

Among Prof. Hull's more recent work may be mentioned articles in Hastings' *Bible Dictionary*, and a small series which appeared in *The Outlook* during the autumn of 1913, on the Dead Sea, Petra and Mount Hor, the site of Mount Sinai, and the physical position of Egypt at the time of the Exodus.

Prof. Hull continued to take a deep interest in the P.E.F. up to the end, and he will be much missed by all who knew him.

S. A. C.

HYGIENE AND DISEASE IN PALESTINE IN MODERN AND IN BIBLICAL TIMES.

By Dr. E. W. G. MASTERMAN.

INTRODUCTION.

THE subject of the diseases mentioned in the Bible has always been a difficult one and it is not expected that this present effort to elucidate it will have anything of finality about it. The writer will be content if he clears up some obscure points, and if incidentally he is able to present to his readers a considerable mass of facts which have not hitherto been co-ordinated. The basis of any correct views on the subject must be our knowledge of the conditions of life in Palestine in Old and New Testament times. Though doubtless much may be gathered from literature it is reasonable to suppose that the physical environment of the modern peoples of this land as regards climate, food, houses and mode of life being probably much the same as of old, a study of these will be likely to prove at least as important. Then the diseases rife in the land to-day may also be considered. It is quite possible that some diseases have changed their type or even become extinct, and it is certain that some diseases occur which were unknown before the Middle Ages, but as some popular information on the modern diseases of Palestine may be opportune at this time, this section will be complete in itself, though necessarily brief. Twenty years' residence in various parts of the Holy Land in actual medical practice enables the writer to treat this part of the subject with the authority of experience, and he does so with greater assurance, inasmuch as he has discussed various points here mentioned with other practitioners in the land, both personally and in conferences.

The literature of this subject was until recently extraordinarily scanty, but in the last few years a number of medical papers from those practising or making researches in the land have been published which do much to add to our knowledge. This is notably the case with regard to tropical

diseases in which, thanks to the researches of the workers in the "International Health Bureau," established in Jerusalem in 1913, we have scientific reports of the greatest value. Although a full Bibliography will be published at the conclusion of these papers¹ I may mention here a few recent papers which give information about diseases in modern Palestine in a fuller manner than will be possible here :—

T. HARRISON BUTLER.—"Clinical Features, Bact., and Treatment of Acute Ophthalmia in the East," *Roy. Lond. Ophth. Reports*, Vol. XVII. "Some aspects of Ophthalmology in Palestine" (Middlemore Lecture, 1915), published by *Birmingham Medical Review*, 1915.

J. CROPPER.—"The Geographical Distribution of Anopheles and Malarial Fever in Upper Palestine," *Jour. of Hygiene*, 1902. "The Malarial Diseases of Jerusalem, and their Prevention," *Jour. of Hygiene*, 1905.

DR. HUNTEMÜLLER.—"Neuartige Parasitenbefunde bei der Jerichobeule," *Centralblatt für Bakteriologie*, Berlin.

E. W. G. MASTERMAN.—"Notes on Some Tropical Diseases in Palestine," *Jour. of Hygiene*, 1913 and 1914; "Hirudinia as Human Parasites in Palestine," *Parasitology*, 1908; "Haemoglobinuric Fever in Syria," *B. M. Jour.*, 1906, etc.

Prof. P. MÜHLENS.—"Bericht über eine Malariaexpedition nach Jerusalem," *Centralblatt für Bakteriologie*, Abt. 1, Orig. Bd. 69, Heft. 1, Jena. (The most authoritative statement yet published.)

HANS MUCH.—*Eine Tuberkuloseforschungsreise nach Jerusalem*. Hamburg, 1913.

With regard to using modern scientific medical literature it must however be always remembered that from the point of view of old writings it is less helpful than might be hoped, as the scientific recognition of many specific diseases is comparatively modern and until quite recently such general terms as "fever," "consumption," "palsy," were used in a broad and general sense, and each included what we now know to be many varieties of disease. Perhaps more help will be found from study—such as will be attempted here—of the primitive ideas of disease and its cure, such as is still to be found abundantly among the people of the land. Some light on the conditions of life and health in early times, which may be gathered from the results of Palestine excavations, will form the subject of a special chapter.

Finally, an endeavour will be made to get as near as possible to the true meaning of the various terms used in the description of disease and to investigate the actual relation of the Mosaic laws to health. Here then is a considerable body of Biblical and theological literature to which reference will be made in the Bibliography.

¹ The author would be grateful for any references to medical or Biblical papers bearing on the subject.

PART I.—DISEASES OF MODERN PALESTINE AND SYRIA.

CHAPTER I.

Race, Habit, and Food as bearing on Disease.

It is not necessary to discuss here the very complicated ethnological relations of the various and mixed races inhabiting Palestine and Syria; for practical purposes it is sufficient to recognize three distinct classes of people distinguished by such special habits of life as to have a somewhat different liability to disease. These are (1) the nomads or bedawin, who dwell in tents all the year round and live a pastoral as contrasted with an agricultural life; (2) the peasants or fellahin, who are primarily agriculturalists; and (3) the town dwellers or hader, whose occupations are various. Each class shades off into the other. Thus, some of the local bedawin live in rough houses or old ruins in the winter, and do a certain amount of primitive agriculture, housing their cattle and stores of *tibn* in the winter; and a considerable number of the fellahin, particularly in recent years, though making their homes in their villages, spend so much of their time in occupations in the towns as to expose them to all the disease-risks of the townfolk.

(1) The bedawin are popularly credited, on account of their entirely open-air life, with great soundness of constitution, but it cannot be said that this is the case with the nomads of Palestine. They are exceedingly scantily clad, the poorest in actually nothing but a shirt, and their skins are exposed to all the extremes of heat and cold; their goat-hair tents are but little protection from the heat of summer or the cold and wet of winter; while, during the latter season, the atmosphere of their dwellings is commonly saturated with the irritating smoke from wood or dung. It might be supposed that the smoke would at least afford some protection from insect pests, but the truth is that, under such conditions, lice, mosquitoes, and other insect pests are found in abundance. Doubtless, in the days when the bedawin possessed considerable wealth of cattle, camels, and horses, and were able both to feed well and to keep themselves in good physique by martial exercises, they enjoyed greater robustness, but now a large proportion of the bedawin of Palestine are sallow in complexion, and constantly suffer from malarial fever, and even from pulmonary tuberculosis (consumption), from which it might be thought their out-door life would save them.

Even their nomad habits do not deliver them from epidemics of small-pox, typhus, enteric, measles and whooping-cough; and the mortality is very high, especially among the young. While it is probably true that the great desert tribes are largely free from venereal diseases, this is certainly not the case with the mongrel bedawin in the neighbourhood of the towns of Palestine, who have very low morals: syphilis and gonorrhœa are extremely common among them, and it is said that the same is the case with some of the nomads of Sinai. These same bedawin are described as being peculiarly liable to rheumatism. No class are greater fatalists, and in the larger number of cases of illness the patient is left uncared for, even, as the writer has witnessed, when the sick one is a cherished son. The bedawin have remedies of their own, but many appear to be the result of the inspiration of the moment rather than of any tribal lore. The food of these nomads consists of unleavened bread, made of coarsely ground wheaten flour, burghul (bruised wheat, boiled), rice, lebban (sour milk), cheese, dates and fresh fruit when they can be obtained; occasionally, as on a feast, a sheep is killed and there is a gorge of meat. A great number of them suffer from chronic dyspepsia, the pangs of which they usually ascribe to intestinal worms; these, it is true, they also have in plenty. Child-birth is, as a rule, accomplished with extraordinary ease. Although these nomads, in a remarkable manner, survive injuries received in their fights, their constitutions present very little resistance to acute diseases, particularly perhaps to pneumonia, and they succumb to what any soundly constituted European would successfully resist.

(2) The fellahin are ethnologically a very mixed race, and distinctive physical characteristics are found in certain villages or groups of villages. In general, the poorest both in physique and in possessions are found in southern Palestine. The great masses of the fellahin—like the bedawin—are nominally Moslems, but they know but little of the religion which they profess, and follow a cult of traditional religious customs, often quite at variance with their orthodox belief. There is a certain number of Christian villages scattered about the land where, as a rule, the houses and surroundings are more comfortable than in the villages of the Moslems. In northern Palestine, particularly, the most varied races and classes dwell side by side—Christians (in several distinct sects), Jews (in "colonies"), Sunnite Moslems, and Metaweleh, Druzes, Moslem Circassians, Turkomans, and Algerians. Even those

occupying villages within sight of each other will often have but little social intercourse. All over the land the custom of intermarriage within the very narrow circle of a single village, or of a small group of villages, is the rule. This constant interbreeding is naturally prejudicial to health, and must greatly concentrate the tendency to inheritance of disease. The houses of the fellahin are usually constructed of very loosely built walls, with flat mud roofs, unprovided with parapets (Deut. xxii, 8), and in many parts of the land without even chimneys. These ill-made walls, however, have the advantage of allowing free ventilation even when, as is the rule, all windows and doors are closed at night. Most dwellings swarm with vermin. In some parts of the land (*e.g.*, Ḥaṭṭin, Banias, etc.) the inhabitants sleep in booths constructed on the roofs during the summer months, when the vermin are most active. A witness to the commonness of the presence of body lice is supplied by the exclamation frequently used in northern Palestine, "May God not remove them [*i.e.*, the lice] from me!" because the sudden departure of these pests from anyone is considered a sign of mortal sickness. The village streets are narrow and very irregular. Heaps of refuse accumulate in corners, and a huge dung heap—the breeding-place of countless myriads of flies—dominates the habitations. There are, with very few exceptions, no sanitary arrangements, and the whole village is often surrounded by a narrow area of human excreta which the fellahin never take the trouble to cover with earth, and which, when the rains come, is, in many cases, carried into the source of the water supply. Although the native of the land has a keen appreciation of good water when he sees it, and will laud the virtues of fine springs in extravagant language, he is often very careless about his domestic supply. In many places water is very scarce over much of the year, and little can be spared, or is used, for personal cleanliness. On the other hand, the young lads, in many villages, bathe daily in the tank or pool which supplies water for domestic use. The house-floors, being usually of beaten earth, can never be properly cleansed and harbour the accumulated filth of years. The fellah has the advantage neither of the nomad's periodical migration to a clean site nor of the thorough cleansing which the town-dweller is able to give periodically to his stone-paved floor. From want of personal cleanliness and the impregnation with sewage of the food, especially the salads, intestinal worms are exceedingly common. The food of the villager,

in addition to the articles mentioned as eaten by the nomad, includes a large amount of fresh and dried fruits, especially figs, grapes, apricots and dates, and in their seasons, fresh melons, gourds and cucumbers. Cooked with meat he has rice, vegetable marrows, egg-plant (*solanum*), bārmeyeh (*Hibiscus esculentus*), tomatoes, etc. Eggs, chicken, and meat in general are eaten more commonly than with the bedawīn, and in certain districts fish is also a usual article of diet; but the majority of the villagers never touch it. As with the bedawīn, so with these people, there is a great prevalence of dyspepsia, due partly to the common custom of making but one large meal daily, in which half-cooked bread and unripe fruit largely figure, partly to the over-eating which occurs at feasts, and perhaps most of all to the perpetual over-drinking of water (a habit in itself often due to dyspepsia), which distends the stomach and dilutes the gastric juices. This last is even more true of the bedawīn, who have often to wait for a long time before getting a satisfactory drink. The fellahīn suffer much from the cold and wet in winter, the majority make but little change of raiment, and those who can do so cower over their small charcoal fires during the long, heavy, rains of the winter months. They need sunshine for their natural life, darkness and wet are things to be got through as well as possible—preferably in slumber.

(3) Then we turn to the hader, or townfolk. It is necessary to distinguish to some degree between the Moslems, the Christians and the Jews, and, in the case of the last two, to differentiate between the true Orientals and the more or less orientalized Europeans, because each class has different social customs and modes of life, leading to a different liability to disease. For example, venereal diseases are distinctly rare among the Jews of Palestine, not very common among the oriental Christians, but fairly common among the more well-to-do Moslems. This is said to be increasingly true the nearer we approach to Egypt; at Gaza, for example, a very high percentage of the people, according to the late Rev. Canon Sterling, M.B., suffer from syphilis. The morals of the Jews of the Holy Land, particularly of the European immigrants, are good; they, as a class, are much held in check by religious motives. Public vice is uncommon everywhere, but on the other hand a large proportion of the more notorious "public women," especially in Damascus, are Jewesses. Among the Moslems, unnameable vices are deplorably common, and they are viewed by the rank and file

with but little horror. The kidnapping of boys for vile purposes is done in some of the larger Moslem centres in broad daylight, and the victims, not uncommonly native Jews, have but little redress. The writer has had many such cases under his care.

As a whole the towns-people enjoy better houses, better clothes and better food than the fellahin; and perhaps, as a class, oriental Christians know best how to live comfortably. Food is much the same as with the fellahin, with the addition of great quantities of sweets and nuts, sweet sherbets and coffee, the first mentioned, particularly, leading to rapid decay of the teeth. The villager with his coarse food has usually excellent teeth, but a few months of town life leads to rapid deterioration. Milk is, by a long-standing instinct, always boiled—a custom which doubtless saves many lives from Malta fever, enteric and tuberculosis. In the towns, dyspepsia is also somewhat common, much of it being due to the habit of cooking food with oil, olive or sesame, instead of, as with the fellahin, with *semen* (boiled butter). The orthodox Jews, always, and the native Christians, at fast seasons, are obliged to cook their meat and vegetables in this way, and experience shows that food so prepared is not easily digested.

The sanitary arrangements of all the towns are still extremely primitive. Drain traps are practically unknown, except in European houses and institutions. The "waterclosets" are usually in close proximity to the front door, or the kitchen, or both; and the entrance to the main drain or cesspool, where there is often an accumulation of years, being quite untrapped, the effluvia is at times almost unbearable. In Jerusalem, which should be a place easily drained, a water-carriage system of main drainage has been made, ancient sewers being utilized, but as there is no system of flushing these badly constructed, stone-built channels, sewage stagnates in them during the whole dry season, poisonous gases make their way freely into the houses and streets, and the liquids impregnate the surrounding soil for a considerable distance, and, without doubt, in places reach the neighbouring cisterns. When the heavy winter's rains fall, the accumulation of months is carried down the main sewer, emerges in the valley of the Kedron just below the village of Silwān, and flows down the valley in close proximity to the Bir Eyyūb (Job's well—the ancient 'en-Rogel), the water of which is carried to the city for many domestic purposes. Much of the fresh sewage is distributed over the gardens to the

south of the city, in which are grown quantities of the salads, cauliflowers, and other vegetables supplied to the city. One effect of these and such-like arrangements is the universal occurrence of "round worms" among the native population, and here too we have all the necessary antecedents for the propagation of enteric fever and cholera.

(*To be continued.*)

THE IMMOVABLE EAST.

By PHILIP J. BALDENSBERGER.

(*Continued from Q.S., 1917, p. 165.*)

III.—THE SISTER-TOWNS RAMLEH AND LYDDA¹—*continued.*

THE Christian natives live on good terms with their Mohammedan fellow-citizens, as it was only after great events in history that they suffered persecution, and life was made intolerable to them. Since the departure of the Crusaders from Acre, they have greatly diminished in numbers, and certainly have had to endure every kind of humiliation during the "Great blank" from 1291 to the end of the eighteenth century. During these five centuries their existence was little short of slavery, their condition rising or falling according to the ruler of the empire, kingdom, or province. During the short occupation of the coast by Bonaparte—February to May 1799, they hoped for a final recovery of the Holy Land by a Christian power, and showed their contempt for their Moslem co-citizens—a Christian even allowed himself the liberty of calling out to the Muezzin in irreverent terms and shooting him down. Many joined the retreating French army, and many were killed by the mountaineers who followed on their track, while the women and children were carried away and sold in the markets of Jerusalem,

¹ [It will, of course, be borne in mind that these sketches of the modern towns of Palestine were written several years ago.—ED.]