

## **Memoir on leprosy in Syria / by John Wortabet.**

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MEMOIR

1. Oct. 1873  
ON

# LEPROSY IN SYRIA.

BY  
JOHN WORTABET, M.D.,  
BEYROUT.

*(Reprinted from the 'British and Foreign Medico-Chirurgical Review,'*



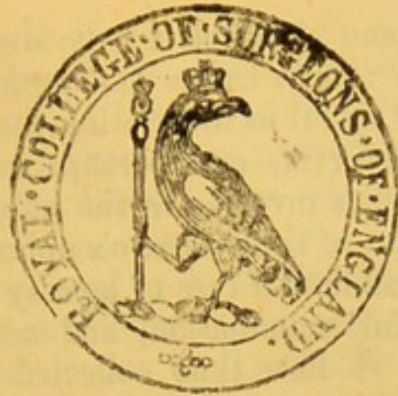
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**Memoir on Leprosy in Syria.** By JOHN WORTABET, M.D.,  
Beyrout.<sup>1</sup>

*Introduction.*

LEPROSY has recently attracted a considerable degree of attention among medical men. An awful scourge which afflicts the human body, highly ancient in its history, unknown in the largest part of Europe at the present time, and thus removed from the field of modern investigation and discovery, it has become a subject of great interest to scientific labourers. To the private contributions of various writers, chiefly the valuable work of Danielssen and Boeck of Norway, the British Government has been the means of adding a new and important book. At the request of Her Majesty's Secretary of State for the Colonies, the Royal College of Physicians issued a series of interrogatories which was sent to medical men in different parts of the world. The result was the accumulation of a vast amount of information with which was incorporated a number of highly valuable documents, such as the conclusions drawn by the committee of the College from an examination of the entire evidence submitted to them on the subject-matter of each interrogatory, the account of post-mortem examinations made by Dr. Carter of Bombay, and the notes of Professor Erasmus Wilson on nineteen cases of leprosy which had fallen under his observation. The Report of the College was printed at the expense of the British government, and will long be a rich treasure for reference on this disease.

<sup>1</sup> This instructive paper was sent by the author to me a few months ago, with the expressed desire to have it made known to the British medical public. Containing the results of a lengthened personal experience of the disease in different Asiatic countries, it will be found a valuable contribution to its general history in that region of the world. Dr. Wortabet, in reply to the interrogatories of the College of Physicians in 1863, communicated some interesting remarks on leprosy in Aleppo; these will be found at page 57 of the report of the College. The reader will now be enabled to compare the conclusions which a highly intelligent observer in the East has formed respecting various points about this obscure and momentous malady with those at which I have arrived from my recent opportunities of studying it in the West, and which are recorded in my report recently issued by the Colonial Office and presented to Parliament.—GAVIN MILROY, M.D.

Having paid some attention to the study of leprosy in Syria, I venture to lay the results before the profession with the hope that they may be found useful in illustrating the conclusions arrived at by more competent observers, and, perhaps, in adding new information on some of the topics involved in the subject. My own study and personal observation of the disease occupies a good number of years, and I have rarely allowed a case of leprosy which came before me to pass without careful examination, and noting down its symptoms and peculiarities. I have thus collected a good number of cases which fell under my care either in private or dispensary practice. The rest of my cases are derived from the leper-houses of Damascus which I visited in the spring of 1868, and which were visited again for me by a medical friend in the spring of 1872.

The order which I have adopted in the following pages is—  
 1. The symptoms and pathology of leprosy, with a few typical cases.  
 2. An account of the leper-houses of Damascus, with tabulated cases of leprosy.  
 3. Notes on the following topics:—Sex, age, comparative frequency of the tuberculated and non-tuberculated forms, duration of the disease to date of observation, topography, causes, hereditary taint, contagion, segregation, specific character of leprosy, Jewish leprosy, and treatment.

Photographs were taken from cases in the leper-houses of Damascus.

#### SECTION I.—*Symptoms and Pathology of Leprosy with Typical Cases.*

*General description.*—The most prominent features of leprosy which form its peculiar characteristics are these:—*Anæsthesia* of the extremities, often involving the face and rarely the trunk; the *skin* is generally thickened, and its colour is changed into a red, dusky, glossy hue; the *hair* of the face falls, sometimes completely; *tubercles* appear on the face and extremities, which break from time to time, or large *bullæ* are formed on the extremities, rarely extending higher than the elbows and knees, and often converted into deep corroding fetid ulcers; the *joints of the fingers and toes* are almost invariably involved during the course of the disease, some of the phalanges are destroyed, and the hands and feet, chiefly the former, become crippled; the *voice* becomes husky or is wholly lost; and the respiration becomes difficult. While these changes are going on, the *general health* is more or less impaired; and after a few years, the period being variable, the patient sinks from exhaustion, or from some intercurrent disease.

*Nomenclature.*—The Greeks called this disease *elephantiasis*, evidently from the hypertrophied condition of the legs which is often a concomitant of leprosy; and it still passes under this name in

the classification of the older nosologists, *E. Græcorum*.<sup>1</sup> They must, therefore, have embraced the disease known now as "Barbadoes" or "Cochin" leg and leprosy under one common name. The Arabs made a careful distinction between them, and called the former *Da'el Fil* (*morbus elephantis*), from whence we have now its classical name *E. Araborum*. Nor did they adopt the equally objectionable name of "leprosy," a word derived from the *lepra* of the Greeks and indicating an innocuous cutaneous disease of a scaly character, with which the disease under consideration has hardly anything in common. They substituted for it an Arabic word, *el Judham*, derived from a root which indicates the mutilating effect of the disease on the limbs. In the ordinary parlance of the people, it is often called *ed Da' el Kebir*, the Great Disease.

*Symptoms and progress.*—One of the earliest symptoms, and of which the patient takes special notice, is *altered sensation*, commonly in one or both of the extremities, sometimes on the face, and more rarely on the trunk. When the disease is situated in the extremities, the most distal parts are generally first affected, the circulation becoming feeble, the colour dusky, and general sensation diminished. The patient describes it as one of numbness, sometimes he calls it stinging or pricking pain (formication); probably in most cases, there is both objective anæsthesia and subjective hyperæsthesia at the same time. The skin of the affected parts is at first puffy, and ultimately permanently thickened and somewhat scaly; and I have sometimes observed hard, corded, knotty lines running up the fore-arms, as if some of the superficial lymphatic vessels were enlarged. As the disease advances, the fingers and toes lose their usual sensibility, and the patient finds that his prehensile powers are considerably impaired, and that in walking he may cast off a loose slipper without his being aware of it. In trying the extremities with a pin, I have sometimes found that the extensor surfaces were somewhat more anæsthetic than the flexor. About the same time, or very soon after, the face becomes similarly affected, the change of the complexion is more obvious, and the subsequent alterations produce that disfigured appearance of the features which is so peculiar to this disease. The colour becomes red, dusky and shining, and the skin thickened and knotted; the hair of the head and eyebrows, and the cilia drop gradually until they often disappear entirely; the eyes are red and watery with venules running across the conjunctivæ. When it attacks the trunk, the skin becomes affected in patches, though the hair is not so apt to drop off. I believe the face and trunk are rarely affected, unless the extremities are previously at-

<sup>1</sup> The language of Aretæus, however, when he says of it that "it is most powerful in dragging men to death, disgusting to the sight, and in all respects terrible, like the beast of the same name," would seem to indicate other points besides the hypertrophied condition of the legs.

tacked. These changes are attended by fetid perspiration, chiefly of the hands and feet.

It is difficult to believe that these earlier symptoms of the disease<sup>1</sup> can usher it in without a considerable degree of constitutional disturbance. In his great concern as to the fearful consequences of his malady, the patient rarely speaks of it; but there is always more or less of general malaise, febrile flushes, disturbed dreams, a peculiar heaviness affecting the whole body, and depression of spirits. This latter phenomenon becomes ultimately a settled state of the mind; all active cheerfulness is lost, and the leper assumes a sad subdued mien through life. This state of mind is produced probably by moral as well as physical causes. The victim of an incurable and loathsome disease, shunned by his nearest relations, disabled from work and reduced to dependence if not absolute privation, his life becomes a burden heavy to be borne. I have known a case where this state of feeling became intolerable, and the poor man (who was in good circumstances) was so affected by the bearing of his wife and children that he put an untimely end to his life.

Soon after the invasion of the disease, an *eruption* appears on the skin, limited to the forearms and hands, the legs and feet, and the face; very rarely, if ever, appearing elsewhere. Of this eruption we have two distinct forms, viz. *tubercles* and *bullæ*; the former appearing on the face, forearms, legs and back of hands and feet; the latter on the extremities, chiefly their palmar and plantar surfaces. The *tubercles* are generally numerous, and rarely smaller than a pea. They rise from the skin, and like it are red and dusky in colour, and shining. During the course of the disease they become inflamed, crack, and discharge a thin sanious fluid; after which they heal and contract, others taking their place in different spots. The *bullæ* appear in the form of large vesicles or vesicular blebs, are generally ovoid in form, and measure from three quarters of an inch to one or two inches in their diameter. They resemble so closely the blister of a scald that the patient often describes them as burns from too near an exposure to the fire, while the anæsthesia of the parts failed to give him the needful warning. They soon break and discharge at first a thin *lymph* fluid, and leave an ulcer which penetrates deeply into the integument, and often exposes the tendons of the muscles. The vesicle is thus converted into a deep, red ulcer which discharges fetid pus. When the ulcers are many, or the patient is not cleanly in his habits, the odour becomes intolerable. They generally heal, leaving often a well marked white cicatrix. The tubercles and

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<sup>1</sup> The earliest symptoms of the disease are stated by El Kamory, an ancient Arabian author, as follows:—"Congested appearance of the eyes, duskiness of the skin, huskiness of the voice, fetid perspiration, puffiness of the face, with ulceration and increased redness, and gradual loss of the hair of the eyebrows."

bullæ characterise, in a great measure, the two forms of leprosy called the tuberculated and the non-tuberculated, though these frequently appear in the same subject, but not to the same extent.

The *nose* begins early in the course of the disease to discharge a fetid purulent fluid, arising from sores formed within the nasal passages. Breathing through this organ becomes difficult; the triangular cartilage is gradually eaten away; and the healing process begins only after the nose has been broken down and disfigured. About the same time, the glottis becomes affected with the same morbid infiltration; the voice assuming at first a hoarse unnatural sound, and subsequently reduced to a whisper. I have seen, however, well advanced cases where neither the nose nor the voice was completely destroyed. There is always more or less dyspnœa, but auscultation reveals nothing, when the air passages are not attacked, beyond feeble respiration.

The smaller *joints* of the hands and feet are almost invariably involved in due time. Ulceration sets in, and the distal and the middle phalanges, generally, are loosened and come off. After the loss of the bones the ulceration heals, leaving the fingers and toes shortened, clubbed and sometimes bent by the contraction of the flexor tendons. Occasionally the destructive process stops at this stage, and the whole disease appears to be arrested. Under these circumstances, the disease is called by the natives "Kurtum." The larger joints are but very rarely attacked. The nails often crack, and a fetid discharge takes place beneath them. The extremities (forearms, hands, legs and feet) are generally more or less thickened, specially the latter. The hypertrophy is uniform, and the skin becomes dark, covered by scales of *peeling* cuticle. The lower extremity assumes then the appearance of the "Barbadoes" or "Cochin" leg (elephantiasis Araborum).

The *reproductive functions* are always more or less affected. In males the sexual passion is at first weakened, and, as the disease advances, is often entirely lost. In females the catamenia are scanty, irregular or cease altogether. Fecundation is quite possible in the earlier stages of leprosy, whether we regard the agency of the male or female. When the disease begins before puberty, it is extremely doubtful whether the reproductive functions are ever properly developed; and it is worthy of remark in this place that these conditions are highly favorable to the limitation of the disease among leprous families.

The *general appearance* of a leper is so peculiar that, when the disease has fairly declared itself, or even earlier, a single glance at the patient is sufficient to identify it. The changes in the faces are quite characteristic and not easily to be mistaken. To these may be added, later on in the history of the disease, the swollen, ulcerous, maimed or crippled state of the hands and feet, and



the shortened, clubbed, contracted or bent condition of the fingers.<sup>1</sup>

*Duration and termination.*—The symptoms mentioned above continue an indefinite length of time, and it is impossible to say how long the patient may live after the first invasion of the disease. It may be stated however, in general, that leprosy is an essentially chronic disease, and that its progress and the duration of life under it commonly depend on the previous state of the constitution of the patient and the régime which he follows. When the constitution is strong, and the habits of life in relation to food, cleanliness of body, and purity of air are favorable, the leper usually lives long; whereas in opposite circumstances the chances of lengthened existence are of course much diminished. The shortest duration which has fallen under my observation was the case of a woman who was carried off by anasarca about six months after the commencement of the disease; the longest is that of a man who is still alive, now fifteen years from the date of the invasion. Danielssen and Boeck state the average duration of the tuberculated form to be between nine and ten years; and of the non-tuberculated from eighteen to twenty years. These numbers were taken from the cases in the Bergen Hospital, and appear to be too high for Syria where lepers do not enjoy the advantages of an hospital life.

The intercurrent diseases, which are generally the immediate causes of death, are anasarca, inflammation of the air-passages, diarrhœa, dysentery, low fever and exhaustion.

*Morbid anatomy.*—I have not yet succeeded in obtaining a leprous subject for dissection. The morbid changes which have been observed by Dr. Danielssen and Boeck of Norway and Dr. Carter of Bombay, in post-mortem examinations, are stated in the 'Report on Leprosy' by the Royal College of Physicians.<sup>2</sup> The main points are the following:—1. The nerves were found to be enlarged, their

<sup>1</sup> Avicenna gives the symptoms of leprosy in the following words:—"El Judham commences with a change of the complexion to a dusky red; the eyes are also red; the breathing is difficult; the voice hoarse and nasal; sneezing and obstruction or stopping up of the nasal passages; perspiration on the chest and about the face, its odour and that of the whole body and the breath is fetid; sleep is disturbed by disagreeable dreams and a sense of heavy weight on the body; the hair of the face drops; the nails split; the features are altered; the face becomes puffed, and its colour dark; the blood coagulates and stagnates in the joints; the breathing becomes more laboured until it amounts to dyspnœa; the voice is reduced to a whisper; the lips are thickened; glandular bodies appear on the skin, which gives the patient the appearance of an animal called by the Greeks a satyr; ulceration of the body takes place if the disease be of the progressive form; the cartilage of the nose is eaten off, and the nose and joints drop, and pus is discharged; finally, the voice and hair are completely lost, and the complexion becomes very dark. The pulse of a leper is weak" (Canon B. iv. 3). It is remarkable that neither Avicenna nor any Arabian author mentions the anæsthesia which forms so prominent a feature of leprosy.

<sup>2</sup> 'Report,' pp. lxxii and lxxiii.

terminal branches, however, atrophied and pearly in aspect (Carter). 2. The nervous centres in the cranial and vertebral cavities were diseased only in the anæsthetic (non-tuberculated) form (Danielssen and Boeck). 3. The skin (cutis vera) of the affected parts in the tuberculated form was thickened, and on squeezing it between the fingers, a yellowish-white viscid or gruelly fluid exuded; in the non-tuberculated form, it was thin, and the muscles were atrophied. 4. The mucous membrane of the nares, fauces and larynx was swollen, occupied with tubercles, soft and often ulcerated. The rima glottidis was sometimes nearly closed up. 5. The viscera were more or less affected; the mesenteric glands were generally enlarged; isolated rounded ulcers were occasionally found on the inner coat of the intestines; the liver was sometimes the seat of tuberculated deposit, and the kidneys were almost always found in the advanced stage of the disease more or less seriously affected, the morbid changes being usually those characteristic of albuminous nephritis. The condition of the blood of leprosy patients was found by Danielssen and Boeck to vary considerably from the healthy standard, the most marked changes consisting apparently in the excessive quantity it contained of albumen and fibrin; the former being the chief constituent of the morbid exudation in the skin, tubercles, and sheaths of nerves in leprosy.

The morbid lesions mentioned above appear to establish clearly the view which has been held in relation to the nature of this disease both in ancient and modern times, viz. that it is a specific poison which, once developed in the system, diffuses itself and involves in a great measure the whole body. This is the position which leprosy has taken in the classification of the Royal College of Physicians; and with the definition of the disease given by recent authors it may be interesting to compare that of Avicenna, which is as follows:—"El Judham is a malignant affection produced by the diffusion of black bile throughout the whole body, and vitiating the structural condition, form and appearance of the organs; often attacking their continuity, so that they are corroded by ulceration and fall off. It is very like a general cancer of the whole body, and commonly terminates in ulceration."

*Forms of leprosy.*—Two forms of this disease have been of late years recognised, and called respectively the *tuberculous* and the *anæsthetic*. The former is characterised by the presence of tubercles on the face and extremities; the latter by their absence, and the presence of bullæ; these, though almost confined to it, do appear sometimes in the tuberculous form; and I have occasionally observed a few scattered tubercles in the anæsthetic variety. Anæsthesia is common equally to both forms, and the nomenclature is, therefore, evidently wrong and misleading. To make a clearer and more accurate distinction between them, the College of Physicians proposes the terms

*tuberculated* and *non-tuberculated*; and these are, so far, preferable to the old ones, and appear to answer the purpose so well that I have adopted them. The College calls attention also to the difference between the words "tuberculated" and "tuberculous" in order to avoid any confusion between leprosy and tuberculosis. It may be useful to add a third form to the two proposed by the College of Physicians, which may be called the *mixed*. It would indicate a condition of the disease which partakes equally in the characteristics of both forms, a condition which I have often observed, and which has sometimes puzzled me in classifying my cases.

Avicenna's division of the disease into two forms, the *stationary* and the *progressive*, appears to be a correct one, and might be usefully adopted. For there are certainly cases in which the disease appears to be arrested for a long time; and though it may not have entirely left the system and may break out anew, yet this condition in so grave a malady as leprosy deserves to be carefully noted, and may form the basis of a nominal, if not actual, variety.

*Leontiasis*, a word which occurs frequently in the works of old authors, is not so much a distinct form of leprosy as a very peculiar appearance of the face, which is occasionally met with in some cases of the tuberculated disease, giving a striking *leonine* expression to the countenance. In such cases, the skin of the face is thick, dark, tuberculated and nearly hairless; the eyebrows project forwards, are knotty and overhang the orbit; the forehead is drawn into deep vertical lines; the mouth is deep set and its corners drawn downwards; the eyes are red, hairless and vacant, and the general expression is stolid and unchangeable.

I have endeavoured, hitherto, to give a full and accurate picture of the disease as I have observed and studied it in this country. To make the picture still more faithful, I shall now give the notes of some of the cases which I have met with. I have chosen them from a large number and the selection was made in reference to their being closely typical of the different forms of leprosy.

CASE 1.—H. M—, male, aged 40, native of Mount Lebanon, tuberculated form. The birthplace of this man is in one of the villages on the western slope of the Lebanon. He has two maternal aunts, and the son of one of them, lepers.

The disease began six years before, and he first noticed it as a feeling of numbness in the left leg. Four years afterwards, the right leg was similarly affected, and both legs became swollen with squamous patches. About that time, he noticed a tubercle on the right leg. Other tubercles have appeared since, and now they are scattered over the face, forearms and legs. They itch, but are not painful, and their size varies from a small pea to a filbert. Sensation is considerably impaired. The face is dusky red and slightly tuber-

culated and anæsthetic; the ears are thickened, especially the lobules, tragus and antitragus, but have sensation; the hair of the eyebrows is beginning to fall, but the beard continues to be unaffected; the eyes are red with venules running across the conjunctivæ; the lower lip is slightly tuberculated; the nose discharges occasionally; the voice is nasal; on the hard and soft palate are elevated patches where the mucous membrane is soft and ulcerated; the legs are anæsthetic, more on the anterior than posterior surface; the forearms are similarly affected, but the hands are hyperæsthetic, the slightest tap being painful; there are a few small tubercles on the chest and thighs.<sup>1</sup>

The patient is a well-formed man, and is temperate and cleanly in his habits. His general health is good, but feels occasionally weak; he can carry a weight more easily than he can walk a long distance.

He thinks that the disease advances somewhat every winter, and stops during the rest of the year.<sup>2</sup>

About six weeks ago, he tried a strong decoction of common centaury and feels much better after having used it. He says that the formication has almost ceased, and that the colour of his face is clearer.

I advised him to continue the centaury from time to time, and use cold bathing every morning. I saw him about nine months ago and have not seen him since.

CASE 2.—H. G.—, female, aged 28, native of Mount Hermon, tuberculated form. Her sister was a leper, and died some years ago.

The disease commenced about three years since (when she was nursing a child) with two tubercles which appeared on the back. One of the tubercles suppurated about a year afterwards, and, at that time, a good many others came out on the extremities. Less than a year ago they appeared on the face, and since that time many of them have suppurated and healed. Her voice became changed six months ago, and the hair of her eyebrows began to fall.

A large number of tubercles exist at present on the face, hands, forearms, legs and feet; they vary in size from a small pea to a filbert; none are ulcerated. Their colour is dusky and they itch. Dorsum of left foot is thickened with deposit. Voice hoarse and nasal. Sensation appears to be unimpaired.<sup>3</sup> General health good.

I saw this patient in 1868. She died in 1871, as I was told, of fever. The child, whom she was nursing when the disease first

<sup>1</sup> Tubercles and bullæ on the trunk and upper division of the extremities are rarely met with. They occur, however, occasionally to a limited extent.

<sup>2</sup> Lepers living in hot plains complain most in summer. This patient lives on the Lebanon where the cold of winter is comparatively severe. It would thus appear that extreme degrees of temperature are alike unfavorable to leprosy.

<sup>3</sup> This is not a solitary instance of unimpaired sensation. Such cases are occasionally met with, and they are perhaps limited to the tuberculated form.

commenced, is still alive, and remains hitherto quite free from any symptoms of leprosy. During the earlier course of the disease, she had another child who died in infancy.

CASE 3.—M. G—, male, aged 22, native of Mount Hermon, non-tuberculated form. His great maternal aunt was a leper.

The disease began nine years ago (1863) in the form of dark red patches on the sides of the trunk and slight swelling in the feet, accompanied by a febrile state which continued fifteen days. Under the use of tonics he appeared to get over these symptoms; he was sent soon after to a boarding school where he remained a year. While in school he began to feel numbness in the extremities, more in the lower than in the upper. The soles of the feet degenerated. In May 1865, he had a return of the patches on the trunk, the numbness of the extremities increased, and there was puffiness of the skin on the patches, the hands and the face. The eyes became red, the ears were thickened, and the swollen parts were red, glossy and insensible to the pricking of a pin. He was then treated with arsenic, diuretics and sulphuretted baths: at the end of five months, the patches and swelling desquamated and disappeared. The anæsthesia of the extremities however continued, and for this, electricity was now employed with some temporary benefit. In May, 1867, all the former symptoms reappeared, but in a milder degree compared with 1865. He was again treated with arsenic and sulphuretted baths; and after three months treatment the symptoms gave way.

I saw the patient first in October of that year, and his condition then was as follows:—The face was somewhat red and dark; the eyes were red with venules; the extremities, especially the lower, were œdematous and had a bluish colour without coldness. There was a number of large reddish discolorations on the chest and back, with a few smaller ones on the thighs. The skin on these patches was considerably thickened, covered with fine scales of cuticle, and somewhat anæsthetic;<sup>1</sup> the impaired sensation of the extremities was greater in the lower than the upper; the nose was somewhat stopped up, and he complained of difficulty in breathing through it. I put him on the use of quassia twice a day.

A fortnight afterwards I saw him again. He said he felt better and stronger. The discoloration appeared to be fading; the hands were less œdematous and bluish; no change in the anæsthesia; the patches presented a cleaner surface.

He continued the quassia for some time longer, and then began to take the iodide of arsenic, beginning with one twelfth of a grain and gradually increasing it to one fifth three times a day. At the

<sup>1</sup> The anæsthetic patches on the trunk are an unusual occurrence in leprosy. I have seen, however, another case of this kind, the notes of which I shall presently give.

end of three months, the discolorations had considerably subsided, his general health was better, the face clearer, and the hands and feet more normal; but the anæsthesia was the same in every respect as before. It was, however, doubtful whether the improvement was the result of the treatment, or of the cooler season of winter. In his previous attacks he had always got better in winter.

Since that date the affection of the skin of the trunk and thighs has passed away, and the disease has been confined to the extremities and face. His beard has become well developed, but the face is still red and darkish. The insensibility of the hands and feet has rather increased than otherwise, and bullæ occasionally appear on them. He has lost one of his great toes by ulceration, and the ring and small finger of one hand are contracted and bent. He left a few days ago to try the hot baths of Tiberias.

CASE 4.—M. S—, male, aged 25, non-tuberculated, (anæsthetic patches<sup>1</sup>). The disease began, three years before, in the form of a patch on the external aspect of the thigh, which has continued to increase in size until it measures now ten inches in length, and six in breadth. It is hairless; colour somewhat dusky; and wholly insensible to the prick of a pin. There are two other patches on the face, one on the left cheek hairless, the other on the right side of the chin having a few hairs; both are anæsthetic. The patient has a sallow look, and his general health is feeble.

CASE 5.—K. E—, male, aged 72, native of Mount Lebanon; mixed form. The patient states that the disease commenced twelve years ago with swelling of hands and feet, which subsided four months afterwards. The forehead was also swollen, and there was much hyperæsthesia in both ears. Numbness of the extremities set in from the commencement, and bullæ broke out on them. A year ago, tubercles appeared on the forearms. Up to sixty years of age, he had enjoyed remarkably good health.

Face now somewhat dusky and thickened, but sensitive; lobules of the ears anæsthetic; eyebrows and beard thinned, while most of the cilia are gone; eyes red with venules; has *arcus senilis*; nose running, the Schneiderian membrane ulcerated, and that part of the triangular cartilage which enters into the formation of the septum of the nose completely eaten off; the inferior turbinated bones appear to be whole; the vomer is gone; the discharge from the nose is thin fetid pus; the soft palate and glottis (examined with the laryngoscope) are red, but not ulcerated.

<sup>1</sup> This is evidently the black Baras (*lepra nigricans*) of the Arabs. Dr. H. V. Carter, of Bombay, makes it a third and distinct form of leprosy. Judging, however, from the history of the previous case, I am disposed to think that it will ultimately terminate in the usual non-tuberculated form. Avicenna says distinctly that the black Baras is one of the phenomena which precede el judham.

The muscles of the forearms are atrophied; the skin is dark, scaly, and nodulated; some of the tubercles discrete, others agminated; the skin of the hands whole with white cicatrices of old bullæ; there is a recent one on the back of one of the first phalangeal articulations just drying up; another is in the vesicular stage; there is a visible depression on the back of the hand between the thumb and the forefinger (atrophy of the *abductor indicis*);<sup>1</sup> the palmar surface is more sensitive than the dorsal; and the forearms are anæsthetic up to the elbows.

The feet are swollen, and the skin of the legs is thickened, dark and somewhat scaly with cicatrices of old bullæ; the second right toe is shortened by the loss of the middle phalanx; the skin of the anterior surface of the leg is more thickened and less sensitive than the posterior. The anæsthesia is limited upwards by the knee-joint.

The trunk is entirely free from disease. His breathing becomes difficult on going to bed. He says he feels better in the warm season, is apt to feel cold, and seeks the sun for warmth.

He has been treated from the commencement of the disease, and has taken arsenic, tonics, and diuretics. He appears to have obtained most benefit from diuretics for the swelling, and from vegetable tonics.

CASE 6.—N. M—, male, æt. 40, "stationary" leprosy of Avicenna. The patient was born and brought up in Beyrout, but his parents came from the Lebanon. He married seventeen years ago, and has three living children. He has been a leper for twelve years; nine years ago he separated himself from his wife and children, and lives apart from them.

He gives the following history of his case:—The first thing he noticed was a tubercle on the ulnar border of the left forearm, which inflamed and suppurated. About the same time, the complexion of his face was altered to a dusky red, and the hair of his beard began to drop. A few months afterwards, the skin of his face, forearms and legs became thickened. Bullæ broke out and discharged for a longer or shorter period, and then healed. During the earlier stages of the disease, he was much troubled with formication in the extremities. Some years ago, his nose began to run on account of a sore within it. Soon after his voice became husky, and since that time he has felt considerable difficulty in breathing, but without cough, and independently of atmospheric changes.

His face is now very red and dusky; the skin and lips are thickened and insensible to the prick of a pin; the hair of the beard

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<sup>1</sup> I have rarely seen a case of leprosy which did not present this remarkable appearance, so that, slight as its pathological meaning may be, it is highly pathognomic of the disease.

is thin, and that of the eyebrows is completely lost. The thickness of the skin is uneven. The voice is reduced to a whisper.

The hands have a dark appearance, are thickened, and look deformed. The *abductor indicis* is atrophied. The fingers are thick, shining and somewhat contracted. The anæsthesia extends from the elbows downwards.

The legs are somewhat thickened, and are insensible from the knees downwards; their colour is dark. The integuments are without sores on either the lower or upper extremities, but have white glistening cicatrices of old ones. The toes are whole and normal; the nails have fallen off, and new ones have taken their place.

He enjoys good health, has not entirely lost his sexual appetite. He denies any such causes as contagion or family taint. He lived like other people, and knows of no cause whatever. Though a professional beggar on the wayside, his clothes and habits appear to be quite clean, and this may be the secret of the "stationary" form of his disease. With the exception of the depredations committed by the leprosy, he is in pretty fair health, his body is and has for some time been free from sores, and his articulations have not been attacked, though the disease is of twelve years' standing.

A careful examination of this patient's nose, mouth, and larynx showed the following points:—1. The Schneiderian membrane of the nose had at one time been extensively ulcerated, and the results have been the destruction of the triangular cartilage in great part, and softening of the lateral cartilages, an adhesion of the external walls to the septum, producing a marked contraction of the nasal passages, reducing them to very narrow canals, so that the respiration of the patient has now to be carried on chiefly through the mouth. 2. There is a long cicatrix, extending on the middle line throughout the whole length of the hard palate; the uvula has been lost completely by ulceration, and its site is indicated by a small fleshy tubercle; the pillars of the soft palate are hardened by cicatricial tissue, the anterior being drawn outwards, and the posterior inwards, narrowing the isthmus of the fauces. 3. The mirror of the laryngoscope was thus introduced with considerable difficulty, and the two posterior pillars, being drawn downwards and inwards in the shape of tense curtains, precluded a clear examination of the rima glottidis. During swallowing, however, a short glimpse could be had of the glottis, which appeared gaping and glossy, as if it had been the seat of ulceration. The vocal cords are not seen at all. Auscultation revealed nothing abnormal, farther than feeble respiration.

## SECTION II.—*Leper-Houses of Damascus.*

The object of these houses is evidently the simple one of giving a home to lepers. They are not now, nor do they seem



to have ever been, medical hospitals for the treatment of leprosy. They were built by benevolent persons for an unfortunate class of persons, who, similarly affected, do not shun each other, and thus avoid the miseries of a lonely life. There is also a prevalent idea that there is something peculiarly sanative in the climate of Damascus, which arrests the progress of leprosy, though it may not cure it. Others suppose that the climate destroys the communicability of the disease by contagion. The largest number of lepers come to these houses from different parts of the country, however, with the design of separating themselves from their families, and of obtaining the advantages of public charity. There are two leper-houses in Damascus—one for Moslems, the other for Christians.

The Moslem leper-house is situated out of the city, near one of its ancient walls. It is a miserable building—if it, indeed, deserves that name—consisting of some twenty mud cells, irregularly distributed, windowless, dark, and filthy. There are no indications of great antiquity about the place, though the current tradition is that it was built by Naaman the Syrian, after he had been cured of leprosy by the prophet Elisha, and that from the ancient Syrians it passed into the hands of the Christians, and from them to the Moslems. The establishment has an endowed property of one garden and two houses, the united proceeds of which do not exceed £15 per annum. Besides this small sum, which is distributed among the lepers, their friends, when they are in good circumstances, help them, and they are always considered as worthy objects of charity.

The Christian leper-house is altogether a better building. It is situated in the Christian quarter within the city, consisting of about twenty rooms, each room having a door and window, which open into a large uncovered court. It was built in 1864, the old one having been destroyed, with the rest of the Christian quarter, in 1860. It has some endowed property, but the proceeds are far too scanty to support the inmates, and they have to depend mainly on charity. Like the Moslem, each leper occupies a room separately, and looks after his own food, no general provision being made for the whole.

As far as I could observe, and as I am assured by the lepers themselves, they appear to live in great unanimity among themselves, their hard and peculiar lot exercising apparently a mollifying influence on their general character. Afflicted by a common disease, shunned by the public, and considered to be the special objects of the visitations of Providence, they are looked upon by all classes with unmingled pity, and called "brethren." In both, the Christian and Moslem establishments, the familiar epithet of "brother" and "sister" is used in speaking to and of each other. The Moslems

believe that the disease of Job was the leprosy, and that all lepers share with him the favoured standing which he had with God; and they are, therefore, called in official documents the "Leper-Lords" (el-gadat el-jathma).

I visited the leper-houses of Damascus in 1868; and, after having examined each case separately, reduced them to tabular lists. Table II was taken this year (1872) for me by a medical friend. Table III was made from the notes of cases which I have taken in dispensary and private practice. (Abstracts of these tables will be found subsequently.)

### SECTION III.—*Notes and Observations on Leprosy.*

*Sex.*—Of the 49 cases recorded in the tables mentioned, 39 were males and 10 females; the proportion thus being nearly one fifth of females to the whole number. It would appear, therefore, that leprosy is much more frequent among males than females, and this accords with the observation of the majority of medical men who have had an opportunity of studying the disease. In the conclusions drawn by the Committee of the College of Physicians from the evidence submitted to them, it is stated that this difference may arise from the fact that, in most countries where the disease prevails, the women are secluded, and not so apt to fall under the observation of medical men as males.<sup>1</sup> The force of this suggestion, however, would apply more to hospitals and leper-houses than to private and dispensary practice; and, in looking at the latter class of cases in my own experience, I find that out of 18 cases, 5 only were females; which gives no less than one fourth. On the other hand, if we look at the other tables, and test the matter as to the sex of tainted relatives of lepers, as given by themselves, the difference becomes very considerably diminished; for of the whole number given of the lepers, 16 were females and 19 males. The proportion of males thus continues to appear to be somewhat higher than that of females. On the whole it may be safely stated, I think, that in Syria the disease is more frequent among males than females, and that the difference probably arises from the greater exposure of the former sex to the vicissitudes of temperature, fatigue, and other depressing causes.

*Age.*—I have not seen or heard of a leper who was attacked earlier than five years of age, though the single case in the tables, where the disease is stated to have begun at the age of five, may mean any period in infancy or childhood. Probably, the product of conception would show the symptoms of the disease early when either of the parents was a leper at the time of its formation. A large number are attacked about the age of puberty.<sup>2</sup> The most

<sup>1</sup> Report, p. lxii.

<sup>2</sup> "Children of leprous parents are either born leprous, or will have the disease

usual period is below 30 ; it is less frequent between 30 and 40 ; and rarely appears after the latter age. In reference to this point, the tabulated cases show the following results :

Age at declaration of disease.	Number of cases.
From 5 to 15 . . . . .	13
„ 15 to 20 . . . . .	9
„ 20 to 30 . . . . .	14
„ 30 to 40 . . . . .	7
„ 40 to 50 . . . . .	2
„ 50 to 60 . . . . .	2
	—
	47
Unknown . . . . .	3

*Comparative frequency of the Tuberculated and Non-tuberculated Forms.*—Sometimes the two forms run into each other, and become so mixed that it is difficult to make a distinction between them. Such cases may be, perhaps, properly classified under the “mixed” form. Classified thus, we have of—

The tuberculated form . . . . .	22
Non-tuberculated . . . . .	21
Mixed . . . . .	5
	—
	48

*Duration of the Disease.*—It is impossible, in this country, to follow a leper’s case to the period of death ; and, even in leper-houses, the patients are not stationary. I can, therefore, only give here the duration of the disease up to date of observation :

Duration.	Number of cases.
From 1 to 5 years . . . . .	21
„ 5 to 10 „ . . . . .	16
„ 10 to 15 „ . . . . .	8
„ 15 to 20 „ . . . . .	1
„ 20 to 25 „ . . . . .	1
	—
	47

As regards the relative duration of the tuberculated and non-tuberculated forms, Danielssen and Boeck state that the former runs a shorter course. The result of my cases, as to the general average of duration, is as follows :

Form.	No. of cases.	Average of duration to date of observation.
Tuberculated . . . . .	22 . . . . .	6½ years.
Non-tuberculated . . . . .	20 . . . . .	7½ „
Mixed . . . . .	5 . . . . .	10½ „

The case of longest duration of the tuberculated form that I have seen was fifteen years, of the non-tuberculated twenty-five years, and of the mixed twelve years.

at puberty” (Ibu Zekaria). From an examination of my tables it will be found that, whenever the father or mother was a leper, the disease appeared before or about the age of puberty.

*Topography.*—With a single exception, all the cases mentioned in my tables came from villages or towns situated in mountainous districts or high table lands. So far as I know, none of those places are marshy or malarious. The exceptional case is that of a leper who was born and has always lived in Beyrout, but his parents came from the Lebanon. During a long residence in Aleppo and Beyrout I have not seen a single case among the *bonâ fide* natives. Damascus is said to be free from the disease, though I saw there one case and heard of another. Jerusalem and Nablous have a good number of lepers; but I believe most of them come from the adjacent villages. On the whole it may be safely said that the cities and large towns of Syria, when the inhabitants are well fed and are generally clean in their habits, are comparatively free from leprosy. The limitation of the disease to villages, whose position is often high and healthy, would strongly point to the poor living, uncleanly habits of the inhabitants, and the unsanitary condition of the houses, as some of the most active causes of leprosy.

*Causes.*—Most of the lepers I have seen belong to the lower classes of society, and come, as has just been mentioned, from villages, where to poverty, uncleanliness of person and clothing, filthy, over-crowded, ill-ventilated houses are to be added. An hereditary taint is doubtless the principal cause in many instances; but it fails to account for every case. Over-fatigue and exposure to cold and damp weather, may serve to excite the disease. Certain kinds of diet, as fish, salted meat, grease, oil, and some lentils, are usually enumerated among the exciting causes of leprosy.<sup>1</sup>

After the disease has declared itself, there can be no doubt that the manner of living has great influence in hastening or retarding the course of the malady. I have known instances where good living, pure air, scrupulous attention to ablution and cleanliness, and the general observation of the laws of hygiene have kept the disease at bay for a long number of years.

*Hereditary Taint.*—The Arabian physicians, modern authors, and all those who have had an opportunity of seeing much of leprosy, are agreed that it is often a transmitted disease. Sometimes, however, it certainly arises spontaneously from other causes. Tabulating my cases from this point of view, we have, of forty-eight cases—

Tainted—25. Non-tainted—17. Doubtful—3. Unknown—3.

Laying aside the doubtful and unknown cases, the proportion of the tainted to the untainted is that of twenty-five to seventeen—a large ratio as to the hereditariness of leprosy. It should be also taken into consideration that it is sometimes extremely difficult to get an admission from the leper that any of his relatives are affected with

<sup>1</sup> Avicenna mentions the following causes of leprosy:—Contagion, hereditary taint, impure air, and certain articles of diet, as fish, salted meats, asses' meat, and lentils.

the disease, and occasionally I have had recourse to a very searching cross-examination before I could find out the truth of the matter. When the patient was positive in his denial of any knowledge of family taint, I have put him down as a non-hereditary case. Besides wilfulness or ignorance, it is quite possible that the disease may have passed two or three generations, thus making a thorough examination among ignorant people almost impossible.<sup>1</sup>

As regards the degree of tainted relationship in the ascending and collateral lines, the tables show :

Mother . . . . . 4	Father . . . . . 1
Maternal uncle . . . . . 4	Paternal uncle . . . . . 3
Maternal aunt . . . . . 2	Paternal aunt . . . . . 1
Great maternal aunt . . . . . 1	Great paternal uncle . . . . . 2
Maternal cousin . . . . . 2	Paternal cousin . . . . . 1
—	
Taint on mother's side . . . . . 13	Taint on father's side . . . . . 8

It will thus be seen that the law of inheritance was nearly twice as operative in the maternal as in the paternal line, and that it was more than twice in the indirect than in the direct maternal line, while it was 8 to 1 in the paternal line. For, of 21 cases of inheritance, we have 13 on the mother's side, and only 8 on the father's; and of 13 on the maternal side 4 only were direct from the mother, and of 8 on the paternal side 1 only was direct from the father.

It may possibly be a true explanation of this remarkable difference in the agency of hereditariness between the direct and indirect lines, that lepers lose early the power of reproduction, and thus give a wider range to the family taint in the collateral line. It may also be true that, in the primary stages of the disease, males lose their reproductive functions earlier than females, thus giving a wider scope for

<sup>1</sup> "Drs. Danielssen and Boeck have given two tables to show the relative frequency of the influence of hereditariness in the cases of leprosy, treated in the hospital at Bergen. Of 145 cases of the tubercular form, hereditariness could be traced in 127 instances; and in 68 cases of the anæsthetic form, it could be traced in 58 instances. 'From these tables,' they remark, 'it will be seen that out of 213 leprosy patients the disease was hereditary in 185, and that in 28 cases only it was of spontaneous development. Moreover, it will be seen that the hereditariness was more frequent (plus répandue) in the collateral line than in the direct line. What deserves particular notice is the mode of its propagation in passing through successive generations. The singular result is remarked that the disease not only passes over some generations, but that it manifests itself in the second and fourth generations with much greater intensity than in the first and third generations. If it has spared the first generation, it, as a general rule, appears in all the individuals of the second, who transmit the germ of the disease to succeeding generations. Tolerably often it seemed to pass over the second and third generations, and to reappear in the fourth generation, and then to spread in all directions, so to speak, with a new energy.' . . . 'We have already said that leprosy may also be acquired. We speak of those cases where the malady declares itself in persons born of healthy parents, in whose families the disease has never been seen, but who have resided, for a longer or shorter period, in countries where it is endemic, and who have lived under conditions liable to occasion its development.'" ('Report on Leprosy,' p. lxxviii.)

diseased progenitors in the case of the latter than in the former. Let me repeat a remark I have made before, namely, that children born of leprosy parents, prior to the declaration of the disease in them, are not so liable to inherit it as when either the father or mother was fully tainted at the time of conception. I have now in my mind a number of children of leprosy parents, born before the disease had manifested itself, of different ages from 9 to 30, who are still free from any visible taint.

From the preceding numbers it will have been noticed that the agency of inheritance does not account for all the cases given, leaving at least a third to be accounted for by other causes. Even if we should add to the hereditary cases a few more on the ground of defective knowledge, we should still have a certain proportion which can be only traced to spontaneous development under favorable conditions.

*Contagion.*—The idea is almost universally entertained in Syria, that leprosy is a contagious disease. “Flee from a leper as you would from a snake,” is one of the traditional sayings of the Arabian prophet, and well known among his followers. David el Basir, an ancient Arab physician and author, commenting on these words, says that they clearly indicate the highly contagious nature of this disease. Another tradition, however, attributing all things in nature to the direct agency of God, denies any such thing as contagion, and condemns the man who would seek to elude disease on this ground as guilty of impiety. In times of plague and cholera, and other epidemic diseases, but few Moslems leave their homes, and they are far more attentive than to the victims who fall than their Jewish or Christian compatriots. Still, they believe in contagion, however they may explain it theologically, or act practically in view of its actual presence. Avicenna and all the Arabian physicians are unanimously of opinion that leprosy is a highly contagious disease. The Greek and Latin physicians seem to have been of the same opinion. Aretæus, who wrote towards the close of the first century, says it is dangerous to have any intercourse with persons labouring under leprosy, no less than in the case of the plague, as both are readily communicated by respiration.

On the other hand, all modern observers are nearly agreed as to its non-contagious character. The College of Physicians, who have had an abundant opportunity for collecting information on this subject from different parts of the world, say—“The all but unanimous conviction of the most experienced observers in different parts of the world is quite opposed to the belief that leprosy is contagious or communicable by proximity or contact with the diseased.”<sup>1</sup>

I have put the question to many lepers, whether there was any reason to believe that they had contracted the disease by contagion

<sup>1</sup> “Drs. Danielssen and Boeck state that, ‘Among the hundreds of lepers whom we have seen daily, not a single instance has occurred of the disease spreading by

of any kind. They were all positive in denying it. One of them expressed himself in this way:—"I saw but one leper in my life, and I never came near him." I know instances of lepers' wives living with their husbands a number of years, who never gave it to them; and *vice versá*. I saw a leper Jew in Damascus who lived four years with his first wife. After the disease had fully declared itself, she obtained a divorce and left him. He then took a second wife, whom I saw. She had been living with him about four years also, and was *quite* free from the disease.

And yet, considering the nature and external phenomena of leprosy, and the apparently universal opinion of ancient medical writers, it is somewhat difficult to pronounce positively that it is wholly, and under all circumstances, non-contagious. There is one instance narrated on the authority of Dr. Stangenwald, of Homolulu, physician of the King of the Sandwich Islands, in which the disease was apparently transmitted by inoculation.<sup>1</sup>

*Segregation.*—There does not appear to be a definite law in Mohammedan books of jurisprudence in relation to lepers, though the idea is a prevalent one that it provides for compulsory exclusion when the friends of the patient demand it, but not otherwise. Such cases are never, however, brought before a judge. The usual way is that lepers, after the disease is well declared, are excluded from all near intercourse with their friends, as a precautionary measure against contagion, as well as from a natural feeling of repulsion. When their friends are in good circumstances, and are kind to them, they are generally, if not always, segregated in some separate apartment, and their wants are attended to. In other circumstances they become professional beggars. In Jerusalem they have a separate quarter near the Zion gate. When they become inmates of such leper-houses as those in Damascus, it is altogether a voluntary act on their part, and they are always at liberty to leave when they choose. On the whole, the lot of lepers is a peculiarly hard one, and their sufferings, from this point of view alone, are extremely severe. The provision made for them in leper-houses is altogether inadequate to their condition and wants.

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contagion. We know many married persons, one of whom is leprous, cohabiting for years without the other becoming affected. At St. George's Hospital many of the attendants on the inmates have lived there for more than thirty years, and are quite free from any trace of disease.' . . . 'As the result of our observations we have only to deny the contagiousness of leprosy.'" (Report on Leprosy by the Royal College of Physicians, p. lxix.)

<sup>1</sup> Leprosy seems to abound in the Sandwich Islands, and Dr. Stangenwald was sent on a mission to study the disease in different parts of the world. The instance mentioned above was related by the doctor to a friend of a mine, from whom I heard it. Two boys in India were playing together, one was a native and leprous, the other an English boy; the native plunged a needle in his thigh, and said to the English boy, "See what I have done, can you do like me?" His high-spirited companion took the same needle and plunged it in his own flesh, and soon after was attacked with leprosy.

*Specific Character of Leprosy.*—Leprosy has been confounded with *Elephantiasis Arabum* (Barbadoes leg), from which, however, it is entirely distinct. The latter is a local affection, non-hereditary, rarely attacking any other part except the leg, not involving the integrity of the toes, leaving the general health unimpaired, and having no influence on the duration of life; while the former is a constitutional affection, which taints the whole system, having its own specific causes, symptoms, and course. The confusion has arisen from the two diseases being called by the general name of elephantiasis; and although medical men have long recognised the difference, and made a clear distinction between the elephantiasis of the Arabs and that of the Greeks, still this nosology has occasionally led to the idea that they were two forms of one disease. In leprosy we have often considerable hypertrophy of one or both of the lower extremities, but the diagnosis can always be easily and clearly made out by the history of the case and the concomitant symptoms. I see, therefore, no proof whatever for the conjecture of some writers that the two diseases are allied affections.<sup>1</sup>

The constitutional character of leprosy, breaking out in the form of eruption and ulceration, has led to the serious question whether it may not be of *syphilitic* origin. That it has no such origin is, I think, sufficiently clear from the following considerations:—Syphilis is a modern disease, in this country at least. I have examined most carefully the medical works of Arabian authors, and it is certain that they did not know it, though they expatiate at great length on the diseases of the genital organs. Salih Effendi, who wrote his work ('Ghait él Itkan') about the early part of the last century, does not seem to have ever seen it, and evidently obtained his information about it from European sources. Dr. Russel, who lived some years in Aleppo about the middle of the last century, writes that it existed there in his time, that it was probably imported from Europe, and that it was called the Frank disease<sup>2</sup>—a name which it continues to have to this date. If it did not originate, it was much increased at the time of the French occupation under the first Napoleon in Egypt, from whence it is now yearly imported into Syria. I have put the question pointedly to many lepers, and they all denied having ever been the subjects of syphilis; nor have I ever seen a single case of leprosy which could in any way be traced to a syphilitic origin. In the leper-houses of Damascus I saw a man with tertiary syphilis, but he had got there by mistake, and was evidently in the wrong place.<sup>3</sup>

<sup>1</sup> 'Report on Leprosy,' p. lxix.

<sup>2</sup> 'Natural History of Aleppo,' by Alex. Russel, M.D., p. 143 (1st edition). The name he gives, "Frank Zahmedy," is of Turkish origin, and seems to indicate that the disease was brought to Aleppo from Turkey by a northern route.

<sup>3</sup> "We hope," remark Drs. Danielssen and Boeck, "that our description of the



Some affinity between *scrofula* and leprosy may, at first sight, appear quite likely; but the diseases which are commonly connected with the scrofulous diathesis are so very different from leprosy, that it is difficult to believe that they have really anything in common. I have never seen a phthisical leper; and though the cervical lymphatic glands are occasionally swollen in leprosy, neither the character of the swelling nor the subsequent history indicates a scrofulous origin. I believe also that the morbid anatomy of the scrofulous tubercle has been found to be quite different from that of the tubercles of leprosy. It is on the ground of such a wide distinction, and to avoid any confusion between the two diseases, that the College of Physicians calls the two forms of leprosy the tuberculated (not *tuberculous*) and non-tuberculated.

*Jewish leprosy.*—The description of this disease is given in Lev. xiii; and according to the Mosaic law, any “swelling or scab or bright spot”<sup>1</sup> may be leprosy. In the case of a *swelling* or *rising*, if “it be white in the skin, and it have turned the hair white, and there be quick raw flesh in the rising,” it was leprosy (v. 10). In the case of a *scab*, its spreading was sufficient to indicate its leprous character (v. 36). A *bright spot* was leprous “if the hair in the bright spot be turned white, and it be in sight deeper than the skin” (v. 25).

Rabbi Levi gives the following summary of the symptoms and pathognomic signs of the Jewish leprosy:

“There are three signs of leprous uncleanness, viz. whiteness of hair, rawness of flesh, and diffusiveness, which show themselves in this way. If any one has a tumour, or abscess, or whiteness (*leuce*), with white hair or raw flesh, the priest on seeing him shall immediately pronounce him unclean. If, however, there be neither whitish hair nor raw flesh, he shall shut him up seven days. If the spot should then have spread, he shall again without delay pronounce him unclean, because this spreading also is a sign of uncleanness, as we have said. But if no one of these three signs of uncleanness shall have appeared during the seven days in which he was shut up, he shall shut him up a second week. If then one of these three signs of uncleanness shall have shown itself, he shall absolutely pronounce

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leprosy has shown that it is a peculiar disease, which, when fully developed, cannot be confounded with any other. The spots, indicative of the tuberculous form, have been in the early stages regarded as *pityriasis*; but this confusion will speedily be cleared up. On the other hand, we have seen cases of this form when such spots existed, as well as at a later stage when distinct tubercles had appeared, mistaken for a syphilitic affection, and treated accordingly. This error is very serious; for, besides the loss of time incurred in the use of inappropriate treatment, the administration of anti-syphilitic medicines is apt to occasion very hurtful consequences, which may lead to the death of the patient. An exact knowledge of the two diseases will prevent such a blunder.” (‘Report on Leprosy,’ p. lxix.)

<sup>1</sup> The words given above are from the English version, but they are differently rendered by others. Gesenius gives—1. Eminence or spot; 2. Scurf or scab; 3. A white spot. The Rabbins appear to differ: Ebn Ezra gives for the two first, burning and gathering, while R. Levi mentions tumour, abscess, and whiteness.

him unclean; if not, he shall declare him clean, because a segregation of two weeks only is appointed for the leprosy which exists in the skin of the flesh; it being understood that, if one of these three signs of uncleanness should appear in him after he had been pronounced clean, the priest shall at once pronounce him unclean, because these three signs of uncleanness are always decisive, as well in the beginning as after segregation. If the whiteness of the leprous spot approaches that of white wool or snow, but afterwards becomes darker (or contracted) and reduced to the appearance of an egg-shell, this is not yet a sign of cleanness, but quite a sign of uncleanness, as in the beginning, until it becomes darker than an egg-shell, when, because it is a pustule, he is held to be clean."<sup>1</sup>

Miriam's and Gehazi's leprosy is described as having transformed the natural colour of the skin into that of snow.<sup>2</sup> The same thing appears to be hinted in the case of Naaman the Syrian,<sup>3</sup> so that abnormal whiteness of the skin in patches, with a corresponding change in that of the hair, seems to have been the main sign, or at least, form of Jewish leprosy.<sup>4</sup> The other cases described are those of raw flesh, or of a spreading scall, both of which were considered to be decisive signs of leprosy.

A careful study of the whole subject would, perhaps, result in the following conclusions:

1. Jewish leprosy seems to have prevailed among the Hebrews in ancient times to a remarkable extent. For not only did the Levitical law recognise it and make an ample provision for its legal treatment, but the Jews were judged by contemporary nations to have been a leprous people.<sup>5</sup>

2. The Mosaic account can not be identified with the present disease known as leprosy. The chief and distinguishing signs of the Jewish leprosy either do not apply to the modern disease, or include many skin diseases, while the main symptoms of modern leprosy are not alluded to at all in the Levitical description.

<sup>1</sup> Rabbi Levi Barzelonita's 'Laws of the Jews.' Edited by J. H. Hottingen. Lect. clxix.

<sup>2</sup> Numb. xii, 10; and 2 Kings v, 27.

<sup>3</sup> 2 Kings v, 14.

<sup>4</sup> R. Levi gives the following definition:—"Lepra hæc est, cum albus fuerit locus unus aut plures in cute carnis hominis; ita ut locorum illorum albedo accedat ad albidinem testæ ovi, aut etiam superat eam. Quamdiu verò subobscura, infra albidinem testæ ovi, fuerit, non est lepra; sed leuce vel vitiligo, id est, alius morbus, qui ex lepræ genere non est, sed scabiei." ('Juris Hebræorum,' Hottinger, clxviii.)

<sup>5</sup> Thus, Lysimachus, quoted in Josephus:—"The people of the Jews being leprous and scabby, and subject to certain other kinds of distempers, in the days of Bocchoris, King of Egypt, they fled to the temples, and got their food there by begging; and as the numbers were very great that were fallen under these diseases, there arose a scarcity in Egypt." He then goes on to speak of a law having been passed by the king to have them drowned and expelled into the desert, which resulted in the establishment of the Jewish kingdom. ('Josephus against Apion,' B. i, § 34.)

3. In the Septuagint, the Hebrew name of the disease (*tsora'ath*, a stroke) was translated *λεπρα* (a scale), from which comes the English word leprosy. This translation is wholly unjustifiable on philological grounds, and appears to have been the means of confounding the Jewish with the modern leprosy. Had it not been for this version of the Hebrew word, it is not at all probable that the two diseases would have been joined together under the same name and classification.

4. The principal form of Jewish leprosy seems to correspond most to the *leuce* of the Greeks, the *boras* of the Arabs, and the *viticigo* of modern writers on diseases of the skin. It is needless to add that this has nothing in common with the disease known now as leprosy, except that the cicatrices of ulceration in the latter are white, and that it sometimes begins in the form of darkish patches, the black *boras* of the Arabs.

5. Maimonides, a rabbi, philosopher and physician of the middle ages, evidently includes the modern leprosy as one of the forms of the Jewish; for he mentions dropping of the hair as one of its characteristics,<sup>1</sup> and seems to consider Job's disease to have been that of leprosy, which is certainly very probable.<sup>2</sup>

6. The leprosy of houses and garments, mentioned in Leviticus, is supposed to have been nitrous incrustations or mildew, a supposition which cannot well be replaced by another, and which seems sufficiently probable.

*Treatment.*—Is leprosy ever capable of a cure spontaneous or by remedial agents? To this important and highly practical question, the answer from every quarter is extremely guarded. The collected evidence of both ancient and modern writers would indicate that it is occasionally curable, and that it is generally more or less benefited by proper treatment.

Dr. Danielssen and Boeck, whose special and extensive study of

<sup>1</sup> "De variis lepræ speciebus videatur Maymon in Hilchoth Tummeat Tzor. Inter alia ibi hæc habemus. *Tsora'ath* est nomen quod *ὁμονύμως* dicitur, et complectitur species multas, quorum nulla similis est alteri. Nam 1. Albedo cutis vocatur *tsora'ath*. 2. Casus pilorum quorundam capitis aut barbæ vocatur *tsora'ath*. 3. Mutationem in vestibus et ædibus lex etiam *tsora'ath* vocat; illa autem non fuit res ordinaria in mundo, sed miraculum et portentum in Israele." (J. H. Othonis, 'Lexicon Rabbinico-Philologicum,' Genève, 1675, pp. 324, 325, Leprosus.)

<sup>2</sup> "Addamus hic illud quod in Jalkut in Jobum 28, 25 legitur. Homo constat ex dimidia aqua et dimidio sanguine. Quamdiu justè vivit, non plus est aquæ in homine quam sanguinis. Quando peccat tunc vel aqua exuberat et fit hydropicus, vel sanguis superat aquam, et fit leprosus" (Id.). The disease of Job is generally considered to have been leprosy. Mr. Carey, in his commentary on Job (chap. ii, v. 7), has collected many incidental allusions and notices of the disease that occur in the book, and certainly their correspondence to the symptoms of modern leprosy is very striking. He has also given much valuable information on notice of this disease by ancient and modern writers.

this disease entitles their opinion to the highest consideration, express their views on this subject thus:—"From our experience and knowledge of the malady we can declare that the more the disease is developed, the more unfavorable must be the prognosis; nevertheless, far be it from us to say that it is incurable, even in its advanced stage, for we have seen that nature had brought about a cure in several instances where the patients were grievously affected."<sup>1</sup>

Arsenic has long enjoyed a high reputation in India and other parts of the world<sup>2</sup> as an extremely valuable therapeutical agent in this disease. The College of Physicians speak favorably of iodine. I have tried in a few instances the iodide of arsenic, and others in this country have used the same agent, and the general opinion appears to be that, while it is no specific, it has considerable power in arresting the further progress of the disease. Mercury has been found to be highly disastrous, and I have never tried it.

The general evidence for the use of tonics, both mineral and vegetable, leaves no doubt as to their great utility in improving the health, and thus contributing to the arrest of leprosy. The same thing may be said of the systematic use of baths, cold, tepid, saline, and sulphureted.

For the anæsthesia of the extremities both myself and others have frequently tried electricity, with generally useful but temporary results.

The leprosy ulcerations lose their fetor and unhealthy character, I have found, under the use of carbolic-acid dressings, and are frequently healed by them.

While all these means are useful, and should never be neglected, the main dependence should be on those general hygienic rules which are of universal application in all chronic complaints—nutritious food, pure air, frequent and daily ablution, moderate exercise, suitable clothing, and regular habits.

It is certain that, so far, we have no specific against leprosy, nor is it likely that we shall discover one. The hope of stamping out the disease by the general amelioration of the physical and moral condition of the poor seems to be the only one held out; and it is reasonable to suppose that, as its extermination in Great Britain and other parts of the world was probably due to this cause, it may be

<sup>1</sup> 'Report on Leprosy,' p. lxxii.

<sup>2</sup> Mr. Palgrave says that leprosy abounds in Arabia, and that the natives use for it an unsuccessful specific, the sulphate of arsenic (tersulphide? orpiment), which they call "yellow arsenic," and which occasionally cures the disease, and sometimes kills by an overdose, or even by external application ('Central and Eastern Arabia,' vol. ii, p. 33). Dr. Aitkin gives the formula of the famous Tanjore Pill (arsenious acid) extensively used in India ('Science and Practice of Medicine,' 6th edition, p. 941).

found again useful in other countries where the disease is still prevalent.

A good hospital for the lepers of Syria would not only be a great boon to a class of miserable sufferers who are generally neglected, and often thrown into circumstances of great destitution and want, but would afford an excellent opportunity for the further study of this terrible disease.