# Palestine Papers

II.

THE

# Agricultural Possibilities of Palestine

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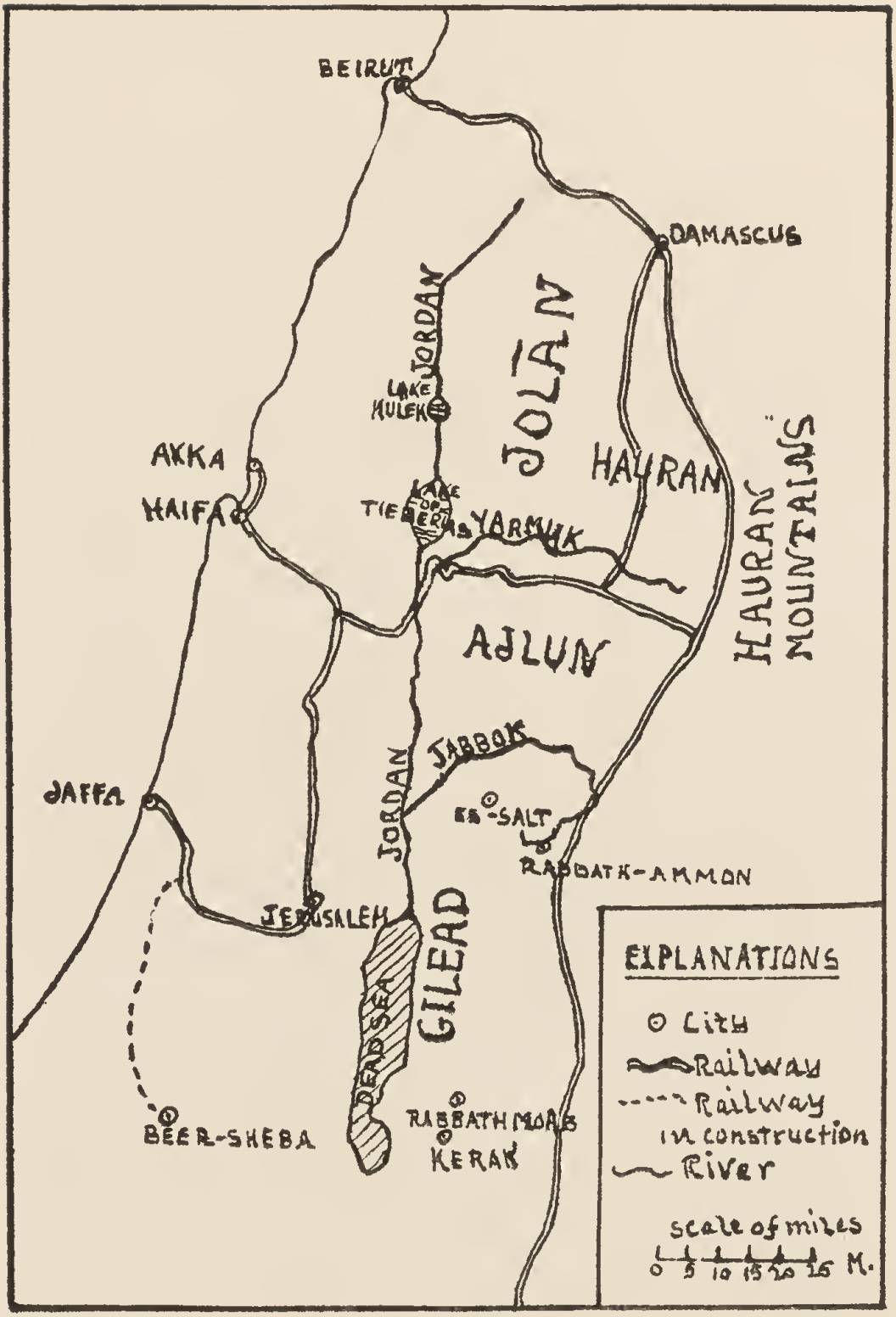
# PALESTINE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JAFFA
ES-SALT
RABBATH-AMMON
JERUSALEM
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# The Agricultural Possibilities of Palestine
## The Greater Hauran and Kerak

In considering the possibilities of Palestine we are inclined to focus our attention upon that part of the country with which the main events of Jewish history and the establishment of the Jewish colonies in modern times has familiarized us, Judaea, Samaria and Galilee. The imminence of our undertaking work in Palestine on a large scale, however, has made it imperative that we regard the country rather from an economic and statesmanlike than a traditional and sentimental viewpoint, and in doing so we are reminded that the land lying east of Jordan, extending from Mount Hermon to the River Arnon, is destined to play an important rôle in the future development of Palestine. This Transjordanian territory* is included within the Turkish administrative provinces (Mutessarifliks) of Greater Hauran and Kerak. The former is bounded on the south by the River Jabbo, and extends northward as far as the district of Damascus. On the west the Ghôr (the Jordan Valley) separates it from Western Palestine, and on the east it gradually merges into the desert plateau. It thus comprises in the north the Jolân (Gaulanitis), the Plateau of Hauran, the lava hills of El Leja, and in the south the Land of Gilead. Greater Hauran is roughly divided into two halves by the Hedjaz railway, which, running from north to south, approximately forms the eastern frontier of the habitable and cultivable districts of this province. East of the railway are barren and rocky hills, either of basaltic or volcanic formation, and east of these lies the great Syrian Desert.

The Hauran and Gilead from an immense table land, intersected in the center by the Yarmuk and its tributaries, whose banks are steep and rocky gorges which rise to the plateau above. Its length is from fifty to fifty-five miles, and its breadth at its greatest point is twenty-five to thirty miles. The plateau is of basaltic formation, but owing to ancient volcanic action the whole surface has been covered with lava, in many places to a great depth. As in other volcanic coun-

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* Population of the Mutessarifliks of Hauran and Kerak in 1915, from *The Economic Possibilities of Syria,* by Arthur Ruppin.

| Kerak | | Hauran | |
|---|---|---|---|
| Caza | Population | Caza | Population |
| Kerak | 19,551 | Hauran | 27,691 |
| Salt | 37,235 | Ajlun | 61,500 |
| Maan | 5,730 | Basrel Harir | 26,448 |
| Tafileh | 7,750 | Sueda | 24,260 |
| | | Azruah | 29,382 |
| | | Masmieh | 13,825 |
| Total | 70,288 | Total | 183,106 |

tries the lava has become disintegrated, and has formed a reddish-brown loam of great fertility. It is capable of growing wonderful crops, and its yield, both as regards quality and quantity, has no equal in the whole of Syria and Palestine.

The geographical situation of the Hauran makes it a political and economic necessity to the power which holds Western Palestine. Forming as it does a natural bastion to Galilee and the Esdraelon Valley, its possession protects one of the main arteries of communication in Palestine from attacks from the north. It was the subjugation or benevolent neutrality of the inhabitants of the Hauran which enabled the Babylonian and Assyrian hordes to conquer Israel and then Judaea. Through the Hauran ran the main caravan routes from Damascus and the north, which, traversing the En Nukra, crossed the Jordan at Jisr el Mujamiyeh, and thence traveled to Beth-Shan (Scythopolis) from which town roads radiated to Samaria, to the Esdraelon Valley, and to the Maritime Plain and Philistia. The Hauran thus assumed the position of the natural outpost of North-eastern Palestine. Judaea and Samaria have always been more easily invaded from the east. The Israelites had been repeatedly driven back whilst attempting the invasion of Palestine from the south. It was only after they had passed through the plateau of Moab which stands as an eastern bastion to the Judaean plateau that they were able to cross the Jordan and capture Jericho. In a like manner the invaders of Palestine from the north had first to traverse the great plateau of Hauran before they could enter the rich and fruitful Galilee and the fertile Vale of Esdraelon.

In the Hauran was formed one of the most famous confederations of ancient history—the League of the Decapolis. It was a league of cities originally ten in number, hence the name of the league, but later increased to eighteen. The original cities were Damascus, Raphana (Kenoth) in the north; Hippos and Gadara, near the shores of the Sea of Galilee; Pella and Dion in Ajlun; Scythopolis (Beth-Shan, Beisan), the only member of the league west of Jordan, and Gerasa and Philadelphia (Rabboth-Ammon) in the south. The object of the league was to present a solid front against the Arab bands, which, inhabiting the western fringe of the Syrian desert, marauded and damaged the fertile plain of the Hauran and the fruitful luxuriance of Gilead.

It is interesting to trace the rise of these free civic communities in Palestine, which were essentially a product of Greek civilization, and a foreign body on the Jewish State. In the wake of Alexander the Great's conquests, there flowed not only a stream of immigrants, but also an ever-growing flood of Greek thought and culture, which came into deadly conflict with Jewish tradition and idealism. The names of Pella and Dion are Macedonian and betray the origin of the early settlers. The whole basis of Greek political civilization was urban; and the system of Alexander was to hold the country by a number of city communities which became centers of culture and administration. Thus there grew up in Palestine and Syria a number of so-called free cities which, in accordance with Greek practice, enjoyed almost complete autonomy. The Greeks in Alex-

ander's time were at the height of their military prestige, and, without interfering unduly in the life of the people among whom they settled, their cities were strong enough to bring them within their sphere of political influence.

Preëminent representatives of this type of city civil state were the three important Mediterranean ports, Sidon, Tyre and Askalon. As illustrating the influence which the two northern ports wielded, the area which they administered amounted to approximately seven to eight hundred square miles, and included Beirut in the north, Acre in the south, and the whole of the rich and fertile coastal plain. The rights and privileges of the free cities at this period were many, and included amongst others the minting of coinage, the imposing and collecting of taxes, the right of maintaining armies, the right of asylum and of property, and the privilege of making alliances with other free cities, and similar forms of independent authority.

The story of the quarrel between Hellenism and Judaea is a long one. Normally tolerant in religious matters, the Greeks could not understand a theocracy like that of Judaea, and in an evil moment they began a ferocious persecution of the Jewish religion. There was a strong Hellenizing party amongst the Jews, who did not any more than other eastern nations escape the fascination of Greek civilization, and to the hatred of the foreigner was added the bitterness of civil strife. In addition the Puritanism of the Jews (if the anachronism will be allowed) was grossly affronted by the moral license of the Greeks. Under the circumstances it was inevitable that the persecution that the Greeks had begun should be retorted on the Greeks, when the military genius of Judas Maccabaeus put it into the power of the Jews. The time of the Maccabees was a time of great tribulation for these free cities; Jaffa and Scythopolis, in particular, suffered terribly. When Pompey conquered Palestine for Rome, one of the cardinal principles of his policy was to revive this Greek civilization. The rights of the old free cities were, however, much restricted, and most of them were put under the authority of the Roman legate of Syria. They retained the right of coinage, of asylum, and of property, but Rome now levied tribute on them, and their inhabitants were liable to military service in the ranks of the Roman legions. Even the once powerful Sidon and Tyre had dwindled, and Beirut, Acre, and the Hinterland now formed part of the Roman Province of Syria. The cities of the Hauran were similarly dealt with, and it is worth noting that Pompey, on his way south from Damascus to the conquest of Palestine, went by way of the Hauran and Gilead (Ajlun), taking over these old Greek settlements on the way. Unlike Pompey, Julius Caesar was pro-Jewish, and his policy of favoring the Jews rather than the Greeks or their Arab neighbors was dominant for nearly two generations in the Roman foreign office. Herod, who was given Gadara and Hippos, appointed a Jewish Governor, and, in the words of the historian, "declared freedom from taxes and the land became full of people." Under his rule the Hauran was transformed from a "home of robber bands into a well-governed and peaceful province." His descendants

had nominal sovereignty east of Jordan right down to Trajan's time, but the real masters were the Nabatean Arabs.

A glance at the map will show that the cities of the Decapolis were dispersed fanwise across the main roads of Eastern Palestine, which radiated from Scythopolis, an important junction of roads from Damascus to Samaria, Judaea, and the Mediterranean. Its situation was of primary importance to the Decapolis, for it commanded the line of communication to the sea and to the Greek cities of the coast. Radiating from Scythopolis were three roads which crossed Eastern Palestine; on the northern road lay Hippos; on the central Gadara, Abilah and Edrei, and on the southern Pella, Dion and Gerasa, and Philadelphia. Raphana and Kanata were the northern outposts of the Decapolis; a second Kanata, and Bosrah the outposts of the desert.

The great period, if not in the history of the league, at any rate in that of the cities that composed it, came under Trajan. He abolished the rule of the two client states of Agrippa and the Nabatean kings and substituted the direct rule of Rome. In this country everything depends on the keeping of the peace by a strong military force, and though the league of the Decapolis had done much, Rome naturally was able to do much more. Bosrah became a legionary camp, and a chain of forts, laid out at uniform distances of three leagues apart in the heart of the desert, secured the trade routes and gave the Hauran a period of prosperity such as it had never enjoyed before. With the exception of Damascus and Scythopolis all the Greek settlements that belonged to the Decapolis were now in the newly-formed Roman province of Arabia. "Building obtained an impetus which was not again arrested. Everywhere rose houses, palaces, baths, temples, theatres, aqueducts and triumphal arches; towns sprang from the ground within a few years, with the regular construction and the symmetrically disposed colonnade which marked towns without a past, and which are, as it were, the inevitable uniform for this part of Syria during the imperial period." (Melchior de Vogué). According to Mommsen there were nearly three hundred towns and villages on the eastern and southern slope of the Hauran, and this splendid civilization endured until the decline of the military power of the Roman empire again let in the invaders from the desert.

Unlike other provinces of the empire, the Hauran did not become completely Roman in character. The inhabitants always remained Semitic, though they imitated Roman manners and spoke the Greek tongue. In the realms of art the treeless state of the Hauran did not permit the Roman style of architecture to be used. The large basaltic rocks and columns were employed in the erecting of houses and public buildings, and resulted in a new form of architectural design which was not Roman. De Vogué speaks of the Hauran architecture as "the first essays toward the Byzantine style of architecture." Because the Hauran retained a great deal of its independent Semitic character, there was a continuous stream of immigrants from the surrounding Arab tribes.

The history of the Hauran during the decline and fall of the Roman empire is a record of the increasing encroachments of the

robber bands on the fertile plain and the luxurious cities of this province. Once the strong hand of Rome had been withdrawn from the protection of the Hauran it became an easy prey. Towns and villages were abandoned by their enervated inhabitants. No serious attempt was made by the Crusaders to conquer the Hauran and turn it once again into a rich and fruitful province. And with the conquest of Palestine by the Turks all hope of a prosperous and well-developed Hauran disappeared.

### The Jolân

The Jolân (Gaulanitis) is that portion of the administrative province of Greater Hauran which is bounded on the west by the eastern shore of Lake Huleh (Sea of Merom) and in the north by the foothills of Mont Hermon, which comprise numerous extinct volcanoes. Its southern frontier is the River Yarmuk (Shariat el Menandireh) and Ajlun, and on the east it is separated from the Hauran Plateau by the River Nahr el Allan. Geographically it forms part of the central range of Western Palestine, from which it was separated by the upheaval and consequent subsidence of what is now the Jordan depression.

The Jolân thus forms a plateau which has an average height of 2,950 feet above sea level, and about 3,632 feet above the level of Lake Tiberias. It is not, however, the whole of this region which can lay claim to the celebrated fertility and productivity of the Hauran; for in the north and west central portions it is covered by rocks and stones, which prevent it from being cultivated. That is a wild and waste country, covered with huge volcanic rocks and masses of lava. Unlike the rest of the Jolân, and except for a small space near the watershed in the northeastern Jolân, it cannot be said to hold much promise of agricultural development. On the other hand it forms wonderful pasturage. Mr. G. Schumacher, who surveyed the Jolân on behalf of the Palestine Exploration Fund, writes of this region: "Wherever between the hard solid basaltic rocks there is a spot of earth, or an opened rift visible, the most luxurious grass springs up both in winter and in springtime, and affords the richest green fodder for the cattle of the Bedawin; for this part of the Jolân possesses a great source of wealth in its perennial springs, so that the heat of summer never scorches all the vegetation, and round the springs there is always a fringe of green." The lack of tillage possibilities is thus somewhat compensated by this valuable pasture land. The cattle-breeding industry of Palestine has suffered in the past, especially in the Jewish colonies, for the want of good green fodder, but there is no reason why this industry should not be successfully developed, and flourish in Northern Jolân.

Mention has been made of a small fertile area in northeastern Jolân. This small region, surrounded by extinct volcanoes, is covered by rich red volcanic soil, for which the Hauran is famed. Here wheat and corn flourish, as well as barley, lentils, and peas. Reference must also be made to the swamps and marshes of Lake Hulch, which form an excellent soil for a first-class quality of rice. Tobacco, also, is cultivated in the north of the Jolân, near Za'ora.

In direct contrast to the stony northern Jolân is the southern Jolân, which is practically stoneless, and which is covered by a wonderfully fertile rich red soil. The crops consist of wheat, barley, Turkish maize (dura), and sesame, although almost all kinds of cereals can be grown on this soil. In still further contrast to the northern section of the Jolân the southern region possesses very little pasture land. Here there are practically no springs, which abound in the north. All that is required to transform what is now waste land into fields of wheat and barley is an industrial and intelligent population. There would be no difficulty with modern methods of agriculture and their scientific application, in developing a prosperous and valuable settled industry. And in this connection it is interesting to note that the differences between the northern and southern Jolân have resulted in two distinct forms of communal life. In the north, a country of shepherds, the inhabitants live in tents, and are nomadic; in the south village colonies have been formed, and a more settled form of life exists. It is true that only the areas around the villages are cultivated, but the land is sufficiently fertile to guarantee the necessities of life, even though cultivated in the most primitive manner. As elsewhere in the Hauran, north of the Yarmuk, the country is almost treeless, except here and there, where are found single, or small groups of terebinths—a thorn bush—or a few oak trees; of course fruit trees are practically unknown. This treeless state would seem all the more remarkable when it is pointed out that the climate and soil of the Jolân are favorable to arboriculture. The reason for this lack of trees is the improvident and thoughtless extravagance of the Arab inhabitants in cutting down all the trees for fuel in the winter. No attempt is made at substitution or re-afforestation, and thus centuries of tree felling have resulted in denuding the country of all its timber. All kinds of trees indigenous to the rest of Palestine can be grown in the Jolân. The Turkish officials have been successful in planting fruit trees, such as fig trees, sycamore, and even vines, in their own private grounds.

The climate of the Jolân is excellent. The winds from the Mediterranean blow across the low hills of Galilee, and temper the heat of the plateau. The differences of night and day temperature vary, but the nights are very cold, and a heavy dew falls. Snow and ice are a common occurrence in the winter, especially in the north. It is a healthy climate, except in the marshes of Lake Huleh, which have become malaria breeding swamps. Drainage of these swamps would do much to mitigate the danger of malaria.

The Jolân is intersected by its chief river, the Nahr er Rukkad, which, rising in the foothills of Hermon, runs from north to south and joins the Yarmuk near Arkub er Rahwah. The Nahr er Rukkad is a swiftly flowing stream, and in its course forms numerous waterfalls, which turn many mills even today. The Nahr el Allan, a river of like importance, also has its source in the foothills of Hermon, and running southward separates the Jolân from the Hauran Plateau, thus forming the eastern limit of the Jolân. It also joins the Yarmuk near Kom el Kussub. Between these two rivers lies the most fertile soil of the Jolân. The problem of irrigating this region

is simplified by the flooding of these two rivers during the spring, when the snows of the hills begin to melt. The building of dams, and diverting the superfluous waters into reservoirs and cisterns, would maintain a continual supply of water during the whole year. Power for pumping the water into the irrigation canals and thence to the fields and farms is at hand.

## The Hauran

East of the Jolân lies the rich and fertile Hauran Plateau,—Hauran proper—which gives its name to the whole province. In the north it rises from the foothills of Mount Hermon by terraces, three to four miles wide, and finally reaches a height of over two thousand five hundred feet above the sea level. Towards the south this platean descends and becomes a rolling stretch of prairie land; towards the southwest, in the direction of the Yarmuk, it falls to a height of eleven to twelve hundred feet, whilst towards the Decapolis and Jebel Ajlun it falls to a level of fourteen to fifteen hundred feet. This relatively lower prairie land is called by the Arabs En Nukra or "The Hollow," and it contains a rich and productive soil. In the northeast of Hauran is situated the remarkable chain of lava hills, the El Leja (the ancient Trachon). In the southeast, separating Hauran from the desert, lies the volcanic Jebel ed Druz, sometimes called the Jebel Hauran, whose peaks rise to a height of over six thousand feet. Thus Hauran proper comprises two distinct regions, each of which has played its part in the history of this famous province; in the west the fertile plateau and prairie plain, and in the east the hills of the El Leja and the mountains of Jebel ed Druz. These two regions are divided from each other by the Hedjaz Railway, which intersects Hauran from north to south, almost dividing it into two equal halves. To the west of the railway lie the famous wheat lands, and to the east rise the lava hills and mountains, with their wild ravines and gorges. Hauran proper is then bounded on the north by the southern extremity of the Damascus territory, approximately the Nahr el A'vai (the Pharpar). On the west the plateau is a continuation of the Jolân, and further south the limit is the Nahr el Allan. The Jebel ed Druz lies astride the eastern frontier, separating Hauran from the great Syrian Desert; while the Jebel Ajlun and the Decapolis form the southern boundary. Hauran thus comprises a territory 45 miles long, with a breadth of 35 miles.

Geologically Hauran differs greatly from the rest of Palestine. Its geological formation is mainly basaltic, and most of the hills are of volcanic origin. The sombre mountains of the Jebel ed Druz are purely volcanic. "The network of lines chosen by cartographers to represent the El Leja as a symbol of a lava field well represents the confused mixture of fertile patches of wheat, and rough, naked masses of dark volcanic rock, over which last both man and beast must walk warily for fear of broken legs." The country in the northwestern section of the Hauran is covered with volcanic mounds and is stony. Like northern Jolân it provides excellent pasturage. But towards the south and east this stony surface disappears and gives place to a stoneless, magnificent, reddish-brown soil, the fertility

and productivity of which have made the Hauran famous. Here all kinds of cereals can be cultivated—wheat, barley, oats, sesame—and the yield is more than one hundredfold. Even today, though the Hauran Plateau and the En Nukra are sparsely populated, and though only the area around the villages is cultivated, the average annual yield of cereals prior to the war amounted to approximately 320,000 tons. Sir George Adam Smith writes of En Nukra: "It is a land of harvests, and if you traverse it in summer, fills you with the wonder of its wealth."

The river system of Hauran is mainly composed of the tributaries and confluents of the Yarmuk, the sources of which are largely found in the Jebel ed Druz. During the summer months the upper reaches of these streams dry up, but the rains and the melting snows during the wet season and early spring flood the river beds and form swiftly flowing rivers. In the north of the Hauran Plateau there rises the Wadi el Ehreir, which, beginning as the Wadi el Harram, takes a southerly course. After crossing the Hadj Road at Dilly it assumes the name of El Ehreir. At its junction with the Wadi el Ghariyeh it turns southwest and finally joins the swiftly flowing streams, the Wadi Tell esh Shihab and the Wadi esh Shellaleh, the junction of the three rivers forming the Yarmuk. The Wadi Tell esh Shihab rises in the hills of the Jebel ed Druz and the esh Shellaleh in Ajlun. The three streams and their branches practically drain the whole of the Hauran. The physical configurations of the Hauran and the character of its rivers make the problem of irrigation easy of solution. The main watershed forms the eastern frontier of this region, and the rivers flow westward into the plateau and plain which contain the cultivable lands. During the wet season the rivers become swollen torrents, often overflowing their banks, and forming steep cascades and waterfalls—those of the Wadi Tell esh Shihab being some of the most beautiful in Syria and Palestine.

The climate of the Hauran is temperate. The winds of the Mediterranean deposit their rain-bearing clouds on the slopes of the plateau of the En Nukra. In the north snow is a common occurrence, and often lies on the ground for two or three weeks. As the winds rise and reach the higher altitudes of the Jebel ed Druz they deposit their rain, and the dry river-beds become swift torrents. The high altitude of the Hauran makes it comparatively cool in summer, and on the western plateau of El Belka the nights are cold. The climate of the Hauran Plateau thus corresponds to that of Central Europe.

## Gilead

South of the River Yarmuk lies the Land of Gilead, part of which, as far as the River Jabbok (Wadi ez Zerka) is included in the Turkish administrative province of the Hauran. The Land of Gilead forms part of the Eastern Range, which, beginning in the north-eastern corner of Palestine as the Anti-Lebanon, successively forms the Jolân and Hauran plateaus, the hills of the Ajlun, the Jebel Gilead, the Moab Plateau, and finally merges into the Arabian Desert. In the center of this range, sandwiched in between the Pla-

teaus of Hauran and Moab, lies the region which in ancient times was known as the Land of Gilead. Gilead, therefore, comprises the territory which is bounded on the north by the Yarmuk and on the south by the Wadi Heshban, which approximately separates the Moab Plateau from the ridges to the north of it. From the western frontier the valley of the Ghôr (Jordan depression) rises by steep terraces to the Jebel Ajlun, and the Jebel Gilead, which on the east merge into the Syrian Desert and the foothills of the Jebel ed Druz.

About twenty-five miles north of the Wadi Heshban is found the River Jabbok. This river, flowing into the Jordan, intersects Gilead and divides it roughly into two parts; the northern section containing the Ajlun region, and the southern the Jebel Gilead and the plateau to the southeast, which in former times was known as Ammon. Gilead is thus, roughly, fifty-five miles long, with a breadth of from twenty to twenty-five miles. Many writers in describing the country east of Jordan extend the limits of the Land of Gilead as far south as the River Arnon. As will, however, be seen from an examination of the map of Eastern Palestine, the district south of the Wadi Heshban is properly included in the Plateau of Moab, and geographically does not belong to the hill country of Gilead. The treeless tableland of Moab is in great contrast to the wooded ranges of the Jebel Gilead, and of Ajlun, intersected by valleys and covered with orchards and fields of corn. Indeed, it is the woods and forests of Gilead which have so much influenced its history and development, and which make it today one of the most desirable provinces in Syria and Palestine. A well-known traveler and writer says: "Jebel Ajlun presents the most charming rural scenery that I have seen in Syria. A continued forest of noble trees, chiefly the evergreen oak, covers a large part of it, while the ground beneath is clothed with luxuriant grass, and decked with a rich variety of wild flowers." Again, Canon Tristram in his "Topography of the Holy Land" writes: "No one can fairly judge of Israel's inheritance who has not seen the luxuriant exuberance of Gilead."

A description of the scenery of Gilead would be very familiar to Europeans, for it closely resembles the fertile region of Western Europe. It is made up of streams, springs, and woods. The herbage of its pastures is luxuriant, and the cattle are often knee deep in grass. As in Northern Jolân, this country possesses vast possibilities for a prosperous cattle-breeding industry. Even now the Arab tribes for miles around bring their flocks to feed on the rich pastures.

The hills of Gilead rise to an average height of three to four thousand feet above the sea level, and the eastern summits of the Jebel Ajlun, in Northern Gilead, are the highest in Transjordania. They rise a little over four thousand feet above sea level, and about six thousand four hundred feet above the Dead Sea. On the western side they rise by steep slopes and terraces, intersected with tracts of fertile land. In the north the chain of peaks forms a broad ridge of uneven tableland. The Jebel Ajlun, like almost the whole of Gilead, is intersected by numerous deep valleys and gorges. These valleys are covered with fields of corn, wheat and barley, relieved by tracts of rich pasture land. They stand in great contrast and form a

happy pieture with the well-wooded slopes of the hills. The two main valleys of the Ajlun running down to the Jordan are the Wadi Yabis and the Wadi Ajlun. The Wadi Yabis erosses the Jebel Ajlun in a southwesterly direetion, immediately to the north of Jabesh-Gilead. The Wadi Ajlun opens out to the west of Suf (the supposed site of the Biblieal Mizpeh), and also takes a southwesterly direetion down to the Jordan. There is no region in Palestine exeept the Hauran whieh possesses more favorable eonditions for the building up of a thriving rural life than the Ajlun. With its fertile soil, its rieh pastures, and its orehards, and its almost temperate European elimate, Ajlun offers attraetive eonditions for an intensive eolonization. Conder, in the report of his survey of Palestine, observes that the ravines and hill slopes of the beautiful Sorrento seenery near Naples, both in fauna and flora, very nearly approaeh the natural history of Gilead.

The hill system is roughly divided by the valley of the Jabbok into two. To the north lies the Jebel Ajlun, to the south the Jebel Gilead and El Belka, the foothills of whieh merge into the Moab Plateau. These ridges and hills are eovered with forests of trees, very elosely set, and often eontaining oak trees reaehing to a height of fifty to sixty feet. Whereas the Hauran and Jolân were denuded of their wood by the senseless felling of trees and eutting of timber, Gilead, thanks to the sparseness of its population, has eseaped the axe of the Arab. Not only oaks but the wild almond tree, the moek orange tree, earoub trees, and terebinths grow here in abundanee; aneient olive trees are found near the villages and ruins. There is abundant evidenee in the numerous oil presses whieh are still found in this distriet that olive eulture was onee a flourishing industry, and the vine fenees, small watch towers, and loeal names prove that viniculture was onee extensively praetised. The valleys and their slopes hold today orchards of pomegranates, aprieots, and few olive groves. The few moors are rieh in fragrant herbs. Indeed, Gilead is said to have onee borne perfume and medieine for the whole Eastern world.

The river system of Gilead is dominated by the Jabbok, whieh divides Gilead in two. This river, approximately sixty miles long, rises on the northern edge of the Moab Plateau, only eighteen miles from the Jordan, and on the eastern side of the watershed. During its eourse it forms a semi-eirele. It begins by flowing desertwards, past Rabbath-Ammon, and meets the Hadj Road at Khurdableh. Then it turns northwest, traversing a deep valley, eutting the range of Gilead in two, and eontinues southwest to the Jordan. The valley of the Jabbok is of great fertility, and irrigation is earried on by ehannels, whieh, quite primitive in their eonstruetion, guide the river water to the orehards and gardens. The river is not very deep, and it is easily fordable. In the winter and spring it is swollen by floods and rains and beeomes a swift torrent, whieh dwindles in the summer. North of the Jabbok is the Wadi el Arab. Its sourees are found in the northern foothills of the Jebel Ajlun. Passing Irbid, the administrative eapital of Ajlun, it takes a westerly eourse and enters the Jordan three miles south of the Jisr el Mujamiyeh. During its eourse it supplies all the needs of the inhabitants, turning their mills and affording them watering and bathing plaees. It is a perennial

stream. Other rivers of minor importance are the Wadi Yabis and the Wadi Rajib. To the south of the Jabbok there are no important rivers. The country, however, is well supplied with minor streams, which rise in the Jebel Gilead and the Ammon Plateau, and fall into the Jordan. The whole of Gilead contains numerous springs and fountains.

The problem of irrigation does not present any insurmountable obstacles, as the hilly country lends itself to the building of cisterns and reservoirs, which could collect and store the water during the rainy season, and be used during the dry summer. Unlike the volcanic soil of the Hauran, the crumbling limestone of Gilead is very porous, and consequently is not retentive of water. This is somewhat counteracted by the action of the woods and forests, which help to retain the water in the soil, but in order to obtain maximum productivity, irrigation is essential, for the terraces on the hillsides, and for the fields on the tablelands. Although Gilead has not been thoroughly explored, the ruins of aqueducts, reservoirs, and cisterns have been found, which tend to show that irrigation works had been extensively built during Gilead's period of prosperity. Laurence Oliphant, who proposed the purchase of Gilead, in order to settle thereon a large Jewish community, speaks with enthusiasm and conviction of the remarkable conditions which there exist. He describes the whole territory south of the Jabbok as far as the Arnon as being a vast alluvial deposit of the richest character, out of which rise knolls and ridges on which the old cities stood, and which are, to this day, abundantly supplied with the reservoirs and cisterns which had been hewn in them in old times. He further expressed as his definite opinion that "it (Gilead) contained agricultural resources susceptible of the highest degree of development, and that the local conditions were peculiarly favorable to the introduction of immigrants, through whose capital and industry these fertile regions might once more be rendered vastly productive."

## Moab

Guarding the southern entrance into Gilead by the Wadi Heshban lies Moab, which forms the southern extremity of the Eastern Range. Its western frontier is the eastern shore of the Dead Sea, from the water of which the hills rise precipitously to the plateau above. On the south it is bounded by the Wadi el Ahsy, or Wadi Kerahi—by some writers identified with the Brook Zered of the Bible. Eastwards the plateau finally merges into the great Syrian Desert, in low, undulating hills. The northern bank of the Wadi el Ahsy rises steeply from the river bed, and is impregnable to attack from the southern bank. Thus Moab can be approached with facility only from the desert to the east.

Moab consists of four narrow diversified strips of territory, running north and south, parallel to the Ghôr. The first is the steep westward escarpment facing the Dead Sea. This is a wall of wild, precipitous mountains, rising from the very water of the Dead Sea. Although this region is almost uninhabited it contains pasture land.

The second is a narrow strip of invariably fertile land, about

ten miles wide. The soil of this strip is richly productive, and here may be seen fields of wheat and corn. This region is inhabited by Syrian farmers and fellahin, and contains a settled population.

A third similar strip is next found. Although the soil is good it suffers in some years from drought, and is therefore fruitful only in years of good rainfall. Along this strip there is a line of ruined towns and villages, which indicate a period of former prosperity.

The fourth strip, which lies along the lower eastern foothills of the Moab Plateau bears grass in winter and spring, which dries up in summer. This region supplies pasture land for the wandering Bedouins, who come in from the desert to feed their flocks.

These four diversified types of country are in the main due to the differences of climate. Dr. Tristram, in his Appendix C, on the Land of Moab, quotes: "Within this area three climates, if not three floras, are included. We experienced winter, spring and summer, on three successive days. One night, clad in every available vestment, we shivered between our blankets, whilst the water froze into block ice in the basins.....The next we enjoyed open air and warmth..... The third I wrote my journal with my coat off, with the thermometer at 76 degrees at midnight."

The rain-bearing Mediterranean winds must first cross the Judaean Plateau, and then descend the Ghôr, where the moisture is quickly evaporated. They then rise at the escarpment, and, entering a colder atmosphere, water the edge of the plateau, which is about three thousand feet above the level of the Mediterranean, and four thousand three hundred feet above the Dead Sea level. The amount of water precipitated, however, is small. The winds then descend the eastern slope, where they quickly dry up. North of the River Arnon, which intersects Moab, and almost divides it in two, the soil is good, and there is excellent pasturage. There is also here a considerable amount of wood—containing many olive and almond trees.

Moab contains four perennial streams, with many smaller tributaries, and there should be no difficulty in irrigating the numerous valleys and ravines. The irrigation of the plateau and the eastern slopes would present greater obstacles, but by the building of dams and reservoirs water could be stored for use during the period of drought.

The rivers draining Moab all fall into the Dead Sea. In the north the main river is the Wadi Zerka Ma'in, which has its source in several small streams situated on the high plains of El Belka. It begins its course at Ma'in—the ancient Baal-Meon—hence its name, and passing the Jebel 'Attarus, continues its course by a narrow and precipitous chasm to the Dead Sea. On this river, about three miles from its entry to the Dead Sea, lie the famous hot springs of Callirhoe, sometimes called the Springs of Herod.

Farther south, and forming one of the most important rivers of Palestine, is situated the Arnon (Wadi el Mojib). This river is made up of two streams, the Wadi el Waleh and the Wadi Mojib, from the latter of which it takes its name. The Waleh rises in eastern Belka, and turning northwest, passes to the north of Dimon. It then crosses the old Roman road, which runs parallel to the Hedjaz Railway

and taking a southwesterly direction, finally joins the Mojib about two and a half miles from its entry into the Dead Sea. The Wadi el Mojib has its source almost on the fringes of the desert in Southwestern Moab. It first takes a northwesterly direction, and after passing the bridge of Arver, runs due east into the Dead Sea. The valley through which the Wadi el Mojib runs is at places 1,700 feet deep. The river itself is forty yards wide, and is a swiftly-flowing stream today, turning many mills. The slopes are rich and fertile, and the pasturage is of excellent quality.

In the southern half of Moab the two main rivers are the Wadi Kerak and the Wadi el Ahsy, the southern boundary of Moab. The Wadi Kerak has its source near Kerak, and runs a winding course in a northwesterly direction to the El Lisan, the isthmus of the Dead Sea. The Wadi el Ahsy, sometimes called el Kerahi, has its source east of the Hadj Road. It is a perennial stream in its upper reaches, and descends by a deep gorge to south of the Dead Sea.

There are several streams of minor importance, which dry up during the summer months, but the waters of which could be partially used and stored for irrigation purposes. On the western side of Moab there are many springs and fountains, which today are utilized for irrigating the fields and gardens surrounding the Arab villages.

Geologically Moab differs from the Hauran Plateau in that it has nowhere been subject to volcanic action. South of the Yarmuk, and except for the eastern limits of Gilead, at the foot of the volcanic Jebel ed Druz, the volcanic soil entirely disappears. The surface strata belong to the upper cretaceous period, mainly composed of high ridges. The rocks which constitute the hills and plateau of Moab are Jura limestone. This geological structure is almost common to the whole of Palestine except in the Maritime Plain, which belongs to the Quaternary, a more recent formation. We have already noted the other main exception, the lava beds of the Hauran-Jolân plateaus, and of the El Leja.

The road systems of Transjordania, highly developed at the time of the Decapolis, fell into partial decay, and it is only recently that an attempt has been made to restore it for military purposes. The Hauran was linked up with western Palestine by the main roads, which ran from Damascus to Palestine through the Jolân. The two roads which traversed northern Jolân and connected Damascus with Banias are now almost obliterated. Much frequented is the ancient Via Maris (Road to the Sea), which, beginning at Damascus, runs through El Kuneitrah, traverses the Hauran, and at Jisr Benat el Yakub crosses the Jordan. From this point it travels to Acre and to Haifa.

The other main highway which crosses the Jolân runs in a southwesterly direction, and crosses the Nahr er Rukkad at Jisr Suseisah. It then passes through Gadara and joins the Scythopolis road. From here it radiates to Samaria, Judaea, and the Mediterranean ports. At Nava (Neve) in the north, el Mezeirib (Casphor) in the south, ed Dera'ah (Edrei) and Bosrah, at the foot of the Jebel ed Druz, are found the junctions of the roads from Damascus to the Mediter-

ranean ports and from Damascus to the Hedjaz, Mecca, and Medina.

Intersecting the Hauran from north to south is the celebrated Hadj, or pilgrims' road, which enters Hauran at es Sunamein, in the north. Running due south it meets the road from Bosrah and Edrei at el Mezeirib, entering Gilead at Remtheh (Ramath). Running almost parallel to the Hadj Road, and farther east, is the line of the Hedjaz Railway. At Dera'a there is a branch line which passes through the most productive section of the Hauran, with a junction at el Mezeirib. Unfortunately, no great use is made of this line, and even today the corn and wheat of the Hauran is transported to Damascus and the sea ports by camel and horseback.

Another important road is that which, coming from the Syrian desert, joins Bosrah and Edrei to el Mezeirib. From thence the road turns north, and at Nava traverses the Jolân, crossing the Jordan at the Jisr Benat Yakub into Galilee. At Jisr Benat Yakub the famous Via Maris joins this road. The road from Judaea and Samaria, which passes through Gadara to Damascus, also cuts through the Hauran. From Edrei and Bosrah and el Mezeirib roads radiate to the El Leja and the Jebel ed Druz. The El Leja acts as a bridge between the Jebel ed Druz and Mount Hermon, and unites the two main bastions of northeastern Palestine.

In Gilead the main line of communication runs from the famous Jisr el Mujamiyeh—the bridge of the Jordan—to Irbid, the chief town of Ajlun. At Irbid the road bifurcates, one going to the north, crossing the Hauran, and joining the Damascus road. The other runs southeast to Gerash, and finally joins the Hadj road to Mecca. From the main road there branch off roads of minor importance, which connect up the various districts of the province with the Jordan valley. The roads are good, and fairly free from loose stones, and are mostly the remains of Roman roads.

The Hadj Road in its progress southward almost forms the eastern boundary of Moab; it is along this road that the ancient Israelites must have marched to their attack on Sihon. Moab is also intersected by an old Roman road which branches off from the Hadj Road north of Rabbath-Ammon.

There is no doubt that under a wise and benevolent administration Transjordania will offer unlimited opportunities to settlers with initiative and enterprise; the pastures of the Jolân, the wheat of the Hauran, the forests of Gilead fairly clamor for large agricultural and industrial communities. Fortunes are to be made with comparatively little effort. "Thou canst not," as the Arab saying has it, "find a country like the Belka for cattle and sheep." First of all the land is well irrigated by nature; secondly, the motive force which exists in its rivers can supply electricity not only for Transjordania, but, according to the German director of the Hedjaz Railway, for the greater part of Palestine. The Yarmuk has, from its head to its junction with the Jordan, a total fall of 1,015 feet. In its descent from the high altitude of the Jordan plateau into the Jordan valley it forms numerous waterfalls and cataracts ranging from 60 to 120 feet in height, which are capable of producing enormous power. Similarly its tributaries which drain Western Hauran and Eastern

Jolân are all swiftly flowing rivers, with steep falls and cataracts. Just below the Jisr er Rukkad the Nahr er Rukkad falls over a perpendicular cliff about 80 feet in height, and from this point it continues falling in recurring cascades until it joins the Wadi Seisun. In all the Rukkad falls 1,072 feet in six and a half miles, or 165 feet to the mile.

The Wadi Seisun, a tributary of the Nahr er Rukkad, rises near the Jisr er Rukkad. Six miles from Ain Dakkar it falls over a perpendicular cliff 100 feet in height, and then continues straight on over 420 yards of cataract, where the fall is 517 feet more. In a like manner the Nahr el Allan falls 1,268 feet in 12 miles. There are other streams in this region, the Wadi el Ehreir, the Wadi el Bajjeh, and the Moyet Zeizun, which have a big fall during their short course, and which can be put to extensive use for the purpose of creating hydraulic power.

Too much stress cannot be laid on the importance of developing these natural resources, especially when it is remembered that the presence of coal and oil in Syria is only as yet problematical. It is therefore all the more essential that the opportunities afforded by the physical configuration of Palestine acting on its river system should be utilized to the utmost extent.

The scheme suggested by the director of the Hedjaz Railway is no romantic phantasy. Gadara, which is situated only a few miles from the Wadi Tell esh Shihab, in the southwestern foothills of the Hauran plateau, would be an ideal point for the erection of power stations. It is an important Transjordanic station on the Jerusalem-Damascus and Haifa-Damascus roads, which meet at Scythopolis, and which cross the Jordan at Jisr el Mujamiyeh, only six miles from Gadara.

As a matter of fact it is hardly possible to exaggerate the greatness of the future that is in store for the country between Jordan and the desert. What Trajan did can be done again. "Bosrah," says Wettstein, "was the most favorable situation of all the towns in eastern Syria; even Damascus, which owes its size to the abundance of its water and to its protected situation, will excel Bosrah only under a weak government, while the latter under a strong and wise government must elevate itself in a few decades to a fabulous prosperity. It is the great market for the Syrian desert, the high mountains of Arabia Petræa, and its long rows of booths of stone still in their desolation furnish evidence of the reality of an earlier, and the possibility of a future, greatness."

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