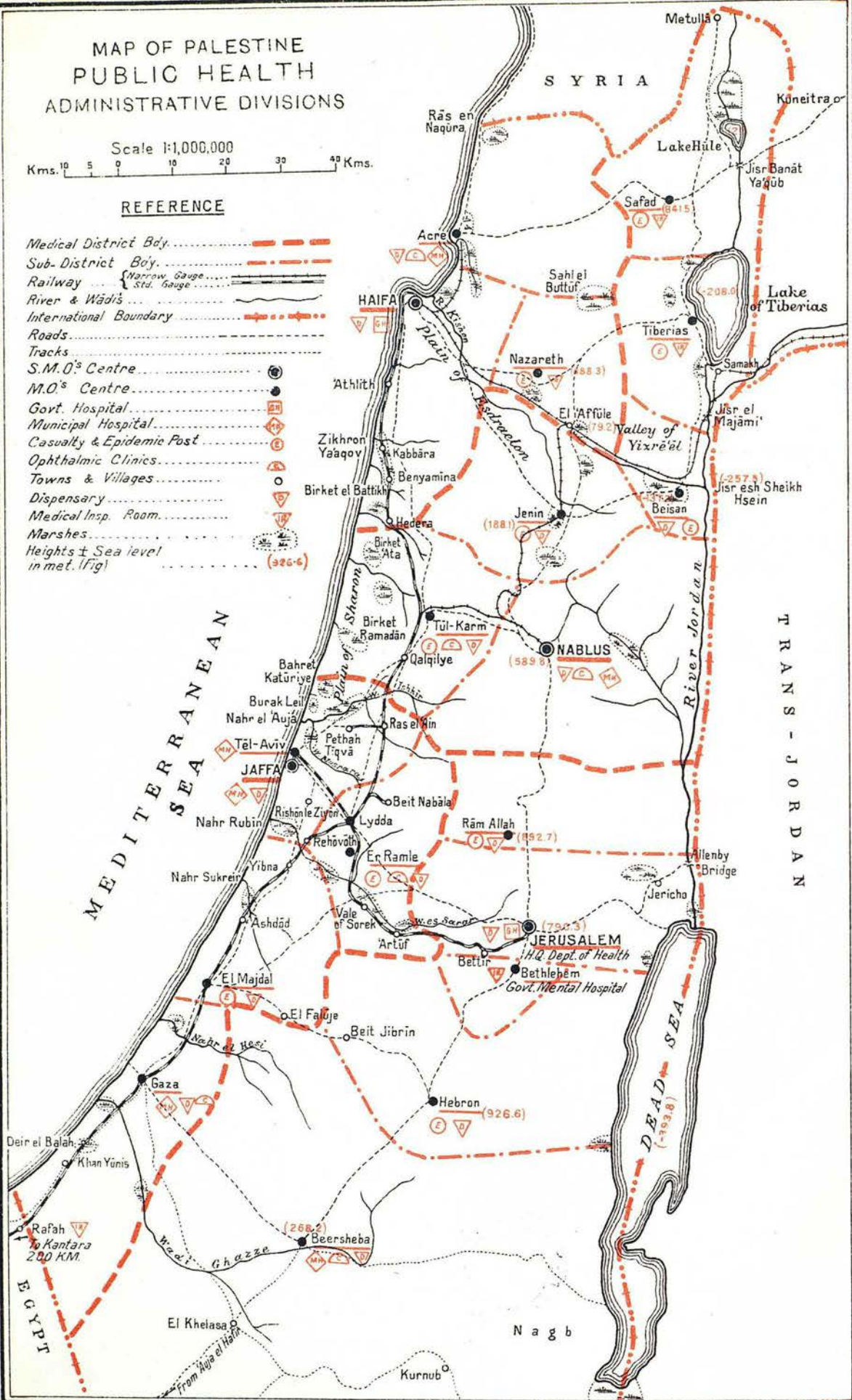


MAP OF PALESTINE PUBLIC HEALTH ADMINISTRATIVE DIVISIONS

Scale 1:1,000,000
Kms. 10 5 0 10 20 30 40 Kms.

REFERENCE

- Medical District Bdy.
- Sub-District Bdy.
- Railway { Narrow Gauge
Std. Gauge
- River & Wādī's
- International Boundary
- Roads
- Tracks
- S.M.O.'s Centre
- M.O.'s Centre
- Govt. Hospital
- Municipal Hospital
- Casualty & Epidemic Post
- Ophthalmic Clinics
- Towns & Villages
- Dispensary
- Medical Insp. Room
- Marshes
- Heights ± Sea level
in met. (fig)



TRANS-JORDAN

MEDITERRANEAN

DEAD SEA

EGYPT

N a g b

A S T U D Y
OF ENDEMIC SYPHILIS IN PALESTINE.

by

J. MACQUEEN, M.B., Ch.B.

Being a Thesis Presented for the Degree of
Doctor of Medicine
of the
University of Edinburgh.

March 1931.



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INTRODUCTION.

The original observations recorded in Part II of this paper were made between the years 1923 and 1930 when I was a medical officer of health in the mandated territory of Palestine. During this period I had charge from time to time of the district which comprises the South East quarter of the country, contains the small towns of Bethlehem, Hebron and Beersheba, and in its northern part the walled capital, Jerusalem. The Judean mountain range fills it from the North end to some distance South of Hebron, where it gives place to the sandy plains of Beersheba. The inhabitants are settled in villages in the hills. The plains are sparsely peopled by wandering tribes of bedouin.

My attention was early attracted by the prevalence of syphilis in certain localities and information regarding its distribution gradually accumulated. Lesions in the mouth and of the skin were those most often seen. The natural and to some extent religious objection on the part of the Moslem inhabitants to exposure of the genitalia made the search for primary sores a matter of difficulty, but it did not occur to me to doubt their existence. It has apparently been suggested by French authors that a form of the disease/

disease exists in which chancres do not occur (syphilis d'emblée). The evidence afforded by my observations has not shaken my original view that primary sores, although rarely seen, are not absent. From the first a considerable number of cases were observed amongst children, but some time elapsed before the significance of this was appreciated. My paper has been prepared in support of the hypothesis that spread of the disease by innocent contact is to a large extent responsible for its high incidence in certain parts of Palestine.

The conception of syphilis as a non venereal disease was to me a novel one. Reference however to the literature, particularly that of German authors in the past, and Russian, French and British observers of to-day taught me that such a state of affairs existed widely in Europe up to fifty years ago and still maintains in Russia and in some tropical countries. A number of authors declare that syphilis in this endemic form is a milder disease in respect of its common sequelae than when it is venereally spread. I hold this view at present. Into the uncertain waters of immunity I have not ventured far.

Syphilis was generally considered to have become endemic in Palestine during the Great War. This view is shown to be incorrect.

The paper is arranged in three parts. Each part consists of five chapters arranged as follows:-

History

Description of the Disease

Diagnosis

Treatment

Endemiology

Part I deals with the literature on endemic syphilis. It contains no chapter relating to treatment.

Part II is an account of the author's original work in Palestine.

In Part III the evidence gathered from Parts I and II is set out and the author's views based upon it are stated.

The paper concludes with a short summary and list of references.

P A R T I.

Part I is arranged as follows:-

- Chapter I History.
- Chapter II Descriptions of the Disease.
- Chapter III Diagnosis.
- Chapter IV Endemiology.

CHAPTER I. HISTORY.

This chapter summarises the literature relating to the history of syphilis. Scotland, the countries forming the pre-war Turkish Empire, and those places where the disease became definitely endemic, are given prominence.

The causes of its endemicity are illustrated. Everywhere there was ignorance of the nature of the malady by both the public and the profession. In most localities there were additional local reasons. As will be shown later, both common and subsidiary causes have played a part in enabling syphilis to advance from sporadic to endemic status in certain parts of Palestine.

There is still disagreement amongst recognised authorities as to the manner in which syphilis was introduced into the old world.

Bloch/

Bloch (1901) and his followers maintain that it was brought to Barcelona by the sailors of Columbus when that intrepid admiral returned from the discovery of America in 1493. Its existence there in pre-Columban days is established by the records of Spanish authors.

Roman Pane (1493) describes the disease amongst the inhabitants of Haiti who infected the members of the expedition. It was well known in the island and there were recognised lines of treatment for it.

Sahagun and Hernandez record its already wide distribution in Mexico, where it was so well established that it had gained a place in the religious beliefs of the people. Their favourite sun god was known as the Little Syphilitic and was represented with a pustular eruption on the body.

Las Casas (1498) whose father accompanied Columbus, draws attention to the mildness of the disease amongst the Haitians as compared with its severity in the sailors who contracted it.

The work of Sudhoff (1913) has now shed some doubt upon the correctness of this view of the origin of syphilis.

Bloch's contention is that it was, soon after its introduction by Columbus, carried to Italy
(in/

(in 1494) by the army of Charles VIII of France with its numerous infected Spanish mercenaries. It is certain at any rate that in 1495 it was widely spread in the former country and had reached France, Switzerland and Germany. The quite numerous records of its ravages in Europe in those early days agree as to its severity. The descriptions resemble those of the syphilis maligna of modern text books.

The disease was to spread early to England (1496) and Scotland (1497). It was brought thither by soldiers returning home from the fighting in Italy and was known as the Spanish or French pocks.

Simpson (1860) quotes an edict of the town council of Aberdeen issued in 1497 which refers to the appearance of the disease in that city. James IV displayed considerable interest in it and on September 22nd 1497 issued a decree ordering all persons suffering from the complaint to leave the town of Edinburgh. They were to be taken to Inchkeith and treated there; (Comrie) William Dunbar, the poet who was attached to the Scottish Court at that time, refers to it in a poem dedicated to the Queen, as the Spanye pockis. Nearly a hundred and fifty years later with the entry of Cromwell and his soldiers into Scotland in 1640, and later in 1650, there was a wide spread epidemic of what was then known as sibbens. It appears to have/

have derived its name either from one of Cromwell's generals or from the resemblance of the lesions to the wild raspberry the Gaelic name for which was subhan. It is not unnatural that the Scots should have chosen for the disease a name which in the Latin tongue designates a sister malady. Framboesia, the lesions of which are almost identical in appearance with those of syphilis, also means a raspberry.

Dr Freer (1767) of Glasgow states that it was carried by Cromwell's men as far North as Inverness. He considers the spread of the disease in the North of Scotland to have been due partly to the customs of the highlanders. Their ways differed little from the habits of the villagers of Palestine amongst whom the disease is endemic to-day. Both are poor and hospitable. The Arab family is dirty. It is comparatively recently that the highlander has learnt to place the virtue of cleanliness second to that of godliness.

Gilchrist (1765), Bell (1793), Creighton (1891), Cullen (1911) and Comrie (1927) describe the endemic in Scotland at the time of which I am speaking. Ayrshire, Galloway and Dumfries, where the disease was called the yaws, suffered severely.

In the early epidemics in Europe, public baths appear to have played a rôle. Sudhoff describes those which occurred in Nürnberg in 1496, Berne in 1570, /

1570, and Brunn Mähren in 1577. The practice of dry cupping which was common in these institutions was specifically implicated. Now every town in Palestine contains its public (Turkish) bath and dry cupping is a form of medical treatment commonly employed by the natives throughout the country.

In Norway and Sweden the disease was wide spread and became under the name Radesyge well known from 1800 onwards. There is an extensive literature on the endemic in those countries. Medical men were in doubt as to its nature. The fact of its spread by innocent contagion was common knowledge. Hence they hesitated to identify it with syphilis. It was confused with tuberculosis, leprosy, scurvy, scabies, elephantiasis and other diseases. Simpson alone, identified it with the Scottish sibbens. Such confusion on the part of the profession led to a lack of confidence by the public in the benefits of treatment.

Royal commissions sat, reports were issued and measures of one sort or another, chiefly the spasmodic establishment of hospitals, were undertaken. They were ineffective in reducing the incidence of the disease and it continued to maintain its hold for many decades.

Still better known is the syphilis of Croatia and Dalmatia, Bosnia and Herzegovina. Here under the name of/

of Skerljevo, that of a small town on the Croatian coast, the disease held, for many years, almost undisputed sway.

Our interest centres firstly on the records of how it spread to these countries. It is said to have been imported by the Turks in 1463. This appears unlikely, but it is probable - Jukio (1850) - that they carried it westwards into these regions with their armies in 1780. L. Glück (1888-1906) thinks that it was conveyed from the orient by the troops of Mahmud Pasha in 1832. Other authors suggest that Omar Pasha and his Anatolians brought it with them in 1849. It has also been attributed to Turks wandering from Serbia in 1863. In support of the view that it came into these countries from the East is the fact that it was commonest in their more eastern districts. Von Düring (1902-1921) holds this opinion. Rigler (1852) states that syphilis was not widely spread in the orient until 1852. Oppenheim (1838) declares that he noticed bridgeless noses less commonly in eastern than in European towns.

The energetic and complete, although costly, measures eventually taken by the Austrian government to combat endemic syphilis in Bosnia and Herzegovina, served as an example for other nations and added lustre to the names of Von Zeissl (1887), Neumann (1884/

(1884-1904) Zeichmeister (1903-1905) and L. Glück.

To return to the records of the existence of the disease in Turkey (which included Palestine before the war) in the latter part of the 18th century; it is interesting to note that the Turks called and still call it Frenji illata, Frenji hastaluk, and by an abbreviation Frenjak. These expressions mean the Frank or western pocks. The Arabs of Palestine use almost the same words in their language and name it hub Frenji, that is the foreign pocks, and what is, I presume, an abbreviation Firgal.

It is characteristic of syphilis that one country blames another for its introduction. Thus Europe considers that it was carried to her shores from America, Sweden blames Norway, Scotland inculpates Cromwell and his English, south eastern Europe accuses Asia Minor, and the oriental calls it western pocks.

In Greece syphilis was at first called Spirokolon. It was introduced into the country by armies from Albania, Asia, Africa and Egypt. In 1835 according to Wilmer (1841), Rex (1897-1901) and Joannu (1892) it was already endemic in parts of the country.

In Russia syphilis is still endemic in many localities and the incidence of infection in that country forms a useful basis of comparison. Okun (1925) found 3.8%, 6.6% and 7% of the population infected in the towns of Naryschkina, Hadonowka, and New/

New Hadonowka.

There is much literature Elian (1925), Federowski (1925 and 1926) Halperin (1927) Bronner (1925) M. Rosentul (1924) in which the findings are similar. In Palestine my estimate for the Hebron region in 1924 was that 5% of the population had macroscopic lesions. Parfenenko (1913) estimated that 5.4% of families in all Russia were infected. Schwarzmann (1926) working amongst Moslems in the Caucasus found 9.8% syphilitic amongst 5044 men examined.

That the incidence varies considerably where the disease is endemic is recognised. Rosentul describes the condition amongst the Kalmucks of the Astrakhan Steppes. The habits of this hardy race are much like those of the highlanders of Scotland two hundred and fifty years ago, and the Arab villagers of Palestine to-day. Ignorance of hygiene accompanies generous hospitality. The pipe and bowl are passed from mouth to mouth. Ssyskin working amongst them in 1927 found 14.5% infected amongst 2562 men examined.

There are on the other hand countries where the disease is rare. In certain parts of the East Coast of Africa where the population is largely Moslem, cases were until comparatively recently remarkably scarce. This fact is of interest in relation to my findings/

findings here and those of Schwarzmann already quoted. In Palestine the infected villages are mostly inhabited by Moslems. Their strict code of sexual morality is kept enforced by severe punishment of transgressors. If a virgin is known to have been seduced, her nearest male relatives are expected to put the culprit to the sword. Before the war this was frequently carried into practise. Even now it is not unknown.

Dr Paterson, who worked in Hebron from 1892 until the war and for some time after, in a personal communication (1929), gave this as one of his reasons for regarding the syphilis of the villagers as being to a great extent non-venereally disseminated.

Jullien (1904) refers to the very low incidence among the Moslems of Senegambia on the West Coast of Africa. The causes of such marked differences in the infection rate in different Moslem countries and in different places in the same country present interesting epidemiological problems.

The disease is said to be altogether unknown in the Dutch East Indian Islands of Guyon and New Guinea, the South Sea Islands, the Australian Islands of Rapa, Raiata and Taha, in the deepest parts of Brazil, and almost unknown in Iceland and Greenland. Such facts have suggested the possibility of racial and climatic immunity. It has been shown, however, that there is no/

no real climatic immunity. There is more to be said for racial sensitiveness.

Livingstone stated that the natives of Central Africa did not suffer from the disease in his time. Jullien much more recently refers to their immunity and describes how it is broken down in proportion to the admixture of their blood with that of the white. In America on the other hand the negro is now more highly infected than the white man.

M. Neil (1916) states that in his investigations in the latter country he found the Wasserman Reaction + in 25-30% of healthy negroes, and in 40-50% of sick. Thorn (1921) quotes similar high figures for New York; 16.65% positive negroes, 33.85% positive negresses. These results are higher than those I found in Nahalin which was one of the worst infected villages that came under my observation in Palestine.

CHAPTER II. DESCRIPTIONS OF THE DISEASE.

This chapter reviews the literature on the symptomatology and sequelae of the disease in the various parts of the world where it became, or still is, endemic. All the authors quoted remark upon the remarkable scarcity of primary manifestations, the high proportion of secondary lesions, and the low incidence of neuro-syphilis. Most of them found, as I did in Palestine, that secondary mouth lesions were the most numerous. Von Düring who worked in Asia Minor before the war is frequently quoted.

The chapter is arranged as follows:—

Symptomatology.

- (a) Primary Sores.
- (b) Rashes.
- (c) Condylomata.
- (d) Mucous Membrane.
- (e) Mouth, Throat, Nose.
- (f) Skin Lesions.
- (g) Bones and Joints.
- (h) Adenitis.
- (i) Perleche.
- (j) Leucodermia.
- (k) Larynx.
- (l) Eyes.
- (m) Neuro-syphilis.
- (n) Cardiovascular Lesions.
- (o) Congenital Lesions.

Sequelae.

- (a) Neurosyphilis.
- (b) The Abortion Rate.
- (c) Congenital Disease.

(a) /

(a) Primary Sores.

Some of the most complete work on the symptomatology of endemic syphilis lies to the credit of the Glücks (L. Glück 1896-1906). (A. Glück 1921) working in Bosnia and Herzegovina. On perusing their records one is immediately struck by the remarkable fact that the number of primary lesions observed was exceedingly low. At first none were seen at all. Later, when presumably it was realised that they were as likely to be discovered on other parts of the body as upon the genitalia and were more persistently searched for a certain number - but still remarkably few - are recorded. L. Glück gave two sets of statistics at the medical congress held in Serajevo in 1903. In his first series of 3,887 cases he saw no primary lesions. In his second series of no less than 10,173 patients he records 33 or 0.3% of chancres.

My observations in Palestine were similar. I was struck by the almost entire absence of primary manifestations. Searching for them, the region of the mouth came under suspicion. Now L. Glück states in his earlier work that in 169 children under 14 years of age he found 35 primaries of which 32 were in the mouth and throat. Such a statement scarcely accords with his later findings and must be accepted with reserve; /

reserve; but it shows, at any rate, where he was looking for them.

Von Düring states that in Asia Minor he found 4% of primaries most of which he diagnosed by their scars. I am not able to accept the undoubted accuracy of this figure either. It is not easy to be sure of a primary from its scar. On the other hand he found no chancres amongst children.

There is at any rate agreement amongst all the authorities of wide experience upon one outstanding fact. As compared with syphilis as we know it under civilised conditions, primary chancres are extremely rare. Carle and Boucart (1917), Lévy-Bing and Gerbay (1917) and Jeanselme (1901 and 1904) writing of Morocco, Madagascar and Indo China agree with the Glücks and their contemporaries on this point.

Jeanselme states that amongst Arabs, Moroccans and other dwellers in the tropics, the primary sore tends to have a phagaedenic form. If this is so then it would sometimes be difficult to differentiate it from some of the later lesions. Thus perhaps, I thought at first, could such contradictory findings as occasionally appear in the literature be explained. Further experience has led me to regard this view as unlikely to be correct.

Lacapère (1915-1922) describes such irregular primaries/

primaries and goes on to refer to the high incidence of secondaries, the thick scabs and deep ulcers. Scabbing must depend to some extent on the cleanliness of the patient. A person who is described as permanently filthy will scab more readily than a clean one. The Arab scratches himself freely. He has frequent need to do so and it becomes, I suppose, almost reflex with him. The extent of the ulceration would presumably also be influenced by this habit.

(b) Rashes.

Lévy-Bing and Gerbay, Carle and Boucart remark upon the rarity of roseolar eruptions in Arab and Moroccan soldiers.

(c) Condylomata.

Von Zeissl and Jeanselme record comparatively few condylomata. The former states that he found 3 in 165 cases. Escobar (1922), a Spaniard, and most French tropical authors, however, refer to the moist papules on the genitalia and round the anus.

(d) Mucous Membrane.

L. Glück found this to be affected in 55% of his cases. The mouth is most frequently attacked.

(e) /

(e) Mouth, Throat, Nose.

Such lesions include the secondary mucous patches mostly on the inside of the lips and cheeks and on the tongue, and also the ulcerative lesions chiefly of the soft and hard palate and tonsils. Neumann gives nose 32% and throat 25% of lesions observed. Von Düring puts the destructive conditions of the throat and palate as constituting 40% of his cases. Zeichmeister's figures are 53% for Dalmatia and 38% for Croatia. With the same observer in two neighbouring districts the proportion varies. Such variations occur and are apparently genuine. Jeanselme alone in Indo China finds the incidence of mouth, nose and throat affections low.

(f) Skin Lesions.

Authorities agree upon the high incidence of skin affections. Neumann puts the figure as high as 48.67%; Dina Sandberg (1895) at 28%. These authors refer to the prevalence of nodular cutaneous syphilides and their pigmented scars. The back, chest and extremities are commonly affected. Ulceration of the skin is common, particularly in the sacral region, on the nates, on the neck and shoulder blades; and the tendency for this to be extensive and septic is/

is stated.

As an instance of how different factors may influence the type of skin lesion is the observation of Pirlík (1925) who states that in the hunger year of 1922 in Simferopol 37% of skin lesions were pustular. In May 1923 when the famine was over only 3% were found in this condition. He also records that in the year 1921-22 even haemorrhagic forms were seen.

Jannin (1920) and Lacapère note the tendency of secondaries to become deep seated and ulcerating abnormally early in Morocco. Proteus (1914) states that in hot countries the papular and circinate later forms are commoner than in Europe. Such variations from the standard form of lesion might be due to changes either in the spirochaete or its surroundings.

Immunity appears to alter with succeeding generations and Andrewes (1914) considers that the first barrier set up by the immune process is against the formation of the primary sore, the next against the roseolar eruption and so on.

(g) Bones and joints.

The descriptions of the Greek Spirokolon contain frequent reference to severe joint pains of a rheumatic nature with nightly exacerbation. Jeanselme records a similar observation. Khijin (1893) states that/

that they occurred in 7% of his cases and that there were bone gummata in 61%. V. Pernhoffer (1868) found bone lesions only in company with affections of the skin and mucous membrane, never alone. Stern (1903) gives the order in which bones were affected as:

- (1) Tibiae, (2) Ribs, (3) Skull, (4) Sternum,
- (5) Clavicle, (6) Metacarpals, (7) Wrist.

(h) Adenitis.

Adenitis is described but is not given great prominence in the literature.

(i) Perleche (not necessarily a syphilitic lesion).

Neumann found it frequently. Von Düring observed it often in syphilitics and also in non syphilitics.

(j) Leucodermia.

A. Glück records that it was rare in his cases. Raynaud (1893) states that it is commoner in Arab than in European women. Pirlík found it up to 70% in the hunger year and it dropped to 16% in 1923.

(k) Larynx.

L. Glück and Kobler (1900) found the larynx affected in 22% of their cases, Zeichmeister in 10% of his.

(1) Eyes.

Von Düring, Escobar and L. Glück record them as seldom affected.

(m) Neuro_Syphilis.

Von Düring in 2000 cases saw 7 of meningitis and 30 of myelitis but observed tabes only twice in many thousand cases. Eventually as a result of these findings, he came to the conclusion that syphilis was not the cause of tabes. Rosentul, describing the endemic amongst the Kalmucks, records headaches as a rarity and neuro_syphilis as a most exceptional occurrence.

L. Glück makes similar statements. Authorities in the tropics and sub_tropics agree with these observations. Lacapere states that neuro_syphilis is rare amongst Mahommedans but commoner among Jews. L. Fournier, (1926) however, found headaches to be common in Algiers and observed that the cerebro_spinal fluid often gave the specific reaction in the secondary and tertiary stages of the disease. Lévy_Bing and Gerbay, Batut (1903), Brock (1912), Grober (1918), Jullien and Raynaud agree as to the rarity of neuro_syphilis.

The records from Morocco are conclusive. The native population is estimated at five millions.

Comby/

Comby (1923), Carle and Boucart, Proteus, Decrop and Salle (1923) and Colombani place the proportion infected as from 60% to 80%. All agree on the extreme rarity with which tabes or general paralysis are observed. Fraser (1914 and 1922 South Africa) records similar observations. Jannin states that in Cyrenaicia where the Bedouin are highly syphilised there is practically no tabes or general paralysis. The same is true of India, Ceylon, Malaya, Indo China, Siam and the Dutch Indies, Hermans (1926).

Egypt is stated to be an exception to this. Wilmanns and Steiner (1926), Marie (1926 and 1922), Raynaud. But recent personal enquiries have led me to doubt the accuracy of their statements.

(n) Cardiovascular Lesions.

Cardiovascular lesions, according to Von Düring, are not uncommon.

(o) Congenital Lesions.

Von Düring mentions the commoner congenital lesions. In the rest of the literature they are, where referred to at all, recorded as being rare.

Sequelae.

Reference has already been made in this chapter to neurosyphilis and congenital manifestations. The literature which has been quoted records the rarity of these sequelae of the disease. If such statements are correct, and these important conditions are really exceptional when the disease assumes endemic proportion, then this aspect of the question becomes of first importance.

It is thus desirable to treat it somewhat more fully at this stage and in addition to recording any additional observations which have been published, to summarise the main theories which have been advanced in explanation. One may take the sequelae in the following order:- (a) Neurosyphilis; (b) The Abortion Rate, (c) Congenital Disease.

(a) Neurosyphilis.

There is a wealth of literature on this subject. Sezary (1921-1926), Wilmanns & Steiner, Gärtner (1920-1921), Gastinel and Bouteilier (1923), H. Salomon (1925), Nägelsbach (1926 and 1927).

The theories may be tabulated as follows:-

- (1) The more highly developed brain theory.
 - (2) The dermo_ and neuro_tropic strains of spirochaete. (Morrell-Lavallée.) Sezary and others
- Point/

point out that Morrell-Lavallée's theory does not explain the fact that Europeans in endemic areas are just as liable to neuro-syphilis as they are at home.

(3) The theory of racial immunity.

Montpellier (1919-1926) in Algiers and Lévy-Bing and Gerbay state that there is evidence that the spirochaetes cause a reaction in the central nervous system as often amongst the Arabs as amongst the Europeans in the army in Morocco, viz: a high cell count in the cerebro spinal fluid etc. They consider that the two races react differently to the disease. But there are examples of where this theory breaks down just as does the climatic theory.

(4) Haustein (1926) considers that in the last decade there has been occurring a gradual change in the course of syphilis both in civilised and less civilised countries.

(5) There is the theory that neuro-syphilis is due to arsenical treatment. McArthur (1923) and Mehliiss. The view is that immunity is developed in the skin; that treatment kills the spirochaetes in the skin but not in the less vascular meninges, so that not enough immunity is developed.

(6) Again there is the question of the allergy of the skin and anergy of the central nervous system to syphilis. Head considers tabes to be a hypersensibility to small doses of parasite.

(7)/

(7) There is also the question of the influence of malaria and other tropical maladies on the disease. Kirschner and Van Loon (1924) hold the view that they exert an important modifying influence on the course of syphilis. Nagelsbach's experience in malaria-free West Abyssinia does not support it and Haver noticed no difference between malarious lowlands and malaria free highlands. Sezary and Barbe think that syphilitics who have had malaria before or after infection do not develop the disease in its generalised form.

(b) The Abortion Rate.

L. Glück states that in Dalmatia and Croatia abortion occurred only in 2.4% of syphilitic mothers. This is an important statement in view of his enormous experience both in hospital and clinic.

(c) Congenital Disease.

L. Glück states that in endemic syphilis as observed by him syphilitic mothers bore syphilitic children only in 4.5% of cases. He strengthens this statement by recording that in the special hospitals erected in Bosnia during the anti syphilis campaign infected mothers generally bore healthy children.

CHAPTER III. DIAGNOSIS.

Attention has been directed in the preceding chapters to the difficulties in diagnosis which syphilis presented to the earlier observers. The discoveries of Schaudinn and Wassermann have placed it on a scientific basis and to the modern worker there is only one disease with which it is likely to be confused. Framboesia or yaws resembles syphilis so closely that some authorities regard them as the same disease.

There is much literature on the subject. Manson-Bahr in the 1929 edition of Manson's text book on Tropical Diseases tabulates the difference thus:

Yaws Not congenital	Syphilis Congenital
Primary sore - extragenital	Primary sore - usually genital
Secondary Stage	Secondary Stage
(a) Typical yaw pathognomic; furfuraceous desquamation and plantar lesions characteristic.	(a) Seldom imitates framboesia.
(b) Mucous membranes not affected	(b) Mucous membranes affected
(c) Itching common	(c) Itching rare
(d) Alopecia unknown	(d) Alopecia may occur
(e) Eyes unaffected.	(e) Iritis common, choroiditis and retinitis rare.
Tertiary Stage	Tertiary Stage
(a) Visceral lesions absent	(a) Visceral lesions occur, i.e. pericellular cirrhosis, gumma of liver, kidney etc.
(b) Nervous system never seriously affected.	(b) Nervous system prone to infection; tabes, G.P.I.
(c) Blood vessels; no endothelial proliferation as in syphilis.	(c) Endarteritis obliterans of viscera - cerebral thrombosis.

<p>Yaws better resisted. Constitutional distur- bance slight; great exuberance of eruption and cheloid scarring. Does not respond to mercury.</p>	<p>Syphilis attacks consti- tution affecting the vital structures. Responds well to mercury.</p>
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Byam and Archibald (1922) refer to the absence of mucous patches in the mouth in yaws, to the non-indurated primary lesion and to the fact that patients suffering from syphilis may contract yaws and vice versa. They also state that monkeys inoculated with yaws do not acquire an immunity to syphilis and that the converse holds true.

Castellani and Chalmers (1919) declare that experimental investigation has proved conclusively that they are two distinct diseases.

Some doubt appears, however, again to have been thrown upon statements such as these by recent observation and research. That the treponemata of the two diseases are morphologically indistinguishable and that both give positive Wassermann reactions are established facts. The arguments in favour of their being distinct diseases are chiefly based upon the observation that a patient suffering from one disease can contract the other. Stannus (1926) and Manson-Bahr (1928) have pointed out that the distinction is not so clear as at first appears. Both diseases are pathogenic/

pathogenic for monkeys and rabbits. In this connection, the experiments of Kolle and Schlossberger (1926) on the question of immunity to syphilis amongst animals are important. They have shown that an animal infected with one strain of syphilitic virus becomes immune to that particular strain but not necessarily to other strains. Using heterologous strains they succeeded in producing reinfection in 60% of their experiments. The same workers and Nichols (1925) failed to produce yaws in animals immunised against syphilis (Virus of Truffi).

Jahnel and Lange (1925 - 1928) formerly stated that general paralytics were resistant to infection with yaws but have recently recorded a case in which they succeeded in producing infection. Manteufel and Herzberg (1927) state that in their experience with rabbits it is possible to immunise them to yaws by infecting them with syphilis (Nichol's Virus) which they consider the more powerful infection, but that the reverse process cannot be brought about. The stronger infection protects against the weaker but the converse does not hold. Yaws appears to be definitely less pathogenic to rabbits than syphilis and there is not the same invasion of the lymph glands in the former as in the latter. The same authors however also state that Matsamoto, Ikegami and/

and Takusaki succeeded in infecting rabbits suffering from syphilis with the *treponema pertenuis*.

It must be admitted that the findings recorded throw some doubt upon the duality of the two diseases.

One of the arguments for the established view is that syphilis is ubiquitous whereas yaws is confined to the tropics. But there are both tropical and non-tropical countries where syphilis is unknown. (South Nyassaland, Howard (1908), Fiji Islands, de Boissiere (1904), Samoa up to 1922, Parham (1922), Iceland and Greenland (*vide ante*)).

It cannot be denied that endemic syphilis tends to imitate yaws. Even Manson considered it possible that sibiens was really yaws brought over to Scotland by sailors from the West Indies. He and others also thought that the blains (Exodus IX) by which the Jews were afflicted in their journey across Sinai under Moses might have been framboesia. Is it possible that he was right and that in Hebron, the final resting place of Abraham, it lingers to-day?

Some observers, in countries where the two diseases coexist in the same race, agree as to the difficulty of distinguishing between them. Others however state that it is quite possible to do so.

In parts of East Africa the incidence of each is said to vary with the leanings of the particular medical/

medical officer of health of the area. Butler and Peterson (Haiti 1927) give the two diseases the common name, treponematoses. They both react almost miraculously to salvarsan therapy.

Endemiologically there are certain differences. Framboesia affects the lowlands rather than the highlands, Shircore, Tanganyika (1930). The same author and others state that, as opposed to endemic syphilis, the sex incidence is equal or with a tendency to be higher in males.

CHAPTER IV. ENDEMIOLGY.

It is the universal opinion of the authorities on endemic syphilis that spread is in the largest measure by extragenital contact infection.

Belouossow (1887), Chischin (1892), Generopitowzow (1901), Khijin, Liwschütz (1900), Nikolski (1892), v. Petersen (1893) and Bronner, dealing with the country folk in Russia all give the proportion of cases extragenitally infected as 70% or over. Piljuschkín (1902) puts it as high as 90%.

The statistical evidence in support of such a view is based upon (1) the large proportion of children affected, (2) the high incidence amongst women.

(1) The Large Proportion of Children Affected.

L. Glück from 1897 to 1904 saw in his clinic 215 children under 14 years of age with fresh secondary acquired syphilis. Khijin states that gummatous conditions were often observed in the first five years of life. Jannin (1920) declares that in Tunis infection starts in childhood.

Lepulkian and Aubrecht (1925) in the Ukraine found 30% of 8148 patients to be between 6 and 15 years of age.

The fact that some of this youthful syphilis is congenital naturally suggests itself. In the literature Jeanselme alone puts this at a fairly high figure. Nikolski/

Nikolski (Russia), Jannin (Tunis), Hermans (Dutch East Indies) and others do not find it so. L. Glück, (1921) previously quoted, states that syphilitic parents only bear syphilitic children in 4-5% of cases and that abortion occurs in not more than 2.4%.

(2) The High Incidence Amongst Women.

The Russian authors quoted above give the proportion of women, children and men as women 45%, children 30%, men 25%. Tapelsen (1926 Russia) gives 56.9 - 58% females to 42 - 43.1% males and he remarks that the husband brings the disease to the family and the women and children cultivate it. Federowskij states that 60% of the cases in the Ukraine are amongst women.

Such then is the view of those who have worked where syphilis was or still is endemic. They hold that in the main it is non venereally spread. Opinion as to the actual channel of infection is not so freely expressed. The two following observations serve however as a reminder that mouth infection occurs easily and that spread by this route is rapid, under certain conditions. It would appear to be more rapid than by the venereal channel and this is what one would expect.

Flamand (quoted by Ehle's) describes a small epidemic/

epidemic in Haute Saone in France in 1819. It started with a man who accepted a drink from the mug of some Austrian soldiers in Montpellier during the second entry of troops after the Napoleonic wars. He infected his wife and three children and eventually 25 persons were afflicted.

Brosius (1904) records an epidemic amongst glass blowers in which 8 became infected at the same time.

P A R T I I .OBSERVATIONS IN PALESTINE.

My original observations on syphilis in certain parts of Palestine are recorded in Part II. They form an important section of my paper. The arguments advanced in Part III are to a large extent built upon them.

The pre-war information is derived in the main from a personal communication made to me by Dr Paterson of Hebron. This is freely quoted. I could find no other source.

The figures should be reviewed in the light they throw upon the mode of spread of the disease and, what is of perhaps even greater importance, the apparent infrequency of the typical nervous and other sequelae common under civilised conditions and modern treatment.

Part II is arranged as follows:-

Chapter V	History.
Chapter VI	Description of the Disease. The Author's Original Observations.
Chapter VII	Diagnosis.
Chapter VIII	Treatment.
Chapter IX	Endemiology.

CHAPTER V. HISTORY - PRE-WAR RECORDS.

The disease in its endemic form is limited to the Arab population and to certain parts of the country. Hebron and the villages around it, some of the hamlets close to Jerusalem and certain of the bedouin tribes in the Beersheba area are most affected. Such a distribution accounts for the paucity of the literature. Before the war there were no Arab doctors working in the villages in Palestine South of Jerusalem. Indeed there were none who found it sufficiently profitable to undertake private practice outside the large towns anywhere in the country. There was one Jewish doctor at Hebron, but he might not have had many Arab patients. This would apply in a large measure also to the Jewish doctors in Jerusalem.

It is not surprising, therefore, that I have been unable to trace any pre-war Arabic or Hebrew publications on syphilis in Palestine, nor do there appear to have been any since the British occupation of the country.

It was to the British and other mission hospitals that the villagers came for treatment. Masterman (1919) who worked in Jerusalem from 1893 to 1914 makes the following statement: "Syphilis while by no means so prevalent as in European lands, is not uncommon among/

among the town dwelling Moslems of the middle and upper classes, but on the whole it is of a rather mild type. The relative infrequency of this disease has without doubt much to do with the rarity of chronic nervous diseases such as locomotor ataxia".

Masterman's hospital admitted for missionary reasons primarily Jewish patients, but he had a fairly extensive practice amongst the better class Arab population of the city. He had no dispensary except for Jews and thus had little opportunity of seeing the village people. Paterson who worked in Hebron from 1892 till the war and from 1918 to 1922, has a different story to tell. In a personal communication (1929), in which he refers to his work from the time of his arrival in the country, he says, in contrasting his experience with that of Masterman, "I was in the thick of the malady in the heart of an Arab district 40,000 strong. Even with such fitful and partial attendance at my clinic as occurred, largely on account of religious and quack opposition, during the first and second years of my work, half an eye could see that syphilis was everywhere and rampant. Not until attendance became regular and large, did its appalling preponderance, an easy first, malaria not excepted, almost daunt me". He puts the incidence amongst his patients at 50% to 60% and says "primaries were rarely seen, secondaries/

secondaries abounded, tertiaries were common, quaternaries apparently nil". Children, adolescents and adults of all ages and both sexes were about equally affected. He is not in agreement with Masterman as to the mildness of the disease and states that it was often intractable. Paterson gradually formed the opinion that it was in the main non venereally spread. Working single-handed under difficulties which do not exist to-day, it formed no part of his task to compile statistics like those contained in this paper. He advances, however, good reasons for his belief. Chancres or chancre scars were rare. Gonorrhoea was seldom seen and urethral stricture almost unknown. Patients had no shame in presenting their syphilitic lesions. Gonorrhoea, on the other hand, when it did occur was hidden as being evidence of illicit intercourse. This is not surprising, for, in accordance with the Moslem code of behaviour death is the punishment for the crime of sexual incontinence. Women were and still are not infrequently slain by members of their own family for such a reason and it is difficult to get Arab judges to pronounce the death sentence on the murderers when this occurs. The guilty male, if he were known, was followed, often with the utmost tenacity, until the opportunity to slay him arose. Did he die a natural death, revenge was/

was eventually taken on his son. Prostitution was unknown in Hebron. Paterson's view as to the introduction of the disease into this region is that until about the middle of the 19th century the Mountain of Hebron was untouched by syphilis. Its inhabitants were a turbulent, truculent people, virtually cut off from the rest of the country. The Sultan's writ scarce ran there. The town itself had been for centuries ruled by one or other of its powerful families. The place even defied the conqueror of Turkey, Ibrahim Pasha, who in the eighteen forties administered South Palestine for seven years. As a result of this defiance he reduced the town and broke in its inhabitants. On his retreat the Ottoman government re-occupied it in force. From that time the recruiting sergeant had his way in Hebron and annual levies replaced the occasional conscript. For the first time in its history large numbers of the town's young men found themselves in urban areas all over the Turkish Empire freely exposed to the risk of venereal infection. The Moslem has certain habits which militate against his contracting the disease. He has frequent religious, daily ablutions, and washing is enjoined and practised after intercourse. As compared, therefore, with white troops probably a less proportion became infected than was the case amongst the European armies/

armies in medieval times. But it was enough to sow the seeds in the virgin soil of Hebron. And as in Spain, Italy, France and Germany at the end of the 15th century it spread like wild fire. Paterson says "Lip contact sufficed to diffuse the contagion widely and rapidly".

The Arab is a lavish kisser. Mothers, fathers, brothers and sisters are prodigal in this form of physical demonstration of their affection for younger children and to some extent for each other. Adult males often embrace on meeting, and mothers do not confine their kisses to the face, lips and hands. Infection and contagion would still further be facilitated by the promiscuous use of the same argeelah (the hubble bubble pipe in common use), drinking jar, spoon, coffee cup and platter.

So much for Paterson's view and it says much for the accuracy of his observations and the soundness of his reasoning that with the greatly increased facilities provided by the complete public health organisation which has been created in Palestine since the war, we reached this conclusion in ignorance of his view. Besides this, had he but known it there were even in his day other workers in Europe and in Asia Minor, the Glücks, Neumann, Von Düring and their colleagues whose reputation rests upon their labours in this field and who agree with Paterson's opinion.

CHAPTER VI. DESCRIPTION OF THE DISEASE.THE AUTHOR'S ORIGINAL OBSERVATIONS FROM THE BRITISH
OCCUPATION TO JUNE 1930.

With the British occupation of Palestine came the establishment in the country of a well staffed public health service and an influx of all sorts of additional voluntary medical aid.

Free government hospitals were established in Jerusalem, Hebron, Beersheba and other places. Well equipped Jewish institutions were opened and government medical officers began to tour the villages regularly.

This chapter is arranged as follows:-

- (1) Mukhmas.
- (2) Jerusalem and its Suburbs.
- (3) Beersheeba; the Bedouin.
- (4) Hebron and its Suburbs, including Table I.
- (5) Analysis of Table I.
- (6) Nahalin.
- (7) Age Incidence in the Hebron and Nahalin Cases including Table II.
- (8) Photographs and Notes of Cases.
- (9) Family Trees, Nahalin.

(1) Mukhmas.

In August 1921, the attention of the Jerusalem health office was drawn to the large numbers of syphilitic patients coming from the village of Mukhmas for treatment. This is the biblical Michmash. It lies $2\frac{1}{2}$ hours ride to the north east of Jerusalem and had in 1921 a population of over 330. As many of them as possible were medically examined. Amongst 169 men 14.7% and of 161 women 7.5% showed evidence of active disease.

The place is a Moslem village lying amongst steep hills and somewhat inaccessible country. The habits of its people are typical of those of their kind all over the southern hills of Palestine. Ignorance is universal. Cleanliness is a virtue unknown. Most of the inhabitants live in a room on a sort of upper storey, the ground floor of the hovel being occupied by cattle, donkeys and goats. The beasts are within the same four walls as the people and serve to provide warmth in the winter and so economise fuel. The whole family sleep together on mattresses on the floor. They eat with their hands from a common plate; spoons and forks are little used and one or at most two cups serve them all as drinking vessels. Water is a precious commodity in all the hill villages. Springs are few. The average annual rainfall/

rainfall of 25 inches is confined to four months of the year. The rain is gathered into cisterns, has to last for 8 months and every drop requires to be drawn by hand and carried to the house. Such circumstances induce dirty habits. It is almost impossible to be clean. The eating and drinking utensils in use are rarely, and never properly, washed. The countryman of Palestine is noted for his hospitality. The visitor of whatever rank is fed and housed in the village guest house. On his arrival coffee is served. There are not enough cups to go round and the same vessel is used for more than one person.

The habit of coffee drinking is universal in the orient. Palestine is no exception. Many times a day the village "elders", not necessarily all of whom are old men, gather round a small centre fire in the guest house or in some other large room in the village and partake. As a rule there is one coffee cup to about every four persons. Nor is the habit confined to the guest house or council chamber. For many months in the year the fellah has little to do. When he has passed the age of herdsman he sits about sipping coffee in his own home. Each family has but one or at most two cups. Nor does a family or household compare with such a unit in our own country. Grandparents, often aunts, one or two wives and numbers of children are included. Young married couples are not/

not expected to have a separate home for themselves. The custom so firmly established in England whereby the young man is expected, upon marriage, to set up house at once, marks a certain degree of general prosperity. In Italy, Greece and many of the poorer countries it is not nearly so common. It is, of course, much more economical not to establish a second house until later. The Italian marries much younger than the Englishman. The Moslem villager in Palestine becomes a husband about fifteen and takes a wife sometimes only twelve, and rarely over sixteen.

(2) Jerusalem and its Suburbs.

A government hospital was established in Jerusalem on the British occupation. From its inception cases of syphilis almost entirely from the surrounding villages attended. From 1927 until 1929 inclusive 528 cases of the disease were treated. They formed during this period 2.1% of all out patients attending the hospital. This figure is of little value as an indication of the incidence of the disease. Most of the patients were of the country working class from villages lying within a day's return journey from the town. The population in them varies from 400 to 1000 persons. Silwan, Bethany and its neighbour Abu Dis, Kalonia and Walajeh are all Moslem hill/

hill villages and in all the standard of living is low. During the period under review 41 cases of gonorrhoea attended this hospital. That is to say that gonorrhoea accounted for 13.9% of these 569 Cases of "venereal" disease.

(3) Beersheba; the Bedouin.

Beersheba is the capital of a large bedouin region in the south of Palestine with a population of anything between 40,000 and 60,000 nomadic tent dwellers. The annual rainfall is very low, 2 or 3 inches, and the poor crops of wheat and barley do not suffice to meet the people's needs for the whole year. There are practically no springs and a considerable section of the population leave their homes in the dry season and turn northwards to eke out existence in more fertile places. They are thus extremely poor as judged from our standards. Their outdoor life in tents moving from place to place leads, not to cleanliness, but to a cleaner form of dirtiness than in the villages. Their habits are similar and they all sleep close together. The bedouin, although his stock of victuals is pitiably limited, is not less hospitable than the villager. Like him, he drinks coffee, feeds from a large common platter, sitting round it on the ground, and smokes cigarettes or a large wooden pipe. The habit of enjoying the argeelah or/

or hubble bubble is common to the bedouin and fellah alike, although more so with the latter who is a man of settled abode and thus not obliged to consider to the same extent the bulk of his movable property. It serves more than one person. The same mouthpiece passes from one to the other with scarce a wipe.

A small government hospital was opened in Beer-sheba after the British occupation. From 1927 to 1929 inclusive 220 cases of syphilis were treated there. This forms 1.5% of its total out-patients, and is for various reasons a better indication of the incidence of the disease than the Jerusalem figure. During the same period 3 cases of gonorrhoea attended the dispensary, a proportion of one to every 73 cases of syphilis.

(4) Hebron and its Suburbs.

It is, however, in respect of Hebron and the villages of which it forms the centre or capital that the most complete and accurate records are available. The waywardness of fate ordained that when my attention was attracted to the disease in this district I did not know of Paterson's work. In November 1923 in company with another medical officer I set out on a tour to some of the villages to the north east of the town. That evening seated native/

native fashion by the sumptuous repast provided by the villagers of a hamlet called Shiukh, I noticed in the rather dim light curious circinate marks on the neck of one of my hosts. Enquiry revealed the fact that such scabby lesions were quite common. On the morrow, at my request I was presented with five or six sufferers. Those whom I saw were mostly women and they had condylomata and patchy mouths. An examination of 30 pupils, most of them under 10, in the village school revealed one with active signs of syphilis. Later as the result of ^{an} argument with my companion on the significance of the greyish moist patches which we had observed at the corners of the lips of a great many of them, blood was taken for the Wassermann reaction from fifteen. Three, or twenty per cent, gave a positive result. Later in November 1924 in Hebron itself, the reaction was performed on 35 pupils in the boys' and girls' schools. Of these 16 or 46% were positive. The tests were in both cases, but particularly in the latter, carried out upon children who showed symptoms or had signs suggesting that they were or had been infected. They cannot be taken as providing an indication of the general Wassermann rate in either place.

In March 1925 I made another journey through the same part of the country with the object of discovering/

discovering what proportion of those infected were taking advantage of the free treatment which had been provided.

My observations on that occasion led me to estimate that 5% of the population of the district which is about 40,000 required treatment. In Chapters II and IV a similar rate is recorded for certain parts of Russia where alone in Europe syphilis is endemic to-day. I stated in my second report to the Government of Palestine (1925) that "there is considerable variation in the extent of the infection in different villages. The village of Shiukh has 88 patients while Sair situated in the same valley a couple of kilometres away with double the population has but 16". We came to the conclusion, as a result of examining the relatives of those under treatment in each village, that most of those with lesions were attending or had received some treatment. So that the observation as to the considerable variation in the incidence without apparent reason can be taken as accurate and accords with the findings of the authors previously quoted.

In September 1924 a free Government clinic was established in Hebron and has functioned ever since. Detailed records were maintained and these have been analysed for the period September 1924 to December 1929/

1929 and appear as Table I., Groups A and B which follows here. It should be examined in conjunction with the "Analysis of Table I" which succeeds it on page 51 . For purposes of clearness it may be stated at this point that the table represents an analysis of all the cases which attended the Hebron clinic from its inception in September 1924 up to December 1929. They have been divided into two groups because in the later cases, Group B, only Wassermann Reaction + cases are included, whereas in Group A some cases are recorded and were treated without testing the blood Wassermann. Group B therefore acts as a control upon Group A.

TABLE I./

TABLE I. Being an Analysis of Cases attending the Hebron Clinic from September 1924 to December 1929 in two Groups; Group A from September 1924 to December 1926 and Group B from January 1927 to December 1929.

The Hebron Statistics.

	<u>Group A</u>	<u>Incidence per cent of Cases.</u>	<u>Group B.</u>	<u>Incidence per cent of Cases.</u>
I. Primary Lesions.				
a. On the genitalia	3			
b. On the lips or in the mouth.	7			
c. In other situations.	4		<u>1</u>	0.12
	<u>14</u>	0.7	<u>1</u>	
II. Affections of the skin and subcutaneous tissues.				
a. Secondary	15		125	
1. Rashes	51		11	
2. Condylomata	295		92	
3. Other forms				
b. Tertiary	18		7	
1. Gummata, non ulcerated.	215		7	
2. Ulceration.	<u>594</u>	28.2	<u>242</u>	31.1
III. Affections of the lips, mouth and tongue, pharynx and nose excluding destruction of the hard palate and bridge of the nose.				
a. Secondary.	63		17	
1. Sore Throat	797		217	
2. Mucous patches	98		21	
3. Lesions on lips.			12	
4. Fissured tongue				
b. Tertiary.			2	
1. Gummata				
2. Ulceration, excluding nose.	161		107	
3. Ulceration in nose	25		9	
	<u>1144</u>	54.4	<u>385</u>	49.5

	<u>Group A</u>	Incidence per cent of Cases.	<u>Group B</u>	Incidence per cent of Cases.
IV. Affections of cartilage, bones, joints, including destruction of hard palate and bridge of nose.				
a. Tertiary.				
1. Destruction of hard palate.	23		2	
2. Destruction of bridge of nose.	53		4	
3. Other lesions	42		25	
	<u>118</u>	5.6	<u>31</u>	4.0
V. Other affections.				
1. Headaches and bone and joint pains.	99		54	
2. Laryngitis	78		49	
3. Affections of the eyes.	11		2	
4. Cardio vascular lesions.	3		0	
5. Affections of the C.N.S.	7		14	
6. Varia	28		0	
7. Congenital	8		0	
	<u>2104</u>	11.1	<u>778</u>	15.3
Grand total				

(5) Analysis of Table I.

The table presents two Groups of cases:-

Group A comprises those attending during the period from September 1924 until December 1926 inclusive. The total number of cases analysed in this group is 2104. Of these 40% were males and 60% females. In this group only a proportion of the patients were examined for and showed positive Wassermann reactions. The test was only carried out as an aid to diagnosis in doubtful cases.

Group B represents an analysis of 778 cases all Wassermann Reaction positive treated from January 1927 to December 1929 inclusive. Of these 38% were males and 62% females.

The similarity between these two analyses and the figures for endemic syphilis previously quoted is at once apparent. Primaries are exceedingly rare; secondaries, particularly in the mouth, predominate; and neurosyphilis is uncommon. Let us consider them in more detail.

I. Primary Lesions.

In Group A there were 0.7% and in Group B. 0.1% of primary lesions. This is in marked contrast to what is seen in syphilis clinics in civilised countries. It will be noted that in Group A. 3 were seen/



seen on the genitalia whereas more than twice that number were on the lips or in the mouth and 4 in other situations. That is to say that there were 11 in nonvenereal to 3 in venereal situations.

II. Affections of the Skin and Subcutaneous Tissues.

These formed 28.2% and 31.1% of the cases respectively. One series shows few and the other many rashes whereas for ulceration the converse holds. There is no particular advantage in discussing at length the causes of such variations. Two different doctors were working under me in charge of the clinics during the periods under review. In general the proportion does not differ markedly from the findings of observers from 1850 onwards. I have not seen a true roseolar rash amongst the several hundreds of cases which I observed personally.

Condylomata are undoubtedly quite common. Under other forms fall the various striking skin lesions, the description of which bulks largely in the literature. Papular lesions are common. Annular or circinate forms are frequently seen. Then there is the deeper type of nodular cutaneous syphilide common on the buttocks. Rupioform encrustments are not uncommon. Photographs 2 to 7 (pp.58 - 64) are illustrative of some of the skin lesions observed.

Gummata. I have not personally seen a non-ulcerated gumma. Ulceration was common in Series A.

I have classified as tertiary all lesions with definite ulceration and also gummata. It is not proposed to enter into a detailed discussion of the principles of the classification adopted. The somewhat arbitrary division into secondary and tertiary groups has frequently been the subject of criticism. It serves its purpose, however.

III. Affections of the Mouth and Nose Regions.

These are exceedingly common representing 54.4% and 49.5% of the cases. This accords with the findings of the authorities quoted in Part I. There has been a good deal of discussion as to whether primaries, possibly phagaedenic or atypical occur in the mouth. The only typical primary sores that I have personally seen were hard chancres on the tongue. Photograph I (page 58) shows the common form of secondary mouth lesion.

IV. Affections of Cartilage, Bones, Joints etc.

I have personally seen a number of cases of tertiary osteosclerosis of the compact bone. Three were of the tibia, one of the femur in its lower half and one of the humerus above the elbow. Lesions in the nose are not uncommon.

V. Other Affections.

Central nervous system. In Group A seven are recorded in 2104 cases. Amongst these there was only/

Corrigenda: Insert the following after the words
"endemic form" p.54 line 7:-

In addition to the scarcity of neurosyphilitic lesions we were struck by the low abortion rate. For example in Group B in 50 consecutive married patients whose cases were investigated from this point of view abortion occurred in 7 only.

In Group A the average number of abortions in those cases where there was a history of this was 1.8. These figures do not exceed the rates, insofar as it has been possible to obtain them, for healthy women in this part of Palestine.

only one case of tabes dorsalis and one which is recorded as general paralysis. The rest were atypical organic nervous lesions. Amongst the 778 Wassermann positive cases there were none. Such figures, which are confirmed in the literature, form one of the most striking features of syphilis as it is observed in endemic form.

(6) Nahalin.

In April 1928 it was found that the village of Nahalin to the south-west of Bethlehem was heavily infected. The infection appeared to be of fairly recent date. If this had not been so it would have been discovered before. Nahalin is a closely built village amongst the hills. The houses are small and the families, which generally include several relations, live together at close quarters often under the same roof as their animals. It has a population of 380, of whom 75 or 23.5% were found to be diseased, and is divided into 6 quarters. Two of these quarters were more heavily infected than the others and the incidence in them rose respectively to 37% and 38% of their numbers.

The table showing age incidence which follows in paragraph (7) and includes the Hebron figures, brings out the high rate in those who have not reached puberty/

puberty. 34.5% of the sufferers in Nahalin were not over ten years of age.

Three family trees are appended - pages 65, 66 & 67. They indicate clearly how widespread was the infection in this village, and in number 2 it will be observed that a grandmother of 60, her children of 16, 20, 22 and 25, and her four grand-children between 1 and 3 years old all had early secondary lesions. 69% of the Wassermann tests made were positive. The lesions observed in their order of frequency were mucous patches, sore throat, condylomata, laryngitis and skin syphilides. Mucous patches represented 32%. No chancres were seen.

(7) Age incidence in the Hebron and Nahalin cases.

One of the most striking facts which a consideration of the Hebron and Nahalin figures brings out is the unusual distribution of the cases in the various age groups, - unusual that is in comparison with what one finds in venereal diseases' Clinics in civilised countries to-day. I have arranged them in Table II.

TABLE II./

TABLE II.

Age Incidence in Hebron and Nahalin Cases.

<u>Age period.</u>	<u>Incidence per cent. of cases.</u>		
	<u>Hebron.</u>		<u>Nahalin.</u>
	Group A.	Group B.	
Birth to one year	1.2	0.8	3.3
1-2 years	1.5	0.8	3.3
2-5 years	6.8	1.1	13.3
5-10 years	15.1	9.9	14.6
10-15 years	12.3	9.7	5.3
15-25 years	23.5	26.2	17.3
25-45 years	31.1	40.3	26.6
45-60 years	6.7	10.2	13.7
60 and over	1.8	1.	2.6

It will be seen that the incidence per cent of cases of 10 years and under is as follows:-

Proportion of Cases aged 10 years and under:-

Nahalin	34.5%
Group A.	24.6%
Group B.	12.6%

It is not only however amongst the young that the incidence is markedly high. We find the same tendency in persons of 45 and over. An analysis of the figures on this basis gives the following results.

Proportion of Cases aged 45 years and over:-

Nahalin	6.3%
Group A.	8.5%
Group B.	11.2%.

These figures afford evidence of the innocent manner of spread of a large proportion of the cases. The Nahalin figures represent the kind of distribution that occurs when first the disease is brought to almost virgin soil. Group A represents a later stage and Group B still further approaches the civilised incidence. Their significance and that of the family trees represented on pages 65, 66, 67 are further discussed in Part III.



Mucous Patches on Tongue.

Case I. Photograph taken on 1.2.30.

Saffieh Mohamed. Female, unmarried. Age 13 years.

Duration of lesions on tongue and in mouth, 1 month. No history of former lesion elicited, no other lesion discovered. Wa. R. +. A fairly advanced secondary condition of the tongue, which has swollen papillae and is patchy and fissured. There are also mucous patches on the lips. No treatment received when photograph taken. After two injections of 0.45 cc. Neosalvarsan intravenously the lesions were healed.

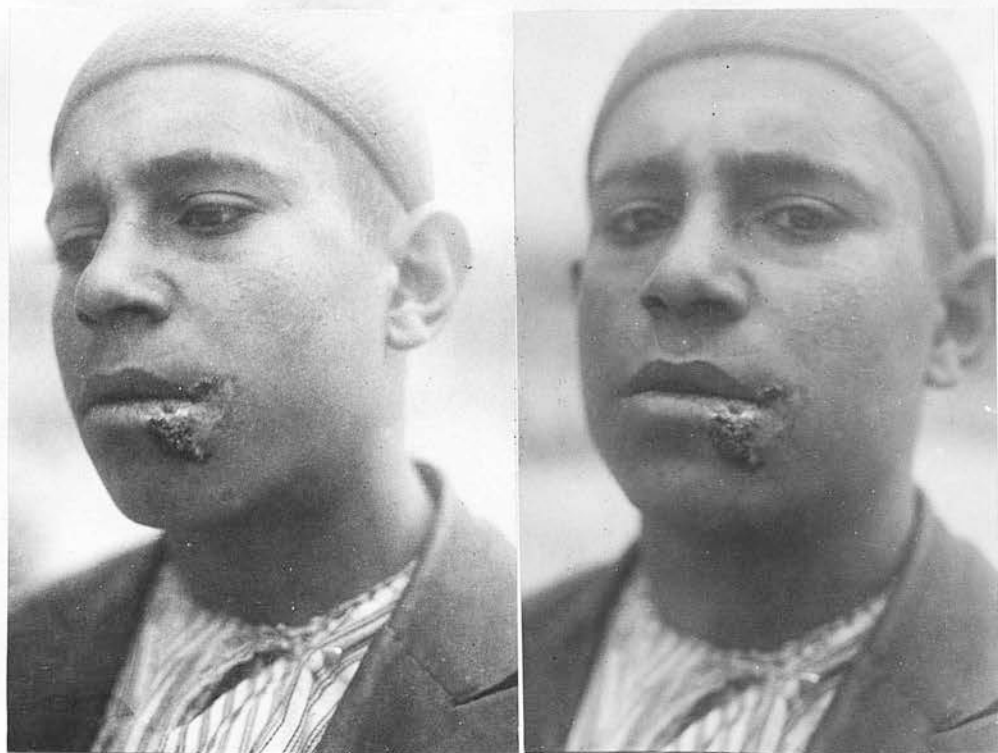


Syphilitic Eruption Resembling Psoriasis.

Case 2. Photograph taken on 1.2.30.

Rasmeh Badr. Female, married. Age 35 years.

Duration of lesion 1 year. No history of former lesion, no other lesion discovered. Wa. R. +. No treatment, when photographed but cleared up quickly under Neosalvarsan intravenously. This shows part of a psoriasis like eruption which extended over a considerable part of the trunk and on the extremities.



Rupia.

Case 3. Photographs taken on 1.2.30.

Ahmed Mohamed. Male, married. Age 16 years.

Duration of lesion 3 months. No history of former lesion elicited. No other lesion discovered. Wa. R. + .
When photograph taken had had altogether 2.25 gms. Neosalvarsan intravenously and the lesion is clearing up. This is a rupioform encrusted type of late secondary lesion.



Nodular Cutaneous Eruption.

Case 4. Photographs taken on 1.2.30.

Yousef Mohamed. Male, unmarried. Age 17 years. Duration of lesions 5 months. No history of primary lesion. No other lesion discovered. Wa. R. +. The lesions are bilateral, the photographs being of the right and left buttocks of the same patient. At the date of the photograph the patient had already had 1.5 gms. Neosalvarsan intravenously in 3 injections and had much improved. The appearance to start with was similar to that of Case 5. The improvement as a result of treatment is therefore readily estimated.



Rupia on Nose.

Case 6. Photograph taken on 4.4.30.

Zahweh Hussein Salman. Female, married. Aged 40 years. Has children. Duration of lesion 1 year (states). No history of other lesions, or other manifestations discovered. Wa. R. + . The child showed no evidence of congenital syphilis. The lesion resembles that in case 7. It rapidly cleared up under Spirocid.



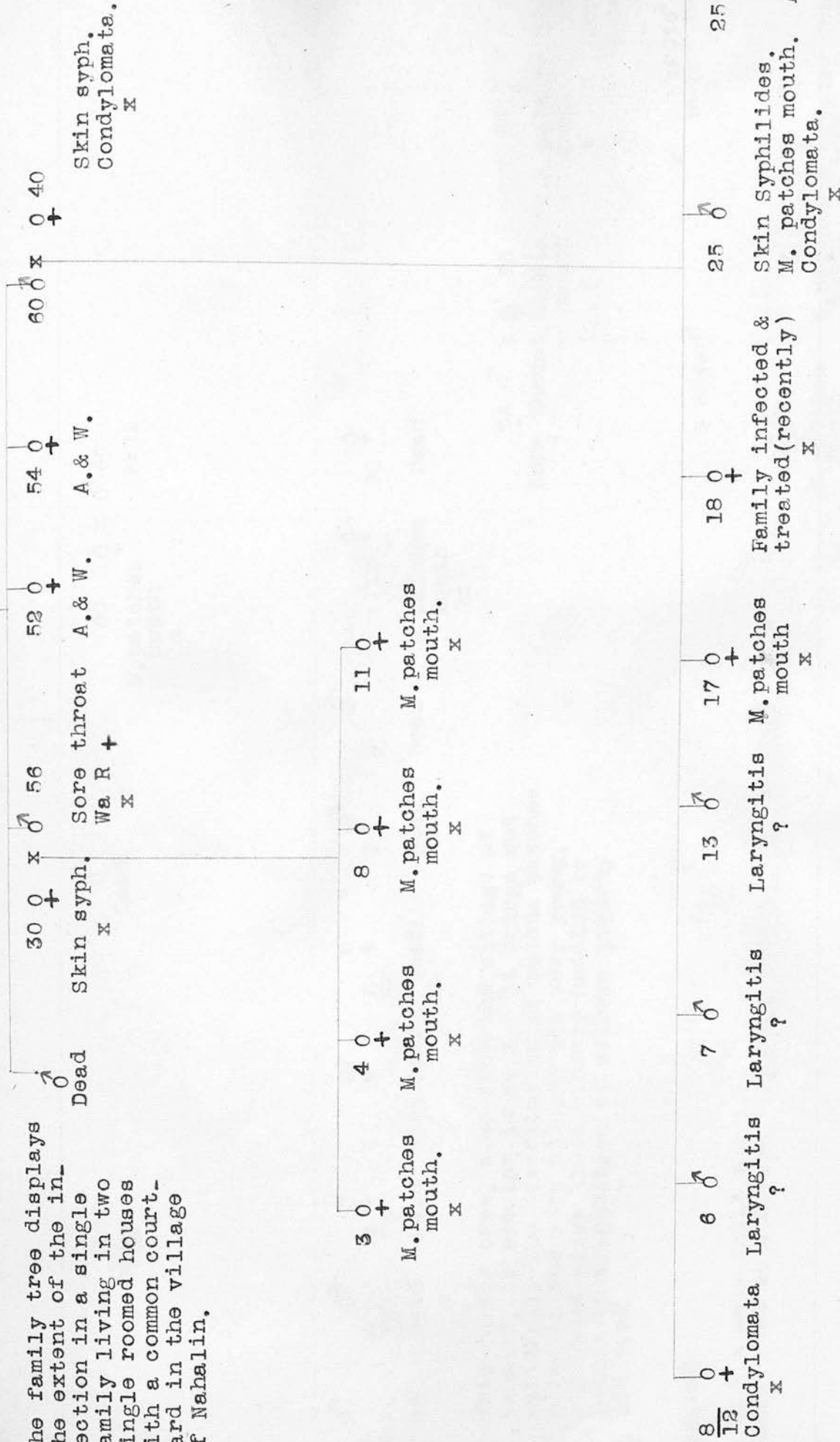
Rupia on Nose.

Case 7. Photograph taken on 4.4.30.

Jamneh Abdel Mahsin. Female, married.
 Age 30 years. Duration of lesion 2 months.
 No history of former lesion, no other
 lesion discovered. Wa. R. + .
 This is a fairly common form of secondary
 skin lesion resembling cutaneous leishman-
 iasis. She had received no treatment when
 the photograph was taken but cleared up
 rapidly on Stovarsol. (Spirocid)

The family tree displays the extent of the infection in a single family living in two single roomed houses with a common courtyard in the village of Nahalin.

♀ Dead ♂ Dead



LEGEND.

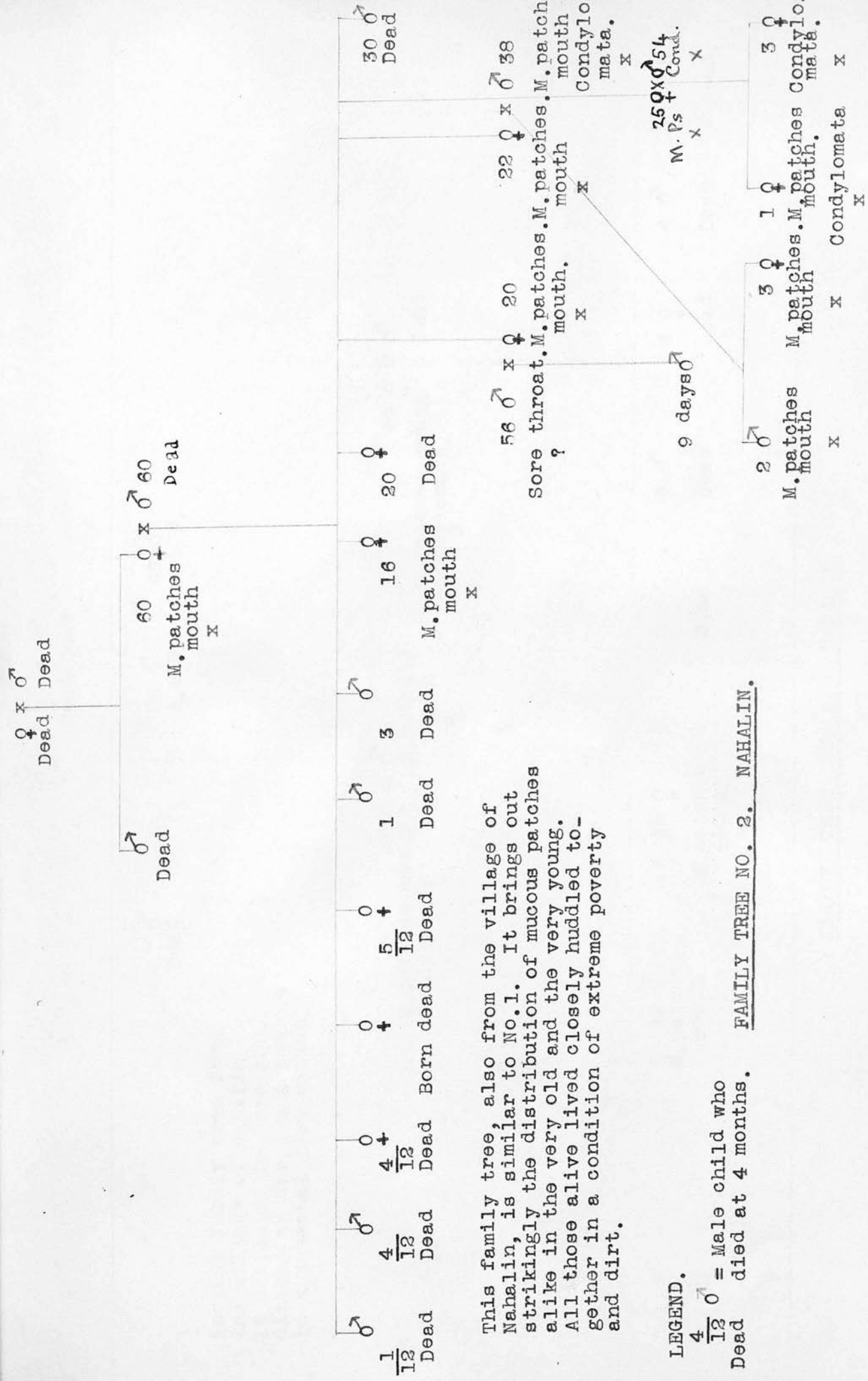
x = Infection with syphilis.

Figures 3, 4, 8 etc indicate age.

12

x = married to.

FAMILY TREE NO. 1. NAHALIN.



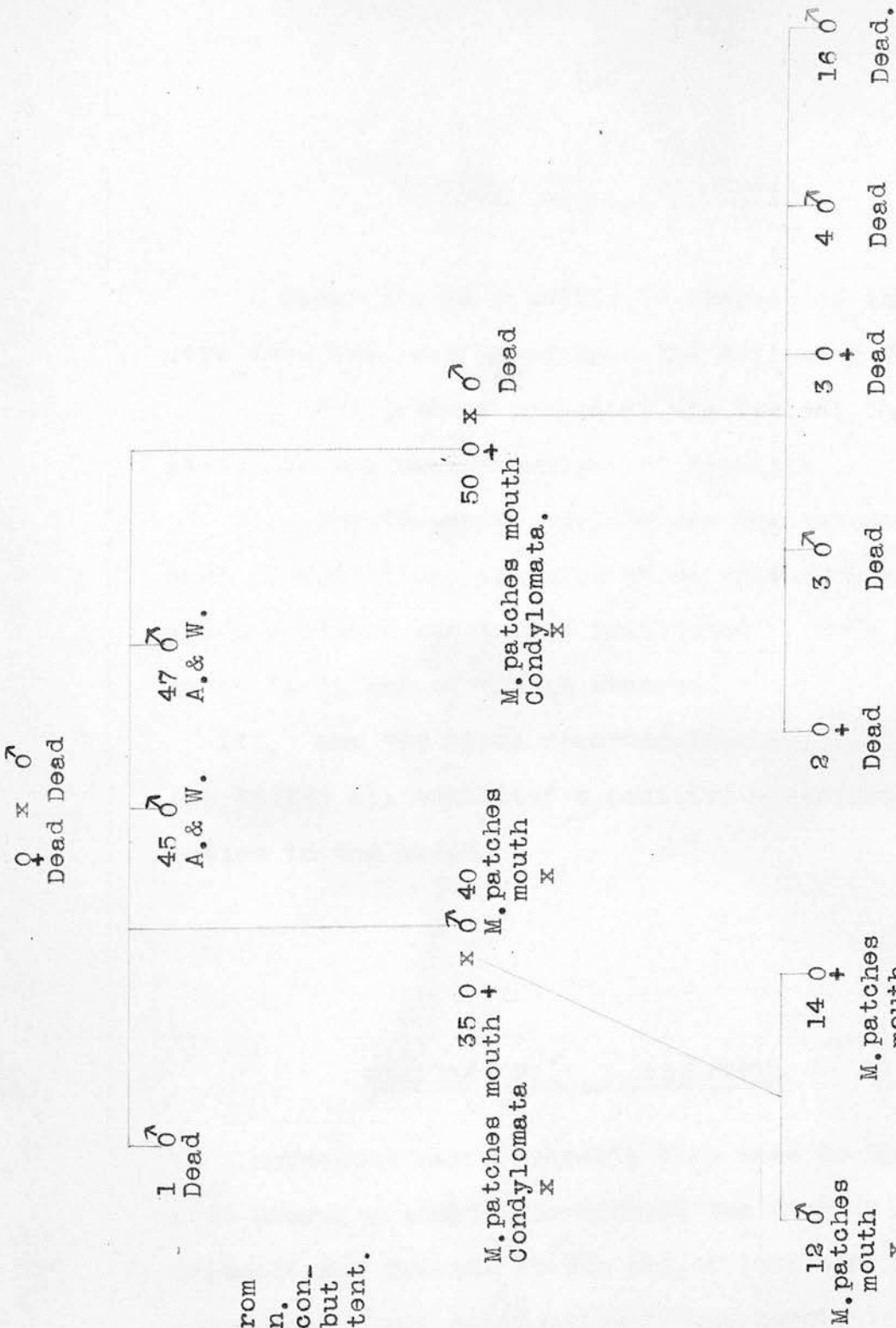
This family tree, also from the village of Nahalin, is similar to No. 1. It brings out strikingly the distribution of mucous patches alike in the very old and the very young. All those alive lived closely huddled together in a condition of extreme poverty and dirt.

LEGEND.

4/12 ♂ = Male child who died at 4 months.

FAMILY TREE NO. 2. NAHALIN.

Another family tree from the village of Nahalin. It displays the same conditions as Nos. 1 & 2 but to a somewhat less extent.



FAMILY TREE NO. 3. NAHALIN.

CHAPTER VII. DIAGNOSIS.

A diagnosis of syphilis in respect of the disease here described was based upon the following facts:-

I. The lesions presented the typical characteristics of the manifestations of syphilis.

II. The *Treponema pallida* was demonstrated by dark ground illumination in those primary lesions in which a search for it was instituted. This was undertaken in 14 out of the 15 observed.

III. The 778 cases recorded in Group B, Table I (pp.49-50) all exhibited a positive Wasserman reaction in the blood.

CHAPTER VIII. TREATMENT.

Reference has previously been made to the extensive measures adopted to control the disease in Dalmatia and Croatia at the end of last century. Propaganda, mass examination of the population, and thorough treatment in free dispensaries and hospitals built for the purpose formed the basis of a campaign which remains as a classical example of what can be accomplished by science when properly directed into practical channels for the control of disease. The results constitute a monument to the memory of Neumann, /

Neumann, Zeichmeister, Von Zeissl and L. Glück; and the enlightened attitude adopted by the government of Austria at that time pointed the way to other countries till then less enterprising in their efforts to ameliorate the health of the public. At the eighth German Dermatological Congress at Serajevo in 1903 L. Glück was able to report that the situation had greatly improved, that quackery ^{had} dropped into the back ground, that the population had become accustomed to scientific and thorough treatment and that soon syphilis would be relegated to its proper place in relation to the general health of the country.

Since that time Schaudinn made his epoch making discovery, Wassermann described the reaction which bears his name and Ehrlich added salvarsan to our therapeutic armamentaria. In Palestine, in 1926, we were thus in a position to start our campaign with weapons with which these workers had not been equipped. The barriers erected by ignorance and indifference were perhaps even more formidable than they had to face, but the almost miraculous results of a single injection of the new drug were readily appreciated.

Nor was the problem so vast. The Hebron area, for example, had a population of 40,000. Out of that number it was estimated that 5% had active lesions. Two thousand persons thus required to be dealt with. The/

The numbers in South Austria were much greater.

We had the good fortune to appreciate early the significance of the fact that infection spread from the active secondary lesions in the mouth and upon the body. In addition we realised that even if left to itself the disease appeared rarely to be followed by the sequelae which make thorough treatment almost a religion in enlightened countries to-day. Besides this we knew, and so, very soon, did our patients, that one or two injections brought about the healing of the sores. If we could accomplish this on an extensive scale a marked reduction in the incidence was, we considered, bound to occur. Let it, therefore, be borne in mind that we set out with this object in view and shaped our plans as time progressed to that end.

It will also be realised that the frequent examination of the blood for the Wassermann reaction would have considerably increased the cost of and labour entailed in our work. Patients would not return voluntarily at the end of treatment for this purpose. Indeed it was at first impossible to get them to do so even for injections so soon as the sores had healed.

They had to be cajoled, begged, and almost beaten into coming. All the weight of authority exercised legally and often illegally was for long necessary to make/

make them complete a six weeks' course. Let it be realised that a four to six hours absence from her home, involving the physical labour of a walk which few English women would undertake, presented little attraction to the ignorant mother with 3 or 4 of a family to leave at home and 1 or 2 to drag or carry with her. In Palestine the husband rides a donkey, his wife follows on her feet. Women and girl children are of less value than animals. She would receive little but discouragement from her man if she wished to leave the home.

Hebron. In the Hebron clinic, based upon a certain amount of previous experience, we adopted as standard a minimum course of 4 grammes of neosalvarsan. This was given intravenously once a week in doses ranging from 0.3 grms. to 0.9 gms. dissolved in 5 to 10 cc. of distilled water. The course occupied six weeks or more. The patients themselves generally provided the intervals of rest, that is missing one injection, which form a feature of arsenical therapy to-day. Few immediate and no late ill effects were observed. Vasodilator reactions were rare and jaundice is not recorded. The lesions healed quickly, sometimes after two injections. This was as I have pointed out a disadvantage from one point of view, for, as a result it became difficult, often impossible to/

to secure an attendance for the rest of the course. Neither mercury, bismuth nor potassium iodide were as a rule employed. The patients objected to the intramuscular route either for neosalvarsan or the metal and they threw away their bottles of iodide mixture. In Series A the Wassermann reaction was used only as an aid to diagnosis in the doubtful cases, in Series B however I insisted on it being carried out as a preliminary to treatment in every case. For the reasons already presented it was not often employed in the control of treatment.

The question of the permanency of our results naturally presented itself and from this point of view also it was considered that the best plan would be to undertake the examination of patients in their villages at varying periods after treatment had ceased.

Observations made by me in June 1927 and December 1928 on 113 cases two years or more after the completion of treatment showed 18 recurrences. These consisted of joint pains, fissured tongue and mucous patches on the mouth. 8 fell in the last two categories and were still infectious. In 1929, 515 patients were again observed two years or more after completing treatment. 86 of them or 17% required a further course. Some of these had only neuralgic pains, /

pains, some had laryngitis, some still had mucous patches and skin lesions. 6.4% fell in the last two categories and were therefore infectious. These results are by no means perfect. But in spite of this and at no very great expense the incidence in many of the infected villages has been greatly reduced. Of 12 patients who started with the WaR \pm and who had the test carried out one year after completing treatment, one was still positive.

Nahalin. A detailed account of the epidemic in Nahalin has already been given. When considering the steps which we should undertake there our attention, by a measure of good fortune, was directed to the advantages presented by the employment of an arsenical preparation in tabloid form. Spirocid had been used for some time by different medical officers in Palestine in spirochaetal and other conditions and had given good results in the treatment of framboesia further afield. It was decided to give it a trial. The dosage recommended by Oppenheim was employed. It is prepared by Messrs Bayer-Meister Lucius in small tablets each containing 0.25 gms. of the drug. In the case of adults this was given as follows. 2 tablets on the first day, 3 on the second and 3 on the third in the morning before food. A rest of three days was then prescribed and the dosage repeated. This/

This was continued until a quantity equal to approximately one tablet to each kilogramme of body weight had been taken. This completed the course. Proportional quantities were used for children and the course lasted for six weeks to two months. The experiment justified our most sanguine expectations. Amongst the 75 patients who received treatment in Nahalin all the open lesions were healed in less than four weeks and the obvious advantages of oral administration for adults and still more so for children were experienced. No ill effects were noted.

Of these 75 patients treated in April 1928, 64 were observed in April 1929. None had relapsed. In October and December 1929, I again visited the village and was unable at this late date to discover any of our patients showing recurrence.

By using a drug in tabloid form, the administration of which could be supervised by a male nurse who lived for the time being in the village it was an easy matter to ensure that every patient had a complete course. The difficulty of securing the attendance, at one and the same time, of all those infected disappeared. Syphilis was cleared from the village in the short space of two months and there have been only two further attendances from Nahalin at our government clinic up to 1st June 1930.

Our/

Our success in Nahalin in such a simple manner was encouraging and the method is at present being extended throughout the entire endemic area. The absence of systemic, nervous and congenital sequelae cannot yet be said to have been established beyond doubt. If my view as to their rarity is confirmed by a well planned and carefully conducted search extending over a considerable period then it is probable that endemic syphilis in Palestine can be successfully dealt with by tabloid treatment at much less cost and more rapidly than by the efficient but laborious and expensive methods employed by Glück and his colleagues in southern Austria at the end of last century.

CHAPTER IX. ENDEMIOLGY.

A discussion of the factors concerned in advancing syphilis from sporadic to endemic status is reserved for Part III of this paper.

Certain additional observations made in Palestine, and falling under the heading of Endemiology remain to be recorded in Part II. They are concerned firstly with the incidence of the disease in the endemic area and secondly with its relation to treatment.

I. INCIDENCE IN THE ENDEMIC AREA.

My reports previously quoted place this at 5% in a population of 40,000. In Nahalin it was as high as 23.5% and in one quarter of that village rose to 38%. A variation in incidence in different villages has previously been recorded. In order to obtain some information as to the extent to which antibodies were present in the blood of the population in general after nearly a hundred years of widespread infection I proceeded in February 1930, to obtain the Wassermann rates amongst apparently healthy persons in Hebron and in the villages of Halhul and Nahalin. In the two former the persons examined were school children of an average age of 10 (Hebron) and 9 (Halhul). In Nahalin they were persons of all ages including young children, but excluding those recently treated/

treated. The results were as follows:-

Wassermann Rates in the General Population.

	<u>Numbers examined.</u>	<u>Numbers positive.</u>	<u>Incidence per cent.</u>
Hebron	50	4	8%
Halhul	30	3	10%
Nahalin	112	16	14.3%

I had expected a higher rate. Judged by these figures immunity would not appear to be of much importance as a factor in causing the reduction in incidence which has taken place since 1925.

II. RELATION OF INCIDENCE TO TREATMENT.

Consideration is directed to the map which appears at the end of this chapter (page 80). It represents Hebron and the surrounding villages and against each certain figures are entered in this manner. Halhul 1927, 49/15. Here 1927 was the population of Halhul in February 1925, and 49 the number of cases attending for treatment in that year. The figure below the line shows the number attending for treatment in February 1930, that is five years later. The populations may for our purpose be regarded as the same in 1925 and 1930.

In the first place it will be observed that in 1925 when the free clinic at Hebron had only recently been/

been started the ratio in the different villages of cases attending to population was not constant.

Thus:-

<u>Place.</u>	<u>Population.</u>	<u>Cases attending.</u>	<u>Incidence per cent of Cases attending to Population.</u>
Hebron	20,000	298	1.5%
Halhul	1927	49	2.5%
Sair	1477	16	1.1%
El Shiukh	792	88	11.1%

Such a variation is due mainly to two causes; (1) the time since the introduction of infection into a particular community and (2) the amount of treatment undertaken. On considering the 1930 figures it will be seen that the reduction in numbers attending for treatment (which now bears a fairly constant ratio to the numbers infected) is not uniform. Where there were many in 1925 the reduction has been considerable, where there were few the decrease has not been proportionately great. For example Shiukh has fallen from 88 to 12. Sair only from 16 to 7, and so on. There are exceptions which are explained by local circumstances but this is the general rule.

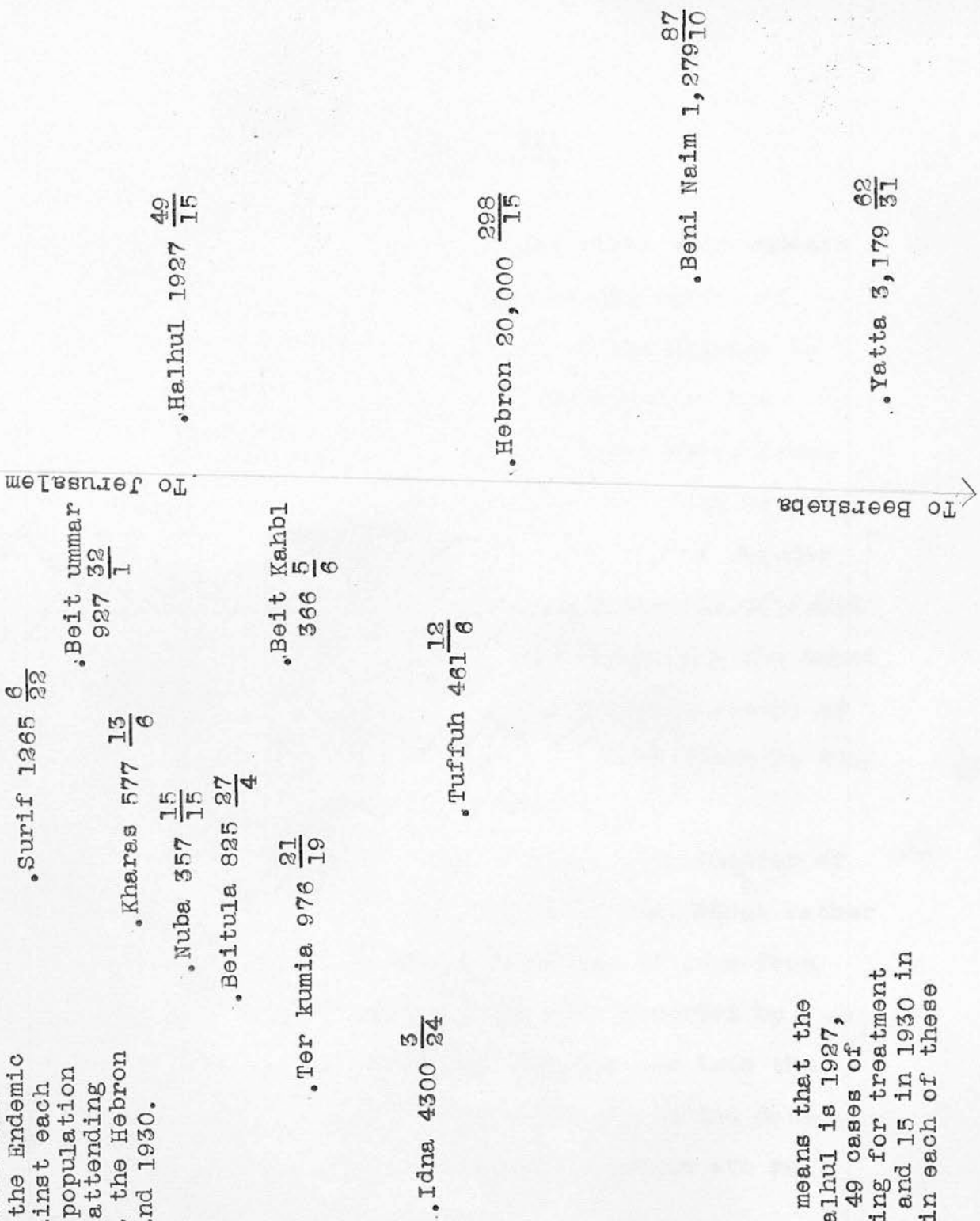
Nor is this surprising. Patients had to walk to Hebron for injections once a week. Not until the numbers of cases became considerable would any sort of effort be made. Then they would all go off together on the appointed day. It was a sort of outing/

outing for them, especially the women and children. Apart from this it is of course the usual experience in such work that it is much easier to reduce the incidence from say 40% to 10% than from 10% to 5%.

The reduction in the average number of sufferers attending the Clinic from 734 in 1925 to 223 in 1930 appears therefore to be due to the treatment undertaken.

There is no evidence to show that it has supervened as a gradual immunisation of the population since 1840. Wilmanns on the other hand considers that where the disease has been widely spread for a hundred years a considerable degree of general immunity exists.

Sketch Map of Hebron and the villages in the Endemic Area. Shown against each village are the population and the numbers attending for treatment at the Hebron Clinic in 1925 and 1930.



LEGEND.

$\frac{49}{15}$ means that the population of Halhul is 1927, that there were 49 cases of syphilis attending for treatment from it in 1925 and 15 in 1930 in the same month in each of these years.

P A R T III.

In this part of my thesis my views upon endemic syphilis are set forth. They are the result of eight years original observation of the disease in Palestine and of a careful consideration of the literature. Some of these views have already found expression in the preceding pages. In Part III they are stated as concisely as possible in each chapter or section of a chapter and the statement is followed by a summary of the evidence upon which they are based. In arranging the evidence I have generally placed my own observations first and have followed these by the records taken from the literature.

Chapter X, which deals with the Introduction of the Disease into Palestine and is of historical rather than scientific interest, necessarily differs from the others. Here the possibilities afforded by circumstance for the entry of the disease into the endemic area from prebiblical times up to the date when Paterson commenced his work in Hebron are reviewed in chronological order.

The authors whose names appear in this part of my paper have already been referred to in the preceding pages. Dates are therefore not placed against their names except where it has appeared desirable to/

to remind the reader that they made their contributions to our knowledge at a date subsequent to the discovery of the Wassermann reaction.

Part III is arranged in the same manner as Parts I and II. It is as follows:-

Chapter X. History. The Introduction of Syphilis into Palestine.

Chapter XI. Description of the Disease.

Chapter XII. Diagnosis.

Chapter XIII. Treatment.

Chapter XIV. Endemiology.

CHAPTER X. HISTORY. THE INTRODUCTION OF SYPHILIS
INTO PALESTINE.

My view is that syphilis was introduced into the endemic area round Hebron about the year 1840. Cases may have existed in other parts of Palestine earlier but the disease did not acquire endemic status in any part of the country prior to that time.

The *treponema pallida* can be carried in a living condition from one person or animal to another only under certain known conditions. It can live but a short time outside the body and then only in moist surroundings. It does not occur under natural conditions in the animal kingdom. If, then, there were countries from which at one time it was entirely absent and/

and where it exists at present, it must have been introduced. There are lands where even now the disease is unknown. I have referred to some of them. Jullien, Mense (1900) and Scheube (1902) place the Mahomedan part of the East Coast of Africa, Seme-gambia, the Mahomedan part of French West Africa, the people known as the Mois in Central Asia, the Dutch East Indies of Luzon and New Guinea, the Australian negroes in the centre of that continent, the dwellers in deepest Brazil, certain island groups in the South Seas and the Australian islands of Rapa Raiata and Taha in this category. To prove conclusively its complete absence from a country is, of course, difficult. But it had not been observed up to 1902 in these places. That is as far as we can go and provides sufficient grounds for the presumption that syphilis free lands existed, let us say, 5000 years ago. Now Bloch considers that the whole of the old world was free from syphilis until 1493. He may not be correct in this but I do not consider that I am assuming too much if, on authority such as his supported by the absence of any reference to the disease in Biblical literature, I start by assuming that Palestine was free from it at any rate up to Old Testament times. Other diseases are not only mentioned but described in the Bible.

In/

In the Old Testament disease is regarded from two aspects. There is on the one hand the Hebrew teaching enjoining the observance of certain hygienic laws, and on the other the description of the plagues and pestilences as punishments for transgression. The injunctions regarding personal and communal hygiene were laid down primarily as a religious ritual. They developed in the course of time into hygienic instructions but probably should not be regarded as having been originally conceived in this light. The very fact that they were of a religious nature would tend to keep them prominently in the mind of the people and it is, therefore, significant that there is no reference in them to a disease which answers to the description of widely spread syphilis.

In Leviticus XV 2-15 we read "When any man hath a running issue out of his flesh "he himself, his clothing, that which he sits on and his saddle are unclean." This might have been gonorrhoea. From its double reference to what was sat upon it would appear to be something in the crutch. It received at any rate sufficient attention to be taught as a religious instruction. If syphilis had existed in anything like its present form it would have had a better claim to inclusion in the teaching.

The biblical references to the plagues and pestilences are too well known to require quotation.

Naturally/

Naturally it was such wide spread epidemics as the blains* (Exodus IX) which captured the attention. The lack of reference to what might have been syphilis is not proof that it did not exist. It is in the main but a skin disease. The Hebrew word Zara'ath in the Old Testament which has unfortunately been translated as leprosy should more correctly be taken to mean skin disease in general. The descriptions sometimes suggest psoriasis and there are passages where pustulation, scab formation, scarring, and the occurrence of white patches are mentioned. The Talmudic references suggest that Zara'ath was not contagious. This points to the fact that syphilis as it occurs in Palestine to-day was unknown in those times. The most ignorant would have realised its contagiousness.

Tuberculous bones and lungs have been discovered in mummies. Crook-backedness (Leviticus XXI 20) is no doubt Pott's disease of the spine. There are Hebrew words which have been translated as consumption and others which refer to the burning ague. It is not now seriously contended that the illness of Job, (Job 11. 7) is a description of syphilis, nor is it maintained that the inheritance "to the third and fourth generation" should be regarded in this light. Such observations were perhaps not strictly accurate, but/

* Manson thought this might have been Yaws.

but they appear, and it is most unlikely that, if syphilis had been widely known in Palestine at that time, there would not have been some record of it in the Old Testament.

This argument is strengthened by the complete absence of any mention of such a disease from the pages of the New Testament. The accounts of the Apostles abound in descriptions of individual cases of sickness. None of them are even suggestive of syphilis. The most casual observer could scarcely have failed to notice it. Every villager in Palestine to-day, illiterate as he is, knows what the foreign pocks means.

Pursuing the search further one finds no reference to it in the accounts of the crusades. Now even though it had existed before the time of the last crusade which reached Palestine, in 1291, and does not for some reason appear in the literature, it would certainly have been carried back to Europe and we would have heard of it in other ways.

Let us also recall the history of the country in the light of the opportunities which were afforded for the introduction of the disease with the armies which made it their battle ground. Palestine has always been a prey to the invader. From the East came the Assyrians, the Babylonians and Persians; from/

from the South the Egyptians, Napoleon and the allied forces. The crusaders approached by way of the sea; from the North descended the Romans, Greeks, Tartars and Turks. The Jews wandered to and fro from Mesopotamia right up to the Middle Ages.

The earliest recorded conquerors were the pharaohs. In Old Testament times, at first the Canaanites, Hittites, Jebusites, Phoenicians and Philistines struggled for mastery. About 2000 B.C. Abraham left Ur of the Chaldees for the promised land. There follows the period of the Judges and Kings of whom Saul in 1050 B.C. was the first. The Jews returned from exile in 536 B.C. Then came Alexander and the Greek era to be succeeded by the Maccabeans in 167 B.C. About this time the Romans appeared in the land and then follows the age of the New Testament. The next stage is marked by the completion of the Moham-
medan conquest under the Khalifs in 636 A.D. 1096 marked the first crusade, 1291 the last which reached Palestine. The Moslem world was now thrown into disruption and the incursions of the Tartars commenced. Following in their wake the Ottoman Turks completed the conquest of Palestine and Egypt in 1517. By this time according to Bloch, syphilis had gained a hold in Europe. 1799 saw Bonaparte in the land and Sydney Smith with his ships at Acre. The historians of/

of Napoleon's campaign make no mention of the existence of syphilis amongst the natives of the country, although they give vivid accounts of the malaria and plague which struck down his men.

In 1832 Ibrahim Pasha, then a Turkish officer, descended upon Palestine from Egypt and subdued the whole of the Levant as far North as Anatolia. The mountaineers of Hebron at first defeated him in a great battle at Solomon's Pools south of Bethlehem. Their triumph was shortlived. He reorganised his forces and in a short campaign crushed them into subjection. Determined to teach these turbulent people a lesson he conscripted them in large numbers and sent them to strengthen his levies in the far flung outposts of the Turkish Empire.

There is a wealth of literature upon these pages of human history, and it is hardly conceivable that syphilis could have existed to any extent in the country without its being recorded. Napoleon's men must, of course, have brought it with them and would have assuredly left it behind. But they did not penetrate to inaccessible Hebron.

The traders on the coast would become early affected as a result of their ready contact with the outside world, but the Hebronites were highlanders not merchants.

I have recounted how Paterson considers that it was brought back to Hebron by returning levies in 1840. There is ample analogy for such a form of introduction.

The disease, whether for the first time or not, was certainly brought to Spain by the sailors of Columbus. It reached Scotland in 1497 and in Cromwell's time with returning mercenaries. Riddell (1770), Hecht (1911) and Proksch (1910) state that the Mal de la Baie de St Paul was brought to Canada by English and German explorers. Ehlers (1919 and 1923) states that it came to the Danish islands with sailors returning home. There and in Norway and Sweden as in other countries with a coast line, it started on the sea board first. Morrow (1882) states that Captain Cook's men brought it to the Sandwich Isles. Skerljevo is the name of a small coastwise town. In Bosnia and Herzegovina wandering Turkish soldiers and Anatolian and Egyptian armies were accused of bringing it with them for the first time. So is it also with the Spirokolon of Greece. Gückel (1927) states that the Jakuts were infected by Pegelajew's army in 1923 and Jullien considers that the incidence in the French colonies in Africa is kept up by the two yearly importation of fresh troops from Europe.

We know then that syphilis was already endemic in/

in Hebron and some of the surrounding villages in 1892 when Paterson first arrived there.

It must therefore have been introduced some time before that.

The preceding consideration of the historical reference to disease in the Holy Land discredits the likelihood of its existence in endemic form before the nineteenth century. This view obtains support from the records of the spread of the disease in neighbouring countries quoted in Chapter I (Jukio) L. Glück) (Von Düring) (Rigler) (Oppenheim).

Historical events make it almost certain that it was brought to Hebron at any rate by 1840. Paterson holds the view that it was introduced in that year. The author's researches afford confirmation of this opinion.

CHAPTER XI. DESCRIPTION OF THE DISEASE.

The descriptions of the disease is best considered under two headings. Firstly there is the disease proper and secondly the sequelae.

With regard to the disease proper.

A. Primary manifestations were rarely seen.

The evidence from Palestine is as follows:-

Hebron: Group A. 0.7%. Group B. 0.1% (Chap. VI)

The supporting evidence from the literature is as follows:-

L. Glück: 3,887 cases, no primary manifestations
10,173 cases, 0.3% of primary lesions.
(Chap. II)

Von Düring: 4%, diagnosed by scars. (Chap. II)

Carle & Boucart: Levy & Bing and Sezary and

Jeanselme: Agree as to their rarity. (Chap. II)

B. Roseolar Rashes were equally rare.

Hebron: None observed. (Chap. VI)

Levy & Bing & Sezary: Carle & Boucart agree as to their rarity. (Chap. II)

C. Lesions of the mucous membrane were the most common.

Hebron: Mouth and Nose:- Group A. 54.4%(Chap VI)

Group B. 49.5%(Chap VI)

L. Glück: 55%. (Chap. II.)

Neumann; Von Düring; Zeichmeister: Agree. (Chap II)

D./

D. Skin manifestations were the next commonest.

Hebron: Skin and Subcutaneous Tissues.

Group A. 28.2% (Chap. VI)

Group B. 31.1% (Chap. VI)

Neumann: 48.67% (Chap. II)

Dina Sandberg: 28% (Chap. II)

To summarise. The lesions commonly seen in venereal syphilis at the present time were rare and those more rarely observed were common. The author's view is that the ignorant, indifferent patient does not present himself for treatment when he has a primary manifestation or a roseolar rash. He comes only when he has troublesome patches in his mouth or inconvenient lesions on his skin. This view is based upon his knowledge of the Palestinian native. His experience does not support the statement that such lesions do not occur. With enlightenment they will be observed in Palestine.

With regard to the Sequelae.

The author's view is that some of the most important sequelae of venereal syphilis are rare in the endemic form. The sequelae in question are neuro syphilis, particularly in the form of tabes and general paralysis, abortions and congenital disease. He considers that his figures go far to refute the theory that malaria is/

is responsible for the rarity of the first. His view regarding the rarity of these sequelae although strongly held is not so positively asserted as some of the other opinions expressed in this part of the paper. For it must be borne in mind that the manifestations under consideration require to be carefully searched for over a considerable period, before their absence can be incontrovertibly declared.

A. Neuro syphilis.

Hebron: Group A. 7 in 2104 cases, of which 1 tabes and 1 general paralysis. (Chap. VI)

Group. B. None in 778 cases. (Chap. VI)

Von Düring: (Pre Wassermann) Meningitis and Myelitis. 37 in 2000 cases. Tabes twice (Chap II)

L. Glück: (Pre Wassermann) "A most exceptional occurrence". (Chap. II)

Rosentul: (Post Wassermann 1924) Confirms their rarity. (Chap. II)

Morocco: (Post Wassermann 1923) 60% to 80% of a population of 5 millions affected with syphilis.

All authorities agree as to extreme rarity of tabes and general paralysis. (Chap. II)

Fraser: (Post Wassermann 1922) South Africa. Confirms. (Chap. II)

B. Abortions: /

B. Abortions:

Hebron: Series of 50 married women attending for treatment and specially investigated. Only 7 abortions. (Chap. VI)

Group A. Average number of abortions per aborting female patient was 1.8. (Chap. VI)

L. Glück. Abortion only in 2.4% of infected mothers. (Chap. II)

C. Congenital disease:

Hebron: Group A. 8 in 2104 cases. (Chap. VI)

Group B. (W.R. + series) 0 in 778 cases. (Chap. VI)

The literature: In general recorded as rare by recent as well as older observers (Chap. II)

D. The malaria theory:

Hebron: The Hebron endemic area has been partially free from malaria since 1924. Neuro syphilis is rare.

"Nägelsbach (Post Wassermann 1926-27). Working in malaria free Abyssinia confirms the rarity of neurosyphilis. (Chap. II)

Haver: (Post Wassermann) Noticed no difference in malarious and non_malarious regions. (Chap. II)

CHAPTER XII. DIAGNOSIS.

The author accepts the established view that syphilis and yaws are two distinct entities. He holds that the disease he has observed in Palestine is syphilis and gives the following reasons. The lesions were typical, mucous patches were observed with a frequency unknown in yaws, the incidence was invariably higher in women than in men, and yaws has not yet been recorded outside the tropical belt. Palestine is definitely subtropical.

A. Syphilis and yaws distinct diseases:

Castellani and Chalmers: Byam and Archibald:
Manson_Bahr. (Chap. III)

B. Typical lesions: already fully described. (Chap. VI)

C. Frequency of mucous patches in syphilis.

Hebron: Group A. 54.4%. (Chap. VI)

Group B. 49.5%. (Chap. VI)

Their infrequency in yaws: Manson_Bahr: Byam
and Archibald: personal communications from
tropical workers (1929 and 1930).

D. Incidence in syphilis higher in women than men.

	Females.	Males.
Hebron: Group A.	60%	40% (Chap. VI)
Group B.	62%	38% (Chap. VI)
Nahalim:	69%	31% (Chap. VI)

In yaws higher in males.

Manson_Bahr: Three males to every female.

Shircore (East Africa): Higher incidence in
males. (Chap. III)

E. Yaws not yet recorded outside the tropical belt.

Manson_Bahr and all British authorities.

Palestine, (Lat. 35°N) is both geograph-
ically and meteorologically well outside
the tropical belt.

CHAPTER XIII. TREATMENT.

I have formed the opinion that treatment by means of spirocid in tabloids marks a definite advance in the control of endemic syphilis amongst native races. This view is based on my personal experience of the method first at Nahalin and during 1930 in the Hebron area, to which it has been recently extended. In Chapter VIII ^(p 73) I have compared it with the system of treatment by intravenous medication which we employed in Palestine from 1924 to 1929. Recently a study of the literature has enabled me to compare it also with measures both past and present which have been adopted in other countries.

The campaigns launched in former years were generally ineffective. The measures undertaken in Norway and Sweden (Chapter I) are a good example. Glück's campaign in Dalmatia and Croatia secured, on the other hand, well merited success. But it was extremely costly. It requires a rich and enlightened government to carry such ambitious schemes to a successful conclusion.

The object of my treatment was particularly single. I aimed at no more than a rapid reduction in the number of infectious persons at large in the population. I have refused so far to deviate from this single aim by consideration of the possible ill effects/

effects of insufficient treatment. I have seen no such ill effects in eight years' work. I regard the sequelae as rare in any case. (Chapter XI)

A comparison of results by the intravenous and tabloid method follows.

Intravenous.

Hebron: 113 cases observed 2 years after completion of treatment - 7.1% still infectious. (Chap. VIII)

515 cases similarly observed - 6.4% still infectious. (Chap. VIII)

Tabloid.

Nahalim: 75 treated. None infectious 20 months later. (Chap. VIII)

It has been suggested that immunity develops in the skin (McArthur and Mehliiss p.923) Besredka's recent work supports such a view and the experiments of Pearce and Brown (1925) on rabbit syphilis bear some relation to it. If this suggestion is correct it is possible that when the disease advances to the skin stage there is sufficient immunity to protect the nervous system and prevent sequelae. In Palestine as I have previously pointed out patients are practically never treated until the secondary stage is quite definitely established.

CHAPTER XIV. ENDEMIOLGY.

I regard syphilis as endemic in the region I have dealt with. It is difficult to state exactly where sporadic syphilis ends and endemicity begins. But certainly an incidence of 5% of the population exhibiting lesions easily appreciable to the naked eye is far above what is observed in civilised countries at the present time. My figures for Palestine were as follows:-

Palestine.

A. Obvious lesions.

Personal investigation:

5% of 40,000 persons in Hebron Area. (Chap.VI)

23.5% in Nahalin village. Population 380.

(Chap. VI)

38% in one Quarter of that village. (Chap.VI)

B. Blood Wassermann positive.

Personal investigation of apparently healthy persons.

8% Hebron school children. (Chap. IX)

10% Halhul school children. (Chap. IX)

14.3% Nahalin general population. (Chap. IX)

Personal investigation of persons who might be regarded by reason of history or health as suspect but without obvious lesions.

20%/

20% of Shiukh school children. (Chap. VI)

35% of Hebron school children. (Chap. VI)

It is of interest to compare these statistics with some taken from the literature previously quoted.

The Literature.

A. Persons infected.

Okun: 3.8%, 6.6%, 7% in Russia. (Chap. I)

Parfenenko: 5.4% of families in all Russia. (Chap. I)

Schwarzmann: 9.8% Moslems in Caucasus. (Chap. I)

Ssyskin: 14.5% Kalmucks. (Chap. I)

Morocco,
various
authors 60-80% of 5 million persons. (Chap. II)

B. Blood Wassermann positive.

Neil: 25-30% healthy negroes in U.S.A. (Chap. I)

Thorn: 16.65% negroes in New York. (Chap. I)

33.85% negresses in New York. (Chap. I)

It is my view that syphilis cannot become endemic unless there is a considerable measure of innocent spread. That most of it is spread in this way in Palestine is certain.

I base this view on the following evidence:-

I. High incidence in childhood.

II. High incidence amongst the middle aged and elderly.

III./

(4) Hutchinson's teeth not recorded. (Chap. VI)

(5) Interstitial Keratitis not in evidence.

(Chap. VI)

(6) Such a distribution of secondary lesions as that observed in Family Tree No. II (p.66) could not be produced by congenital lesions in the younger members. The manifestations are all of the same stage irrespective of the age of the members of the family (Chap. VI).

My opinion regarding the rarity of congenital disease receives support from Paterson, L. Glück, Jannin, Hermans and Nikolski. (Chaps. IV -V).

II. High incidence amongst the middle aged and elderly.

My figures.

Proportion of cases aged 45 and over.

Nahalin 16.3% (Chap. VI)

Group A. 8.5% (Chap. VI)

Group B. 11.2% (Chap. VI)

Family Tree No. II. Nahalin.

Here a grandmother of 60, her children aged 16, 20, 22 and 25 and four grandchildren between 1 and 3 were all infected at one time. Such a state of affairs would be impossible in a venereal infection. (Chap. VI)

The literature.

Paterson: "All ages almost equally infected." (Chap. V.)

III. Higher incidence in women than men.

My figures.

	Females.	Males.	
Group A.	60%	40%	(Chap. VI)
Group B.	62%	38%	(Chap. VI)
Nahalin	69%	31%	(Chap. VI)

The literature.

Tapelsen, Federowskij and other Russian authors record a higher sex incidence in women. (Chap. IV)

IV. Low comparative incidence of gonorrhœa.

My figures.

Jerusalem: 13.9% of 569 V.D. cases treated in a general hospital. (Chap. VI)
 Beersheeba: 1 to every 73 cases of syphilis. (Chap. VI)

The literature.

Paterson: "Urethral stricture almost unknown". (Chap. V)

In V.D. clinics in the United Kingdom to-day gonorrhœa generally accounts for over 50% of the cases.

V. The Moslem Code of Behaviour.

I have referred to this in a previous page. It is quite inconceivable that the unmarried would attend our syphilis clinics as they do if opinion connected the disease in any way with sexual intercourse. (Chap. V)

Paterson confirms this view. (Chap. V)

VI. High incidence of extragenital chancres.

My figures.

Hebron: 12 out of 15 chancres in extragenital situations. (Chap. VI)

An extragenital mode of spread being admitted, what is the most likely channel of infection?

My view is that spread from mouth to mouth either directly or indirectly must frequently occur. Mouth lesions are the commonest, they are also the most infectious. This opinion receives support from the Hebron statistics and the literature.

My figures.

Hebron: Of 12 extragenital chancres, 7 were on the lips or mouth. (Chap. VI)

The literature.

Paterson: Confirms this view. (Chap. V)

Flamand: Mouth borne epidemic. (Chap. IV)

Brosius: Glass blowers epidemic. (Chap. IV)

Endemicity having been shown to exist and non-venereal spread proved it is not difficult to define the conditions which produce the former. The main factors may be thus summarised.

Ignorance. As a result there is lack of appreciation of the significance of the primary and early secondary manifestations.

Indifference. The sufferer does not seek treatment until he is inconvenienced.

Lack of hygiene. Non venereal spread is facilitated at every turn.

Overcrowding. An important aid to the dissemination of infection.

Lack of treatment. This includes inadequate and unsuccessful treatment which breeds a lack of confidence on the part of the patient. Patients are thus discouraged from seeking relief and the vicious circle is completed.

In the recorded endemics most of those conditions maintained. The Scottish sibbens, and the endemic in Norway and Sweden in the past and the state of affairs in Russia until recently and in Morocco to-day are examples.

Subsidiary causes are the hospitable customs of the people and their habit of coffee drinking. Even these have their counterpart in the literature.

S U M M A R Y.

PART I. A brief account of the history of syphilis is given. Classical endemics in Scotland, Norway and Sweden, Bosnia and Herzegovina, Russia and other countries are described. The scarcity of primary manifestations and apparent rarity of sequelae on the one hand and the preponderance of mucous membrane and skin lesions on the other provide a contrast to what is observed in the modern venereal diseases' clinic. These facts suggest a difference either in the habits of the spirochaete or in its surroundings. Syphilis appears to have become common in the Turkish Empire about the year 1840.

PART II. A detailed account of the author's original work in Palestine is given. The disease, as observed there by him, closely resembles the endemics described in Part I. There is the same scarcity of primary lesions and apparent rarity of sequelae. The view is gradually developed that the difference between endemic and sporadic syphilis is mainly/

mainly that between an innocent and a venereal disease. The author does not however maintain that the low incidence of sequelae is so explained.

PART III. The author holds Paterson's view that syphilis was introduced into the endemic area about the year 1840. The statements of that worker, recorded in this paper for the first time, prove the incorrectness of the opinion generally expressed until to-day. According to this the British Army was responsible for the introduction of the disease during the Great War. A stain has thus been removed from the banner of the Last Crusade.

The reasons for regarding the disease as syphilis and not yaws are given.

The view that treatment by means of tabloids of Spirocid forms an advance in the control of endemic syphilis amongst native races is maintained.

Finally the evidence in favour of the author's view that endemic syphilis is non-venereally spread is displayed.

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