th: day, within 24 hours of the injection.**  
(b) Was there sweating or Diarrhoea? **Sweating-No Diarrhoea**
17. The patients personal hygiene **Filthy** Skin and clothes dirty
18. Lice infestation of bedding **Yes**
19. The date of injection of Neo-Salvarsan **16.12.23** **0.4 Grammes**
20. Other remarks **Blood examination showed spirilla Carteri**

# Relapsing Fever in Ferozepore District 1923.

77

No

Name Karemo s/o Nura Sex Female Age 30 Caste Bhati Jat  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection on 4.12.23 husband got relapsing fever. First case in the house on 18.11.23
2. Prodromal signs None Viz. Lalla
3. Actual invasion On 14.12.23. abrupt onset of high fever with frontal headache.
4. Pulse 120 per minute. Full and regular
5. Temperature 103°F
6. Enlargement of spleen 4 fingers below costal margin
7. Perspiration No visible perspiration
8. Duration of Fever 4 days
9. Gastric symptoms No pain in the epigastrium. No vomiting
10. Delirium None
11. Intestinal complications Diarrhoea
12. Other manifestations: Skin flushed. Tongue large white and furred.
13. Other complications None
14. Duration of first attack 4 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis on the 4th day within 24 hours of injection.  
(b) Was there sweating or Diarrhoea? Diarrhoea
17. The patients personal hygiene Filthy. Skin and clothing dirty.
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan 16.12.23 0.45 Grammes
20. Other remarks Blood examination showed Spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

78

No

Name Bibi Sani w/o Jamala Sex Female Age 22 Caste Bhati Jat  
Occupation Agricul Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.23 when 1st: case of relapsing fever in the house Viz. Lalla
2. Prodromal signs None
3. Actual invasion On 11.12.23 sudden onset of high fever.
4. Pulse 130 per minute, small and weak
5. Temperature 103°F
6. Enlargement of spleen Two fingers breadth below costal margin.
7. Perspiration None
8. Duration of Fever 6 days
9. Gastric symptoms Oppression in the epigastrium
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Pale and anaemic. Emaciated. Tongue dry and furred  
Bowels constipated.
13. Other complications Full term child birth on the 3rd: day of fever  
child healthy
14. Duration of first attack 7 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis on the 7th: day, died during crisis  
(b) Was there sweating or Diarrhoea? on 17.12.23  
Sweating. No diarrhoea
17. The patients personal hygiene Dirty skin and clothes. Overcrowded, badly ventilated house.
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan Not given as seen in the precritical stage.
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

79

No

Name Khushi Mohd/o Gohana Sex Male Age 40 Caste Bhati Jat

Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.23 1st: cases of relapsing fever in the neighbouring houses viz. Damma, Lalla
2. Prodromal signs none On 14.12.23 sudden onset of high fever
3. Actual invasion 120 per minute Full and regular
4. Pulse 103 "F
5. Temperature
6. Enlargement of spleen Not Palpable
7. Perspiration Skin dry and harsh
8. Duration of Fever 4 days
9. Gastric symptoms No pain in epigastrium
10. Delirium None
- 11 Intestinal complications None
12. Other manifestations: Bowels constipated. Face flushed. Conjunctivae injected. Tongue dry, coated and whitish.
13. Other complications None
14. Duration of first attack 4 days
15. How many attacks has  $\frac{he}{she}$  had one
16. (a) Did fever leave by crisis? Crisis within 36 hours of injection.  
(b) Was there sweating or Diarrhoea? sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan 17.12.23 0.45 grammes
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

80

No

Name Suban w/o Kamala Sex Female Age 40 years Caste Bhati Jat  
Occupation Agricult. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection 1st: case in the house on 18.11.23
2. Prodromal signs None
3. Actual invasion On 13.12.23 with sudden rise of temperature with marked shivering
4. Pulse 120 per minute. Full and regular
5. Temperature 102°F
6. Enlargement of spleen Not Palpable
7. Perspiration Skin dry and harsh
8. Duration of Fever 5 days
9. Gastric symptoms None. No pain in epigastrium. No vomiting
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Bowels constipated. Face flushed. Tongue dry and furred.
13. Other complications None
14. Duration of first attack 5 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis within 24 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan 17.12.23 0.45 Grammes
20. Other remarks Blood examination showed spirilla carteri

# Relapsing Fever in Ferozepore District 1923.

81

No

Name **Sattan** ~~sp~~ **Ramzan** Sex **Female** Age **45** Caste **Bhati** ~~at~~  
Occupation **Agricul** Residence **Sadarwala** Tehsil **Muktsar**

1. Date of infection or exposure to infection **About 4.12.23 when she came to the house to attend her relatives who had relapsing fever**
2. Prodromal signs **Malaise** **Viz. Bibi Ani and others.**
3. Actual invasion **on 16.12.23 she got high fever with aching in back and limbs**
4. Pulse **120 per minute Full and regular**
5. Temperature **102°F**
6. Enlargement of spleen **Spleen not palpable**
7. Perspiration **None**
8. Duration of Fever **Three days, aborted by injection.**
9. Gastric symptoms **None**
10. Delirium **None**
11. Intestinal complications **None**
12. Other manifestations: **Bowels constipated Tongue large white and flabby**
13. Other complications **None**
14. Duration of first attack **Three days**
15. How many attacks has <sup>he</sup>/<sub>she</sub> had **One**
16. (a) Did fever leave by crisis? **Crisis within 36 hours of injection**  
(b) Was there sweating or Diarrhoea? **Sweating**
17. The patients personal hygiene **Filthy**
18. Lice infestation of bedding **Full of lice**
19. The date of injection of Neo-Salvarsan **17.12.23 0.45 Grammes**
20. Other remarks **Blood examination showed spirilla Carteri**

# Relapsing Fever in Ferozepore District 1923.

82

No

Name Ghulam Fatsa Kamala Sex Female Age 6 Caste Bhati Jat  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection Brother got relapsing fever on 5.12.23
2. Prodromal signs None
3. Actual invasion On 16.12.23 she got high fever in the evening.
4. Pulse 130 per minute, full and regular
5. Temperature 102°F
6. Enlargement of spleen Not Palpable
7. Perspiration Skin harsh and dry
8. Duration of Fever One day
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Face markedly flushed Conjunctivae injected.  
Bowels constipated Tongue red and coated.
13. Other complications None
14. Duration of first attack One day
15. How many attacks has  $\frac{he}{she}$  had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan 17.12.23 0.2 Grammes intramuscularly
20. Other remarks Blood examination showed spirilla carteri

# Relapsing Fever in Ferozepore District 1923.

83

No

Name Bakhtar s/o Makha Sex Female Age 50 Caste Bhati Jat  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 18.11.23 when 1st case of relapsing fever in the house viz. Lalla
2. Prodromal signs None
3. Actual invasion On 1.12.23 with abrupt rise of temperature with marked frontal headache.
4. Pulse 120 per minute. Full and regular
5. Temperature 103°F
6. Enlargement of spleen Not Palpable
7. Perspiration None. Skin dry and harsh
8. Duration of Fever 7 days fever followed by 7 days remission and 4 days relapse
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Face flushed Conjunctivae injected. Bowels constipated Tongue furred
13. Other complications None
14. Duration of first attack 7 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Two
16. (a) Did fever leave by crisis? Crisis within 36 hours of injection  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan 17.12.23 0.45 Grammes
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

84

No

Name Jaimal s/o Manja Sex Male Age 30 Caste Bhati Jat  
Occupation Agricul Residence Sadarwala Tehsil Muktsar

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1. Date of infection or exposure to infection About 18.11.23
2. Prodromal signs None
3. Actual invasion On 13.12.23 with abrupt onset of high fever
4. Pulse 120 per minute Full and regular
5. Temperature 104°F
6. Enlargement of spleen Not Palpable
7. Perspiration Skin dry and harsh
8. Duration of Fever 5 days
9. Gastric symptoms None. No gastric tenderness. No vomiting
10. Delirium None
- 11 Intestinal complications None
12. Other manifestations: Skin flushed. Conjunctivae injected. Bowels constipated Tongue slightly coated.
13. Other complications None
14. Duration of first attack 5 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis within 24 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan 17.12.23 0.45 Grammes
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

85-

No

Name Shariff s/o Nura Sex Male Age 7 Caste Bhati Jat  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection On 4.12.23 father got relapsing fever first case in the locality on 18.11.23 Viz Lalla
2. Prodromal signs None
3. Actual invasion On 16.12.23 with sudden rise of temperature.
4. Pulse 130 per minute Full and regular
5. Temperature 102°F
6. Enlargement of spleen Not Palpable
7. Perspiration None
8. Duration of Fever Two days
9. Gastric symptoms None
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Flushed face. Injected Conjunctivae. Red glazed Tongue.
13. Other complications None
14. Duration of first attack Two days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis within 24 hours of injection  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy. Skin and clothes dirty
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan 17.12.23 0.3 Grammes intramusculary
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

86

No

Name Mohd. Ali s/o Nura Sex Male Age 3 Caste Bhati Jat  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

Date of infection or exposure to infection On 4.12.23 father got relapsing fever

Prodromal signs None

Actual invasion On 16.12.23 with sudden onset of high fever.

Pulse 160 per minute, quick and small

Temperature 101°F

Enlargement of spleen Spleen two fingers below costal margin

Perspiration None

Duration of Fever 4 days

Gastric symptoms None

Delirium None

Intestinal complications None

Other manifestations: Clean, moist tongue

Other complications None

Duration of first attack 4 days

How many attacks has  $\frac{\text{he}}{\text{she}}$  had One

(a) Did fever leave by crisis? Crisis within 12 hours of injection

(b) Was there sweating or Diarrhoea?

The patients personal hygiene Dirty. skin smeared with dirt

Lice infestation of bedding Yes Full of lice

The date of injection of Neo-Salvarsan 19.12.23 0.15 Grammes intramuscularly

Other remarks Blood examination showed spirilla carteri

# Relapsing Fever in Ferozepore District 1923.

87

No

Name **Nawab** s/o **Natha** Sex **Male** Age **22** Caste **Bhati Jat**  
Occupation **Agricul.** Residence **Sadarwala Tehsil** **Muktsar**

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1. Date of infection or exposure to infection On 22.11.23 sister got relapsing fever Viz. Karemo
2. Prodromal signs Headache.
3. Actual invasion On 17.12.23 abrupt rise of temperature with severe headache and bilious vomiting
4. Pulse 130 per minute Full and regular
5. Temperature 102°F
6. Enlargement of spleen Spleen 4 fingers below costal margin
7. Perspiration None
8. Duration of Fever 4 days
9. Gastric symptoms Bilious vomiting. No epigastric pain
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Dry furred tongue
13. Other complications None
14. Duration of first attack 4 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had one
16. (a) Did fever leave by crisis? Crisis within  
(b) Was there sweating or Diarrhoea? sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Full of lice
19. The date of injection of Neo-Salvarsan 19.12.23 0.45 Grammes
20. Other remarks Blood examination showed spirilla Carteri

# Relapsing Fever in Ferozepore District 1923.

88

No

Name Hamai s/o Jatta Sex Female Age 10 Caste Bhati Jat

Occupation Chowkidar Residence Sadarwala Tehsil Muktsar

- 
1. Date of infection or exposure to infection About 15.11.23 neighbouring houses infected with relapsing fever Viz. Damma
  2. Prodromal signs Malaise
  3. Actual invasion On 17.12.23 sudden onset of high fever with shivering.
  4. Pulse 140 per minute Full and regular
  5. Temperature 102°F
  6. Enlargement of spleen Not Palpable
  7. Perspiration None
  8. Duration of Fever 4 days
  9. Gastric symptoms Pain in the epigastrium No vomiting
  10. Delirium None
  11. Intestinal complications None
  12. Other manifestations: Bowels constipated, moist flabby coated tongue
  13. Other complications None
  14. Duration of first attack 4 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had One
  16. (a) Did fever leave by crisis? Crisis  
(b) Was there sweating or Diarrhoea? Sweating
  17. The patients personal hygiene Filthy
  18. Lice infestation of bedding Yes
  19. The date of injection of Neo-Salvarsan 19.12.23 0.2 Grammes intramuscularly
  20. Other remarks Blood examination showed spirilla Carteri.

# Relapsing Fever in Ferozepore District 1923.

89

No

Name Ahmad s/o Nura Sex Male Age 12 Caste Bhati Jat  
Occupation Agricul. Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection On 4.12.23 Father viz. Nura got relapsing fever
2. Prodromal signs Malaise
3. Actual invasion On 16.12.23 sudden onset of high fever with bilious vomiting.
4. Pulse 140 per minute Full and regular
5. Temperature 104°F
6. Enlargement of spleen Not Palpable
7. Perspiration None Skin dry and harsh
8. Duration of Fever 4 days Attack aborted by injection.
9. Gastric symptoms Bilious vomiting at the onset. No epigastric pain
10. Delirium None
11. Intestinal complications Irritation Diarrhoea
12. Other manifestations: Face flushed Conjunctivae injected. Tongue dry and coated with white fur.
13. Other complications None
14. Duration of first attack 4 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection  
(b) Was there sweating or Diarrhoea? Diarrhoea
17. The patients personal hygiene Filthy. Skin and clothes dirty
18. Lice infestation of bedding Yes Full of lice
19. The date of injection of Neo-Salvarsan 19.12.23 0.3 grammes
20. Other remarks

# Relapsing Fever in Ferozepore District 1923.

90

No

Name Sattan s/o - Sex Female Age 30 Caste Mohd.  
Occupation Residence Saddarwala Tehsil Muktsar

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1. Date of infection or exposure to infection 18.3.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Rigor and rapid high fever
  
4. Pulse 126 Full and regular
5. Temperature 103 F
6. Enlargement of spleen 3 inches below costal margin
7. Perspiration Scanty
8. Duration of Fever 6th: Day
9. Gastric symptoms No
10. Delirium No
11. Intestinal complications Diarrhoea attended with blood
12. Other manifestations: Slight Jaundice Epistaxis
  
13. Other complications No other complications
  
14. Duration of first attack 6th: day
15. How many attacks has <sup>he</sup>/<sub>she</sub> had Fourth attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 20.5.1923
20. Other remarks The fever came down to normal within 36 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

91

No

Name Nur Bibi s/o - Sex Female Age 18 Caste Mohd.  
Occupation Residence Saddarwala Tehsil Muktsar

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1. Date of infection or exposure to infection 10.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden with rigor.
  
4. Pulse 114 Full and regular
5. Temperature 101 F
6. Enlargement of spleen Enlarged 1" below costal margin
7. Perspiration Scanty
8. Duration of Fever 6th: Day
9. Gastric symptoms Frontal headache, Jaundice, Pains in limbs.
10. Delirium No delirium
- 11 Intestinal complications Slight Diarrhoea
12. Other manifestations: -
  
13. Other complications No other complications
  
14. Duration of first attack 6th: day
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Third attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Rich and well fed.
18. Lice infestation of bedding No lice or bugs
19. The date of injection of Neo-Salvarsan 20.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

92

No

Name WalaitKhans/o - Sex Male Age 16 Caste Mohd.

Occupation Residence Saddarwala Tehsil Muktsar

1. Date of infection or exposure to infection 14.4.1923
2. Prodromal signs The patient could explain none specifically.
3. Actual invasion Sudden with rigor and pains in the back and joints.
4. Pulse 130
5. Temperature 103.2F
6. Enlargement of spleen Spleen enlarged one in-ch below costal margin.
7. Perspiration Scanty
8. Duration of Fever 6th: day
9. Gastric symptoms Pain in the abdomen
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Epistaxis, frontal headache, Restlessness
13. Other complications No other complications
14. Duration of first attack 6th: day
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Well fed, Rich
18. Lice infestation of bedding No lice or bugs
19. The date of injection of Neo-Salvarsan 20.5.1923
20. Other remarks The fever came down to normal within 18 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

93

No

Name Fatto s/o - Sex Female Age 45 Caste Mohd.

Occupation Residence Saddarwala Tehsil Muktsar

- 
1. Date of infection or exposure to infection 2.5.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Abrupt with rigor and headache.
  
  4. Pulse 116 Full and regular
  5. Temperature 100 F
  6. Enlargement of spleen Just palpable
  7. Perspiration Scanty
  8. Duration of Fever 4th: day
  9. Gastric symptoms Pain in the abdomen
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea attended with blood
  12. Other manifestations: Slight jaundice
  
  13. Other complications No other complications
  
  14. Duration of first attack 7 days
  15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Second attack
  16. (a) Did fever leave by crisis? Yes
  - (b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice.
  19. The date of injection of Neo-Salvarsan 20.5.1923
  20. Other remarks The fever came down to normal within 28 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

94

No

Name Khairan s/o ~~XXXXXX~~ Sex Female Age 35 Caste Mohd.

Occupation Residence Saiddarwala Tehsil Muktsar

- 
1. Date of infection or exposure to infection 6.5.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Abrupt with frontal headache, pain in back and without shivering
  4. Pulse 128 Full and regular
  5. Temperature 104 F
  6. Enlargement of spleen One inch below costal margin
  7. Perspiration Slight in fever but profuse in the evening
  8. Duration of Fever 5th: Day
  9. Gastric symptoms Nil
  10. Delirium Nil
  11. Intestinal complications Diarrhoea at the end of first attack
  12. Other manifestations: Epistaxis, slight jaundice
  13. Other complications No other complications
  14. Duration of first attack 6 days
  15. How many attacks has  $\frac{he}{she}$  had Two
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 6.5.1923
  20. Other remarks The fever came down to normal within 36 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

95

No \_\_\_\_\_

Name Rana                      s/o                      Sex Male    Age 55    Caste Mohd.

Occupation                      Residence Saddarwala Tehsil    Muktsar

---

1. Date of infection or exposure to infection 8.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden without rigor pain in joints
4. Pulse 134
5. Temperature 103.4 F
6. Enlargement of spleen Enlarged  $1\frac{1}{2}$ " below costal margin
7. Perspiration Scanty
8. Duration of Fever 6th: Day
9. Gastric symptoms Pain in the abdomen
10. Delirium No delirium
11. Intestinal complications Diarrhoea attended with blood
12. Other manifestations: Slight Jaundice
13. Other complications No other complications
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had Second attack
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 20.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

96

No

Name FatteBano s/o - Sex Female Age 40 Caste Mohd.

Occupation Residence Saddarwala Tehsil Muktsar

- 
1. Date of infection or exposure to infection 15.5.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Abrupt with shivering.
  4. Pulse 120
  5. Temperature 102F
  6. Enlargement of spleen Enlarged  $\frac{1}{4}$ " inch below costal margin
  7. Perspiration Scanty.
  8. Duration of Fever 4th: day
  9. Gastric symptoms Nil
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea present
  12. Other manifestations: Epistaxis tendency to vomiting
  13. Other complications No complications
  14. Duration of first attack 5 days
  15. How many attacks has  $\frac{he}{she}$  had This was the first attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 20.5.1923
  20. Other remarks The fever came down to normal within 30 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

97

No

Name Nazaran s/o . Sex Female Age 25 Caste Mohd.  
Occupation Residence Saddarwala Tehsil Muktsar

---

1. Date of infection or exposure to infection 15.5.1923
2. Prodromal signs Headache and pains in the body
3. Actual invasion Sudden with a chilly feelings and pains in the joints.
4. Pulse 120
5. Temperature 102.2
6. Enlargement of spleen Not enlarged
7. Perspiration Not scanty
8. Duration of Fever 7th:Day
9. Gastric symptoms Nil
10. Delirium No
11. Intestinal complications Diarrhoea present
12. Other manifestations: Epistaxis restlessness and Cough.
13. Other complications No complications
14. Duration of first attack 8th:Day
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 20.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

98

No

Name Fatch Bibis/o - Sex Female Age 14 Caste Mohd.  
Occupation Residence SaddarWala Tehsil Muktsar

- 
1. Date of infection or exposure to infection 15.5.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Sudden with rigor and pains in the back and joints
  4. Pulse 136 Full and regular
  5. Temperature 104 F
  6. Enlargement of spleen Enlarged  $1\frac{1}{2}$ " below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 3rd:day
  9. Gastric symptoms Nil
  10. Delirium No
  11. Intestinal complications No
  12. Other manifestations: Restlessness, Frontal headache, Epistaxis.
  13. Other complications No other complications
  14. Duration of first attack 5th: day
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes.  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 20.5.1923
  20. Other remarks The fever came down to normal within 36 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.



99

No

Name Ghulam Fats/o                      Sex ~~Female~~ Age 20                      Caste Mohd.  
-ma  
Occupation                      Residence Saddarwala Tehsil Muktsar

---

1. Date of infection or exposure to infection 24.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Rigor and shivering with pains in the back and joint
4. Pulse 118 Full and regular
5. Temperature 101.8 F
6. Enlargement of spleen Slightly enlarged
7. Perspiration Scanty
8. Duration of Fever 4th: day
9. Gastric symptoms Pain in the abdomen
10. Delirium No delirium
11. Intestinal complications Diarrhoea present
12. Other manifestations: Epistaxis, frontal headache
13. Other complications No other complications
14. Duration of first attack 6 <sup>and</sup> to 8 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had 3rd: attack
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 24.5.1923
20. Other remarks The fever came down to normal within 28 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

100

No

Name Qaim s/o Dulla Sex Male Age 40 Year Caste Jat. Mohammadan  
 Occupation agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.1923 when his brother Damma had relapsing fever.
2. Prodromal signs None.
3. Actual invasion On 23.11.1923 with abrupt onset of high fever, with severe frontal headache.
4. Pulse 130 per minute, full and regular.
5. Temperature 102.8 F
6. Enlargement of spleen Not palpable
7. Perspiration None skin dry and harsh
8. Duration of Fever 6 days. Crisis within 12 hours of Nov-arsenobil injection.
9. Gastric symptoms None. No pain in the epigastrium. No vomiting
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Bowels constipated. Loss of appetite. Tongue furred at the base. Conjunctural slightly injected.
13. Other complications None
14. Duration of first attack 6 days
15. How many attacks has  $\frac{he}{she}$  had One
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection of Novarsenobil.  
 (b) Was there sweating or Diarrhoea? Sweating. No Diarrhoea
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Yes but not marked.
19. The date of injection of Neo-Salvarsan 26.11.1923 0.45 Gramms
20. Other remarks Blood examined on 27.11.1923. Showed Spirilla carteri.

# Relapsing Fever in Ferozepore District 1923.

101

No

Name Nur Bibi w/o Qaim Sex Female Age 40 Caste Mohammadan Jat  
Occupation Agriculturist Residence Sadarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.1923 as 1st case of Relapsing fever occurred in the house of that date
2. Prodromal signs None viz. Damma
3. Actual invasion On 23.11.1923 with sudden onset of high fever and frontal headache.
4. Pulse 130 per minute full and regular
5. Temperature 102.F
6. Enlargement of spleen Spleen not palpable
7. Perspiration None. Skin dry and harsh.
8. Duration of Fever 7 days. Crisis on the 7th:day, 36 hours after Novarsenobillon injection.
9. Gastric symptoms None. No pain in epigastrium. No vomiting
10. Delirium None
11. Intestinal complications None
12. Other manifestations: Bowels constipated Tongue furred at the base, patient lies listless in the bed.
13. Other complications Abortion of two months pregnancy on the 6th:day 12 hours after injection of Nov-arsenobillon.
14. Duration of first attack 7 days
15. How many attacks has  $\frac{he}{she}$  had one
16. (a) Did fever leave by crisis? Crisis within 36 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating but diarrhoea of one loose motion.
17. The patients personal hygiene Skin unwashed and dirty. House badly ventilated and overcrowded.
18. Lice infestation of bedding Yes- but not marked
19. The date of injection of Neo-Salvarsan 28.11.1923 0.4 Grammes
20. Other remarks Blood examination 27.11.1923 showed spirilla Carteri.

# Relapsing Fever in Ferozepore District 1923.

102

No

Name Umra s/o Dulla Sex Male Age 22 Caste Jat Mohammadan  
Occupation Agriculturist Residence Saddarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.23 as 1st case of relapsing fever occurred in that house on that date viz. Demna
2. Prodromal signs None
3. Actual invasion On 22.11.1923 with sudden onset of high fever
4. Pulse 120 per minute, full and regular.
5. Temperature 103 F
6. Enlargement of spleen Spleen not palpable
7. Perspiration No visible perspiration.
8. Duration of Fever 7 days
9. Gastric symptoms None. No vomiting
10. Delirium None
- 11 Intestinal complications None
12. Other manifestations: Patient weak and emaciated with sunken eyes but flushed face. Tongue furred at the base.
13. Other complications None
14. Duration of first attack 7 days of fever, followed by 9 of remission and one day of relapse.
15. How many attacks has <sup>he</sup> had Two  
<sub>she</sub>
16. (a) Did fever leave by crisis? Crisis within 12 hours of injection.  
(b) Was there sweating or Diarrhoea? Sweating. No diarrhoea
17. The patients personal hygiene Skin dirty. House overcrowded.
18. Lice infestation of bedding Yes but not marked.
19. The date of injection of Neo-Salvarsan 9.12.1923 0.45 Gramme
20. Other remarks Blood examined on 28.11.1923 when it showed Spirilla ~~Exr~~  
Carteri.

# Relapsing Fever in Ferozepore District 1923.

103

No

Name Ilam Din s/o Dulla Sex Male Age 35 Caste Mohammadan Jat  
Occupation Agriculturist Residence Saddarwala Tehsil Muktsar

1. Date of infection or exposure to infection About 15.11.1923 when 1st: case of relapsing fever in that house viz. Damma
2. Prodromal signs None
3. Actual invasion On 18.11.1923 with sudden onset of high fever with marked shivering.
4. Pulse 120 per minute, full and regular
5. Temperature 102 F
6. Enlargement of spleen Not Palpable
7. Perspiration None skin dry and harsh
8. Duration of Fever 7 days.
9. Gastric symptoms None. No pain in the epigastrium. No vomiting.
10. Delirium None
11. Intestinal complications Constipation. Bowels opened by Mag. Sulph.
12. Other manifestations: In fever patient restless and complains of much thirst, when seen after the crisis, he is listless weak and emaciated with sunken eyes and haggard face.
13. Other complications None.
14. Duration of first attack 7 days of fever, followed by 6 days of remission and death on the 14th: day, from Collapse.
15. How many attacks has <sup>he</sup>/<sub>she</sub> had One
16. (a) Did fever leave by crisis? Crisis on the 7th: day  
(b) Was there sweating or Diarrhoea? Sweating
17. The patients personal hygiene Filthy
18. Lice infestation of bedding Yes
19. The date of injection of Neo-Salvarsan Not given as seen in the precritical stage.
20. Other remarks Blood examined on the 24th: showed spirilla Carteri.

# Relapsing Fever in Ferozepore District 1923.

104

No

Name Chiragh s/o Lakha Sex Male Age 25 Caste Mohammadan Jat  
Occupation Agriculturist Residence Saddarwala Tehsil Muktsar

1. Date of infection or exposure to infection on 18.11.1923 as 1st: case of relapsing fever occurred in the house on that date Viz. Lalla
2. Prodromal signs None
3. Actual invasion On 4.12.1923 with abrupt rise of high temperature.
4. Pulse 120 per minute, full and regular.
5. Temperature 103 F
6. Enlargement of spleen Just Palpable
7. Perspiration None
8. Duration of Fever 5 days Crisis on the 6th: within 36 hours of injection.
9. Gastric symptoms Epigastric oppression but no vomiting.
10. Delirium Delirious on the 6th: day, just before the crisis
11. Intestinal complications None
12. Other manifestations: Bowels constipated, feeling of intense thirst but loss of appetite. Tongue dirty at the base.
13. Other complications None.
14. Duration of first attack 6 days.
15. How many attacks has <sup>he</sup>/<sub>she</sub> had One
16. (a) Did fever leave by crisis? Crisis on the 6th: day within 36 hours of the injection.  
(b) Was there sweating or Diarrhoea? Sweating. No diarrhoea
17. The patients personal hygiene Filthy. House overcrowded. Bedding dirty.
18. Lice infestation of bedding Yes.
19. The date of injection of Neo-Salvarsan 8.12.1923 0.45 gramme
20. Other remarks Blood examined on 8.12.1923, showed spirilla carteri

EAST

SKETCH OF VILLAGE PATTIKARAM  
TEHSIL FAZILKA DIST FEROZEPUR

I N H A B I T E D A R E A

I N H A B I T E D A R E A

I N H A B I T E D A R E A

POND

POPULATION =

DEPTH OF WATER OF WELLS = 117.0

POND

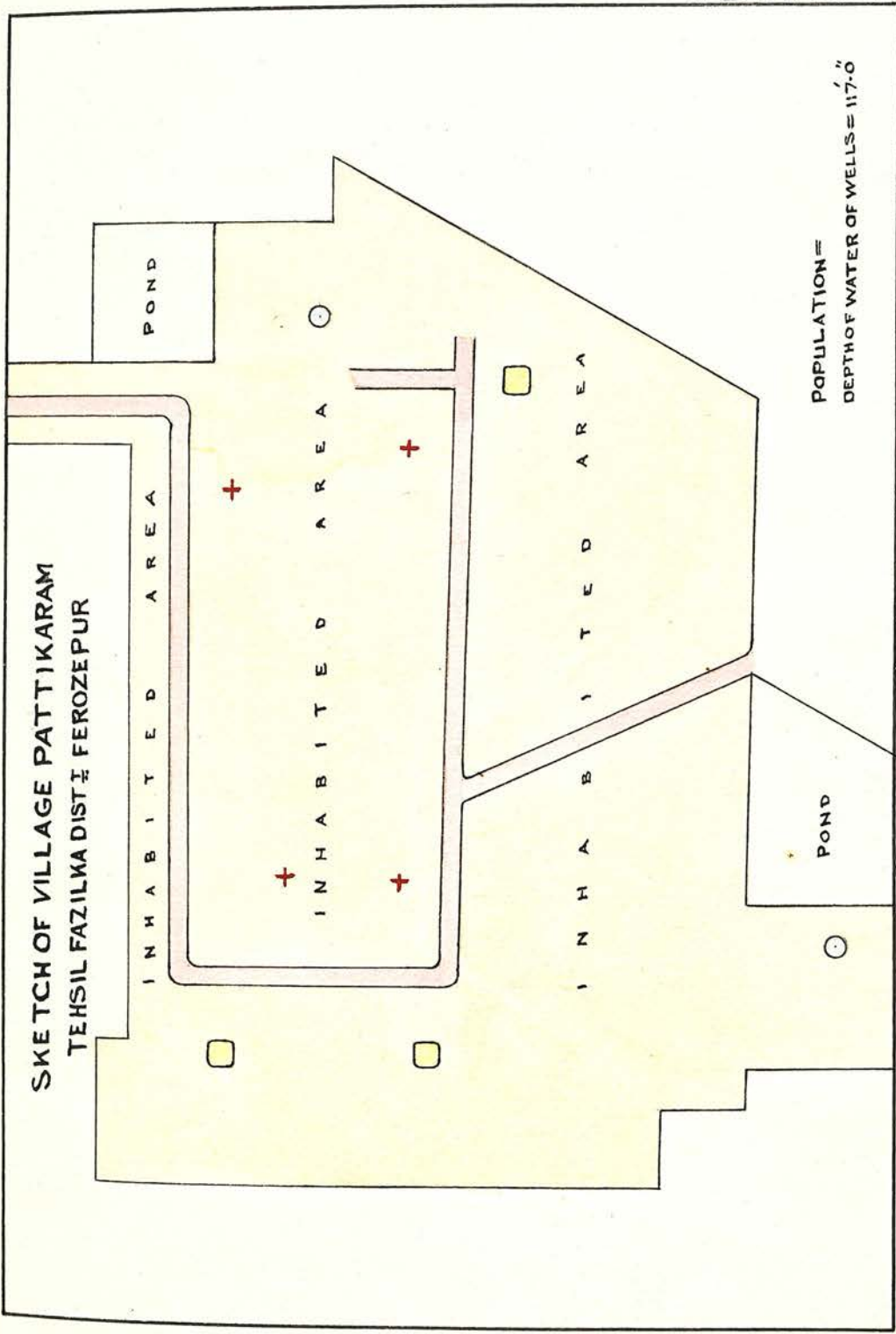
NORTH

WEST

SOUTH

REFERENCES

VILLAGE SITE	□
ROADS	—
WELLS	○
VILLAGE PONDS	□
MANURE HEAPS	□
INFECTED PLACES	+



# Relapsing Fever in Ferozepore District 1923.

105

No

Name Suleman s/o - Sex Male Age 45 Caste Mohd:  
Occupation Residence Patti Tehsil Ferozepore

- 
1. Date of infection or exposure to infection 6.6.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Onset sudden with pains in the back, joints and shivering.
  4. Pulse 115 Full and regular
  5. Temperature 101.6F
  6. Enlargement of spleen Enlarged two fingers below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 4th: day
  9. Gastric symptoms Occasional vomiting
  10. Delirium No delirium
  - 11 Intestinal complications Diarrhoea at the crisis
  12. Other manifestations: Eye Jaundiced and Epistaxis Occasional
  13. Other complications No other complications
  14. Duration of first attack One week
  15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Two
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 6.6.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

106

No

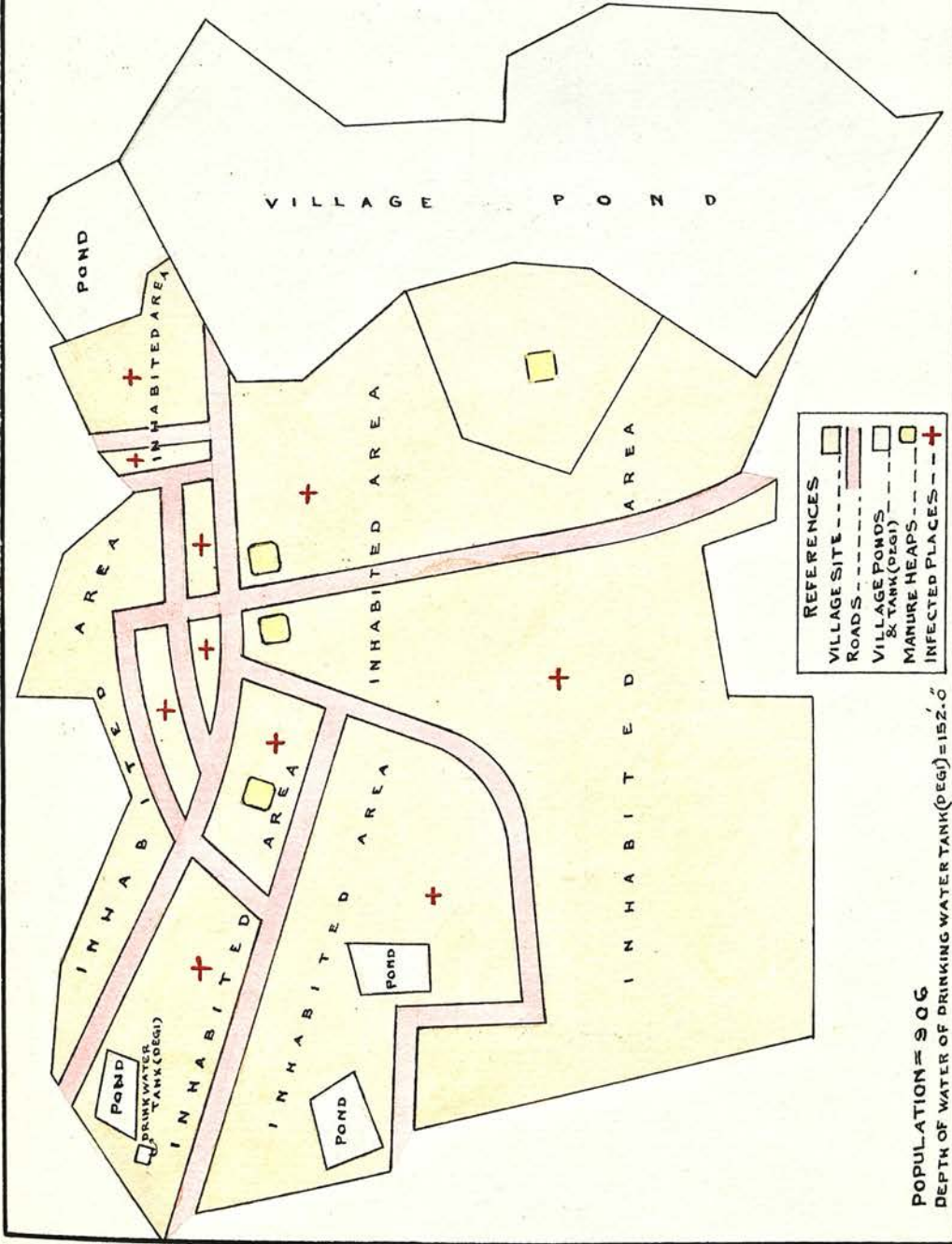
Name Rattizan s/o - Sex Male Age 30 Caste Mohd.  
Occupation Residence Patti Tehsil Ferozepore

1. Date of infection or exposure to infection 6.6.1923
2. Prodromal signs The patient could explain nonspecifically
3. Actual invasion Invasion sudden with shivering and pain in back and joints
4. Pulse 110 Full and regular
5. Temperature 102.4 F
6. Enlargement of spleen Palpable
7. Perspiration Scanty
8. Duration of Fever 5th: day
9. Gastric symptoms Occasional vomiting
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Eye Jaundiced Occasional Epistaxis
13. Other complications No other complications
14. Duration of first attack 6 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 6.6.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

EAST

# SKETCH OF VILLAGE KHUBAN TEHSIL FAZILKA DIST<sup>RICT</sup> FERROZEPUR

NORTH



SOUTH

REFERENCES

	VILLAGE SITE
	ROADS
	VILLAGE PONDS & TANK (DEGI)
	MANURE HEAPS
	INFECTED PLACES

POPULATION = 906

DEPTH OF WATER OF DRINKING WATER TANK (DEGI) = 152.0'

WEST

# Relapsing Fever in Ferozepore District 1923.

107

No \_\_\_\_\_

Name Karam Nisans/o - Sex Female Age 12 Caste Mohd.

Occupation \_\_\_\_\_ Residence Khuban Tehsil Ferozepore

1. Date of infection or exposure to infection 29.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Onset sudden with rigor and pain
4. Pulse 106 Full and regular.
5. Temperature 100 F
6. Enlargement of spleen Just Palpable
7. Perspiration Scanty
8. Duration of Fever 7th: day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: No jaundice
13. Other complications No other complication
14. Duration of first attack 10 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Two
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 29.5.1923.
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

108

No

Name Begam s/o - Sex Female Age 25 Caste Mohd.  
Occupation Residence Khubban Tehsil Ferozepore

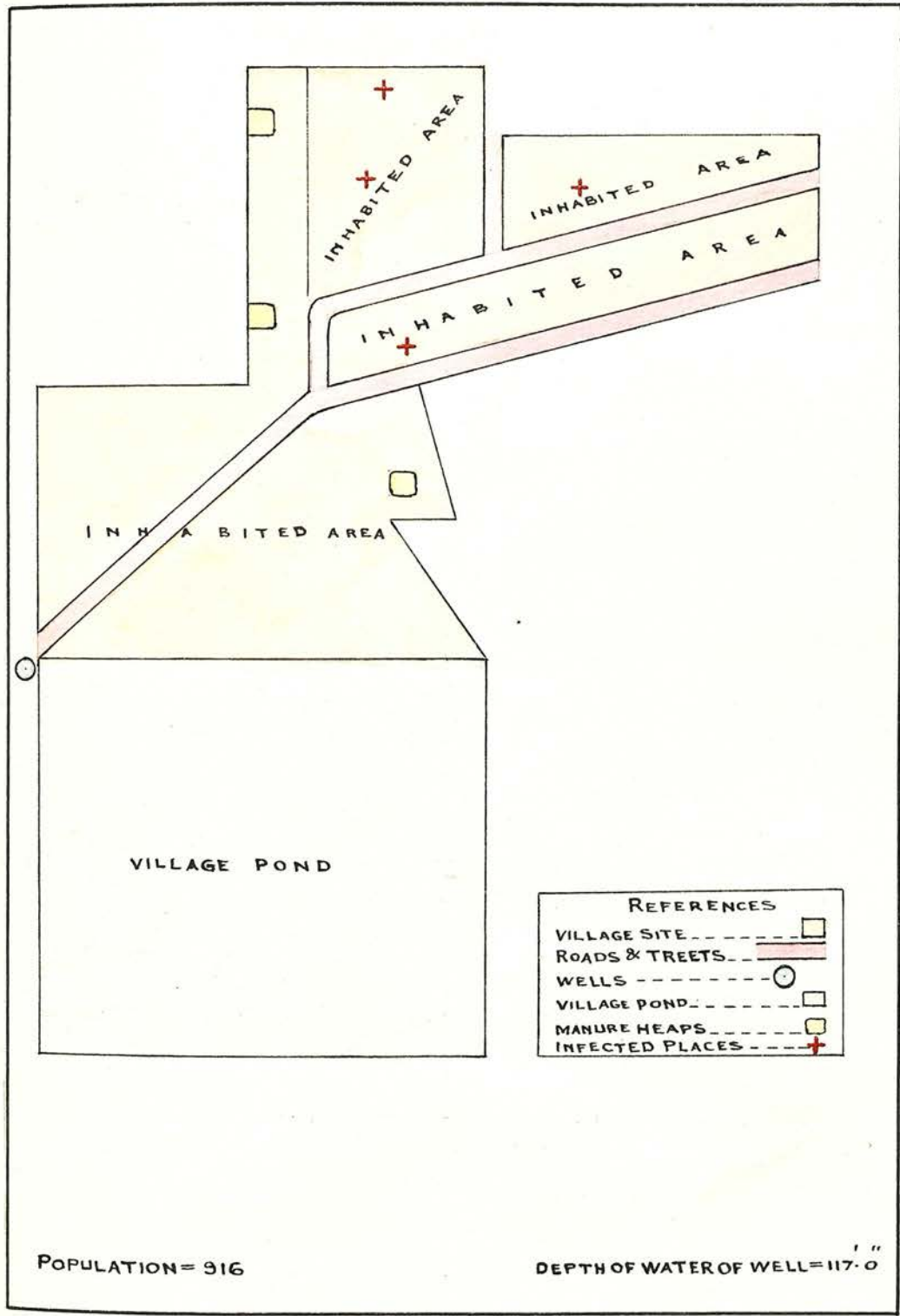
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1. Date of infection or exposure to infection 29.5.1923
2. Prodromal signs No prodromal signs
3. Actual invasion On set sudden with shivering and pain in the back and joints.
4. Pulse 110 Full and regular
5. Temperature 101.5F
6. Enlargement of spleen Just Palpable
7. Perspiration Scanty
8. Duration of Fever 3rd:day
9. Gastric symptoms Vomitting present.
10. Delirium Slight delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: Slight Jaundice
13. Other complications No other complications.
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the second attack.
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and dirty
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 29.5. 1923
20. Other remarks The fever came down to normal within 30 hours of the the injection.

SKETCH OF VILLAGE MIDD A  
TEHSIL FAZILKA DIST<sup>RICT</sup> FERDZEPUR

NORTH

PLATE No 17



# Relapsing Fever in Ferozepore District 1923.

109

No 10.

Name Karam Elahis/o      -      Sex male      Age 20      Caste Mohd:  
Occupation      -      Residence Midda      Tehsil Ferozepore

---

1. Date of infection or exposure to infection 26.5.1923
2. Prodromal signs      The patient could explain none specifically.
3. Actual invasion      Sudden with pains in back and limbs. No shivering.
4. Pulse      96. Full and regular
5. Temperature      103.2 F
6. Enlargement of spleen Not palpable
7. Perspiration      Scanty
8. Duration of Fever      4th:day
9. Gastric symptoms      Vomitting
10. Delirium      No delirium
11. Intestinal complications      No diarrhoea
12. Other manifestations:      Slight Jaundice, No Epistaxis,
13. Other complications      No other complications
14. Duration of first attack      5 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had      One
16. (a) Did fever leave by crisis?      Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene      Poor and filthy
18. Lice infestation of bedding      Clothes infested with lice
19. The date of injection of Neo-Salvarsan 26.5.1923
20. Other remarks      The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

110

No 11

Name Jawaya s/o - Sex Male Age 40 Caste Mohd:  
Occupation - Residence Midda Tehsil Ferozepore

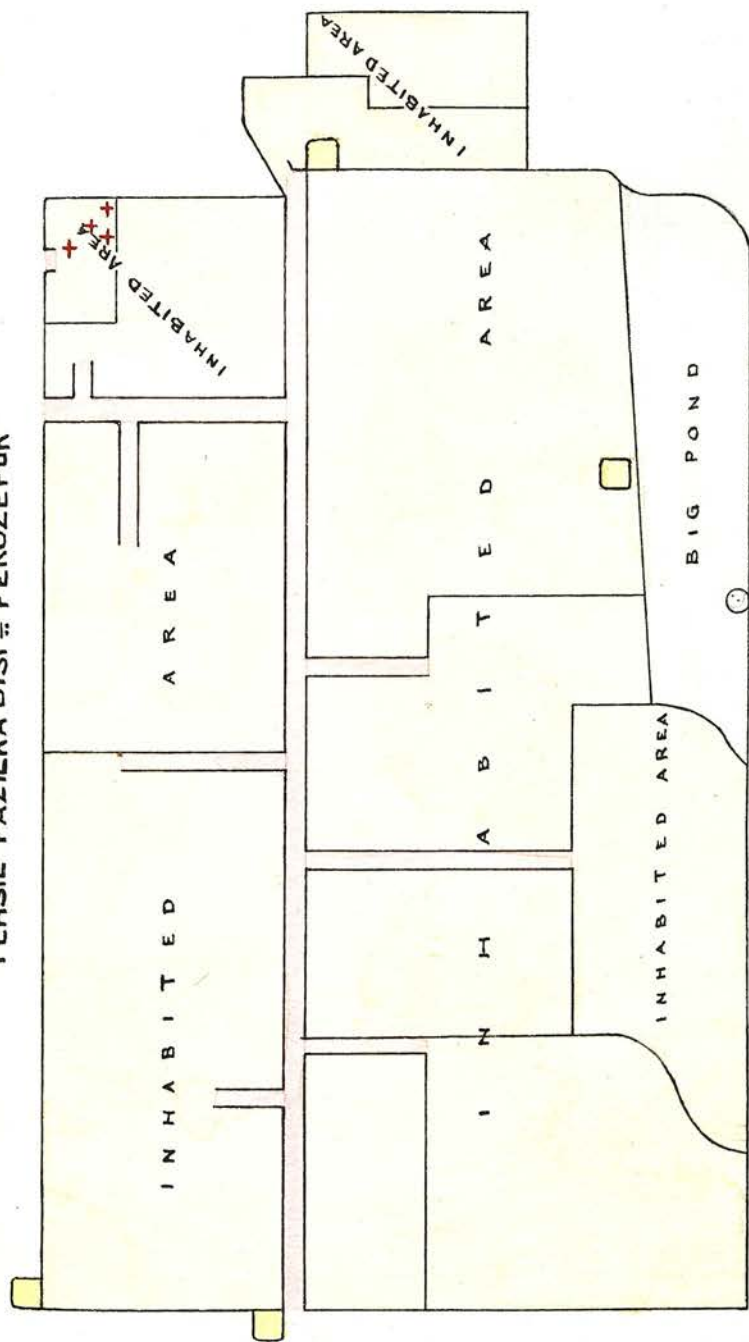
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1. Date of infection or exposure to infection 26.5.1923
2. Prodromal signs The patient could explain none specifically.
3. Actual invasion Sudden with shivering and rigor
4. Pulse 106 Full regular
5. Temperature 102.4 F
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 2nd: day
9. Gastric symptoms Vomitting
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Slight Jaundice No Epistaxis
13. Other complications No other complications
14. Duration of first attack 3 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothings infested with lice
19. The date of injection of Neo-Salvarsan 26.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

EAST

NORTH

SKETCH OF VILLAGE JANDWALA  
TEHSIL FAZILKA DIST FEROZEPUR



POPULATION = 3906

DEPTH OF WATER OF WELL = 128.0'

REFERENCES

- VILLAGE SITE
- ROADS & STREETS
- WELLS
- VILLAGE PONDS
- MANURE HEAPS
- INFECTED PLACES

SOUTH

WEST

# Relapsing Fever in Ferozepore District 1923.



///

No 7

Name Manak s/o - Sex Male Age 25 Caste Others  
Occupation - Residence Jandwala Tehsil Ferozepore

- 
1. Date of infection or exposure to infection 24.5.1923
  2. Prodromal signs The patient could explain none specifically.
  3. Actual invasion Sudden with pains in back and limbs.
  
  4. Pulse 102 Full and regular
  5. Temperature 103.2 F
  6. Enlargement of spleen Just palpable
  7. Perspiration scanty
  8. Duration of Fever 3rd: day
  9. Gastric symptoms Vomitting
  10. Delirium No delirium
  - 1 Intestinal complications No diarrhoea
  2. Other manifestations: Slightly Jaundiced
  
  3. Other complications No other complications
  
  4. Duration of first attack 4 days
  5. How many attacks has  $\frac{\text{he}}{\text{she}}$  had 1st: Attack
  6. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Neither sweating nor Diarrhoea
  7. The patients personal hygiene Extremely poor and filthy
  8. Lice infestation of bedding clothes infested with lice
  9. The date of injection of Neo-Salvarsan 24.5.1923
  10. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

112

No 8

Name Bhagan s/o - Sex Female Age 15 Caste Others  
Occupation - . Residence Jandwala Tehsil Ferozepore

---

1. Date of infection or exposure to infection 24.5.1923
2. Prodromal signs The patient could explain none specifically.
3. Actual invasion Sudden with shivering and rigor.
  
4. Pulse 120 full and regular
5. Temperature 102.6.F.
6. Enlargement of spleen Just palpable
7. Perspiration scanty
8. Duration of Fever 4th: day
9. Gastric symptoms vomiting
10. Delirium no delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: Slightly Jaundiced. Epistaxis
  
13. Other complications No other complications
  
14. Duration of first attack 5 days
15. How many attacks has  $\frac{he}{she}$  had This was the first attack.
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Neither sweating nor diarrhoea
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 24.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

113

No 9

Name Karim s/o - Sex female Age 30 Caste Others  
Occupation - Residence Jandwala Tehsil Ferozepore

1. Date of infection or exposure to infection 24.5.1923
2. Prodromal signs The patient could explain non-specifically
3. Actual invasion Sudden with shivering and pains in joints and back.
4. Pulse 106 Full and regular
5. Temperature 102.6 F
6. Enlargement of spleen Just palpable
7. Perspiration Scanty
8. Duration of Fever 4th: day
9. Gastric symptoms No Vomitting
10. Delirium No delirium
11. Intestinal complications No Diarrhoea
12. Other manifestations: Slightly Jaundiced. No Epistaxis
13. Other complications No other complications
14. Duration of first attack 5 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? No sweating or diarrhoea
17. The patients personal hygiene poverty stricken and dirty
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 24.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# SKETCH OF VILLAGE MALOUT

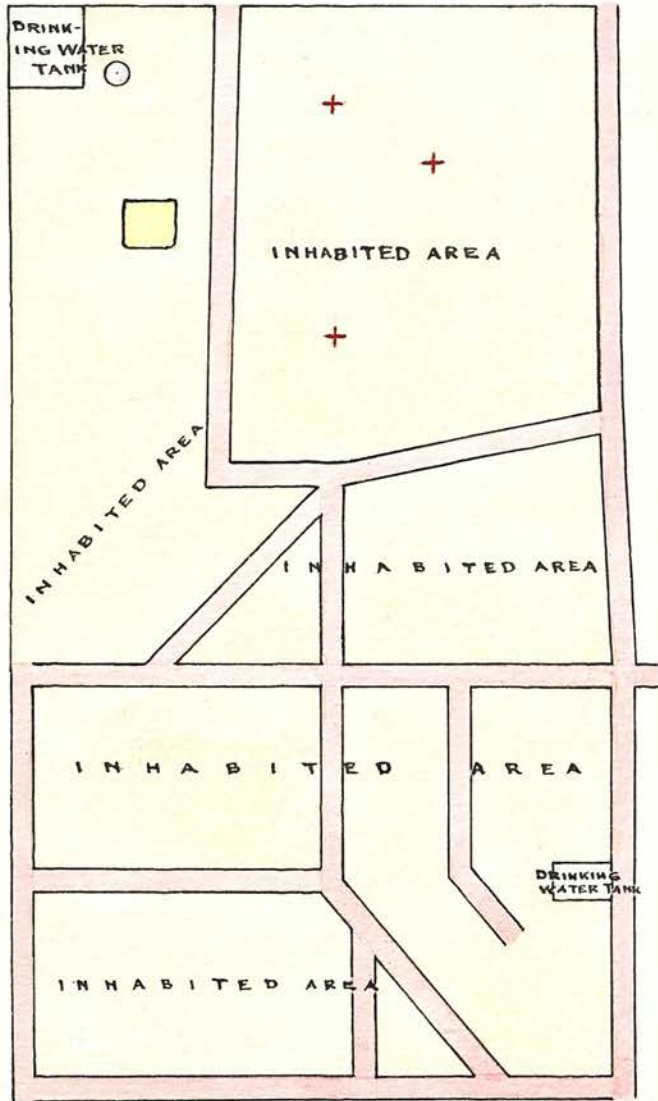
## TEHSIL FAZILKA DIST<sup>Y</sup> FERROZEPUR

NORTH

PLATE No 14

WEST

EAST



POPULATION=2356

DEPTH OF WATER OF WELL=132'0"

REFERENCES	
VILLAGE STIE	---□
ROADS	---■
WELLS	---○
VILLAGE POND & TANKS	---□
MANURE HEAPS	---■
INFECTED PLACES	---+

SOUTH

# Relapsing Fever in Ferozepore District 1923.

114

No 3

Name Mamoon s/o - Sex Male Age 20 Caste Mohd:  
Occupation - Residence Malout Tehsil Fazilka

- 
1. Date of infection or exposure to infection 22.5.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Sudden with pains on back and joints.
  
  4. Pulse 98 Full and regular.
  5. Temperature 101.0 F
  6. Enlargement of spleen Enlarged. 3 fingers below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 5th: day
  9. Gastric symptoms No vomiting
  10. Delirium No delirium
  - 11 Intestinal complications Diarrhoea towards crisis
  12. Other manifestations: Jaundice no Epistaxis
  
  13. Other complications No other complications
  
  14. Duration of first attack <sup>not known</sup> 2nd: Attack. Cut short to 6 days.
  15. How many attacks has ~~she~~ <sup>he</sup> had This was the second attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 26.5.1923
  20. Other remarks The fever came down to normal within 24 hours.

# Relapsing Fever in Ferozepore District 1923.

No 4

115

Name Milkhi s/o - Sex Male Age 12 Caste Others  
Occupation - Residence Malout Tehsil Fazilka

---

1. Date of infection or exposure to infection 22.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden with shivering and pains in joints.
  
4. Pulse 120 full and regular.
5. Temperature 103.4 F
6. Enlargement of spleen Not Palpable
7. Perspiration Scanty
8. Duration of Fever 2nd: day
9. Gastric symptoms Vomitting
10. Delirium No delirium
- 11 Intestinal complications No diarrhoea
12. Other manifestations: No jaundice. Epistaxis
  
13. Other complications No other complications
  
14. Duration of first attack 3 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the Firsr attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Neither sweating nor diarrhoea
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 26.5.1923
20. Other remarks The fever came down to normal within 20 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

No 5.

116

Name Sabrai s/o - Sex female Age 15 Caste Others  
Occupation - Residence Mabut Tehsil Fazilka

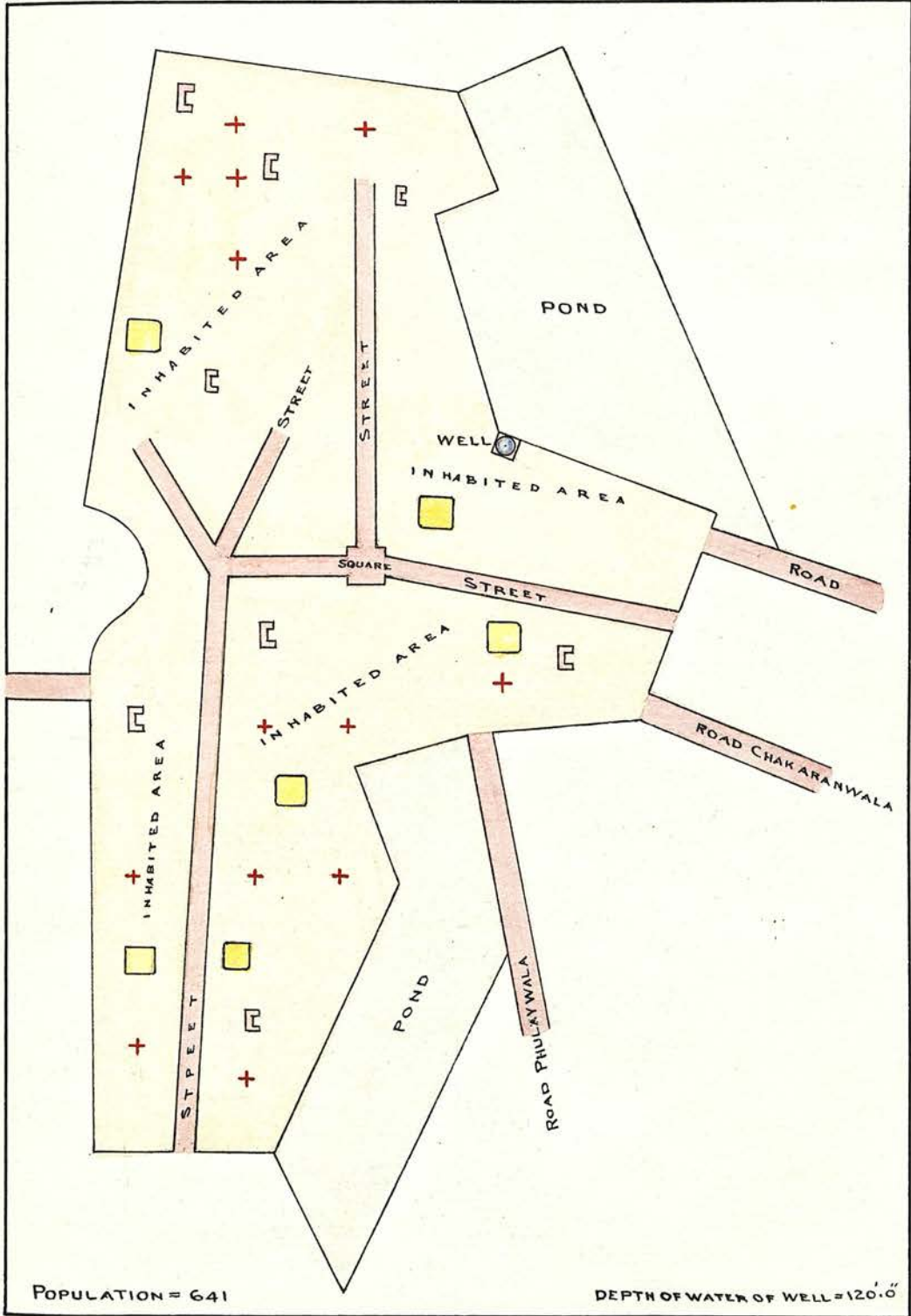
- 
1. Date of infection or exposure to infection 22.5.1923
  2. Prodromal signs The patient could explain none specifically.
  3. Actual invasion Sudden with pains on back and frontal  
Headache.
  4. Pulse 118 Full and regular
  5. Temperature 102.4 F
  6. Enlargement of spleen Enlarged Two fingers below costal margin.
  7. Perspiration Scanty
  8. Duration of Fever 2nd: day
  9. Gastric symptoms No vomiting
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea after crisis
  12. Other manifestations: Eyes Jaundiced
  13. Other complications No other complications
  14. Duration of first attack 2nd: attack. 3 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the second attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? sweating and diarrhoea
  17. The patients personal hygiene Poverty stricken and dirty
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 23.5.1923
  20. Other remarks The fever came down to normal  
within 24 hours of the injection.

# SKETCH OF VILLAGE DHAGANA A

## TEHSIL MUKTSAR DIST. FEROREPUR

NORTH

PLATE No 10



SOUTH

REFERENCES	
VILLAGE SITE	□
ROADS & STREETS	—
SITE OF HOUSES	⌂
WELLS	⊙
VILLAGE POND	▭
MANURE HEAPS	■
INFECTED PLACES	+

# Relapsing Fever in Ferozepore District 1923.

117

No

Name Mohammad Abo - Sex Male Age 10 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 15.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set sudden with rigor and shivering with headache and vomiting.
4. Pulse 120 Full and regular
5. Temperature 104.8 F
6. Enlargement of spleen Not Palpable
7. Perspiration Scanty
8. Duration of Fever 2 days
9. Gastric symptoms Vomitting
10. Delirium Delirium present
11. Intestinal complications Nil
12. Other manifestations: Slight Jaundice and Epistaxis
13. Other complications No other complications
14. Duration of first attack 3 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack.
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 15.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.



118

No

Name Rahima s/o - Sex Male Age 30 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 15.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion On set with severe shivering and pains in the back.
  4. Pulse 98 Full and regular
  5. Temperature 102 F
  6. Enlargement of spleen Spleen Palpable
  7. Perspiration Scanty
  8. Duration of Fever 6th: day
  9. Gastric symptoms Vomitting present
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea developed in 2nd: attack.
  12. Other manifestations: Eyes jaundiced and Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 7 days
  15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Two
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 15.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

No

119

Name Saddi s/o . Sex Female Age 70 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 15.4. 1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with severe shivering and rigor with pain in the back and vomiting.
4. Pulse 98 Full and regular
5. Temperature 101.2 F
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration No perspiration
8. Duration of Fever one day
9. Gastric symptoms No other symptoms
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Nil
13. Other complications No other complications
14. Duration of first attack 2 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 15.4.1923
20. Other remarks The fever came down to normal with 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

120

No

Name Noor Bai s/o - Sex Female Age 45 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

1. Date of infection or exposure to infection 15.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with severe shivering and rigor with pain in the back and vomiting.
4. Pulse 110 Full and regular
5. Temperature 103.2F
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 4th:day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
- 11 Intestinal complications No diarrhoea
12. Other manifestations: Slight Jaundice
13. Other complications No other complications
14. Duration of first attack 5 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 15.4. 1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

121

No

Name Kamala s/o - Sex Male Age 65 Caste Mohd.

Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 15.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Extensive rigor and shivering with pain in the back.
  4. Pulse 110 Full high
  5. Temperature 104.6F
  6. Enlargement of spleen Enlarged three fingers below costal margin
  7. Perspiration No perspiration
  8. Duration of Fever 5th: day
  9. Gastric symptoms Vomitting present
  10. Delirium No delirium
  11. Intestinal complications No diarrhoea
  12. Other manifestations: Has slight Jaundice and bronchitis
  13. Other complications No other complications
  14. Duration of first attack 6 days
  15. How many attacks has  $\frac{he}{she}$  had This was the first attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 15.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

122

No

Name Amiran s/o - Sex Female Age 30 Caste Mohd.

Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 15.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Severe shivering and pain all over the body
  4. Pulse 108 Full and regular
  5. Temperature 103.F
  6. Enlargement of spleen Not Palpable
  7. Perspiration Scanty
  8. Duration of Fever 3 days
  9. Gastric symptoms Nil
  10. Delirium Nil
  11. Intestinal complications Nil
  12. Other manifestations: Nil
  13. Other complications No other complications
  14. Duration of first attack 4 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes
  - (b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 15.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

123

No \_\_\_\_\_

Name Sardar Bibi/o - Sex Female Age 50 Years Caste Mohd.

Occupation \_\_\_\_\_ Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 15.4.1923
2. Prodromal signs Malaise a day before
3. Actual invasion On set abrupt with shivering and pains in the back and limbs.
4. Pulse 118 Full and regular
5. Temperature 102.4 F
6. Enlargement of spleen Enlarged three fingers below costal margin
7. Perspiration No perspiration
8. Duration of Fever 3 days
9. Gastric symptoms Nil
10. Delirium Nil
11. Intestinal complications Nil
12. Other manifestations: Epistaxis present
13. Other complications No complications
14. Duration of first attack 4 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 15.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

124

No

Name Lashkar s/o - Sex Male Age 25 Caste mohd.

Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 20.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion On set sudden with shivering and pain in the back and joints.
  4. Pulse 108 Full and regular
  5. Temperature 102.6F
  6. Enlargement of spleen Enlarged 4 fingers below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 4 days
  9. Gastric symptoms Vomitting present
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea present
  12. Other manifestations: Slight Jaundice and Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 5 days
  15. How many attacks has  $\frac{he}{she}$  had This was the first attack
  16. (a) Did fever leave by crisis? Yes
  - (b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 20.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

125

No

Name Jumma s/o - Sex Male Age 60 Caste Mohd.

Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 20.4.1923
  2. Prodromal signs The patient could explain none specifically.
  3. Actual invasion On set with shivering and frontal headache
  4. Pulse 98 Full and regular
  5. Temperature 100.2
  6. Enlargement of spleen Spleen enlarged two fingers below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 4 days
  9. Gastric symptoms Vomitting present
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea present
  12. Other manifestations: Slight Jaundice and Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 5 days
  15. How many attacks has  $\frac{he}{she}$  had This was the first attack.
  16. (a) Did fever leave by crisis? Yes
  - (b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 20.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

126

No

Name Junia s/o - Sex Male Age 8 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

1. Date of infection or exposure to infection 20.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Onset with rigor and shivering.
4. Pulse 128 Full and regular
5. Temperature 103.6 F
6. Enlargement of spleen Spleen not Palpable
7. Perspiration Scanty
8. Duration of Fever 3rd:day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
- 11 Intestinal complications Had Diarrhoea
12. Other manifestations: Slight Jaundice and Epistaxis
13. Other complications No other complications.
14. Duration of first attack 4 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack.
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 20.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

No

127

Name Bhaskai s/o - Sex Female Age 13 Caste Mohd.

Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 20.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion On set with pain in joints and back
  4. Pulse 120 Full and regular
  5. Temperature 102.4F
  6. Enlargement of spleen Just Palpable
  7. Perspiration Scanty
  8. Duration of Fever 4th: day
  9. Gastric symptoms Vomitting present
  10. Delirium Delirious
  - 11 Intestinal complications No diarrhoea
  12. Other manifestations: Eyes tinged yellow and has very bad Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 5 days
  15. How many attacks has  $\frac{he}{she}$  had This was the first attack
  16. (a) Did fever leave by crisis? Yes
  - (b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 20.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.



128

No

Name SahibZadi s/o - Sex female Age 25 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 20.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with shivering and pain.
  
4. Pulse 100 Full and regular
5. Temperature 102.2F
6. Enlargement of spleen Not Plapable
7. Perspiration Scanty
8. Duration of Fever Third day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
11. Intestinal complications Diarrhoea present towards crisis
12. Other manifestations: Eyes Jaundiced
  
13. Other complications No other complications.
  
14. Duration of first attack 8 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Two
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 20.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

129

No

Name Shah Mohd. s/o - Sex Male Age 25 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

1. Date of infection or exposure to infection 20.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Onset with shivering and pain, in the limbs and back.
4. Pulse 106 Full and regular
5. Temperature 102.6F
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever Third day
9. Gastric symptoms Gastrites and vomitting
10. Delirium No delirium
- 11 Intestinal complications No diarrhoea
12. Other manifestations: Jaundice marked Epistaxis present
13. Other complications No other complications
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had Two
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice.
19. The date of injection of Neo-Salvarsan 20.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

130

No

Name Kharian s/o . Sex female Age 12 Caste Mohd:  
Occupation Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 23.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden with shivering and rigor
4. Pulse 122 Full and regular
5. Temperature 103.6F
6. Enlargement of spleen Enlarged 2 fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 5 days
9. Gastric symptoms No vomiting
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Jaundiced No Epistaxis
13. Other complications No other complications
14. Duration of first attack 6 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 23.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

131

No

Name Moheyud Dins/o - Sex Male Age 20 Caste Mohdn.  
Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 23.4.1923
  2. Prodromal signs the patient could explain none specifically
  3. Actual invasion Sudden with frontal headache and pains in joints
  4. Pulse 118 Full and regular
  5. Temperature 101.8F
  6. Enlargement of spleen Just palpable
  7. Perspiration Scanty
  8. Duration of Fever 3 days
  9. Gastric symptoms Vomitting
  10. Delirium No delirium
  - 11 Intestinal complications No diarrhoea
  12. Other manifestations: Jaundiced No Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 4 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the was attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 23.4.1923
  20. Other remarks The fever came down to normal within 24 hours  
of the injection.

# Relapsing Fever in Ferozepore District 1923.

132

No

Name Okaran s/o - Sex Female Age 14 Caste Mohd:

Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 23.4.1923
  2. Prodromal signs The patient could explain none specifically.
  3. Actual invasion Sudden with shivering and pains in the back and joints
  4. Pulse 120 Full and regular
  5. Temperature 102.4 F
  6. Enlargement of spleen Just palpable
  7. Perspiration Scanty
  8. Duration of Fever 2nd: day
  9. Gastric symptoms Vomitting
  10. Delirium No delirium
  11. Intestinal complications No diarrhoea
  12. Other manifestations: Eye Jaundiced Epistaxis plus
  13. Other complications No other complications
  14. Duration of first attack 7 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the **second** attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 23.4.1923
  20. Other remarks The fever came down to normal within 24 hours of  
the injection.

# Relapsing Fever in Ferozepore District 1923.

133

No

Name Amiran s/o - Sex female Age 30 Caste Mohd:  
Occupation Residence Dhagana Tehsil Muktsar

1. Date of infection or exposure to infection 23.4.23
2. Prodromal signs The patient could explain none specifically.
3. Actual invasion Sudden with shivering and pains in back and joints
4. Pulse 112 Full and regular
5. Temperature 101.8 F
6. Enlargement of spleen Just palpable
7. Perspiration Scanty
8. Duration of Fever 4 days
9. Gastric symptoms Vomitting
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: Eye Jaundiced Epistaxis plus
13. Other complications No other complications
14. Duration of first attack 5 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 23.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

134

No

Name Wali Mohd s/o - Sex Male Age 25 Caste Mohd:  
Occupation ~~Canal Labour~~ Residence ~~Canal Labour~~ Dhagana Tehsil Muktsar.

1. Date of infection or exposure to infection 23.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden with shivering and pains in the back and joints.
4. Pulse 110 Full and regular
5. Temperature 102.3
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 3rd: day
9. Gastric symptoms Vomitting
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: Eye Jaundiced. Epistaxis plus.
13. Other complications No other complications.
14. Duration of first attack 4 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack.
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 23.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

135

No

Name Ata Mohamm~~s~~<sup>o</sup> - Sex male Age 25 Caste Mhd.

Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 24.4.1923
  2. Prodromal signs The patient could explain none specifically.
  3. Actual invasion Sudden with severe pains in joints and back
  4. Pulse 110 Full and regular
  5. Temperature 102.4 F
  6. Enlargement of spleen Enlarged two fingers below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 3rd: day
  9. Gastric symptoms Vomitting
  10. Delirium No delirium
  11. Intestinal complications No diarrhoea
  12. Other manifestations: Jaundice no Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 4 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes
  - (b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 24.4.1923
  20. Other remarks The fever came down to Normal with 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

136

No

Name Jolahiya s/o - Sex Male Age 45 Caste Others  
Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 24.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Sudden with shivering and pains in joints and back
  
  4. Pulse 96 Full and regular
  5. Temperature 100.6F
  6. Enlargement of spleen Not Palpable
  7. Perspiration Scanty
  8. Duration of Fever 4th:day
  9. Gastric symptoms Vomitting
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea present
  12. Other manifestations: Jaundice Epistaxis
  
  13. Other complications No other complications
  
  14. Duration of first attack 5 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 24.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

137

No

Name Bhag Ali s/o - Sex Male Age 20 Caste Mohd:  
Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 24.4.1923
  2. Prodromal signs The patient could explain none specifically.
  3. Actual invasion Sudden with rigor and pains in joints and back.
  4. Pulse 112 Full and regular
  5. Temperature 101.4 F
  6. Enlargement of spleen Not Palpable
  7. Perspiration Scanty
  8. Duration of Fever 3rd:day
  9. Gastric symptoms Occasional vomitting
  10. Delirium No delirium
  - 11 Intestinal complications No diarrhoea
  12. Other manifestations: No jaundice Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 4 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 24.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

138

No

Name Dablan s/o - Sex female Age 70 Caste Mohd:  
Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 24.4.1923
  2. Prodromal signs The patient could explain non-specifically
  3. Actual invasion Sudden with shivering and rigor.
  
  4. Pulse 102 Full and regular
  5. Temperature 102.8
  6. Enlargement of spleen Enlarged on finger below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 3rd; day
  9. Gastric symptoms Occasional vomiting
  10. Delirium No delirium
  - 11 Intestinal complications No diarrhoea
  12. Other manifestations: Jaundiced no Epistaxis
  
  13. Other complications No other complications
  
  14. Duration of first attack 7 days
  15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Two
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 24.4.1923
  20. Other remarks ~~The patient could explain non-specifically~~  
The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

139

No

Name Sardara s/o ₹ Sex Male Age 32 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 18.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with shivering and rigor, pain in the back and limbs.
4. Pulse 118 full and regular
5. Temperature 104.0F
6. Enlargement of spleen Spleen Palpable
7. Perspiration scanty
8. Duration of Fever 5th: day
9. Gastric symptoms vomitting present
10. Delirium No delirium
11. Intestinal complications Had diarrhoea
12. Other manifestations: Epistaxis present
13. Other complications No other complications
14. Duration of first attack 6 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack.
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 18.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

No

140

Name Asmat s/o - Sex female Age 14 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 18.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with shivering and pain in the back and limbs
4. Pulse 130 Full and regular
5. Temperature 103.4F
6. Enlargement of spleen Spleen not enlarged
7. Perspiration Scanty
8. Duration of Fever 4th: day
9. Gastric symptoms Vomitting present
10. Delirium Was delirious
11. Intestinal complications Diarrhoea present
12. Other manifestations: Slight Jaundice and Epistaxis
13. Other complications No other complications.
14. Duration of first attack 5 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 18.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

141

No

Name Gani s/o - Sex male Age 10 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

---

1. Date of infection or exposure to infection 18.5.1923
2. Prodromal signs The patient could explain none specifically.
3. Actual invasion On set with shivering and pain in the back and limbs.
4. Pulse 130 Full and regular
5. Temperature 103.4F
6. Enlargement of spleen Just palpable
7. Perspiration scanty
8. Duration of Fever 4th:day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: Slight Jaundice and Epistaxis
13. Other complications No other complications
14. Duration of first attack 5 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 18.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

142

No

Name Tani s/o Amira Sex Male Age 20 Caste Mohd.  
Occupation Residence Dhagana Tehsil Muktsar

- 
1. Date of infection or exposure to infection 25.5.1923
  2. Prodromal signs The patient could explain none specifically.
  3. Actual invasion On set abrupt with chilly feeling, frontal headache.
  4. Pulse 120 Full and regular
  5. Temperature 103.2F
  6. Enlargement of spleen Enlarged  $1\frac{1}{2}$ " below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 5th:day
  9. Gastric symptoms Vomits out every thing taken
  10. Delirium No delirium
  11. Intestinal complications Diarrhoea and abdominal pain present
  12. Other manifestations: Jaundice and Epistaxis present
  13. Other complications No other complications.
  14. Duration of first attack 6 days
  15. How many attacks has  $\frac{he}{she}$  had Two
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 25.5.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# KOTLI SANGHAR

SKETCH OF VILLAGE KOTLI SANGHAR  
TEHSIL MUKTSAR DISTRICT FEROREPUR.

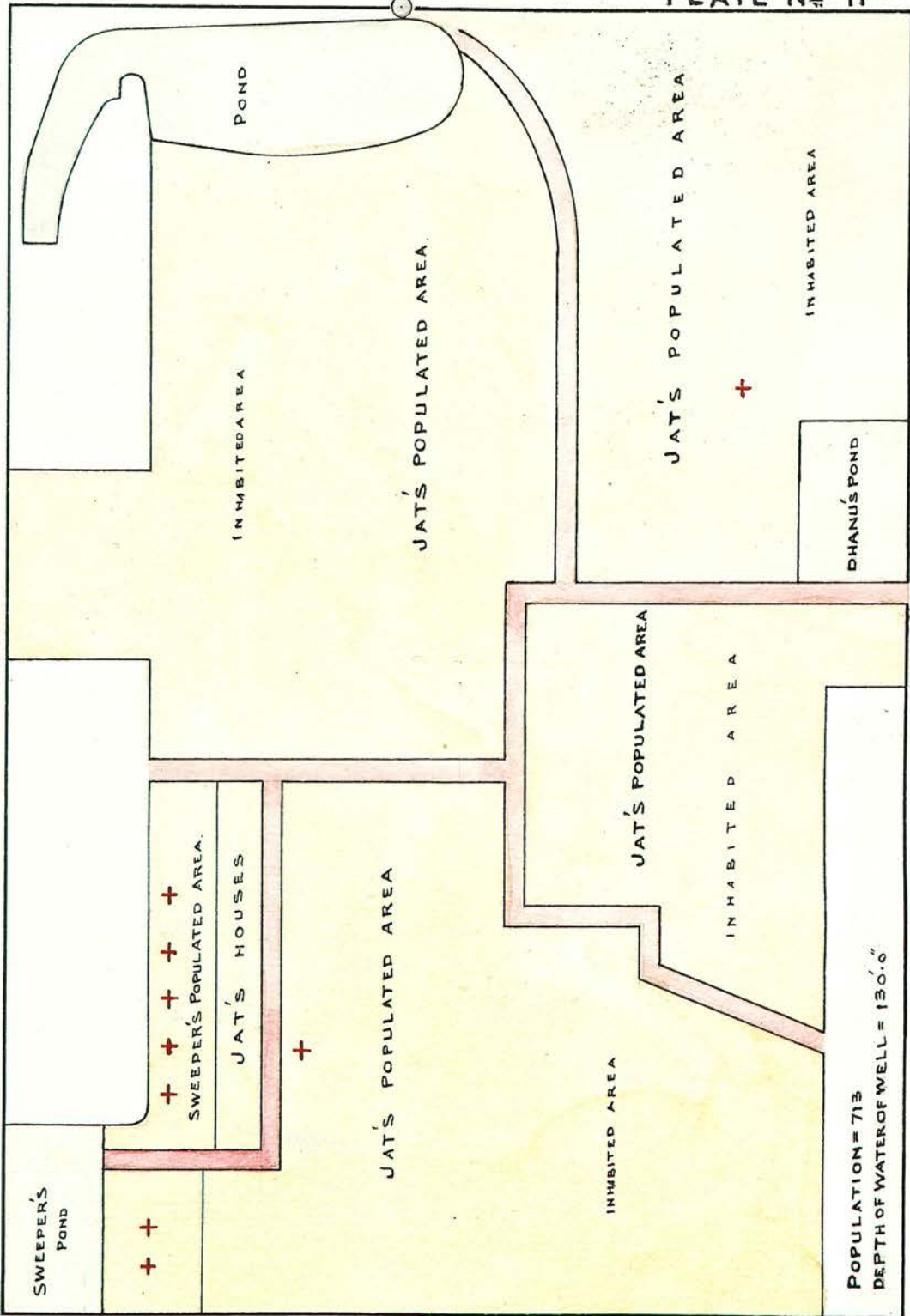
PLATE NO. 11

NORTH

WEST

EAST

SOUTH



REFERENCES

- VILLAGE SITE --- [Yellow rectangle]
- ROADS --- [Red double line]
- WELLS --- [Circle with dot]
- VILLAGE POND --- [Blue rectangle]
- INFECTED PLACES --- [Red '+' symbol]

POPULATION = 713  
DEPTH OF WATER OF WELL = 130.0'

# Relapsing Fever in Ferozepore District 1923.

143

No

Name Chiggar s/o - Sex Male Age 25 Caste Others  
Occupation Residence Kotli Sanghar Tehsil Muktsar

1. Date of infection or exposure to infection 17.4.23
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Invasion with shivering
4. Pulse 118 Full and regular
5. Temperature 103.2F
6. Enlargement of spleen Spleen not palpable
7. Perspiration Scanty
8. Duration of Fever 5th: day
9. Gastric symptoms Vomitting after injection
10. Delirium No delirium
11. Intestinal complications Diarrhea present
12. Other manifestations: Epistaxis present
13. Other complications No other complications
14. Duration of first attack 6 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice.
19. The date of injection of Neo-Salvarsan 17.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

No

144

Name Matta s/o - Sex Male Age 40 Caste Others  
Occupation Residence Kotli Sangh Tehsil Muktsar  
- ar

1. Date of infection or exposure to infection 17.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set sudden with pain in the back and frontal headache.
4. Pulse 110 Full and regular
5. Temperature 102.2F
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 4 days
9. Gastric symptoms Vomitting present
10. Delirium No delirium
11. Intestinal complications Nil
12. Other manifestations: Slight Jaundice and Epistaxis
13. Other complications No other complications
14. Duration of first attack 5 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had ~~This~~ was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 17.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.



# Relapsing Fever in Ferozepore District 1923.

145

No

Name Kishno s/o - Sex Female Age 50 Caste Hindu  
Occupation Residence FerozeShah Tehsil Ferozepore

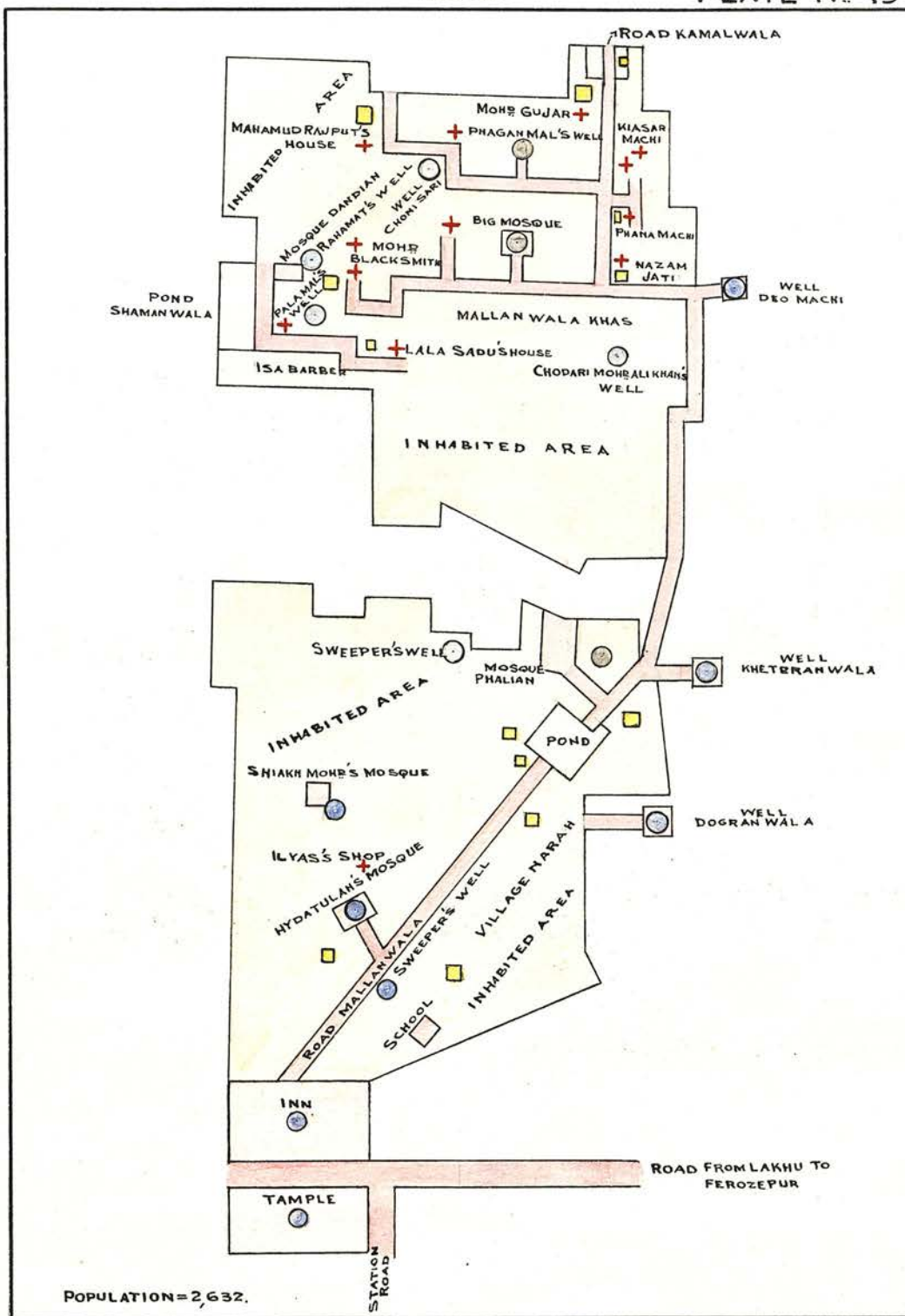
- 
1. Date of infection or exposure to infection 19.5.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion On set with rigors
  4. Pulse 92 Regular
  5. Temperature 100F
  6. Enlargement of spleen Just Palpable
  7. Perspiration Scanty
  8. Duration of Fever 5th: Day
  9. Gastric symptoms Vomitting
  10. Delirium No delirium
  - 11 Intestinal complications No diarrhoea
  12. Other manifestations: Pains in limbs
  13. Other complications No other complications
  14. Duration of first attack 10 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had Second attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan ~~xxxx~~ 19.5.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# SKETCH OF VILLAGE MALLANWALA








TEHSIL ZIRA DISTRICT FERROZEPUR

NORTH

PLATE No 13



SOUTH

REFERENCES.	
VILLAGE SITE	
ROADS & STREETS	
BUILDINGS	
WELLS	
VILLAGE POND	
MANURE HEAPS	
INFECTED PLACES	

# Relapsing Fever in Ferozepore District 1923.

146

No

Name Mohammad s/o - Sex Male Age 35 Caste Mohd.  
Occupation Residence Mallanwala Tehsil Zira

---

1. Date of infection or exposure to infection 25.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with rigor
4. Pulse 75 Regular
5. Temperature 98F
6. Enlargement of spleen Just Palpable
7. Perspiration Scanty
8. Duration of Fever 8th:day
9. Gastric symptoms Vomitting
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea
12. Other manifestations: Slight Jaundice
13. Other complications No other complications
14. Duration of first attack 10 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had Second attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 25.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# SKETCH OF VILLAGE TAPAKHERA

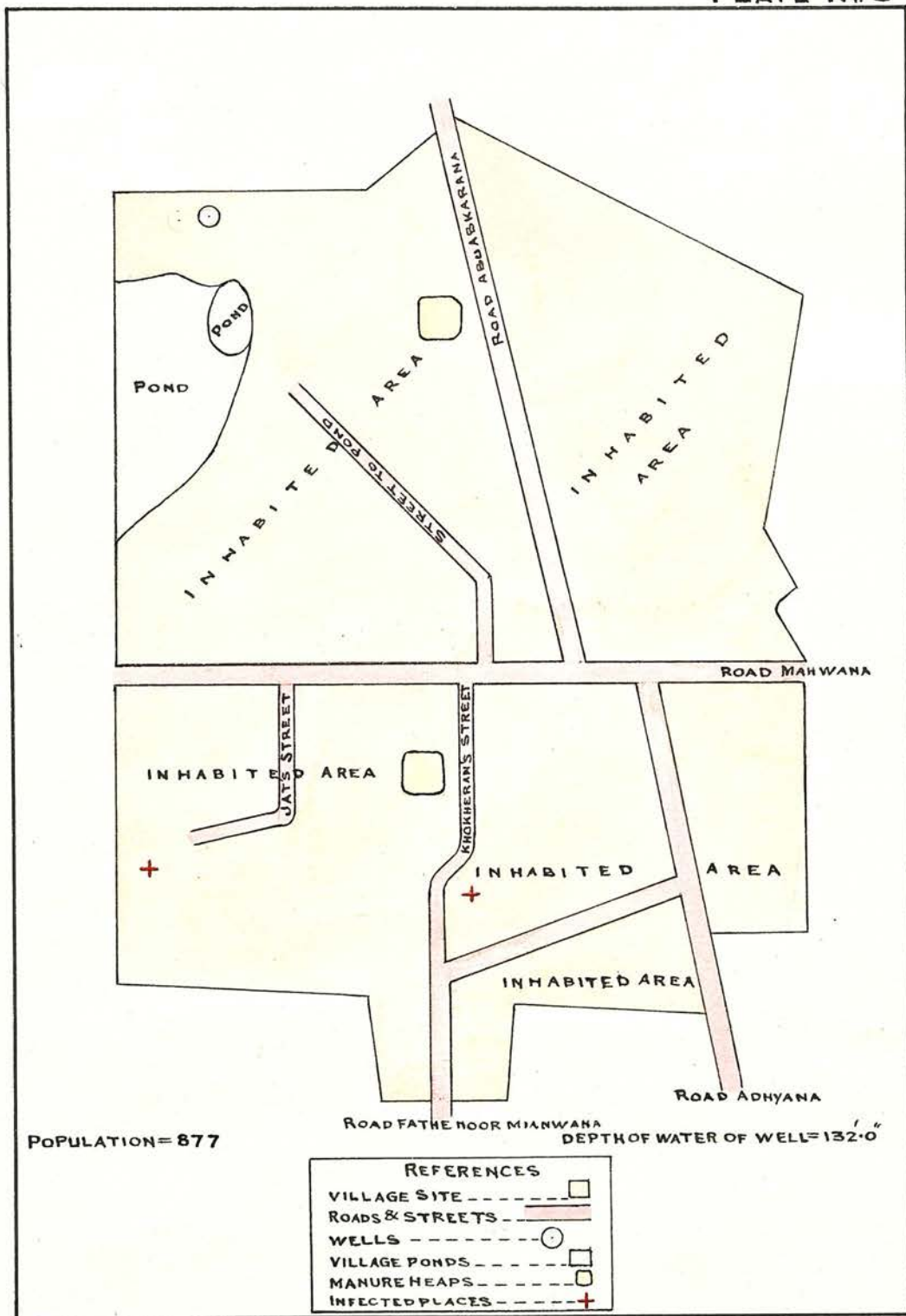
TEHSIL FAZILKA DIST<sup>RICT</sup> FEROREPUR

NORTH

PLATE No 9

WEST

EAST



POPULATION = 877

ROAD FATHE NOOR MIANWANA

DEPTH OF WATER OF WELL = 132.0'

REFERENCES	
VILLAGE SITE	□
ROADS & STREETS	—
WELLS	○
VILLAGE PONDS	□
MANURE HEAPS	□
INFECTED PLACES	+

SOUTH

# Relapsing Fever in Ferozepore District 1923.

148

No

Name Arsan s/o - Sex Female Age 30 Caste Mohd

Occupation Residence TappaKhera Tehsil Fazilka

- 
1. Date of infection or exposure to infection 27.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion On set sudden with rigor, shivering and pain in the back.
  4. Pulse 110 Full and regular
  5. Temperature 102.0F.
  6. Enlargement of spleen Enlarged two fingers below costal margin
  7. Perspiration Scanty
  8. Duration of Fever 6th:day
  9. Gastric symptoms Vomitting present
  10. Delirium No delirium
  11. Intestinal complications No diarrhoea
  12. Other manifestations: Slight Jaundice present No Epistaxis
  13. Other complications Slight Bronchitis and no other complications
  14. Duration of first attack 7 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 27.4.1923
  20. Other remarks The fever came down to normal within 36 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

No

149

Name, Ahmed s/o - Sex Male Age 35 Caste Mohd.

Occupation Residence Tappa Khera Tehsil Fazilka

- 
1. Date of infection or exposure to infection 27.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion On set sudden with rigor and pain in the back and joints
  4. Pulse 108 Full and regular
  5. Temperature 103.4F
  6. Enlargement of spleen Just Palpable
  7. Perspiration Scanty
  8. Duration of Fever 4th:day of first attack
  9. Gastric symptoms Vomitting present
  10. Delirium No delirium
  - 11 Intestinal complications No diarrhoea
  12. Other manifestations: Eye Jaundiced Epistaxis present
  13. Other complications No complications
  14. Duration of first attack Five days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 27.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

150

No

Name Sabun s/o - Sex Female Age 20 Caste Mohd.  
Occupation Residence TappaKhara Tehsil Fazilka

---

1. Date of infection or exposure to infection 27.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set sudden with rigor and frontal headache pain in the limbs and back.
4. Pulse 102 Full and regular
5. Temperature 102.6F
6. Enlargement of spleen Spleen enlarged three fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever second day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Slight Jaundice and Epistaxis
13. Other complications No other complications
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had Two
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 27.4.1923
20. Other remarks The fever came down to normal within 26 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

151

No

Name Nur Nishans/o - Sex Female Age 50 Caste Mohd.  
Occupation Residence TappaKhera Tehsil Fazilka

---

1. Date of infection or exposure to infection 27.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set sudden with shivering and pains in the limbs.
4. Pulse 140 Full and regular
5. Temperature 103.6F
6. Enlargement of spleen Spleen not palpable
7. Perspiration Scanty
8. Duration of Fever second day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Slight Jaundice
13. Other complications No other complications
14. Duration of first attack 6 days
15. How many attacks has <sup>he</sup> had Two  
<sub>she</sub>
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 27.4.1923
20. Other remarks The fever came down to normal after 28 hours.

# Relapsing Fever in Ferozepore District 1923.

152

No

Name Saban s/o - Sex Female Age 20 Caste Mohd.  
Occupation Residence TappaKhera Tehsil Fazilka

- 
1. Date of infection or exposure to infection 27.4.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Onset sudden with rigor and frontal headache pains in the limbs and back.
  4. Pulse 102 Full and regular
  5. Temperature 102.6F
  6. Enlargement of spleen Enlarged three fingers below costal margin
  7. Perspiration Scanty
  8. Duration of Fever second day
  9. Gastric symptoms Vomitting present
  10. Delirium No delirium
  11. Intestinal complications No diarrhoea
  12. Other manifestations: Slight Jaundice and Epistaxis
  13. Other complications No other complications
  14. Duration of first attack 7 days
  15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had Two
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Dirtily clad and poor
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 27.4.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

153

No

Name Gulab s/o - Sex Male Age 30 Caste Mohd.  
Occupation Residence Tappa Kher Tehsil Fazilka

---

1. Date of infection or exposure to infection 27.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden with shivering and rigor
4. Pulse 106 Full and regular
5. Temperature 102.4 F
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 5th: day
9. Gastric symptoms Vomitting
10. Delirium No delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Jaundice Epistaxis
13. Other complications No other complications
14. Duration of first attack 6 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 27.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection

# Relapsing Fever in Ferozepore District 1923.

1574

No

Name Mohammad Kh<sup>76</sup> - Sex male Age 25 Caste Mohd.  
Occupation Residence Tappakhera Tehsil Fazilka

- 
1. Date of infection or exposure to infection 27.5.1923
  2. Prodromal signs The patient could explain none specifically
  3. Actual invasion Sudden with shivering and rigor
  
  4. Pulse 108 Full and regular
  5. Temperature 103.2F
  6. Enlargement of spleen Palpable
  7. Perspiration Scanty
  8. Duration of Fever 4th: day
  9. Gastric symptoms Vomitting
  10. Delirium No delirium
  - 11 Intestinal complications No diarrhoea
  12. Other manifestations: Jaundice Epistaxis plus
  
  13. Other complications No other complications
  
  14. Duration of first attack 5 days
  15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
  16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
  17. The patients personal hygiene Extremely poor and filthy
  18. Lice infestation of bedding Clothes infested with lice
  19. The date of injection of Neo-Salvarsan 27.5.1923
  20. Other remarks The fever came down to normal within 24 hours of the injection

# Relapsing Fever in Ferozepore District 1923.

155

No 2

Name Kishna s/o - Sex Male Age 60 Caste Hindu  
Occupation - Residence TappaKhera Tehsil Fazilka

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1. Date of infection or exposure to infection 20.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden, pains on back and no shivering.
  
4. Pulse 100, full and regular
5. Temperature 102.4 F
6. Enlargement of spleen Just palpable
7. Perspiration Scanty
8. Duration of Fever 3rd: day
9. Gastric symptoms Vomitting
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea
12. Other manifestations: Jaundice no Epistaxis
  
13. Other complications No other complications
  
14. Duration of first attack Four days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had First attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Neither sweating nor diarrhoea
17. The patients personal hygiene Poverty stricken and dirty
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 20.5.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

156

No 1

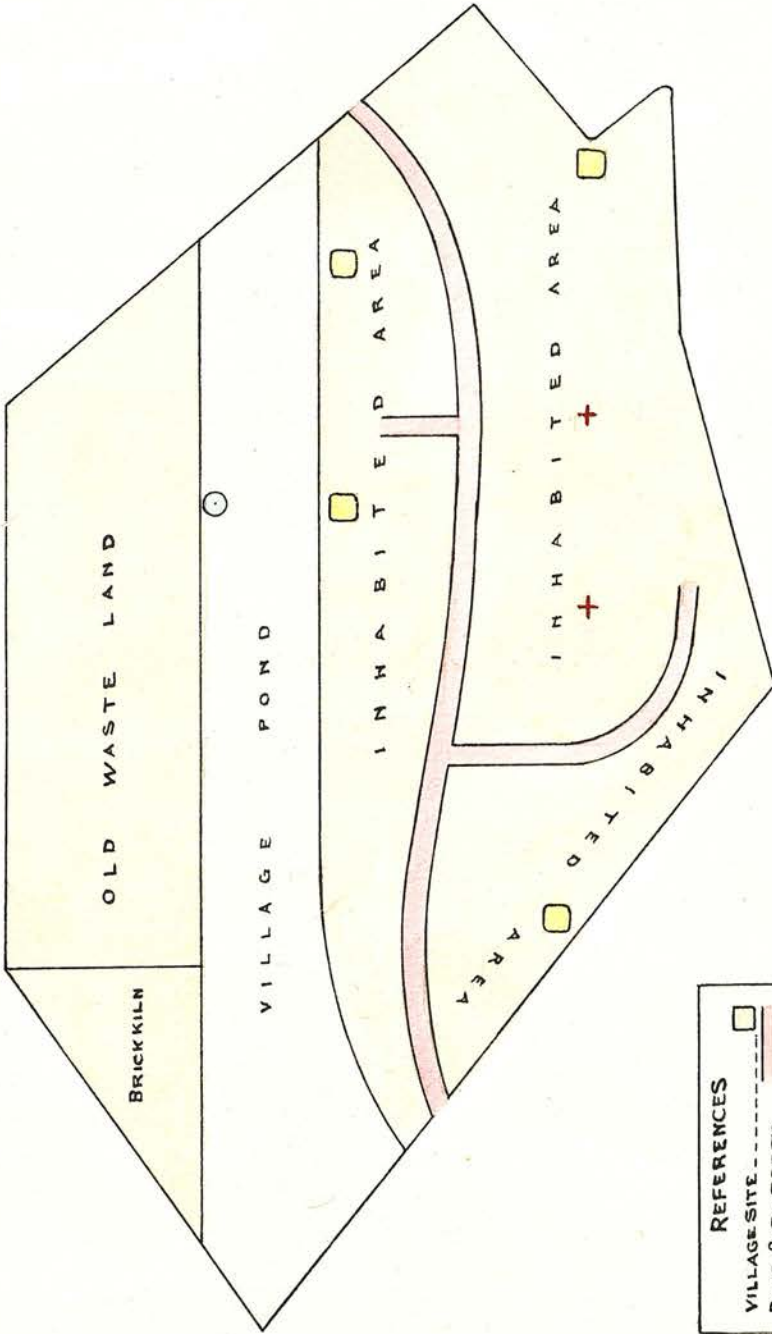
Name Narhvan s/o - Sex Female Age 30 Caste Mohd:  
Occupation Residence Tappa Khera Tehsil Fazilka

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1. Date of infection or exposure to infection 20.5.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion Sudden with shivering and rigor
  
4. Pulse 102. Full and regular
5. Temperature 101.4 F
6. Enlargement of spleen Enlarged. Two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 5th:day
9. Gastric symptoms Gastritis and vomiting.
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea
12. Other manifestations: Jaundice, no Epistaxis
  
13. Other complications No other complications
  
14. Duration of first attack 6 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Neither sweating nor diarrhoea
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 20.5.1923
20. Other remarks The fever came down to normal within 30 hours of the injection.

NORTH

SKETCH OF VILLAGE KOLIANWALI  
TEHSIL FAZILKA DIST FEROZEPUR



WEST

EAST

POPULATION = 792  
DEPTH OF WATER OF WELL = 93.0'

SOUTH

REFERENCES

VILLAGE SITE	□
ROAD & STREETS	—
WELLS	○
VILLAGE PONDS	◐
MAMREHEAPS	◑
INFECTED PLACES	+

# Relapsing Fever in Ferozepore District 1923.

157

No \_\_\_\_\_  
Name Khiaran s/o - Sex Female Age 13 Caste Mohd.  
Occupation \_\_\_\_\_ Residence Kolianwali Tehsil Fazilka

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1. Date of infection or exposure to infection 28.4.1923
2. Prodromal signs The patient could explain none specifically.
3. Actual invasion On set with rigor and shivering
  
4. Pulse 122 Regular
5. Temperature 103.4F
6. Enlargement of spleen Spleen palpable
7. Perspiration Scanty
8. Duration of Fever 3rd:day
9. Gastric symptoms Vomitting present
10. Delirium Delirious on 27.4.1923
11. Intestinal complications Diarrhoea present
12. Other manifestations: Eye Jaundiced and Epistaxis
  
13. Other complications No other complications.
  
14. Duration of first attack 4 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 28.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

158

No

Name Sardaran s/o . Sex Female Age 30 Caste Mohd.  
Occupation Residence Kolianwali Tehsil Fazilka

1. Date of infection or exposure to infection 28.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with rigor , pain in the back and limbs
4. Pulse 120 Full and regular
5. Temperature 102.8F
6. Enlargement of spleen Enlarged three fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 2nd: day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: Slight Jaundice and Epistaxis
13. Other complications No other complications
14. Duration of first attack 7 days
15. How many attacks has  $\frac{\text{he}}{\text{she}}$  had This was the second attack
16. (a) Did fever leave by crisis? Yes
- (b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 28.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

159

No

Name Dina s/o . Sex Female Age 35 Caste Hindu  
Occupation Residence Kolianwali Tehsil Fazilka

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1. Date of infection or exposure to infection 28.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set with rigor frontal headache some pain in back.
4. Pulse 114 Full and regular
5. Temperature 104.6F
6. Enlargement of spleen Spleen palpable
7. Perspiration Scanty
8. Duration of Fever 3rd: day
9. Gastric symptoms Vomitting present
10. Delirium No~~x~~ delirium
11. Intestinal complications No diarrhoea
12. Other manifestations: Slight Jaundice no Epistaxis
13. Other complications No other complications
14. Duration of first attack Four days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Dirtily clad and poor
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 28.4.1923
20. Other remarks The fever came down to normal after 36 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

160

No

Name HassanKhan s/o . Sex Male Age 25 Caste Mohd  
Occupation Residence Kolianwali Tehsil Fazilka

1. Date of infection or exposure to infection 28.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set sudden with pain in the body no shivering
4. Pulse 120 Full and regular
5. Temperature 104.6F
6. Enlargement of spleen Just Palpable
7. Perspiration Scanty
8. Duration of Fever 2nd: day
9. Gastric symptoms Vomitting present
10. Delirium No delirium
- 11 Intestinal complications Diarrhoea present
12. Other manifestations: Slight Jaundice and epistaxis
13. Other complications No other complications
14. Duration of first attack 3 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Extremely poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 28.4.1923
20. Other remarks The fever came down to normal within 36 hours of the injection.

# Relapsing Fever in Ferozepore District 1923.

161

No

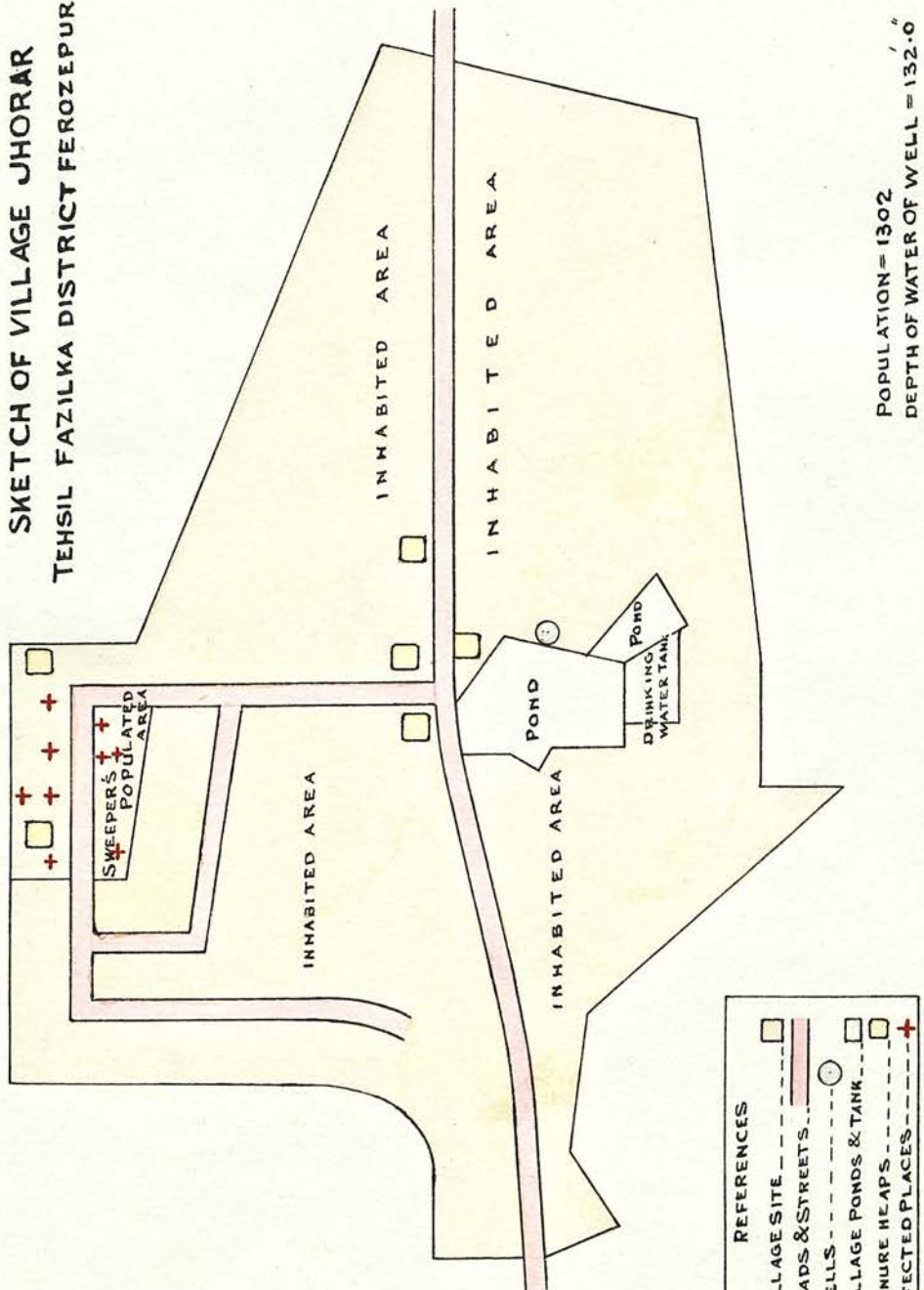
Name Kaim s/o - Sex Male Age 25 Caste Mohd.  
Occupation Residence Kolianwali Tehsil Fazilka

1. Date of infection or exposure to infection 28.4.1923
2. Prodromal signs The patient could explain none specifically
3. Actual invasion On set sudden with shivering and pain in the limbs and back
4. Pulse 110 Full and regular
5. Temperature 102.4F
6. Enlargement of spleen Enlarged two fingers below costal margin
7. Perspiration Scanty
8. Duration of Fever 6th:day
9. Gastric symptoms Vomiting present
10. Delirium No delirium
- 11 Intestinal complications No diarrhoea
12. Other manifestations: Slight Jaundice No Epistaxis
13. Other complications Slight Bronchitis and no other complications
14. Duration of first attack 7 days
15. How many attacks has <sup>he</sup>/<sub>she</sub> had This was the first attack
16. (a) Did fever leave by crisis? Yes  
(b) Was there sweating or Diarrhoea? Yes
17. The patients personal hygiene Poor and filthy
18. Lice infestation of bedding Clothes infested with lice
19. The date of injection of Neo-Salvarsan 28.4.1923
20. Other remarks The fever came down to normal within 24 hours of the injection.

NORTH

EAST

# SKETCH OF VILLAGE JHORAR TEHSIL FAZILKA DISTRICT FERROZEPUR



POPULATION = 1302  
DEPTH OF WATER OF WELL = 132.0

SOUTH

WEST

REFERENCES

VILLAGE SITE	□
ROADS & STREETS	—
WELLS	○
VILLAGE PONDS & TANK	▭
MANURE HEAPS	□
INFECTED PLACES	+

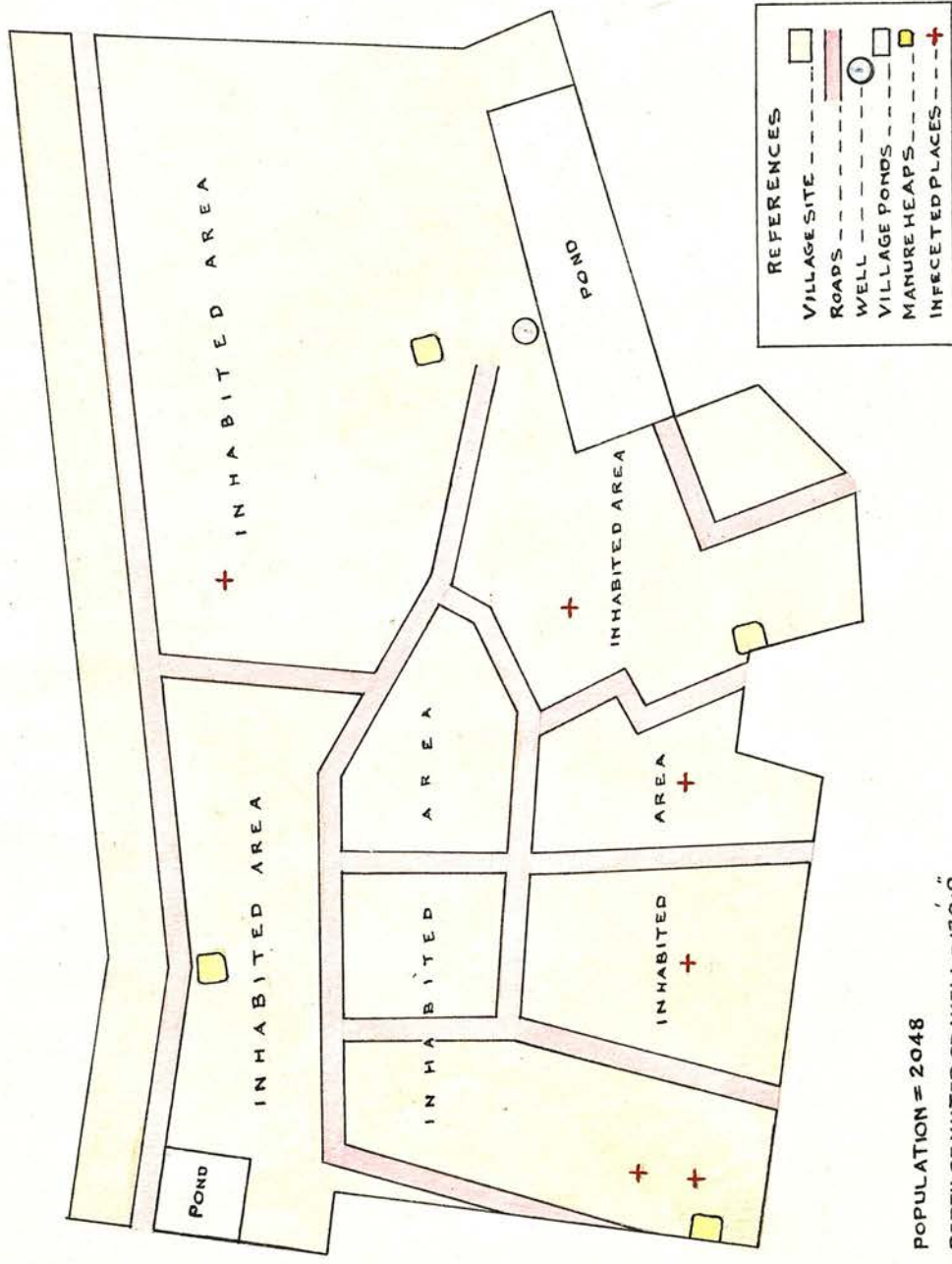
EAST

# SKETCH OF VILLAGE SARANWAN

TEHSIL FAZILKA DIST<sup>y</sup> FEROZEPUR

NORTH

SOUTH



REFERENCES	
	VILLAGE SITE
	ROADS
	WELL
	VILLAGE PONDS
	MANURE HEAPS
	INFESTED PLACES

POPULATION = 2048  
DEPTH OF WATER OF WELL = 130'0"

WEST