

sitch-leli = thou hast killed for him. 31. *Hatch'im* = thou (art) with me; *chutillil* = *chul-t-lil* = all which (is) to me, all that I have. 32. *Wajib 'alēnah*,

Arabic واجب علينا

Since my completion of this article Dr. Van Dyck has called my attention to the book *درة الغواص في اوهام الخواص* by الحريري where reference is made to some changes of consonants, &c., similar to what we find in the Ma'lula dialect. The كَشَكْشَة رِبِيعَة (an Arab tribe) is changing the كَافِ to شِين; as مَابَش for مَابَك; and sometimes the كَافِ, which is not the كَافِ الوقف, is changed to ش, as in جِيدَش جِيدَهَا, عِينَاش عِينَاها.

Change of hamzeh to ع is also mentioned as in *أَعْن تَوَسَمْت* for *أَنَّ تَوَسَمْت*.

In Bethlehem, and among some Bedouins, to-day ك is pronounced like TCH. In Nazareth ق loses its guttural force. The Nuseiryeh, near Sofita, say *دهنت* instead of *أنت*, for the 2nd. pers. sing. of the pronoun.

F. J. B.

ESSAYS ON THE SECTS AND NATIONALITIES OF SYRIA AND PALESTINE.

ESSAY I, INTRODUCTION.

BY REV. GEORGE E. POST, M.A., M.D., F.L.S.

The Physical Features, Climate, Soil, Water Supply, Natural History, and Health of Syria and Palestine.

I.—Physical Features.

It is not the object of the present essay to present an exhaustive view of the topics enumerated in the title, but to show their bearing on the march of population in these lands, and the preservation of the races now represented, as well as the origination and destruction of those which have been represented in the past.

No country of equal size contains so strange an aggregate of heterogeneous elements, such a medley of irreconcilable sects and races, as the

one which we are to pass in review. No country has been so scourged by war, so often trampled under foot and ruined, and yet it has never long been without a considerable population, often a very dense one. No other country has retained such distinct and strongly marked traces of the vicissitudes of its history. None is so complete a microcosm in the variety of types of civilisation and barbarism. To attempt to account for these strongly marked peculiarities simply from history will lead only to partial and one-sided results. It will be our purpose to show how, under the guidance of an unerring providence, the physical features, climate, soil, water supply, natural history, and health of Syria and Palestine, have influenced the population, history, and physical, moral, and religious characteristics of the people.

The insular character, the sinuous coast, the geographical position, and the great mineral and agricultural resources of Great Britain have had a large share in making it the great commercial and naval power of Europe. The lofty mountains, and inaccessible fastnesses of Switzerland have nurtured that spirit of independence and love of liberty which have made that land so illustrious in the history of the world. But neither of these countries has owed more of its peculiar development to its physical features and surroundings than have Syria and Palestine.

Syria and Palestine present in a geographical area of, say 50,000 miles, more diversities and anomalies than any equal territory on the surface of the globe. In this territory is the deepest valley, 1,300 feet below the level of the sea. While its mountains are not as lofty as the Alps, their nearness to the sea gives them a relative elevation as striking, and, in a physical sense, as important. They are surrounded by deserts, with a line of demarcation almost abrupt.

There exists between parts of this territory, quite near to each other, the widest difference in isolation from or in connection with the rest of the eastern world. Thus the southern and eastern deserts are so isolated, that they have been, from time immemorial, inhabited by almost independent tribes of Arabs, whom Assyrian, Babylonian, Persian, Greek, Roman, Saracen, and Turkish power has striven in vain to subdue. Thus a prime factor in preserving a race, language, and customs has been the physical features of their country. Again the mountain fastnesses of the Nusairy range, and of Lebanon, have had a large share in the semi-independence of the tribes which inhabit them, and have made possible the continued existence without fusion of such sects as the Nusairiyeh, the Maronites, and the Druzes. But inaccessibility is the exception and not the rule in this territory. The level strip of sea coast, with openings to the interior by the plains of Esdraëlon, Merj 'Ayun, 'Akkar, and Issus, has been a highway for the conquering armies of Egypt, Assyria, Babylon, Persia, Greece, Rome, Tartary, the Crusaders, Saracens, Turks, and French; hence, while the hill countries and deserts have contributed to *preserve* fragments of the original races unaltered, the plains have invited the intrusion of new races, and produced a mixture, unparalled in the history of mankind. Canaanite, Hittite, Hebrew, Syrian, Arab, have become intermingled with

all the historic races of Europe, Asia, and Africa, even to the blue-eyed and flaxen-haired Dane and Norwegian. Syria and Palestine have been subdued and overwhelmed oftener than any other part of the world, and such seems to be their destiny until the entrance of a new order of things. Let us see how this has occurred.

Syria and Palestine, including the Sinaitic peninsula, form the geographical meeting point of the European, Asiatic, and African continents. For Asia Minor, although included by its sea coast in the Asiatic mass, is essentially southern European in its climate, productions, ethnology (with the exception of the modern Turkish graft), and its history.

The salient physical feature of the country is the two mountain ranges which intersect it from north to south, parallel to each other and the coast. Between the westernmost of these ranges and the Mediterranean Sea, is the narrow maritime plain of Philistia, Phœnicia, and 'Akkar. Between these two ranges is the table-land of Hamath, Hums, the lacustrine basin of Coelesyria, and the sunken trough of the Jordan, Dead Sea, and the 'Arabah. Eastward of the easternmost range is the table-land of Moab, Gilead, Haurân, Damascus, and Aleppo, stretching eastward to the Syrian Desert, and northward to the Euphrates Valley.

So pronounced are these ridges, that they turn most of the principal rivers of the country into a north and south course, in the cleft between the two chains. Thus the Orontes, taking its rise in the valley of Coelesyria, flows northward to a little north of the latitude of Antioch, and then breaks abruptly south-westward around the shoulders of the Nusairy and Cassius chain to the sea. The Leontes, rising near the Orontes, flows southward through the valley of Coelesyria, and, a little north of Tyre, reaches the Mediterranean through the gap between Lebanon and Galilee. The Jordan, rising on the westward slopes of Hermon, flows southward in its strange chasm, to be lost in the Dead Sea. The waters of the Tih flow northward, through the 'Arîsh, and those of the 'Arabah and Edom also northward, through the 'Arabah, to the Dead Sea. Only the lesser torrents flow westward by a more or less direct course to the Mediterranean, and the Barrada and 'Awaj eastward from Anti-Lebanon and Hermon to the Syrian Desert.

As before mentioned, the maritime plain opens by four broad depressions in the hill country to the interior plains. These great and easy high-ways have had a controlling influence on the destinies of the land. An army invading the Euphrates Valley from Egypt, or vice versâ, could march with ease along the coast to Acre, across Galilee by the plain of Esdraëlon and enter Haurân, whence there is hardly need to make roads to enable chariots, as well as horse and foot, to penetrate where they would to the northward. But the table-land of Haurân, Damascus, and Aleppo did not offer a more sure and safe road to an army, than did the Syrian desert hem it in from the east, and compel it to march northward or southward. Hence the great campaigns were always on north and south lines. The forces of Assyria and Babylonia made a wide detour to reach those of Egypt. No conqueror had the foolhardiness or the

resources to enable him to cross the Syrian desert to seek his foe. For this reason the kingdom of Palmyra, sequestered in the desert, was long safe from assault and conquest.

An invading army from Egypt might pass the plain of Esdraëlon, and enter Cœlesyria by the valley of the Leontes, or debouch around the southern or northern shoulder of Hermon into the Damascus plain. Or it might pass northward by the Phœnician plain to 'Akkar, and thence eastward to Hums, Hamath, and Aleppo. Or it might advance northward to the Orontes, and so penetrate to the interior. Campaigns along all of these lines were undertaken by the great military monarchies of northern Africa and Western Asia, and later of Europe. Many times these expeditions merely claimed a right of way, and seem to have interfered little or not at all with the inhabitants. At others they formed alliances with the peoples who lay on their line of march, and thus held open their own communications and line of retreat. But it could not be otherwise than that a land so accessible from every side should have been overrun and conquered by the fierce military monarchies at whose mercy they lay.

The inevitable result of the repeated conquests of the plains and more accessible mountains was to drive back the refugees into the fastnesses, and each wave of war which rolled upward left on retiring a fragment of some race or religion on the upper terraces, and in the secluded valleys of the mountains.

II.—*Climate and Meteorology.*

The physical features of the country, so exceedingly varied, and so important in their influence on political history and ethnology, exercise also a controlling influence over the climate and meteorology, which are more diversified than in any similar extent of territory on the globe.

As the great mountain chains determine the course of the rivers, so they determine the distribution of the rainfall. The Tih and Sinai are under the dominion of the climatic laws which govern north-eastern Africa, and seldom have any considerable rainfall. The dry air of the Sahara, not passing on its way to these regions over any considerable body of water, remains dry, and hence, even the lofty mountains of Sinai do not often find moisture to precipitate, and whole winters may pass without a shower. But the winds that strike the coast range of Palestine and Syria are loaded with moisture in their passage over the Mediterranean, and this moisture is condensed and poured down in copious rains over the seaward slopes of this range, and the maritime plain. The rainfall increases as you pass from Southern Palestine to Lebanon, and probably attains its maximum under the alpine summits of Sunfn and Makuel. The rainy season lasts from the middle or end of November to the end of March. There is a month of occasional showers before and after this season, but the heaviest rains of the year usually occur in the months of December, January and February.

As much of the moisture of the air is extracted in its passage over the maritime chain of mountains, there is a considerably reduced rainfall over

the central plains and the eastern chains. These chains extract still more of the moisture of the air, so that the rainfall of the eastern table-land is much smaller than that of the coast and adjacent hills. Thus, while the average rainfall of Beirût is about 35 inches, and that of the central zone of Lebanon probably from 50 to 55 inches, that of Damascus will hardly exceed 20 inches, and the amount diminishes as the distance eastward from the mountains increases. Those parts of the eastern table land which lie open to the heavily charged clouds coming from the west enjoy a greater rainfall and more fertility than those which are cut off by intervening mountains. Thus Haurân, which lies in the gap between the mountains of Gilead and Hermon, and is backed to the eastward by a high mountain chain, enjoys a heavy rainfall, and corresponding fertility. The same is true of the region about Hums and Hamath.

The heavily wooded chains of Cassius and Amanus attract moisture, and enjoy a longer rainy season than southern Syria and Palestine, and have occasional showers even in midsummer.

The temperature of the different portions of our district depends on their altitude more than their latitude, and varies from the tropical heat of the Dead Sea Chasm, to the alpine temperature of the higher peaks of Lebanon and Anti-Lebanon. The average summer temperature of Beirût at 10 a.m. is about 84° F. in the shade. This would probably be a mean for the coast. But, owing to the low dew point, this temperature, in itself so moderate, seems much higher than it really is. At an altitude of 2,500 feet on Lebanon the average for the same season and hour is about 77° F. The air at this altitude is dry, and this temperature is, therefore, by no means oppressive. The temperature of the upper inhabited regions of Lebanon, the highest of which are 6,000 feet above the sea, is quite sub-alpine, and the winters are so severe that the better classes and many of the poorer people of Ehedin, near the Cedars, winter on the Tripoli plain. Snow covers the higher peaks during the winter months, and rests on their summits throughout the year.

On the other hand the temperature of the Jordan Valley is tropical. The thermometer ranges as high as 120° F. in the shade at Jericho in August. The harvests of this torrid depression mature a month or six weeks earlier than those of the sea-coast, and two to three months earlier than those of the hill country.

In speaking of the temperature in the shade in this land, we must not forget that it quite inadequately expresses the intense fervor of the direct rays of the sun, when no cloud intervenes to mitigate the heat. On the sea-coast the sun temperature often reaches 145° F., and sometimes over 150° F., and in the Jordan Valley and in the narrow gorges which debouche into the basin of the Dead Sea, the heat is blistering. One of these wadies is appropriately termed Wadi-en-Nâr, the Valley of Fire.

The temperature of the plateaux is subject to extremes of heat, and to bitter cold winds. It is not uncommon to have a summer heat of 95° to 100° F. in Hums and Aleppo, while storms almost like the blizzards of the western United States sweep over those boundless plains in winter.

All parts of the country are exposed to siroccos, which are the driest and most exhausting of all the winds of the country. During such winds the surface of the soil is parched and cracked, the covers of books become warped, doors snap with a sound like a pistol shot, the skin becomes dry, and the nervous system is at its highest tension. These siroccos prevail for the most part in the early spring, and are often followed by refreshing rains. They are most intolerable when they occur in mid-summer, and especially so on the great plains of the interior, where they seem like the blast of a furnace.

The rainy winds are usually from the south-west. Occasionally there is a shower from the north, and rarely from the east. But the heavy storms of winter always come up obliquely to the coast line, out of the Mediterranean.

The above particulars of the meteorology of the country denote a climate in the plains of a subtropical, and in the mountains and plateaux of a mild temperate character, with sufficient variety to cultivate strong contrasts of character, illustrated by the extremes of the effeminate inhabitants of the Jordan Valley, and the sturdy mountaineers of Alpine Lebanon. In general, the climate is one which is adapted to the existence of a large population. There being little need of fire for heating houses, the scarcity of fuel would not be felt. The long summers made it a matter of comparatively trifling cost to provide necessary clothing. From these two causes a larger population could exist than in a land where fuel and warm clothing are essential to existence. Again, the variety and range of temperature and rainfall have a most important bearing on the development of all the resources and capabilities of the country. Those plants which require moisture find it. Those which flourish best without it are also suited. Hence almost every foot of land not actually rock produces something directly or indirectly useful to man, and even the clefts of the rocks furnish pasture of no little value to sheep and goats.

III.—*Soil.*

The soil of the maritime plain is usually a fertile brown loam, with sandy reaches behind the prominent capes. That of the hill country of Palestine and Syria is also a brown loam mixed with the detritus of limestone rocks, usually thin, and, except where terraced, liable to be washed down by the torrents into the valleys. When terraced it yields a small harvest of the cereals, but is especially adapted to the fig, the mulberry, and the olive, and from 2,500 feet to 5,000 to the vine.

The soil of Coelesyria is that of the bed of an ancient lake, a rich brown, and in places almost black loam, of inexhaustible fertility. Notwithstanding the primitive ploughs, which only scratch the soil, the rude method of sowing, and the failure to manure, this plain still furnishes luxuriant crops of wheat and maize, sesame, and sorghum. The only attempt at scientific agriculture is the rotation of the crops of maize and wheat. This, and leaving portions to lie fallow, seem to suffice to maintain a fertility which is immemorial.

The soil of the Jordan Valley and of the plain of Esdraëlon, and the lesser plains of the uplands of Palestine, resembles that of Coelesyria in fertility and strength.

Eastward of the Jordan the soil of Moab is thin, and for the most part adapted to pasturage. The rolling park land of Gilead is partly wooded, and adapted only for forest growth, and partly a grazing country, as in the days of Reuben. Only a few favoured spots are specially adapted to the raising of wheat and other grain.

Haurân, El Leja, and the great plains which stretch away to the northward as far as Aleppo, are largely volcanic. The tufas and other products of the disintegration of the volcanic rock, furnish an exceedingly rich soil, specially adapted to the growth of wheat. Seven hundred camel loads of wheat are said to be carried daily to Acre during the season immediately following the wheat harvest of Haurân.

As a whole, Syria and Palestine, while containing much rocky and unproductive territory, are countries of great fertility and resources. But their fertility depends in a peculiar manner on the industry of man. The soil of the hills must be terraced, or it will be washed down their sides by the winter torrents; it must be worked over to clear it of rocks and stones, or it will not give good nourishment to the plants and trees which it bears. But given a carefully-prepared soil, and sufficient water, and there seems no limit to the agricultural possibilities of this land of fertilising sunshine. Water, however, is a *sine quâ non*, and as the season of rain is limited, it was necessary that there should be a provision for the storage and distribution of water over all the country, through the dry as well as the wet season.

IV.—*The Water Supply.*

Few countries have a more admirable provision for the collection, storage, and distribution of water than Syria and Palestine. The limestone rocks which constitute the greater part of the mountain chains have numerous and very extensive caverns, which are natural cisterns for the storage of the surface water which percolates into them through the fissures of the overlying strata. In the centre of the north and south mountain-chains rise the lofty ranges of Lebanon and Anti-Lebanon, the summits of which are covered with snow during the winter, and carry the snow of one winter into the next. The summits of Jebel Sunnîn and Jebel Kenîseh, and parts of the chain above the Cedars, are so arranged as to collect and retain vast drifts of snow. The top of Sunnîn, for example, consists of a series of funnel-like depressions from 250 to 1,200 feet across, and from 100 to 250 feet deep. These become almost or quite filled with snow in mid-winter. From the bottoms of these funnel-like depressions there are channels leading down to the great caverns in the heart of the mountain mass, and through these channels the water which melts from the snow-drifts flows down to swell the

supply in the reservoirs, from which it breaks forth in perennial fountains at different levels down to the sea, and even under its surface. The top of Jebel Makmel is a broad plateau with transverse ridges across it, and between these ridges lie the snow-drifts, and into depressions of the plateau runs the water, to be lost in the mountain mass beneath, and then reappear in such streams as the Kadisha, which springs forth, an ice-cold torrent, below the "Cedars of the Lord."

Similar store-houses of snow and water are found on the tops of the other peaks of Lebanon and Anti-Lebanon, and in their inmost recesses. The lake of Yamûni is drained by an underground channel, and perhaps reappears in the great fountain of Afka, which is about 400 feet lower, on the opposite side of Lebanon. In that case the underground stream must tunnel the entire breadth of the mountain chain at an elevation of over 4,000 feet.

The strata of the limestone chains are nearly horizontal, and there is abundant evidence that the water stored at the higher levels is distributed as follows: copious fountains burst forth at the base of the summit cones and ridges, as those of Neba'-el-Leben, Neba'-el-'Asal, Neba'-el-Hhadid, the fountain of the Kadisha, and many others: Another portion of the water percolates through the upper strata to other intramontane reservoirs at different lower levels, and is then conducted by the slightly dipping strata in channels between these strata, and breaks forth by side channels in fountains along the course of these rocky aqueducts. Nothing is more striking in travelling through Lebanon than to see from some commanding point of view the villages along both sides of a valley, like that of the Damûr, lying along horizontal lines, corresponding with the strata between which the fountains gush forth. In some cases these rocky aqueducts are many miles in length, and a single one manifestly acts as a water-main for a large number of villages. A few hundred feet below such a concealed watercourse will be another tier of villages, supplied by a second conduit, with its lateral channels to furnish the life-giving fluid to the fountains along its course.

There are also underground rivers flowing to great distances, and supplying fountains even to the level of the sea, or beneath its bed. In this way must be explained the large number of perennial springs which flow through the rainless months along the sides of the mountains of Palestine, and in the Nusairy chain, which have no snow-clad peaks to supply water through the seven months of summer. Doubtless there are many of these channels which work more or less on the syphon principle, and some of them give rise to intermittent fountains of a most interesting kind.

The capacity of the great storage and distributing reservoirs of the mountains may be inferred from the vast quantity of water which flows in the numerous streams of the country. The aggregate of the Orontes, the Leontes, the Jordan, the Barrada, the 'Awaï, the Kadisha, the Dog River, and the Damûr, beside the numerous smaller streams, which flow into the Mediterranean, and the Dead Sea, and the Damascus plain, is

enormous. Much of this water is used for irrigation and never reaches the mouth of the stream. Many streams are wholly used in this way in summer. But, notwithstanding leakage, evaporation, and irrigation, a vast volume of water is poured out steadily through the long succession of rainless months; and if we add to this the fact that, by digging, copious supplies of potable water can be obtained almost anywhere on level ground, we shall gain a more adequate conception of the provision made for fertilising this land and supporting a large population.

The bearing of the fertility of the soil and the adequate supply of water for the wants of all whom the soil can feed, on the continuity of a large population in these lands through all the vicissitudes of the ages, is evident. A land in which the water supply is on the whole stable and certain, and the soil responds to the labourer's toil, is a land which will attract back again a population however it may have been "scattered and peeled." While there are irregularities in the amount of the rainfall there is seldom a water famine. The drought of summer is offset by the fact that the winter is a period of vegetable growth, not of sleep under a mantle of snow as in cooler climates, and that, with irrigation, two or more crops may be gathered in a year. It is still further offset by the fact that several of the staples of the country, as the mulberry, the vine, the olive, the fig, and the durrah, are independent of rain, except during its proper season, and there is a superabundance of water for all crops which require irrigation.

It is not, then, to be wondered at that a succession of wars, and desolations, and captivities, which would have ruined a less favoured land irreparably, as they have ruined Mesopotamia, large parts of Persia, and Northern Africa, have never for any long time prevented Syria and Palestine from having a considerable population. And while the country now supports far fewer people than it once did, and may do again, yet every year of peace multiplies its population, and it needs but the protection of a stable and just government to cause it once more to swarm with people "as the sands on the sea shore for multitude."

V.—*Natural History.*

The *Flora* of this land is the richest of any country of its size in the world. The great diversity of soil, climate, rainfall, sun exposure, elevation, and depression, gives opportunity for the growth of a large number of species and varieties. The flowering plants number over 3,000 species, distributed through 850 genera and 117 orders. Many of the genera have a large number of species. Thus, *Ranunculus* has 28, *Silene* 58, *Trigonella* 31, *Trifolium* 48, and *Astragalus* 115 species, and several other genera have from 30 to 60 species apiece.

Each district has its distinctive flora. The *maritime plain* has the palm, the sugar-cane, the colocasia, the banana, the orange, lemon, citron and mandarin orange, which characterize its gardens and fields. In the dunes on the coast grow a large number of plants which are only adapted

to the blown sand, and seem to be provided to prevent this sand from overwhelming the fertile land. In the warm, moist air of the coast plain most sub-tropical plants can be cultivated in the open air.

The *lower and middle zone of the mountains* is the favoured home of the mulberry, the fig, the olive (which also grows luxuriantly on the maritime plain), and the vine. Tree culture is the main industry of Lebanon, and a considerable one on the mountains of Palestine. The cereals grown in the mountains are insufficient for the support of the population, and cannot be rated as a staple of the district. The main reliance of Lebanon is the mulberry, which not only furnishes the food of the silkworm, but later that of the sheep and horned cattle.

Anti-Lebanon is far less fertile, and has far less inhabitants than Lebanon. Tree culture is less common, but there are far more forest trees here than in Lebanon. But at similar altitudes corresponding productions are raised.

The forest trees of the *middle mountain zone* are the Aleppo Pine, the Hackberry (*Celtis Australis*), three species of Maple, the Portuguese, Lebanon, evergreen, Vallonia, Cerris, and other Oaks, the Syrian Ash, the Juniper, the Cypress, the Styrax, the Arbutus (which attains the magnitude of a considerable tree in the park-like groves of Gilead), the Terebinth, and, in Northern Syria, the Beech and Hornbeam, and others. The Walnut is generally cultivated as also the Carob. All the ordinary fruit trees, as apples, peaches, pears, plums, apricots, medlars, &c., flourish.

At an altitude of about 6,000 feet the famous Cedar of Lebanon flourishes, and doubtless once covered the subalpine zone of Lebanon and Anti-Lebanon. It is now found in only a few groves of Lebanon, and is extinct in Anti-Lebanon, but grows in considerable quantity in Amanus.

Of wild fruit trees there are few in our district. The sour plum (*Prunus ursinus*) is a plant of the middle and subalpine regions of Lebanon and Anti-Lebanon. A minute dwarf cherry flourishes on the alpine peaks. There is the Arbutus Unedo, L., the Jujube tree, the Hawthorn, the Syrian Pear. Of shrubs almost the only one with an edible fruit is the wild Blackberry.

The characteristic flora of the *almost treeless plains of the interior* consists of numerous species of Astragalus, Centaurea, Phlomis, and Salvia. These plains are the great wheat producing regions of the Levant, and along them armies have always been sure of supplies. Maize, durrals, sesame, barley, and in wet places rice, flourish in this district. From some prominent shoulder of the mountains one of these great fertile plains appears in the spring-time a broad sea of green, and later, in the harvest-season, a sea of gold, stretching away as far as the eye can reach, or to the base of the range of mountains which constitutes its boundary.

The flora of the *Jordan Valley*, besides sharing the characteristics of the lower levels of Palestine, has an element of tropical vegetation, similar to the upper Egyptian and Nubian. The Zaqqûm, or so called Balm of

Gilead Tree, grows nowhere in our district but in this valley. The same is true of the Papyrus, *Salvadora Persica*, *Calotropis procera* (the Apples of Sodom), *Solanum coagulans*, and other plants. The torrid heat of this valley causes its crops to mature very early, and its abundant water is capable, by irrigation, of making it, what it once was, a garden of the Lord.

The *alpine peaks of Lebanon, Anti-Lebanon, Cassius, and Amanus* support a copious and peculiar vegetation, of most interesting botanical character. This vegetation, although useless to man directly, is of great indirect value, as it furnishes the food of large flocks of goats, which are a source of livelihood to no inconsiderable number of goatherds and their employers. These goats, however, do more harm than good to the country, by devouring all seedling trees, and so preventing the second growth of the forests, so needed on the higher mountain ranges, both as a direct source of wealth, and as a regulator of the rainfall.

The *desert flora* is as peculiar and interesting as that of the alpine regions, and like it, although directly of little value to man, indirectly contributes to his maintenance by supporting considerable herds of camels, and in some places asses. Not all of the so-called desert is unproductive. The valleys of Sinai have, until recently, contained large numbers of acacia and tamarix trees, which have furnished much charcoal for the Egyptian market. The supply is even yet not exhausted. The great table land known as the Syrian Desert, furnishes pasturage for innumerable flocks and herds, and supports a large nomad population.

It is evident from the foregoing sketch of the botanical regions of this land that the diversified productions of the different parts of so small a territory have had their full share in its strange history. Thus the fertility of the coast and the great plains of the interior, as well as of the depressions which connect them with the coast, has had as much to do with making them highways for conquering armies as their ready accessibility. An Egyptian or Assyrian Army could march from its base to its objective point almost without commissariat, and find abundant supplies by the way. On the other hand, the rugged surface and stony soil of the mountains, ill-adapted to the production of the cereals, could not furnish an invader with necessary supplies, thus adding to the cost and difficulty of a campaign the necessity of providing a commissariat. Yet in their remote fastnesses or fortified towns the natives could preserve a sufficient store of food to enable them to withstand a siege, and when it was over their forests and upland pasturages furnished a means of quickly regaining a livelihood, while their less fortunate brethren of the plain had been despoiled of all they possessed, and perhaps led away into captivity.

Furthermore, the deserts, while inaccessible to foreign armies, furnished sufficient sustenance to the indigenous shepherds and warriors who roamed over them.

Thus, while parts of the country were being depopulated in every campaign, there remained hives of population, furnished with scanty but

sufficient nourishment for their hardy frames and frugal habits, ready to swarm out over the desolated plains and re-people the fertile districts so inviting to those who had known only the hardships and privations of mountain and desert life.

The *Fauna* of Syria and Palestine in Bible times was more varied, and included more of the larger animals than are now to be found. It is probable that the hippopotamus, the wild ass, and the lion were found in Palestine in historic times. It is asserted that the crocodile still exists in the marshes of the Zarqa and the Kishon. But from early times the wild animals of the more formidable kind were extirpated or driven back into the deserts or remoter mountain districts. Of the larger mammals the bear still exists in small numbers on the high peaks of Lebanon and Anti-Lebanon; the leopard is occasionally met with throughout the wilder forest and mountain regions; the oryx, which inhabits the deserts adjacent to Palestine; the fallow deer, of which a few stragglers inhabit Carmel and the wadies of Galilee; the ibex, which is found in the deserts and eastern and southern mountains, as far as Sinai; the Bubale, or Boqr-el-Wahsh of the Arabs; the addax, and the kebsh—but few of them are ever seen, and fewer captured or killed by man. The chase, therefore, is of no great importance in this land for the maintenance of human life. Wild swine exist in numbers in the forests of Cassius and Amanus, in the more secluded regions of Lebanon and Anti-Lebanon, and in the cane brakes of the Jordan Valley and elsewhere. They owe their continued existence to the fact that they are regarded as unclean, and unsuitable for food.

The chase is now almost confined to gazelles, hares, porcupines, conies, and other small mammalia, and to noxious animals, as the fox, wolf, hyæna, and jackal, and to birds. This was not, however, always so. In ancient times hunting supported a considerable population, and the game was worthy of noble and even kingly hands.

But if man finds little in the way of game to sustain life in this land, on the other hand, he has little to fear from wild beasts. A few people die annually from serpent bites, a few are torn by leopards or wolves, but predaceous animals have not seriously molested man within the historic periods.

The *domestic fauna* is, however, of great importance to man. It includes such invaluable servants as the camel, the horse, the ass, the mule, the buffalo, the ox, the sheep, and the goat. The camel is to the Arab what the reindeer is to the Laplanders. It is the beast of burden, its milk furnishes a considerable part of the food of the Bedawîn, its hair is woven into cloth for garments and tents, its flesh is also most valuable in case of need. Its value is greatly enhanced by the fact that it is the most inexpensive of animals to feed. In fact, it lives and thrives where no other beast of any use to man could exist. Hence its importance to the dwellers in deserts cannot be over-estimated. Probably without the camel these deserts would have been uninhabited. With it they maintain a very considerable population. The ass, also, is an animal of

exceeding value to man in these lands. It can live on the most meagre and uninviting diet of thistles and stubble, and yet do a surprising amount of work. Being very sure-footed, it is specially adapted to mountainous and stony regions, which are the rule in Syria and Palestine. The goat also is an animal capable of living where other grazing animals would find little or nothing to support life. It climbs over almost inaccessible rocks, and lives on a host of aromatic and bitter plants, which no other animal will eat. The importance of these animals in furnishing to man the means of existence cannot be forgotten in estimating the persistence of a large population in the remoter and more barren districts.

VII.—*Mineralogy.*

The mineral wealth of our district is not large. Iron ore is found in large quantities, and has, from earliest historic periods, been worked. The Damascus steel was famous in the Middle Ages. At present, the production of iron is probably smaller than at any previous period, owing to the disappearance of the forests which furnished the charcoal used in smelting. Copper mines were worked in ancient times by the Egyptians in Sinai. Turquoise was also extracted in considerable quantities from the sandstone rocks of Wadi Maghara. Copper is said to be found in the neighbourhood of Jebâ', in Lebanon. Bitumen is found in the neighbourhood of Hasbeiyah and in the Jordan Valley. Chromium is found near Antioch, but its value was not known to the ancients. In general, it must be admitted that the country is poorer in minerals than in other resources, and that it was indebted for its supplies to other lands. Few mines have been discovered, and, except the workers in iron, few of the people have ever depended on metallurgy for their livelihood.

VIII.—*Health and Disease.*

The health of these lands is in general good. They are to a large extent free from the severe inflammatory affections so fatal in the colder climates. They are also free from the peculiar diseases of the tropics. The great variety of productions, the generally wholesome water, and the comparative certainty and regularity of the crops, cause the prevalence of a high standard of health, and prevent the famines which curse countries of one staple. The temperate habits of the people, their freedom from alcoholism, their moderate use of meat, all favour their resisting power to causes of disease, and enable them to bear injuries and operations well. The adjacent Mediterranean, the high mountains, the table lands of the interior, swept by pure and almost constant winds, the deserts which lie on two sides of the land, all contribute to the maintenance of the purity of the air, and support a vigorous stock of humanity, fitted to replenish and infuse new vigor into the more effeminate races of the lower districts. They are also a sanitarium of the most perfect kind, and constantly afford

a refuge to those enervated by the tropical climate of Egypt and the warmer portions of Syria and Palestine themselves. Again and again has it happened, while cholera has prevailed on the coast and in the cities of the interior, that the mountains of Lebanon and Anti-Lebanon, and the Syrian and Sinaitic deserts have been quite free from the scourge.

The bearing of the excellence of the conditions of health on the recovery of a people subjected often to the rigors of war, and the derangement of industry, as well as the forcible breaking up of homes, and the crowding together of large bodies of men, is not hard to see. As a good constitution in an individual enables him to rally from desperate illness and regain sound health, so the sound state of a country's health enables it to recuperate after the horrors of war, and speedily reproduce the population which had been wasted by the sword.

Summary.

Syria and Palestine constitute a territory situated at the meeting point of the three ancient continents, and forming a highway connecting them, and along this highway the historic races of mankind have passed to and from a career of invasion and conquest unexampled in the annals of the world. Yet, although affording an easy pathway to invaders and conquerors, this land contains hiding places for those who have escaped conquest, which have afforded refuge to a large number of communities, still surviving, and transmitting by living tradition the fragmentary history of the past.

The *Climate* is such as to favour rapid increase of population and the maintenance of life, with a small expenditure for fuel and clothing, and a frugal diet. The *Soil* is rich, and produces, under the favourable conditions of exposure, altitude, and rainfall, a vegetation of unexampled richness and variety, and has been proven capable of supporting a very dense population. The *Water Supply* is copious for a country with a rainless summer, and the provisions for storing and distributing it are such that the population is well able to occupy a large part of the land. Even the deserts yield subsistence to a considerable number of hardy men, who are, and always have been, unconquerable. The *Flora* and *Fauna* are such as to favour the growth of population, and to make available to man all that the soil and climate furnish. Finally, it is a country whose lofty mountains and breezy plateaux furnish an admirable sanitarium for its tropical and sub-tropical lowlands.

From the combination of these causes these lands were inhabited from the earliest periods of history, and their populations, so often conquered, destroyed, or carried into captivity, have often returned, or a remnant of them has survived in some mountain fastness or desert solitude, or such rugged refuges as the lava sea of the Leja, or the volcanic cones of the Jebel-ed-Durúz, and these remnants have often clung to the traditions, religion, and customs of their forefathers, and in one case a

few villages have clung to their ancient language, or rather transformed it into a new and most interesting dialect. In taking up the individual sects it will be our duty to point out the origin and history of each, and their present geographical distribution so far as possible.

Meantime, the subject of a second preliminary essay will be—

The Land Tenure, Agriculture, Industries, Dress and Habits, Art and Architecture, Amusements, Science, and Music of these sects, so far as they are common to all.

METEOROLOGICAL OBSERVATIONS.

SARONA, 1887.

THE numbers in column 1 of the table show the highest reading of the barometer in each month; the maximum for the year was 30·285 ins. in January, this being higher than any reading in the preceding seven years. In the years 1880, 1881, and 1884, the maximum was in January as in this year, in 1882 in February, and in 1883, 1885, and 1886 in December. The maximum, therefore, has always been in the winter months. The mean of the preceding seven years highest pressures was 30·207 ins.

In column 2, the lowest reading in each month is shown; the minimum for the year was 29·145 ins. in April, this being lower than any reading in the preceding seven years. In the year 1883 the minimum was in January, in 1881 in February, in 1880, 1884, 1885, and 1886 in April, as in this year, and in 1882 in July; the mean of the seven preceding lowest pressures was 29·516 ins. The minimum, therefore, has taken place in the months from January to July.

The range of barometric readings in the year was 1·140 inch; this range being greater than any in the seven preceding years, viz., 1880, 1881, 1882, 1883, 1884, 1885, and 1886, when the ranges were 0·780 inch; 0·711 inch; 0·704 inch; 0·579 inch; 0·757 inch; 0·680 inch and 0·621 inch respectively. The mean for these seven years was 0·690 inch.

The numbers in the 3rd column show the range of readings in each month; the smallest was 0·104 inch in October, this being the smallest range in any month in the eight years; in the year 1883 the smallest was in June; in 1882 and 1886 in August, and in 1880, 1881, 1884, and 1885 in October, as in this year. The mean of the seven preceding smallest monthly ranges was 0·175 inch.

The largest monthly range was 0·843 inch in April, this being the largest range in any month in the eight years; in the years 1883 and 1884 the largest was in January, in 1882 in February, in 1881 and 1886 in March, in 1880 in April as in this year, and in 1885 in September. The mean of the seven preceding largest monthly ranges was 0·584 inch.

The numbers in the 4th column show the mean monthly pressure of the atmosphere; the greatest, 29·958 ins., was in February. In the years