The Development and History of Railways in Palestine, Israel, and Adjoining Areas, from 1838

Pinhas W. Pick
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Abstract
The following thesis on the "Development of Railways in Palestine from 1838", does not, at first sight seem to deal with a theme with which an institution devoted to Hebrew Learning would concern itself. The writer, therefore feels a deep sense of obligation to Dropsie University for the permission nevertheless granted to him to carry out research in this field, which has never been touched before.

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THE DEVELOPMENT AND HISTORY OF
RAILWAYS IN PALESTINE,
ISRAEL, AND ADJOINING AREAS,
FROM 1838 UNTIL

By
Pinhas Walter Pick.

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A P P R O V A L

This dissertation, entitled
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Onward

by
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Candidate for the degree of
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**Illustrations** are to be found on pages: 107, 178, 194, 210, 225, 241, 252, 279, 311, 332, 348, 381, 410, 416, 435, 456, 465, 483, 514, 530, 558, 594, 607, 616, 624, 628, 630.
The following thesis on the "Development of Railways in Palestine from 1838", does not, at first sight seem to deal with a theme with which an institution devoted to Hebrew Learning would concern itself. The writer, therefore feels a deep sense of obligation to Dropsie University for the permission nevertheless granted to him to carry out research in this field, which has never been touched before.

It is hoped that perusal of the complete thesis, for all its imperfections, will prove that the subject dealt with, did indeed have a considerable bearing on the fortunes of Palestine in the 19th - 20th centuries, and on its political, military, social, and economic history. It is also hoped that the thesis will prove that the development of railways in the Holy Land, which in its early stages came to symbolize progress and industrialization to the infant Zionist movement, was in the long run of great value for the growing Jewish Yishuv on its way towards statehood.

The thesis could not have been completed but for the encouragement and sometimes gentle prodding, of two scholars to whom the writer owes an infinite debt of gratitude.

One is Professor Abraham Katsh, President of Dropsie University, but for whose practical assistance, paternal interest, and capacity for bringing problems into correct focus, the writer would not have been able to overcome the pressure of external circumstances while the thesis was being written.
The other is Professor Isaiah Friedman, Head of the Department of Modern History and Political Science at Dropsie University, but for whose patient supervision, deep delving criticism, and unstinting advice, both as to the contents and shape of the manuscript, the thesis would not have been completed at all.

Whatever contribution to the study of Palestine and the Middle East, the thesis may possibly make, will be due to a decisive extent to the influence of these two distinguished mentors of the writer.

Finally, the writer would like to express his profound gratitude also to Dr. Eliahu Elath, late President of the Hebrew University in Jerusalem, and Doyen of Israel's Middle East experts, for his willingness to read the thesis, and comment upon it.
I. INTRODUCTORY
PALESTINE'S MAIN GEOGRAPHIC SUBDIVISIONS
AND ITS ANCIENT HIGHWAYS.
THE PHYSICAL LAYOUT OF PALESTINE

A Land of Transit

Throughout its long history Palestine has been called many names, ranging from Canaan, the Land of Israel, and Palestine, to "the Buckle on the Belt of the World", and the "Battleground". It might, with some justification also be called the "Bridge", linking the Eurasian landmass with Africa, the ancient civilizations of Mesopotamia and Anatolia with pharaonic Egypt, and modern Europe and the Middle East with the Black Continent. Its central location between three out of the five major subdivisions of the globe has no equivalent elsewhere.

To be sure, other lands beside Palestine have, by reason of their location and geographical features, served as distinctive "bridges" linking various areas of the world--Anatolia and the Iberian peninsula being prime examples (and there are others)--but none of them ever funnelled the flow of civilization, trade or war into quite such a distinct and narrow passage as Palestine has always done. None linked to one another areas of quite such permanent importance to mankind. With the Mediterranean Sea on the one hand, and the Syrian Desert on the other, none left its prospective users so few, and dangerous, alternative routes. And by reason of its easy and inviting physical configuration, none was quite as adapted to a role as a country of transit as was Palestine.
A Delimitation of Palestine's Boundaries

Before analysing the geographical layout of Palestine, and the physical features that made it so obviously a bridge between continents, and so eminently a land of transit, the exact limits of the area known as Palestine should be defined for the purpose of the following study. The operative word here is "exact", because the borders of Palestine in their broadest sense may be regarded as automatic. They were always the Mediterranean in the west, Syria in the north, the Desert in the east, Arabia and Sinai in the south. However, the actual borders of Palestine, or rather, the borders of the historical entities that existed in that country, have always shifted. Since a line has to be drawn somewhere, if only in order to have points of reference, and even if this should necessitate some arbitrariness, for the purposes of this study the name "Palestine" should be taken to refer to an area bounded by the following lines:

1) In the west - the Mediterranean Coast from Rafa (Hebrew - Rafiah) in the south, to the mouth of the Litani (ancient Leontes) river in the north.

2) In the north - a line drawn due east from the mouth of the Litani river, across the southern extremity of Mout Hermon, to a point just north of the Lejja Massif (ancient Batanaea).

3) In the east - a line drawn due south from just north of the Lejja Massif, very roughly along the edge of the Syrian Desert, to a point due east from Akaba.
4) In the south - a line from a point in the desert due east of Akaba, to the head of the Gulf of Akaba (Hebrew - Gulf of Eilat), and from there in a straight line to the Mediterranean at Rafa.

While the boundaries of Palestine in its wider sense, as outlined above, and including the area east of the Jordan river, are perhaps somewhat approximate, it is hoped they will serve the purposes of the following study. Anyhow, it does not appear that a different outline of Palestine's fluctuating borders will prove to be of greater use. In any case, Palestine, as a typical land of transit, can never be treated as a country entirely divorced from neighbouring lands. Therefore, while most of the following inquiry will revolve around Palestine, adjoining areas will also be dealt with, although perfunctorily, as occasion arises, to a greater or lesser degree. These areas include mainly Sinai-Egypt in the south-west, the Hejaz in the south-east, and Syria (including Lebanon), in the north.

The Influence of Geographical Factors on Palestine

Palestine's age-old role as a country of transit, will be found to be based on two cardinal facts: 1) Its overall geographical position as a land-bridge linking continents; 2) Its internal geographical layout that favoured north-to-south communications to a very significant degree, but to a lesser extent also permitted lateral communications from west to east. It was Palestine's ready accessibility
to movement along its north-south axis that lent practical importance to the otherwise almost academic fact that the country linked Eurasia with Africa. Consequently, Palestine's geographical build-up deserves a close look.

It should be noted however, that the following summaries of Palestine's geographical subdivisions, and of its historical road communication patterns, based to a great extent on the country's physical layout, in no way are intended to constitute a reasoned inquiry into the subject.

The sole purpose of the following survey, based on generally known facts, and other people's research, is to provide a background against which the following chapters, devoted to a study of the development and history of railways in Palestine, should, and indeed must, be read.

The Geographical Subdivisions of Palestine

The most significant feature of the geography of Palestine is, that its four very distinct physical subdivisions all run from north to south, and thus, with the possible exception of the Galilean mountain-mass in the extreme north, do not bar communications in these directions, but on the contrary, usually facilitate them. These four main subdivisions are the following(1);

(1) The question of whether to use the geographical nomenclature of Palestine in its traditional Biblical or Arabic (and sometimes Greek or even Latin) version that is usually used in western publications of all kinds, or whether to list names in the new Hebrew-Israeli version, is a vexed one, and perhaps has no logical solution.

In the immediately following section, geographical names will be given in their traditional form, as far as possible, with the new Hebrew names (if any) in parantheses. In the subsequent chapters of this study, names will be used as they were current in the period under discussion, though there will be exceptions to this rule, and more modern names will be employed, if this will prove necessary in context.
A) The Coastal Plain

This ranges from the borders of Sinai, into which it merges in the south, northward through the Philistine lowland (the Shephela coastal plain), and the Sharon coastal plain that adjoins it, to the Carmel range. North of the Carmel range, the coastal plain continues, as the plain of Acre (Acco, or the plain of Zevulun) to Ras-el-Nakura (Rosh Hanikrah), where the mountains of Western Galilee fall into the sea. From Ras-el-Nakura the coastal plain continues north, as a narrow, level, strip of land between the sea and the mountains, to the mouth of the Litani river.

The two mountain spurs that bisect the coastal plain, namely the Carmel range, running south-east to north-west, and the Nakurah range, running east to west, impede progress, but have never stopped it in historical times. They lend variety to the coastal plain, rather than shut it off into closed segments. The Carmel range could easily be bypassed around its northwestern promontory, Cape Carmel, and when that passage, some dozens of metres wide at its narrowest point, was closed, the range could easily be crossed by at least three low passes traversing it at Tel Kamun (Yokneam), Lejjun (Megiddo), and Balameh-Jenin (Yibleam-Ein-Ganim). The crossing of the Ras-el-Nakurah range was slightly more difficult, but never stopped the flow of trade or war, anymore than did the far more difficult passage of the Nahr-el-Kelb (Dog River) further north.

Movement along the coastal plain was easy, for most seasons of the year, except in winter, when it was clogged by rain-soaked soil.
It's very few perennial rivers are all short, and could be crossed without trouble when necessity arose. Usually, except for a few days in winter, they could be forded. What dunes there were, could be avoided, and also the few swamp areas, where river mouths had filled up. Nor did the forests, that existed in the Sharon and on the slopes of Carmel until a few generations ago, constitute serious obstacles.\(^{(2)}\)

The width of the coastal plain ranges from some 50 kms. about Gaza, to between 3-15 kms. further north, and it thus always afforded ample space to circumvent natural or human obstacles.

B) The Mountain Backbone

This very pronounced physical subdivision of Palestine runs parallel to the coastal strip of the country—that is, also from north to south. It reaches an elevation of 1,000 metres only in three places, Halhul near Hebron, Tell Assur (Har Hatsor, north of Jerusalem) and around Safed (Tsfath), where Jebel Jemak (Har Meiron) rises to 1,206 metres. Most of the mountain strip is plateau-like, with no conspicuous differences in height, and a relatively ample main ridge in its southern part. Its western slopes, towards the sea, are generally fairly moderate, though not everywhere easily negotiable. Its eastern slopes, towards the Jordan valley, are steep throughout, and mostly, forbidding. It starts just north of Beersheba (Beer-Sheva) and continues past Jerusalem to

\(^{(2)}\) The wooded areas in Palestine's coastal belt show plainly on the maps of Conder and Kitchener drawn about the 1880's.
Nablus (Shehem). There it is cut across by a very pronounced, though narrow, valley, linking the coastal belt with the Jordan Rift. North of the Nablus valley, the mountainous backbone of the country continues on its way till it is cut across by a pronounced plain, the Valley of Jezreel (Emek Jezreel), and its extensions, the Plain of Acre (Shefelath Acco/Emek Zevulun) in the west, and the Valley of Beisan (Emek Beth-Shean) in the east. The hilly backbone between Nablus and the Valley of Jezreel—the mountains of Samaria (Shomron)—lack a well-defined ridge, and are rather an agglomeration of hills, some fairly high, with a number of small plains enclosed by them. The north-western extension of the mountains of Samaria is the Carmel range. The continuation of Palestine's mountainous backbone on the other side of the Jezreel Valley, and towards the north, are the mountains of Galilee. This mountain massif, and its northern continuation towards the Litani river, has no central backbone at all. In its southern part it has a distinct east-to-west trend, with two parallel tiers of heights, one lower and one higher, that mark roughly the border between the Jezreel Valley and Lower Galilee, and the border between Lower and Upper Galilee respectively. The northern part of the Galilee massif, up to the Litani river, is a rather confused jumble of medium-sized hills and mountains. Owing to the absence of a central ridge, and the east-to-west tiers of hills, the Galilean massif has never in history been easy of access, and has always been one of the most impenetrable parts of Palestine, with traffic by-passing it on the east and west.
It might be said, without bending facts too much, that the Valley of Jezreel and the mountainous block of Galilee adjoining it in the north, have a counterpart of sorts in the south of the country, where the Valley of Beersheba cuts across the land from south-east to west, with the arid and uninhabited hills of the southern Negev bordering the lateral passage on the south.

While the fastnesses of Galilee never made a significant contribution to Palestine's role as a country of transit, and the contribution of the Negev hills was even less, the central mountain backbone of the country, far from being an obstacle to communications, indeed favoured them, by providing a secondary north-to-south link along its ridge, parallel and alternative to the coastal plain. Though broken up enough to make movement off the central ridge fairly strenuous, the main mountain range always provided quite a feasible way of travelling along the watershed between the Mediterranean and Jordan on its top. Natural obstacles along the top of the ridge were relatively few, rivers non-existent, and differences in height insignificant. Actually, except during driving rain or snow, Palestine's mountain backbone provided quite a viable alternative to travelling along the coastal plain, whenever the going there was difficult owing to the vagaries of the weather or human interference.

C) The Jordan Valley and the Arava

This, perhaps the most distinctive feature of Palestine's four physical subdivisions, is part of the vastly long Syro-African Rift Valley.
It too runs in a north-to-south direction, parallel to the country's mountainous backbone, and parallel to the coastal plain. This valley of the Jordan and the Arava would have been ideal for the purposes of human movement but for two facts: a) almost halfway through its length, it is barred, practically entirely, by the basin of the Dead Sea, which in some places has no passable shoreline at all; and b) its greater part, from north of Lake Tiberias (Yam Kinneret) to a considerable distance south of the Dead Sea, lies below sea level and is so torrid that up to World War I, most of it was considered uninhabitable. Its role in the country's natural layout was always that of an obstacle, to be passed as swiftly as possible. The only exception to this was the northern stretch of the Jordan Valley, from north of Lake Tiberias to Beisan, which, though also below sea level, was not unbearably hot. It was therefore the only stretch of the Rift Valley that was fit for human passage, and throughout history played a vital role in Palestine's destiny as a land of transit.

D) The Transjordanian Plateau

This too, like the other three subdivisions of Palestine that are paralleling it to an unusual degree, trends, mostly unbroken, from north to south. It runs from the southern slopes of Mount Hermon and

(3) C. A. Wavell, Allenby, London Harrap, 1940, p. 255. "Nothing is known of the climate in summer-time, since no civilised human being has yet been found to spend summer there." The author quoted from a British Intelligence Handbook, about 1917.
from the northern tip of the basaltic Lejja massif, with the Syrian Desert as its eastern boundary, down to where it merges into the mountains of the Arabian province of Hejaz. Throughout its way, the Transjordanian plateau is bounded on the west by the Jordan Trench and the Arava, in to which it descends steeply all along its length. Close to the drop into the rift valley there are some high mountains (north of Salt and about Petra), and also the western slopes are cut up by a number of perennial streams, Yarmuk and its tributary Rukkad, in the north; Zerka-Yabbok in the north-central part of the plateau, and Mojib-Arnon further south. In the south there is a steep descent towards the Gulf of Akaba. But east of all these features the plateau of Transjordan is flat, and easily passable, all along its length from north to south at all seasons, even providing a modicum of water for thirsty wayfarers. This, the easternmost, and fourth natural subdivision of Palestine, is no less, and perhaps more than the others, favourable to communications from north to south making it a land of transit par excellence.

Lateral Links Between the Geographical Subdivisions

Palestine

The parallel physical subdivisions of Palestine are not, of course, isolated from one another. Except for the slopes of the Transjordanian plateau into the Arava rift, south of the Dead Sea, that are very largely impassable, the four physical subdivisions of the country communicate
more or less easily along their entire length. Some of the geographical features that permit lateral communications are very prominent, especially on the cis-Jordanian part of the country; others are less obvious, though still important. The lateral links of the four physical subdivisions of Palestine, are the following, going from north to south:

1. The Jezreel Valley

With its subsidiaries, the Plain of Acre and the Valley of Beisan, this valley cuts right across Western Palestine, from the Mediterranean coast in the north-west to the Jordan rift valley in the south-east. It links up with the coastal plain, though rather circuitously, around the Carmel Promontory, and is more directly connected with it by the three previously mentioned passes across the Carmel range. The Jezreel valley has always been, from times immemorial, Palestine's most important lateral link, either in peace or war. For the sake of completeness it should be mentioned that north of Jezreel Passage there was an ill-defined and little-used west-east natural link between the Mediterranean and the Sea of Galilee. It linked the Plain of Acco, through Wadi Melekh with the Battauf Basin (Emek Beth Natofah). From there it went east and down into the Jordan Valley.

2. The Central Palestine Passage.

This runs east to west between Mount Gerizim (Jebel-et-Tor) and Mount Ebal (Jebel Islamiyeh). It leads from the coast, by way of the
Wadi Iskanderun (Nahal Alexander) through Wadi Shair, past Nablus (the ancient Shehem), to the head of the Wadi Fara. This wadi provides an easy descent into the Jordan Valley. There is a subsidiary branch of this passage going from Nablus, north-east, to Beisan.

3. **The Ascent of Beit-Horon (Beit Ur)**

   This lateral link is rather extraordinary in that it uses a mountain ridge, rather than a valley, for its ascent. It climbs from the coastal plain about Jaffa and Lydda (Lod) into the mountains and is the historic gateway (together with the steep Wadi Salman to the south of it) into the southern hills of Ephraim, and the northern hills of Judaea, including Jerusalem. This lateral link has only a precarious continuation from the top of the mountain backbone down to the Jordan Valley. This is the descent through the Wadi Suweinit which joins the Wadi Kelt (Nahal Krt), and reaches the Rift Valley about Jericho.

4. **Wadi Sarrar (Nahal Sorek)**

   This starts on the coast, south of Jaffa, as Nahr Rubin (Nahal Rubin), and continues into the hills as Wadi Sarrar. In the hills it splits. One branch (Wadi Koloniya, later called Wadi Beit-Hanina), reaches the top of the ridge just north of Jerusalem. Its eastern continuation is the Wadi Fara that turns into Wadi Kelt which reaches the Jordan. The other branch (Wadi Bittir, which turns into Wadi-el Ward), reaches Jerusalem from the south-west. Its eastern continuation are the Hinnom and Kidron valleys, which combine to form the Wadi-en-Nar,
which falls into the Rift Valley, at the north-western shore of the Dead Sea.

5. **Wadi-es-Sant**

This starts on the coast as Wadi Sukreir (Nahal Lahish), turns into the Wadi-es-Sant (Emek Ha'ela), and then climbs to the top of the mountain backbone, as the Wadi el Mazar. Its eastern continuation is formed by the Wadi el Mashash, ending at the Dead Sea near Ein Gedi.

6. **The Ascent of Beit Jibrin (Beit Guvrin)**

This starts in the Coastal Plain in the Gaza-Ascalon area and climbs into the hills past Beit Jibrin (and Lahish), Tarkumiye, and through the Wadi el Marj, to reach the mountain ridge at Hebron. There is a continuation of sorts of this lateral link to the south-east, in the direction of the Wadi Zuweira (Nahal Zohar), ending near the southern end of the Dead Sea.

7. **The Beersheba Gap**

This broad lateral link across southern Palestine, where the country is widest, starts in the Coastal Belt about the Wadi Gaza (Nahal Besor). It then follows the Wadi Beersheba, past Beersheba itself, to turn south-east, following the Wadi Arara (Nahal Aro'er) to Kurnub (Mamshit). Here the natural descent into the Arava stretch of the Rift Valley continues through Wadi Kurnub and Wadi Hahira. Most of the lateral natural descents from the mountain ridge into the Rift Valley are very difficult.
Some other, subsidiary, lateral links across Western Palestine exist, but their local, and often temporary, importance does not warrant elaboration. Chief of them, for a time, was the ill-defined track that bisected the southern Negev, with its focal point at Eshoda (Avdat).

Lateral Links: Transjordania

The country east of the Jordan also has its natural lateral links. The relatively flat surface of the eastern plateau always presented few obstacles to any movement. On the other hand, the steep western slopes of the plateau made lateral communications with the Jordan Valley difficult, and the relative paucity of population on top of the plateau through most of historical times made the majority of these links, with some notable exceptions however, unimportant. It is a curious fact that two of the three river valleys running down from the plateau into the Rift Valley never served as natural routes of transit. These were the Wadi Zerka, the River Yabob, and the Wadi Mojib, the ancient Arnon River. The third place, the River Yarmuk (now Sheriat el Menadire), began to fulfil its function as a natural passage only at the beginning of the present century. The non-use of these river valleys as lateral links was perhaps due to their narrowness, and the lack of human environment.

The most important natural lateral passages from the Transjordanian plateau into the Rift Valley, counting from north to south, are the following:

1. The Banias Passage

This climbs the plateau from near the sources of the Jordan, around the southern tip of Mount Hermon, towards the north-east.
2. **The Hatzor-Damascus Passage**

This lateral link, relatively steep, but otherwise quite unobstructed (except for the short crossing of the Jordan Gorge), has from times immemorial been the most important link not only between the two parts of Palestine, east and west of the Jordan, but also between the countries of the Middle East as a whole. Through this wide passage travels the northerly branch of the famous "Via Maris", which will be discussed later. Its traffic-wise implications made this lateral link (actually running south-west to north-east) one of the most important natural features that have constituted Palestine a land of transit between countries and continents.

3. **The Wadi Samakh Link**

The steep, but short, passage climbs from the eastern shore of Lake Tiberias up onto the plateau. It, and probably to a lesser extent its parallel wadis, served the second, more southerly branch of the Via Maris in its progress across Palestine.

4. **The Wadi Sakhlib Link**

This passage from the Jordan (just where it is reached by the eastern outlet of the Jezreel Valley), to the plateau at Irbid, apparently substituted for many centuries for the practically impassable Yarmuk Gorge. It climbs from the Rift Valley along the southern edge of the Wadi Sakhlib. Its importance until recently was minor.
5. **The Ascent Damieh-Es-Salt**

   This passage apparently substitutes for the natural, but unused, highway of the Zerka River, which itself is actually the eastern continuation of the Wadi Fara that comes down from the heart of Western Palestine. However, the Zerka River leads nowhere, while whatever concentration of population there was in Transjorania always mostly centered about Jerash (Gerasa), Es-Salt, and Amman (ancient Philadelphia; today's, and biblical, Rabbath-Amman). Therefore, like some of its counterparts in cis-Jordania (for instance the route Jerusalem-Jordan), this lateral link from north-west to south-west follows no very obvious natural features, and just climbs steeply the western slopes of the Jordanian plateau, from Damie (Adam) up to Jebel Osha, where it enters inhabited areas.

6. **The Jericho Fords-Amman Link**

   There are several fords across the Jordan opposite Jericho, and they form a continuation of the lateral links, like Wadi Suwenit and Wadi Kelt, that passes across Western Palestine's mountain ridge in the Judean Hills about Jerusalem. There are actually two, more or less parallel, natural axes of communication from the fords onto the top of the Transjordanian plateau. One, the more northerly one, starts at what used to be known as Ghoraniye Ford (today's Allenby, or King Hussein, Bridge) and climbs through Wadi Nimrin and Wadi Shaib to Es-Salt and Amman. The other one, more southerly, starts at the
neighbouring fords of Makhadet Hajla and El Henu, and goes up directly to Amman, alongside the Wadi Kufrein and Wadi Nau'r.

7. The Akaba-Ma'an Link

This lateral route, actually running north-east to south-west, is the most obvious, and, despite its steepness, the most convenient, natural line of communications between the Arava Rift Valley, at the head of the Gulf of Akaba, and the entire southern part of the plateau. It goes up the Wadi Yatm, and through subsidiary valleys, climbs the narrow pass of Nakb-Ashtar, and then follows the Wadi Zahira to the top of the plateau.

Like Western Palestine, the Transjordanian plateau has some subsidiary natural passages down to the Rift Valley whose minor practical importance does not warrant description. Only two, however, might be mentioned. One is the Wadi Kerak leading down to the Lissan peninsula in the Dead Sea, where it ends. In periods when the fluctuating water level of the Dead Sea was lower, it continued in sort of a ford across the lake, to link up with the desolate and precarious paths that came down to its western shore from Beth-Lehem, and Hebron, respectively. The, at present, practically trackless slope of the plateau into the Arava (from the Dead Sea to the Gulf of Akaba) at times had a possible, but very difficult, lateral natural path through the wadis Uweir and Feinan (Punon).

In conclusion of the survey of Palestine's physical layout, it will be noted that slightly more space has been devoted to the description
of the country's lateral communications, than to its physically more extensive, and in practice, much more dominant, north to south trends. This, on account of the fact that the country's length-wise build-up, and its four parallel subdivisions, are not complicated, while its transversal features are much more involved, and relatively little known. Basically, however, Palestine's lateral features, with a few notable exceptions, have always had more local importance, while the country's major north-to-south moulding always had far more than local implications. This, any map showing Palestine in context with neighbouring countries, and even continents, will prove.

The country's physical layout has been described in conformity with the definition of the term "Palestine", as laid down at the beginning of the chapter. This left out, however Palestine's south-westerly continuation, the Sinai Peninsula. Sinai's geographical build-up is radically different from that of its northern neighbour. It will not be described here. What references there will be, further on in this chapter, to the physical layout of Sinai, will only be in connection with its communications, but only in so far as they were an extension of those further north. (4)

THE HIGHWAY SYSTEM OF PALESTINE

The physical configuration of Palestine, as described above, invited both local and long-distance travel. This moved through the

(4) Details of the physical layout of Palestine will be found in any reasonably good atlas, especially the Atlas of Israel, and the National Geographic Society Atlas. There are useful maps in the Encyclopaedia Hebraica, vol. 6., col. 41, and 111-112. For details cf. the bibliography attached to this chapter.
country, following its most suitable natural contours, for uncounted ages. In the process there developed in the country a system of highways, most of which played, either permanently or temporarily, a significant role in the country's history. The traces of this highway system are well preserved to this day, either physically in various parts of the country, or in a more abstract, but no less credible way, in written sources.

The country's highways may be divided, just like the country's natural features which they follow, into longitudinal and latitudinal ones. The following are only the most important of Palestine's highways, as they were in early times, and from which most later traffic arteries developed.

The Longitudinal Highways

1. Via Maris - the Coastal Highway

Along Palestine's physically easiest geographical subdivision, the Coastal Plain, there developed from very early times onward a most important section of the great international highway connecting Egypt and the North. This led through the length of Syria to Asia Minor, Anatolia and possibly Europe, on the one hand, and by way of various branch routes to Mesopotamia, Iran and possibly India, on the other. This

(5) Good maps of the historical road system of Palestine will be found in the books by Aharah, and Liver, listed in the attached bibliography.
highway, best known as the Via Maris, i.e., "Way of the Sea", because it paralleled the Mediterranean coast, started about Rafa (Rafia), and had two side-by-side alignments, both going north, one immediately following the coast, and one wending its way further inland, along the foothills of the country's mountain backbone.

The two branches of the coastal highroad ran approximately as follows: a. Rafa - Gaza - Ashkelon - Ashdod - Jaffa (Yaffo) - Hefer (Tel Afshar on the Nahr Iskanderun), there turning east towards the opening of the Wadi Ara (Nahal Iran); b. Rafa-Yursa/Arza (Tel Jemma) - Gerar (Tel Abu Hareira) - Gath (Tel-es-Safi) - Ekron - Aphek (Antipatris) - Yaham (Khirbet Jama), from there going north-west to the entrance of Wadi Ara. There was an important lateral link, Jaffa-Aphek, between the two routes.

At least four branches of the Via Maris crossed, or by-passed, the Carmel Range. One turned north-east of Yaham, and went past Dothan, Yibleam (Balameh) and Beit Hagan (Ein Ganin, Jenin), to continue north and east. One, apparently by far the most important one, went through the Wadi Ara, and today's Musmus Pass, to Megiddo (Lejjun, Tel Muttesselim), and the Jezreel Valley.

Another branch went from the mouth of the Wadi Ara (for which it probably substituted when it was blocked) north-west and then north-east through the Wadis Shakak and Milh (Nahal Tuth and Nahal Yokneam) to reach the Valley of Jezreel at Tel Kamun (Yokneam). The fourth, and last, branch of the coastal highway by-passed the Carmel Range altogether,
and continued north-west from the mouth of the Wadi Ara to reach Dor (Tantura) and then went north along the coast, and round Cape Carmel, through the narrow defile between it and the sea, to debouch into the Plain of Acco (Emek Zevulun).

After the Via Maris had run along the open coastal plain, and had either crossed the relatively low and passable Carmel Range, or had gone around it, to reach the plains beyond, it faced on their other side, a serious natural obstacle. This was the Galilean mountain block, running east to west, and the mountains to the north of it. Thus the lay of the land forced the continuation of the coastal highway from Megiddo, towards the north-west, via Yokneam where another branch came in, through the Plain of Acco, where yet another branch joined up, past Acco itself, and onward into a narrow defile. This started at Akhziv (Es-Zib), passed Ras-el-Nakura (Rosh Hanikra) and Ras-el-Abiad (collectively Scala Tyrriorum), until it widened into a more easily passable plain about Tyre (Sur). Then it continued north along the sea, to the mouth of the Litani River. While this north-western section of Palestine's coastal highway was feasible for traffic, it was, on account of its defile, relatively difficult to travel on in peacetime, and easily blocked in wartime. Also, Damascus, the historical and commercial centre of Syria, and a main staging point on the routes to Mesopotamia, was situated not towards the north, but in the north-east. Consequently, at Megiddo the Via Maris split into several more branches, its true continuation through Acco to Tyre, losing
much of its importance. Two of the four branches splitting off at the focal crossroads of Megiddo, came to be the true continuation of the coastal highway, considering their military and commercial importance, though they could be called "coastal" either not at all, or only in relation to the Middle East as a whole. The remaining two branches were unimportant. (6)

Of the two main branches mentioned above, of the Via Maris leading to Damascus, one led straight north-east, diagonally across the mountains of Lower Galilee where these are easily passable, but giving a wide berth to the difficult heights of Upper Galilee. Going around Mount Tabor (Har Tavor), the highway turned north past Lubie (Lavie), past the Horns of Hattin in the east, and went down into the Plain of Kinnereth-Ginnosar. From there the highway climbed to Hatzor, where it split. A lesser branch continued straight north, following the Rift Valley, paralleling the Jordan River to a point near its sources, and then going through the length of Cœle-Syria, the Rift Valley between Mounts Lebanon and Hermon, to distant Hamath (Hama) and onward. The more important branch by far turned north-east at Hatzor to cross the Jordan, pass through the Kuneitra Gap of today, and ultimately reach Damascus.

(6) One of the lesser branches linked Megiddo with the easternmost stretch of the Via Maris at Beit Hagan (Jenin). It had local importance only. The other subsidiary branch cut right across the center of the Valley of Jezreel to Hanaton (probably Tel Redawiye; south-west of the Sahel (Plain of) Battauf (Bikat Beit-Netofa), from where it turned east. This seems to have been important only sporadically, perhaps because it was liable to heavy flooding in winter, where it crossed the Jezreel Valley and the Kishon River, and about the Battauf Plain.
The second main branch of the Via Maris leading away from Megiddo went almost straight east, along the Valley of Jezreel, and continued down its eastern extension to Beisan (Beth-Shean). Here it divided.

Its eastern continuations, which in any case were of minor importance owing to their steepness, are in any case uncertain. These climbed the Trans-Jordan plateau either through the Wadi Saklib (already mentioned above), or through its northerly parallel, the Wadi Arab. Whichever way they climbed, they passed Arbel (Beth Arbel, today's Irbid) and Ramoth Gilead (Remthe) to reach the "King's Highway" (Derekh Hamelekh), which will be described later, on its progress along the plateau towards the north and Damascus.

The more important continuation, by far, of the Via Maris, turned north at Beisan, to follow the Jordan Rift Valley, to Yanoam (Tel Ubudiye), near the southern tip of the Sea of Galilee (Lake Kinnereth or Tiberias). From here a trail went up, paralleling the western shore of the lake, to join the other branch of the Via Maris (from Megiddo to Hatsor) at Kinnereth. But the main track of this branch of the Via Maris turned north-east about Yanoam, and, ignoring the impassable Yarmuk Gorge, continued to a point about halfway up the eastern shore of the lake. It then climbed to the Transjordanian plateau through the wide Wadi Samakh (or on either side of it) to join the "King's Highway" to Damascus somewhere near the present Nava, north of Ashtaroth-Karnaim (Tel Ashtor-Shaikh Saad). So much for Palestine's most important, and presumably one of history's best defined and most travelled, highways.
past Dothan (Tel Dothan), (7) where it was joined by a subsidiary branch of the Via Maris coming from Yaham. It then went through the Pass of Yibleam to Beit Hagan (Jenin). From here the road went north to join the Via Maris going from Megiddo to Beisan, somewhere in the shadow of the Giv'ath Hamoreh (Nebi Dahi). The other secondary branch of the Ridge Road struck out north-east from Shehem, passed Thirza (Tel Fara), another royal city (from which there was a track to the Via Maris about Yibleam), and then went down into the Jordan Rift Valley, through the Wadi Malih, to end up at Beisan.

The traffic-wise importance of the Ridge Road was hardly that of the much easier, grand international highway along the coast. Yet it was of great importance locally, linking from times immeorial the important towns of the hill country, providing a highroad for the Patriarchs, and providing a backbone for the Kingdoms of Israel and Judea, and the bodies politic that were their successors. While laden caravans, working their way from Egypt to the north, and vice-versa, could hardly be expected to climb the mountain ridge of Palestine, up one side and down the other, without a particular need, the Ridge Road did nevertheless serve as a secondary international link. However, besides its local importance, its wider use was, presumably, mostly more military than commercial. A good many conquerors who had to operate in the hill country, used it perforce. (8)

The ridge road had no continuation north of the Jezreel Valley, there being no useable ridge in Galilee.

(7) Cf. the biblical story of the sale of Joseph near Dothan to a caravan going to Egypt, Genesis 37:17-28.

(8) Cf. the prophet Jesaia's description of the Assyrians' progress along the Ridge Road, Jesaia 10:28-32.
3. The Jordan-Arava Rift Valley Highway

The Syro-East-African Rift Valley begins its course in northern Syria. In this, its first section, it always served as the main highway of the country. Further south it lost some of its pre-eminence, as the most important centres of population, Damascus in the east, Sidon and Tyre in the west, developed away from it. However the Rift Valley road always retained some importance, as it continued south past Iyyon (Merj Ayyun), Abel Beit-Maakha (Abil Kamh), past the sources of the Jordan; and by Lake Hule and its swamps to Hatsor.

From Hatsor onward to the south, all along the way to Beisan, as it dipped below sea level, and passed along the western shores of the Sea of Galilee, this stretch of the Rift Valley highway became through most of its length an artery of great importance. This, on account of the fact that between Hatsor and Kinnereth, and between Yanoam and Beisan, it was identical with the two branches previously described of the Via Maris which led from Megiddo to Damascus.

The continuation of the Rift Valley road from Beisan, though crossing relatively flat country to Jericho, was probably never of any importance. It passed through ever more desolate and sun-baked country, with ever steeper, and uninhabited slopes hemming it in on both sides, to come to a broiling dead-end at the northern tip of the Dead Sea. This road had some lateral communications, going into the hills east and west, and Damieh and Jericho, but they were of no use to long-
distance travel because nobody would have dreamt of going ever deeper into the Rift Valley furnace, to climb in the end even steeper tracks into the mountains. As the northern shores of the Dead Sea on both its sides were totally impassable (a goat track climbing into the broken Desert of Juda provided some link between Jericho and Ein Gedi and further south) but it was never a viable link.

A continuation, of sorts, of the way along the Rift Valley was probably formed, south of the Dead Sea, by lateral roads coming down the mountains from the west (Wadi Hathina and Descent of the Scorpions) and possibly from the east (Punon). This continuation went down the Arava Valley, but on account of heat and lack of water was probably never used except by an occasional caravan engaged in desultory trade or carrying ore. This road came to a stop on the searing coast of the Gulf of Akaba. In all, except for the short, and very important stretches between Hatsor and Beisan, the road down the Rift Valley never had, especially in its southern reaches, any importance comparable with that of the Via Maris along the coast, and the Ridge Road along the mountains.

4. The King's Highway

The generally flat plateau of Transjordania naturally invited the development of a north-to-south highway. There too, as happened in the coastal belt to the west, the wide open expanse even invited the growth of two, parallel and rather ill-defined, arteries, both possessing the same terminals. One, the actual "King's Highway" (the biblical
"Derekh Hamelekh") began at Damascus, and went south (possibly under the local name of the "Way of the Bashan", Derekh Habashan) past Ashtharoth-Karnaim, Edrei (Der'a) to Rabba of the Ammonites (Rabbath-Amman, Philadelphia, Amman). From there it continued through Hesbon (Hesban) Aro'er (Arara), Kir-Moav (Kerak) to Botsra (Butseira), crossing on the way two steep-sided river valley's it could not by-pass. These were the Arnon River (Wadi Mojib) and the Zered River (Wadi Hasa). From Botsra it continued south, until it split into two branches. One went down south-west into the Rift Valley, where it reached the Red Sea at ancient Eilath (Etsion-Gaber, Akaba) and from there crossed Sinai to Egypt. The other one continued south-east into Arabia. The other parallel branch of the highway along the plateau, also called loosely the King's Highway, left Damascus in a wide sweep to the east, skirting the Lejja lava block, ultimately to come also into the chief city of the Ammonites. From here it continued south in an easterly sweep under the name, "The Way of the Desert" (Derekh Hamidbar"), referring to the Moabite and the Edomite deserts, to rejoin the actual King's Highway, which it had paralleled all the way from Damascus, somewhere on the plateau north-east of Eilath. Whoever came down the eastern trail, also could continue either to Egypt or to Arabia.

Unlike the "True" King's Highway that, at least in its northern and central sectors, passed through relatively well-watered and cultivated countryside, and linked several towns on its way, its more easterly counterpart ran for practically all its way along the border between
the plateau and the North Arabian Desert, touching no big settlements in its progress. It may have been a substitute for the main highway, used by wayfarers who did not, or could not, use the King's Highway at various times, as it was controlled and some times barred, by the various peoples through whose territory it passed. (9) However, regardless of whether the western or the eastern route was used, the Plateau Highway was, beside its coastal counterpart, probably one of the most important traffic arteries in the Ancient East as a whole. It was the sole means of access from the north (and from the Mediterranean Coast), to Western Arabia, and also provided a secondary road to Egypt for whoever preferred it.

The four parallel highways described above, constituted a concentration of traffic lanes in a small area with probably few equals in the world. However, an appreciation of their importance will be incomplete without a description of the country's lateral road system, running east-west, complementing and interconnecting the main north-south highways.

The Latitudinal Roads

In the course of time there developed in Palestine quite a number of lateral roads, connecting the four physical subdivisions of the country. At least a dozen of them can easily be counted. The following description of the roads will take account however only of the more important ones, which had more than local importance.

(9) CP. the biblical account of the Israelites barred from using the King's Highway by the Edomites and the Moabites, Numeri 20:14-21; Judges 11:17.
1. **The Northern Lateral Roads**

   This started with the Plain of Acco (Zebulun), having Acco itself (respectively Haifa-Shikmona/Tel-es-Samakh) as a terminal. It first went south-east and then mostly east, following the Valley of Jezreel past Megiddo, and continuing into the Jordan Valley at Beisan. On account of its favourable geographical features this was always by far the easiest and the most important lateral highway across northern Palestine. In it terminated the Ridge Road, along the country's mountain backbone, and—a fact of far greater importance—into it merged the Via Maris, in its progress both along the coast towards the north, and inland towards Damascus, in the north-east. It also had extensions to the Plateau in the east. For the sake of completeness, however, an even more northerly road, across Lower Galilee, should be mentioned, though it rarely seemed to have been of any importance. This led south-east from Acco through Wadi Melekh to Hanaton. It then went east to join the Via Maris.

2. **The Central Lateral Road**

   This road linked the coast with Shehem (Nablus) through the easily passable Wadi Shair, which provided an extraordinarily easy crossing of the main mountain range. From Shehem it continued into the Jordan Valley through the Wadi Fara. This cross-country road also had an extension, eastward into the Transjordanian plateau, utilizing the Jordan crossing at Damieh.
3. The Lateral Roads of Judaea

Perhaps owing to the growing importance of the Judaean hill country, as the history of Palestine unfolded, there developed in the course of time not one, but several, lateral roads from the coastal plain into Judaea. Amongst their special characteristics was the fact that not all of them conformed to geographical features. This, perhaps because favourable features of this kind were either not available at all (as for instance along the broken steep, eastern slopes of Judaea down into the Jordan Rift Valley), or because the need for short communications took precedence over more circuitous although perhaps easier natural routes (as in the case of the steep Ascent of Beit Horon).

The most important lateral artery in that part of the country was the road from about Ked in the coastal plain, which went up the Ascent of Beit Horon, to join the Ridge Road along the top of the mountains just north of Jerusalem. This road, which did not use any of the natural ascents through lateral valleys, climbed straight up a mountain spur, and probably was for ages the most important link of Jerusalem with the coast. It was apparently supplemented by an even more difficult, narrow (and blockable) ascent through the Wadi Salman, just south of it. This likewise continued to Jerusalem through Giebon (El Gib) and past Mitspa (Nebi Samu'il).(10) The easterly continuation of the main road coming

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(10) The present main road to Jerusalem, from the coast through Bab-El-Wad (Shaar Hagai), probably was never of much importance until the construction of the Turkish road in 1869, as it involved a very steep descent into the Wadi Beit Hanina that barred the way, and a very steep climb following it.
up through Beit Horon, was probably a little-used track through the almost impassable Wadi Suwenit which joins the Wadi Kelt on its way to Jericho. The continuation of the Wadi Salman ascent, down the eastern slope, may have been the Wadi Fara, which also joins the Wadi Kelt. These tracks never amounted to much, on account of their difficulty, and because whoever came up from the coast, in any case went first to Jerusalem before going into the Jordan Valley.

South of the lateral ascents mentioned there was the way of the Nahal Sorek, (Wadi Sarrar), which probably was never more than an occasionally used track. This, because at its western entry into the mountains, it formed an extraordinarily narrow defile which could be held by a few people against an army. Part of its course also lay right in the bed of a wild torrent that blocked it in winter. If it was used at all (until the building of the railway to Jerusalem in 1892), it was because it occasionally provided access right into the most important parts of Judaea. In the hills this track divided into two sections, one (following the Wadi Beit Hanina) getting to the top of the plateau just north-west of Jerusalem, and the other (following Wadis Bittir and El Ward) reaching the ridge south-west of the town. The natural continuation of the Nahal Sorek track from Jerusalem to the East should have followed the Hinom and Kidron Valleys, that go down to the Dead Sea after forming the Wadi en-Nar. However, this natural lateral link across the Judaean Hill's was totally unuseable because the Wadi en-Nar, a narrow, steep, and furnace-like passage in its upper reaches, becomes totally impassable just before it
reaches the Dead Sea. Here it is blocked by a series of high steps that are not negotiable. In its stead there developed, perforce, what might be called a man-made highway from Jerusalem down the eastern slopes of the mountain ridge to Jericho. This followed no particular natural features, but (not unlike the Beth Horon ascent, and the Damieh-Es-Salt ascent in Transjordania), took the shortest route cutting across the Desert of Judah, to join the Wadi Kelt on its way to Jericho and the Jordan, about half down the way to its destination.

Second in importance amongst the roads into the Judaean Hills was probably the road from about the (supposed) site of Gath (Tel-es-Safi), past the gate-fortress of Azeka (Tel-es-Sakartye), through the Wadi-es-Sant. This well defined, and relatively easy highway continued along a western spur of the main range, to join the Ridge Road just south of Beth-Lehem. There was also a not very important track that climbed from about Ascalon on the coast, via Lakhish (Tel-ed-Duweir), through the Wadi Mar'j to Hebron. Both last mentioned ascents had rather precarious continuations to the Dead Sea, one about Ein Gedi and the other about Jebel Usidum (Har Sdom) which at times extended across it, and onto the opposite plateau.

4. The Southern Lateral Tracks

Palestine's easiest lateral highway, probably only an undefined track across a wide, mostly dry expanse, started in the relatively well-inhabited coastal belt, and turned inland, probably near Sharuhen (Tel-
el-Fara), following the broad valley of the Wadi Gaza and its extension Wadi Bir-es-Seba (Nahal Besor - Beer Sheva), which forms a conspicuous gap (not unlike the Jezreel Valley, its northern counterpart), between the country's main mountain ranges and the hills of the southern Negev. Passing Beersheba, Horma (Tel Mashash) and Aroer, this track probably went up to the not very pronounced watershed between the Mediterranean and the big Rift Valley, to drop down into the Arava where it had continuations towards the south, the Gulf of Akaba, and also up the eastern plateau. Across the southern Negev there passed a lateral track, from about Kadesh-Barnea (Ein Khudeirat) past Eboda (Avdat) and through the Wadi Fikreh (Nahal Tsin) into the Arava and beyond.

These, the most southerly of Palestine's lateral communications, differed from their more northerly east-to-west counterparts by not serving as essentially local arteries. There was no need for local traffic in those uninhabited wastes, and they served long-range travel. However, except in very peaceful periods trade caravans must have been few on them, and warlike expeditions non-existent, as the arid country would not permit the movement of large armed bodies. It will be noted that lateral communications across the Transjordanian plateau, and down its western slopes into the Jordan Valley and the Arava, have only been mentioned fleetingly and by implication. Most of Transjordania's lateral links probably never developed into recognisable roads and
highways, since traffic, both commercial and military, overwhelmingly trended north and south, and not east and west. Whatever lateral movements there were, utilized the natural lay of the land, described at the beginning of this chapter, where the natural subdivisions of Palestine are discussed.

The Highways of Sinai

While the north-to-south highway system of Palestine was being described, there had already been occasion to mention fleetingly its continuation to the north (Syria) and to the south-east (Arabia). Nor did the Palestine highway system end in a void at its southern extremity. All its components continued into the Sinai Peninsula, which is the geographic, though not the geologic, link between Palestine and Egypt. As Sinai lies west of Palestine, all the highways made an approximately 90° turn in order to enter it, crossing it roughly in an east-west direction. Had Palestine's highways not been able to turn into Sinai and cross it, Palestine could never have laid claim to being a "Country of Transit", as it would have been cut off from the Nile Valley and Africa. Since a description of the Palestine system of road communications would not be complete without reference to Sinai, a short outline of the roads in its northern half must be given. As the western boundary of Northern Sinai, a line will serve running along the shortest distance between the Mediterranean and the Red Sea, at the Gulf of Suez. No reference will be made to Southern Sinai, as its sun-scorched and sea-girt triangle, practically throughout history, lay beyond civilization, and
had no roads at all of any importance.

The highways which crossed Northern Sinai were three in all, one of them being a continuation of two out of the four of Palestine's own highways, previously described.

1. The Northern, or Coastal, Highway

This linked Rafa, at its eastern extremity on the border of Palestine, via El Arish (Risa-Rhinoculura) and via Sileh (Eitam, Tel Abu Tseifeh), near today's Suez Canal, with Tanis (Ramases, Tsoan, Tsan el Khajer), inside Egypt proper. This highway was the direct continuation of the "Via Maris", the main north-to-south artery along the coastal belt of Palestine. This road running along the Mediterranean was the shortest of the three Trans-Sinai links, and fairly well supplied with water. It was probably the biblical "Way of the Land of the Philistines" (Derekh Erets Pelishtim). Far more important than the other two parallel routes, it was always the most practicable link on the intercontinental highway between Eurasia and Africa.

2. The Central Highway

This, probably the biblical "Derekh Shur" (The Road of Shur), may have been the track travelled by the Patriarchs when they went down to Egypt. It was probably the least important path across Sinai, the least well defined, and perhaps very precarious on account of its limited water supply. It was the direct continuation of the Ridge Road along Palestine's mountainous backbone, through Beersheba. It went down from there to the general area of Kadesh Barnea, and from there proceeded due west across
Central Sinai (probably by way of today's Bir Hassane and Bir Gafgafa) to emerge from the wilderness at the outskirts of the Land of Goshen (probably today's Wadi Thumilath).

3. The Southern Highway

This was a continuation of Palestine's Rift Valley road that ran down the Arava to Eilath (Akaba), and chiefly also a continuation of the south-western branch of the King's Highway which came down to Akaba from the Transjordanian plateau. This, the most southerly of the three highways across Northern Sinai, went in a fairly straight line from the northern tip of the Gulf of Akaba, to the northern tip of the Gulf of Suez (and the city of On-Helopolis beyond). Despite the dearth of water, and difficult mountain passes (Ras-en-Nakb and Mitla) at both ends, this was one of the great highways of the Middle East, and second in importance only to the Via Maris itself. Though it passed all the traffic from Arabia, and all the hosts, peaceful or warlike, who chose, or were forced, to move from Egypt to Damascus and vice-versa, without passing through western, cis-Jordanian, Palestine, had to go down it.

SUMMING UP

At the conclusion of the above survey of the physical layout of Palestine, and of the network of highways, roads, tracks, trails and paths which developed as the result of the country's favourable geographical features, several contributory factors should be stressed which helped make Palestine a "Land of Transit" with few, if any, equals.
Though the differences in height within the area belonging to "Palestine" (as defined at the beginning of the chapter), range from about 2,250 metres at the southern tip of Mount Hermon, to about 400 metres below sea level around the Dead Sea, most of the country's traffic-lanes, longitudinal as well as latitudinal, passed either through flat country, or through medium-sized hills of about 1,000 metres at the most, which did not obstruct passage. There were no big rivers or extensive swamps which could not be by-passed, and the vagaries of weather and temperature never constituted a serious obstacle to movement. Lack of water in some areas, though irksome at times, was never total enough to prevent large bodies of men and animals from finding some alternate, better endowed, route which had more copious supplies. Finally, there almost never arose in the country local concentrations of power, military or political, which were strong, long-lasting, and geographically extensive, enough to block passage through the country entirely, and for long periods of time, without leaving through-traffic some alternative routes of passage.

Therefore, along the highways of Palestine there moved caravans and armies throughout history. Most, though not all, of those highways in due course turned into the asphalted traffic arteries of the present day. But even before the present dense road-net of the country started developing, very slowly at first, from 1869 onward, plans were afoot to lay down railways in Palestine. Some of these plans never materialized, but during a significant period in the country's history those railways
which were actually built turned out to be—as will be shown in the succeeding chapters—as far more important than its roads.

It will be the object of the following chapters to show, and to discuss, how railways in Palestine were planned and built. The following pages will try to trace in detail how the railways in the country were initiated, came to fruition, were dismantled, or kept operating, or were added to, from 1838 when they were first mentioned as a possibility, to the present day. An attempt will also be made to assess how far the railways of Palestine have conformed to the country's salient physical features and how far they were the successors of its historical road system, if they have diverged from it, and why.
II. RAILWAY PLANNING IN PALESTINE, 1838-92.
### SELECTION OF MAJOR RAILWAY BUILDING PLANS IN PALESTINE TO 1890s

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<td>21) Erlanger</td>
<td>Jaffa-Jerusalem</td>
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(Completed 1894)
EARLIEST RAILWAY PLANS FOR PALESTINE IN THE CONTEXT OF TRANSPORTATION SCHEMES FOR THE MIDDLE EAST AS A WHOLE

The world's first steam-worked railway started operating in England between Stockton and Darlington in 1825. Eleven years later, in 1836, London, the British capital, had its first working line, the London-Greenwich Railway (1). Plans to lay down lines in Palestine seem to have dated from very early in the Railway Age. Sometime about 1835 it was first suggested to shorten the journey from Britain to India by building an overland link from the Mediterranean to the Persian Gulf. This would have involved building a railway running practically west-east, from Ismailia in Egypt to Kuwait on the Gulf. The line would have crossed southern Palestine by way of the Negev. Nothing, however, apart from a passing reference is known about this plan. (2)

It appears that the first documented project of building a railway in the Holyland dates from 1838 or from 1839. The concept of building a line from Jaffa to Jerusalem occurred to Sir Moses Montefiore, either while he was preparing, together with his wife, for their second visit to Palestine in 1839, or while he was actually in the country. In any case, in his "Diaries" for 1862, it is stated that he first thought about a

1 Railway Directory, 1975, pp. 648-649. Full details of the sources quoted in the following notes will be found in the bibliographic section appended to this work.

railway 24 years earlier (3). It is intriguing to speculate on what made Sir Moses have such a far-fetched idea at a time when railways were still new and untried. However, he had been Sheriff of London when the first trains began to serve the capital; he may also have heard of Mohammed Ali's abortive scheme of building, 1834-36, with the help of the British engineer Galloway Beg, a first railway in Egypt, between Alexandria, Cairo and Suez (4). Most likely, however, Sir Moses was led to have his original idea by the difficulties he and his wife experienced when going up from the coast to the Holy City. At that time there were no roads at all anywhere in Palestine; the first one, from Jaffa into Jerusalem, was only to be built in 1869 for the visit of the Austrian Emperor Francis-Joseph. And the threat of the robber-sheikh Abu-Gosh looming over the outskirts of Jerusalem no doubt added to the physical difficulties which travellers like Sir Moses and his wife were exposed to. Thus the idea of going to Jerusalem by rail may have suggested itself to the practical mind of the Jewish financier. However, nothing more was heard of Montefiore's railway plan for another eighteen years, until 1856, the year in which the end of the Crimean War opened up new vistas for the Near East and one year after Montefiore had paid his fourth visit to Palestine (5).

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3 L. Loewe (ed.). Diaries of Sir Moses and Lady Montefiore, II., p. 133 (cp. bibliography).

4 C. Issawi, pp. 410-411, Karkar, pp. 108-109, also Elath pp. 100-103.

5 Montefiore visited Palestine seven times: 1827, 1839, 1848, 1855, 1857, 1866 and 1875. In 1856 the Ottoman Government published the "Hatt-I-Humayun", its great internal reform scheme, a fact that may have influenced Montefiore to undertake serious steps to implement his scheme for the railway to Jerusalem--as will be outlined further on.
While Montefiore's tentative plan was the abeyance, there had been another suggestion for a railway in Palestine. This was made in 1848 by the native British Vice-Consul in Jaffa, Assad Yacoob Khayat. He wanted a line to be built from Jaffa to the town of Suez, probably to link up there with the British mail service to India. Such a line would perhaps have been a British-supported rival of the Alexandria-Cairo-Suez railway envisaged, since the middle 1830's, by the not very anglophile regime in Egypt. This proposed line had one feature in common with several other railway plans for Palestine that will be mentioned later on. Nothing is known about it except one short reference (6). It also had something in common with the 1835 suggestion, mentioned above, to build a line from Ismailia to Kuwait across southern Palestine. It would likewise have been an international or even an intercontinental rail link. Both lines, proposed at the earliest outset of the Railway Age, prove Palestine's importance as a Land of Transit, as amply discussed in the introductory chapter.

While Montefiore's scheme for a railway from Jaffa to Jerusalem had been consigned to cold storage during the years 1838/39-1856, quite a number of suggestions were meanwhile being aired, and even were put into execution, regarding the introduction of steam locomotion into the Near and Middle East. He may possibly not have known about Khayat's

6Ch. S. Avitsur, "A Dry-Land Canal Jaffa-Suez" (Hebrew) in Teva Va'aretz, vol. 10, No. 5, July-September 1968, pp. 307-309, referring to Public Records Office file No. 78/701, 705, 755. Assad Khayat is also mentioned by Lane-Poole (cp. bibliography) in connection with the visit to Palestine in 1856 of Sir John McNeill and of F.R. Chesney--both of whom will be mentioned in due course. He also met Montefiore. Khayat served as Vice-Consul from 1847-65, to his death.
plan, but he must have been aware of other schemes, or at least of some of them. In 1853, the British engineer Robert Stephenson completed the first railway in Egypt, and in the Levant as a whole. This was the 112 km. line from Alexandria to Kafr-es-Zayat. The line, which also was the first one on the African continent, was extended to Cairo in 1856, and reached Suez from Cairo in 1858 (7). Montefiore presumably knew of this development in a country he had visited. In fact, during this visit to Egypt in 1857, he went to Cairo by rail. About the same time, approximately, negotiations went on in Turkey for the construction of the first railway in Anatolia. This resulted in 1856 in the granting of the first railway building concession in Turkey proper. This was to become the British-built line Smyrna-(Izmir)-Aydin, which was finished 1866 (8). There were other railway schemes mooted for Turkey, as far as can be made out, all in the 1850's and probably most of them by Britons. Some of these schemes must have come to the ears of Montefiore. The following names of potential builders are mentioned by E. Elath in his work on Britain's Routes to India through the Euphrates Valley: M. Stephenson, A.F. Campbell, J. Wyld, A. Wright, and Dr. J.B. Thompson (9). All these visionary railway schemes for Turkey foresaw very large-scale building activities, in comparison with which a 75 km. (as the crow flies) 

7 Issawi, p. 411; Karkar, p. 109; Railway Directory, p. 100, where the date is erroneously given as 1856.
8 Karkar, p. 110; Issawi, p. 91, where the completion date is given as 1867; also Hecker (cp. bibliography).
railway from the Mediterranean to Jerusalem looked very modest—but much more capable of being carried out.

A backdrop to all these railway activities in the Ottoman Empire, of which Egypt formally was part at that time, was provided after the middle 1830's by the so-called "Euphrates River Scheme" of Captain, and finally General, Francis Rawdon Chesney. This scheme deserves closer scrutiny for a number of reasons: a) It also envisaged in its later stages the building of railways within the Ottoman Empire, a fact that may have been of interest to Montefiore; b) Its sponsors for a time wanted to widen its scope by building a railway from Jaffa to Jerusalem, independently of Montefiore; c) Its sponsors stole a march on Montefiore by surveying proposed routes on the spot in Palestine in 1856, one year before Sir Moses himself did so in 1857 (events which will be dealt with exhaustively later on in this chapter); d) Its main sponsors and their aims were known to Montefiore, at an early stage (about 1852), and later came into personal contact with him (1862) in their endeavors.

**CHESNEY'S EUHFRATES RIVER SCHEME**

In the middle 1830's, F.R. Chesney became known in England as the initiator of a plan to organize a steamboat service down the River
Euphrates (10). This, so Chesney and his supporters claimed, would have been for various reasons, practical, political and military, a more advantageous way to India than the route across Egypt (which as yet had no Suez Canal) and down the Red Sea. Chesney's Euphrates River Scheme of 1834-1837 failed, after he had carried out a rather ill-fated expedition down the river, but the idea of using the Euphrates river valley for communication purposes was never really entirely shelved (11). One of its interesting aspects was that it envisaged the application of steam locomotion to traffic needs in the Near East. Had the scheme materialized, it would quite inevitably have led sooner or later to the building of a railway between one of the roadsteads on the Mediterranean, across northern Syria, to the northern terminus of the Euphrates steamships. The Euphrates scheme, and Chesney's appearance before the

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10 Francis Rawdon Chesney, 1789-1872, was a soldier, engineer, traveller and visionary, who spent his life trying to further British interests in the Near East. In 1830, while in Egypt, his surveys proved the levels of the Mediterranean and the Red Sea were equal, and the building of a canal between them feasible. For this the actual builder of the Canal, F. de Lesseps, called him in 1869, "le père du Canal." Chesney died a full general, but he failed to bring to fruition his life's ambition of opening the Euphrates Valley for international traffic. His life is summarised in the British Dictionary of National Biography, Vol. X, p. 195 (p. 232 in the Concise edition of ca. 1939). His biography by his wife and daughter, and edited by S. Lane-Lane, appeared in 1885. (cf. Bibliography).

11 The complete tale of Chesney's Euphrates Scheme is given by Elath (cf. Bibliography) pp. 54-97. There also will be found a list of Chesney's own publications about his exploratory travels. Haskins (cf. Bibliography) provides useful background material on the subject as a whole, as does Hecker (cf. Bibliography) p. 777.
Parliamentary Select Committee on Steam Navigation to India (12), in which he explained his concepts, undoubtedly must have come to the attention of Montefiore.

Chesney's defunct steamer scheme was resurrected after a lapse of 19 years, in 1856 (rather like Montefiore's Jaffa-Jerusalem railway), in the form of a proposed Euphrates Valley Railway. The initiator of this slightly altered Euphrates River Scheme, originally proposed by Chesney, was Patrick William Andrew, a leading British figure in Indian railway affairs (13). Andrew, like Chesney, before him, had not only commercial, but also British strategic interests vis-a-vis Russia, at heart. As will be noted later on, in connection with Montefiore's activities in 1852, there is even a possibility that the original idea of substituting a railway for river steamers in the Euphrates Valley came from Chesney himself, who had never given up his idea of utilizing that river valley. Andrew, who as director of an Indian railway company had ample means at his disposal, may merely have taken up an idea mooted by his predecessor. However that may have been, Andrew founded The Euphrates Valley Railway Company Ltd. (from the Mediterranean to the Persian Gulf). Early in 1856 he asked Chesney to join the new company

12Cf. Elath pp. 66-82. It was as the result of the Select Committee's recommendations of 1834 that Chesney undertook his 1835-37 expedition down the Euphrates, which involved the loss of one of his two ships, and the failure of his scheme.

13About W.P. (later Sir William) Andrew: Elath, p. 113 (Andrew's writings are listed on pp. 116-118); Issawi, p. 137; Grunwald (cf. Bibliography), p. 248.
and Chesney responded enthusiastically (14). Chesney was to be the new company's engineering adviser (15). Another of Andrew's supporters became Sir John McNeill, a very important man indeed, and destined to become a Privy Councillor within a year (16). He had been an ardent supporter of Chesney's original scheme.

In the autumn of 1856 McNeill and Chesney set out for Constantinople, ostensibly in order to obtain from the Porte a building concession for Andrew's Euphrates railway. On their way, however, both men landed in Palestine in order to study a proposed railway from Jaffa to Jerusalem (17). This was a development as interesting as it was abrupt, since it

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14 The whole story of the Euphrates Valley Railway is described at length by Elath. The background of the railway on pp. 98-113, and the efforts of W.P. Andrew on pp. 113-135. About Chesney's enthusiastic response, cf. Elath, p. 120.

15 Lane-Poole (cf. Bibliography); p. 423.

16 Sir John McNeill will be found in the D.N.B., both in its full and in its concise edition. His name is sometimes spelled MacNeil. He lived 1795-1883, and was a doctor by profession. He also seems to have had qualifications as an engineer. He became envoy at Teheran, and played an important role there in 1836-41. He then had a distinguished public career in England, cf. also Elath, p. 120 et seq., and Grunwald, p. 247.

17 Lane-Poole, p. 438; Elath, p. 121. It might be noted that Elath in his book made a small mistake in stating that Chesney went directly to Constantinople, with only McNeill, surveying the proposed railway route. In fact, Chesney also went to Jerusalem. When landing at Jaffa, both men were attended by the British Vice-Consul, the same Assad Khayat (who later also looked after Montefiore), who in 1848 had already suggested a railway from Jaffa to Suez, as noted above. For this, cf. Lane-Poole, p. 437. Also cf. Mrs. E.A. Finns, Reminiscences (cf. Bibliography), p. 163. In passing it might be mentioned that Elath (on p. 123) also possibly slipped in saying that McNeill ultimately joined Chesney at Constantinople. Whatever the intentions with which he set out, according to Lane-Poole, p. 438, he immediately returned to London from Palestine.
marked yet another plan to build a railway in Palestine, apparently having no connection with Montefiore's plan to build a line linking the very same towns. The motives for this new scheme, linked as it was with the plans for the Euphrates Valley Railway, cannot be found in the available sources. It can only be guessed that the task of the two men was to survey the coast of the Levant for suitable terminals for the Euphrates Valley Railway, and that they used their visit to explore Palestine also (18). What possible connection a line to Jerusalem could have had with the Euphrates railway remains a riddle. The exact activities of McNeill and Chesney during their visit—and they were illuminating—will be detailed later.

MONTEFIORE'S JERUSALEM RAILWAY SCHEME, 1856/57.

How far was Montefiore informed in 1856 of the activities of the Andrew-McNeill-Chesney group? In view of his close involvement with the affairs of the Holy Land for some three decades, it might be assumed that he was aware of them. According to Elath, he definitely even had been in touch with Chesney (19). According to Grunwald, McNeil had even joined the body (described in the following paragraphs), that Montefiore had set up to further his own parallel scheme (20).

18 Cp. Elath, p. 121; also Grunwald, pp. 247-248. Both authors offer no explanation for the sudden emergence of the new Jaffa-Jerusalem scheme or its connection with the Euphrates Railway.

19 Elath, p. 142. Unfortunately no source is quoted.

20 Grunwald, p. 247. Here too, proof seems to be lacking.
Montefiore's "Diaries" for May 1852, four years before the events described above, serve as proof for two facts: a) that Montefiore had kept watching railway developments in the Levant; and b) that he was indeed aware of Chesney's activities--though he did not, possibly, keep in personal touch with him. At the beginning of May 1852(!) Montefiore noted that Dr. Thompson of Beyrouth came to inform him that he was about to proceed to Constantinople to obtain a "firman" (roughly equivalent to "concession") for the Euphrates Valley Railway, and that he proposed forming a company under the directorship of Chesney (21). This, as already noted above, raises the possibility that Chesney had been the originator of the Euphrates Railway concept, even before Andrew. The fact is, anyway, that Dr. Thompson found it necessary to inform Montefiore--in 1852--of the proposed railway scheme and of Chesney's involvement in it. Moreover, Montefiore saw fit to record the visit.

A second entry in the Diaries of a few days later, May 17, 1852, mentions Montefiore's banquet for the Lord Mayor of London and notes that on this occasion he conversed with several gentlemen on Chesney's railway (not steamer!) scheme (22). The diary entries of 1852 form a base.

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21 Loewe, II, p. 25. The question as to who was Dr. Thompson of Beyrouth remains unanswered. Perhaps he was the Dr. Thomson (sic) mentioned by Elath; cf. Note 9. Possibly he was the American missionary resident in Beyrouth in 1837 mentioned by Shalom (cf. Bibliography), p. 592.

22 Loewe, II, p. 25.
for evaluating Montefiore's renewed effort on behalf of his Jerusalem railway scheme of four years later (23).

By the time McNeill and Chesney set out for the East, on September 2, 1856 (24), Montefiore had actually been engaged for several months in an intensive effort to get his idea of 1838/39 for the Jerusalem line going. The Crimean War had come to an end in February 1856, and already at the beginning of that year he attended meetings convened for the purpose of discussing a scheme for a railway from Jaffa to Jerusalem (25). Incidentally, it might be noted that Montefiore's idea to build a windmill in Jerusalem, which still exists, and was the very first "industrial" undertaking in the modern history of Jewish Palestine, seems to have been contemporaneous with the revival of his railway plan—the very first attempt to give Palestine a modern means of locomotion (26).

The story of Montefiore's railway scheme, which unrolled between early in 1856 and sometime in 1862, has partially been dealt with elsewhere,

23 In the quaint archaic language of the Hebrew translation of Montefiore's "Diaries" that appeared in Warsaw in 1899, (cp. bibliography), Part II, Book 3, pp. 82 and 89, there are references to Chesney's Euphrates railway and to the hope that Montefiore had in 1852 for that line to be the beginning of railways in the Holy Land. From that, not very exact, translation it also appears that following his return from Palestine in 1855, Montefiore took part in several meetings at unspecified dates, regarding the building of a railway to Jerusalem. Further references in this translation to Montefiore's railway activities are to be found on pp. 90, 91, 92 and 103.

24 Elath, p. 121.

25 Loewe, II, p. 58; also Grunwald, p. 245.

26 Montefiore's windmill was actually built about 1857, but conceived earlier. Cp. the articles "Montefiore" and "Jerusalem" in the Encyclopaedia Hebraica (Hebrew; cp. bibliography).
by Grunwald, Elath, and also Avitsur (27). Consequently only its most
salient features and some aspects that have perhaps been overlooked, will
be discussed here. In dealing with the subjects a number of questions
arise: a) What were Montefiore's motives in 1856 (except the ones in 1838/39
speculated upon at the beginning of this chapter) when he was planning
the first railway in Palestine; b) who were the people he tried to interest
in his scheme, and what were their incentives as far as can be ascertained;
c) what track did Montefiore have in mind for his proposed line, and
what practical steps "in the field" did he take to reconnoitre it?
This last question, in particular, does not even seem to have interested
researchers, who have discussed the theme only from its political, historical
or economic aspects.

As stated above, Montefiore started his activities for his railway
about the time the Crimean War drew to its close, and when Turkey was
about to become, more than ever before, open to European interests.
On February 18, 1856, the Hatt-I-Humayun had been promulgated by
the Porte, the Reform Edict that was intended to ameliorate the position
of the non-Moslems in the Ottoman Empire. This edict also enabled
foreign subjects to hold properties in their own name, an indispensable
prerequisite for initiating the building of railways (28). Montefiore

27 The most exhaustive treatment of the subject is by Grunwald.
Elath also dealt with it thoroughly, but only as a side-issue of
the Euphrates River Scheme. Both have already been quoted liberally.
Avitsur also mentions Montefiore's railway, in the two different
versions of his summary of railway history in Palestine/Israel, both short
(Cf. Bibliography).
28 Karkar, p. 74.
seems to have been interested enough in this new law to make the
British Ambassador to the Sublime Porte, Lord Stratford de Redcliffe,
send him a copy, and a French translation (29). It can hardly be
doubted that the change in political circumstances in Turkey contributed
greatly to Montefiore's willingness to "push" his scheme. It is also
obvious that the wish to "improve the situation" of his corregligionists
in the Holy Land, also had a great deal to do with Montefiore's efforts
to advance his scheme. Indeed, this is practically the one and only
explicit reason that can be gleaned from most of the "Diaries" (though
he must have expressed also others, in other ways, and on other occasions).
The dearth of motives for the railway scheme, as apparent in the diaries,
is, in fact, remarkable. On the other hand, it is quite clear what
Montefiore did not want, namely, he was quite determined in his wish
that he did not want the scheme to become what he called a "sectarian"
undertaking, that is a denominational body, i.e., one having a Christian
missionary tinge (30). Views like this were not surprising in a
philanthropist who had fought the activities in Jerusalem of the
British Mission to the Jews for many years. What is surprising is that
even a railway scheme in the Holy Land had its religious aspects, nor
was this the last time that religious issues were to crop up in connection
with railway building in a country that was traditionally a battlefield
between the various faiths. Quite early in 1856, Montefiore took pains

29 Loewe, II, p. 62
30 Loewe, II, p. 58
to explain to his Jewish-descended associate, Sir Culling Eardly—who will be mentioned again—that he himself did not expect the proposed railway to induce even 50 Jews to return to the Holy Land, but he did insist on its philanthropic aspects in improving the lot of the local Jews (31).

However, there is also another motive of Sir Moses quite discernible in the Diaries, not expressly stated, and by no means incompatible with his explicit wish to help the Jews in Palestine. He seemed to have been genuinely convinced that his railway scheme was a sound financial investment, provided basic working conditions were suitable. Otherwise he would not have made such earnest efforts (as detailed later on) to interest in his plan people to whom Palestine itself presumably meant little, but whose names—as he explained to Sir Culling—were well known for wealth and connected with other railways (32). It seems to be a fact that Montefiore once declined to join de Lesseps in his Suez Canal Scheme because it was not likely to prove successful from a financial point of view (33). It may therefore be assumed that he was well known in the City as a sound and careful financier, who would on no account have involved others as well as himself, in a plan he thought unsound.

31 Ibid.
32 Ibid.
33 Loewe, II, p. 57. Montefiore refused to get involved not only with the Suez Canal, but also with an early Panama Canal Scheme. Cf. Loewe, I, p. 31.
Montefiore's determination to have a paying investment runs like a red thread through all his efforts from 1856 onward. To safeguard the investors he asked during his interview with the Prime Minister, Lord Palmerston, on April 7, 1856, for a Royal Charter limiting the liabilities of the shareholders (34). He also asked the Prime Minister to apply for a firman for the railway from the Turkish government, also for a stretch of land on both sides of the proposed line and/or a guarantee for a minimum rate of interest. He even requested Palmerston to make him a present of the Balaklava Railway—apparently a surplus British military line in the Crimea (35). To this Palmerston replied that, on the contrary, he hoped that Montefiore would pay him a good price for the line.

Montefiore may have had good reasons for expecting the proposed railway to pay. The number of pilgrims and tourists going up from the Coast to Jerusalem in 1856 is not known, but in the early 1860's, it

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35 Ibid. Palmerston said to Montefiore that it would be some time before the railway became available. The idea of building the line cheaply out of second-hand materials, strangely foreshadows what actually happened in 1890-92, when the first railway into Jerusalem was actually built out of the leftovers of the defunct French line between Panama and Colon, following the Panama scandal.

The idea of using the Bulaklava line may have come from Count Paul Edmond Strzelecki, one of Montefiore's associates, who had been to the Crimea. According to Grunwald, pp. 245-246, it may have been Strzelecki who early in 1856 visited Palmerston and suggested purchase of the soon-to-be redundant railway by a company headed by Montefiore, to lay it down between Jaffa and Jerusalem.
was estimated between 60,000 and 80,000 a year (36). The building of a convenient railway may have been expected to increase the flow of travellers. In any case, Montefiore was adamant in his intention to have a railway concession only with a guaranteed income on the moneys invested. In 1856/57 he wanted a return of 7%, which figure he lowered to 5-6% in 1862 (37). In 1862, apparently when he saw no chance to build the railway under attractive financial conditions, he withdrew. It might then be stated with some confidence, that whatever incidental benefits for the Jews in the Holy Land Montefiore expected from his railway scheme, his motives were to a certain extent monetary. It might be noted in passing that Montefiore's request to have the redundant Balaklava railway as a gift, may provide the only extant clue

36 Zimpel (cf. Bibliography), p. 9; Elath, p. 144. Elath, quoting Lane-Poole, refers to an exchange of letters between Chesney and Sir A. Slade, a Britisher serving as a Turkish admiral. Slade expressed his opposition to the building of a railway to Jerusalem. This for a reason characteristic of the international struggle over the Holy Land. Slade said that most pilgrims were either Catholics or Eastern Orthodox, with few Jews or Protestants. According to Slade, the new railway would lead to another (schismatic!) crusade, and to extra-territorial demands on Turkey.

37 For this, Hyamson's work on the British Consulate in Jerusalem (cf. Bibliography), II, p. 247. Here the British Consul, the famed James Finn, in a dispatch to Lord Clarendon, the Foreign Secretary, quotes in 1857, the Austrian Consul in Jerusalem, Count Pizzamano to the effect that Montefiore will never get the 7% he wants for his railway. Pizzamano also claimed that there were not enough travellers for a railway. (Avitsour, puts their number at only 5,000 before the Crimean War). From Pizzamano's remarks it might also be learnt that in his opinion, an extension of the railway to Damascus, or even to Baghdad (!!!) would not pay. For Montefiore's insistence on 5-6% in 1862, cf. Loewe, II, p. 133.
as to what gauge his railway would have had. In the middle of the 19th century, mostly wide or standard lines were being built in England (i.e., between 1,420 mm and 1,435 mm). The Crimean line must have been one of these gauges and relaying them to the Judaean Hills would have been a costly undertaking. When the first railway to Jerusalem was ultimately opened in 1892 (as detailed in the following chapter) it was of the narrow and cheap 1,000 mm type.

Returning to the April 1856 meeting with Palmerston, Montefiore thought it had been successful (38). The Prime Minister expressed his opinion to Montefiore and Eardly that the proposed line would be of use to increase Turkish commerce and revenues. He also stressed its military importance in enabling troops to be moved quickly—thus becoming the first, but by no means the last, man to link the question of railways in Palestine with military considerations (39). Montefiore on his part also stressed the advantages to Turkey—beside his unwillingness to lose on the deal (40). Some six weeks later in May 1856, Ali Pasha, the Turkis Grand Vizier, visited London. Montefiore and his wife, Judith, went to meet him at Eardley's residence, where speeches mentioning the railway were made. Next day, Montefiore led a delegation of his supporters for a two-hour meeting with Ali Pasha, who however remained

38 Loewe, II, p. 59

39 Ibid.

40 Hyamson, II, p. 246
non-committal, without saying "no" outright (41). He agreed to forward a memorandum home, but wanted to consider either a land grant, or a guarantee of interest on investments, but not both. Towards the end of 1856, some six months later, Count Strzelecki went to Constantinople on behalf of the scheme and reported the Turks wanted to guarantee 6% but refused to grant land (42). There the matter rested for some months.

Who were the prospective investors and partners Montefiore had succeeded in 1856 in enlisting on behalf of his Jerusalem railway scheme? They were a variegated lot (43). One of the most interesting amongst them may have been Lawrence Oliphant (1829-1888), colourful writer, traveller, and mystic, who took part in Montefiore's deputation to the Grand Visier (44). What Oliphant's role was in Montefiore's efforts, whether he came as an entrepreneur, as an acquaintance of Stratford de Redcliffe, the British ambassador at Constantinople, or as an experienced eastern traveller, is not at all clear. He was just 27 years old at the

41 Loewe, II. p. 59
42 Grunwald, p. 247
43 Grunwald. pp. 245-249, provided interesting particulars about Montefiore's supporters. However, the following biographies differ slightly.
44 Loewe, II, p. 59
time. But some 24 years later he was to become a most fervent protagonist of other railway lines designed to further the affairs of Palestine (45). There is far less doubt as to what Sir Culling Eardley's place was in the context of Montefiore's plans. Sir Culling (1805-1863) was to be involved, with a few interruptions, in the Jerusalem railway scheme from its revival in 1856 to its abortive conclusion in 1862.

The D.N.B. calls him "a religious philanthropist" (46). According to it, he obtained a firman of religious liberty from the Sultan in 1856, and also from the Khedive of Egypt. He later on supported the cause of Catholics in Protestant Sweden, and advanced the cause of the Greek-Orthodox-Bulgarian Church. He himself was a Protestant, a fact that may be inferred from his founding the British Evangelical Alliance in 1846. A less known fact is that he was a direct descendant of the Jewish financier (of Sepharadic extraction as was also Montefiore), Sampson Gideon (47). Gideon's son became a Baron Eardley in the Irish peerage (48) and Sir Culling was apparently his heir.

While Oliphant and Eardley may have been the most interesting amongst the people Montefiore had mobilized in support of his railway scheme, the others, all listed by Loewe or by Grunwald, and most by the D.N.B.,

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46 D.N.B., concise ed., p. 379; also Grunwald, p. 246. He was a member of Parliament at the age of 25.
47 Goodman (cf. Bibliography) p. 109, 120.
48 D.N.B., concise ed., p. 492.
also rate a passing glance (49). They were: the Honorable Evelyn Ashley (1836–1907) who, though only 20 years old at the time, was invited as the son of Lord Shaftesbury, the philanthropist. He was a relation of Lord Palmerston, and destined to become his private secretary in 1858. Perhaps by inviting him, Montefiore wanted to get in touch with the Prime Minister; a Mr. Barkley, who may possibly have been--there are some spelling mistakes in the Diaries--Mr. Barcally, the financier, of what was later to become Barclay's Bank; a Mr. Baxter, possibly the merchant-traveller, M.P., and future Secretary to the Admiralty, William Edward Baxter (1825–1890); a Mr. Redhouse, who was possibly (some of these tentative identifications admittedly are speculations) James William Redhouse (1811–1892), who was plain "Mr." until knighted in 1888. He was an outstanding oriental linguist, had been an employee of the Turkish government at Constantinople for several years, and later was Secretary of the Royal Asiatic Society; Count (afterward Sir) Paul Edmond Strzelecki (1796–1873), the Polish, Prussian-born, British-naturalized, explorer and company-promoter. He had many connections in society and London financial circles. His home seems at times to have served as the meeting place of the people involved with the railway scheme. As already noted, he had been to the Crimea and may have been the visitor who suggested to Palmerston handing the Balaklava railway over for Montefiore's use (50); Mr. Matthew Usselly, 

49Loewe, II, p. 58 et seq.; Grunwald pp. 245–247, in whose list there is a slight oversight: Oliphant died not in 1902, but in 1888. Also Grunwald spelled the name Barclay wrongly. It should be Barclay.

a member of the banking house Charles Devant & Co., which had had early railway interests. No details could be found about this gentlemen, but his name permits speculations about his possible Jewish descent (51).

As already noted, late in 1856, Count Strzelecki returned to London from his mission to Constantinople practically empty-handed. About February 1857, all the gentlemen concerned had a meeting at the Count's house, and agreed that nothing could now be done in the matter of the "Jerusalem Railway", whereupon Montefiore paid his part of the expenses and withdrew from the scheme. So according to his Diaries (52) However, there exists what may possibly be a different version of this surprising development. It is based on a note by Chesney, quoted by his biographer, Lane-Poole and mentioned both by Elath and Grunwald (53). As already noted above, Sir Culling Eardley, Montefiore's Jewish-descended associate, had a distinct background of Christian proselytizing interests, and at an early stage (in fact before both went to see Lord Palmerston in April 1856) Montefiore had made it quite clear to him that he, Montefiore, wanted his project to have no "sectarian" aspects (54). Sir Culling had quite agreed to this. However, according to Chesney, when the railway scheme was pretty well advanced in 1856, at a meeting at Count Strzelecki's

51 The name Uzielly figured in the British "Who's Who", as late as 1952, as that of a Christian family. There seems to be a prominent Catholic banking family in the U.S. as well, bearing this name.

52 Loewe, II. p. 63.

53 Elath, p. 142-143, and Grunwald, p. 248, both quoting Lane-Poole, p. 453.

54 Cf. Loewe, II, p. 58.
home, Sir Culling told Montefiore that making converts in Palestine was his (and his associates') expectation—whereupon Montefiore took his hat and left. It remains a moot point what this episode in 1856 had to do with the decision of February of 1857 that nothing more could be done in the matter of the railway. The fact is that Montefiore continued to remain in touch with Sir Culling Eardly with regard to the railway for five more years (55). What is more important—Montefiore in actual fact did not at all give up his Jaffa-Jerusalem line.

CHESNEY'S AND MCNEILL'S JERUSALEM RAILWAY SCHEME

While Montefiore was busy in London, McNeill and Chesney set out, as mentioned before (56) in September 1856, to explore Palestine. As will be noted in due course, their object was to ascertain on the spot what choice of routes there was for a railway from the coast to Jerusalem. This particular aspect of their visit, namely the actual detailed survey of routes has never been dealt with previously. It has been pointed out before that the link between Chesney's and McNeill's Jerusalem line and Andrew's Euphrates Railway Scheme has remained a mystery. It can only be conjectured that their idea was to extend the Jerusalem line at some later stage to join the Euphrates track. Perhaps in 1856 similar ideas were already abroad. The fact is that within a few years, as will be shown


56 See above note 18. Not only McNeill visited Palestine, as claimed by Elath, but also Chesney. C. A. E. From. p. 163. This, of course, is also apparent from Lane-Poole.
further on, at least three people, Pizzamano, Sandwith and Zimpel, considered the idea of a railway link between Palestine, Syria and even Mesopotamia.

From what can be gleaned from Mrs. Fim's reminiscences--she was the celebrated wife of the celebrated British consul in Jerusalem in the 1850's--and Montefiore's Diaries, a pretty good reconstruction can be made of the track that McCNeill had in mind for his 1856 railway (57), the first railway scheme in Palestine for which more than vague details can be reconstructed. The first stretch of the line, McCNeill told Montefiore, would lead from Jaffa to Lod (as the line was actually built 32 years later). Mrs. Fim in her "Reminiscences" supplied details about the remaining part of the line: "...Chesney and MacNeill(sic) came with a view to the construction of a railway through a northern valley...Wadi es-Suleiman:(58). Hence the track McNeill wanted can be summarized as follows: Jaffa-Lod-Wadi es-Suleiman-Jerusalem.

57 Fim (cf. Bibliography), p. 163, et seq., Loewe, II, p. 60. Montefiore's entry, although dated June 1856, expressly says that McNeill came to see Montefiore a few months later, apparently after he returned from the East towards the end of the year 1856. The peculiar fact that the diary entry for June refers to events that occurred months later, is probably due to the editor (Loewe) telescoping events. Loewe also says that McNeill in 1856 ultimately suggested a railway Jaffa-Lod only, with Lod and Jerusalem linked by a MacAdamized (all weather) road. This because he feared the line would not pay. This idea of McNeill's for a combined rail-road scheme never cropped up again, if indeed it was ever seriously made! There was no logic in building a 20 km railway from Jaffa to Lod, over flat country eminently suited for a road, if the rest of the scheme was to consist of a road anyway!

58 Mrs. Fim was writing in 1913, 57 years later. Since, however, she presumably was not interested in railway layouts and the Wadi es-Suleiman line was never built anyway, she probably was not being wise after the events, and her details were genuine.
Three of the above-mentioned places are, of course, well-known. But what about the Wadi es-Suleiman? This wadi can be found on both British and Israeli maps (59), under the name Wadi Salman. Though not well known generally, it is a very prominent feature of the north-western slopes of the Judaean hills. The wadi starts at a height of about 780 metres, some 2-3 kms north-west of El Jib (ancient Givon), and descends very steeply some 500 metres in 14 kms, to the Coastal Plain near Beit Nuba, in the ancient Valley of Ayalon. Its northern boundary is the mountain spur along which runs (at a distance of about 1-2 kms) the age old highway into the hills through upper and lower Beit Horon (Beit Ur). The villages of Beit Likia and Beit Dukku lie to the south of it. Near its head there are the remains of three ancient roads, apparently all Roman, one of which, at least, descended through the wadi and perhaps served at times as a substitute for the Ascent of Beit Horon, when it was blocked. From near Beit Nuba the Wadi es-Suleiman runs in a wide semi-circle to the north-west and is now called Nahal Ayalon (formerly in Arabic, Nahar el Kebir). It passes the outskirts of Lod, and flows into the Yarkon River (formerly El Auja) slightly north of Jaffa. In other words, McNeill wanted to build his railway alongside the ancient highway from Jaffa through Lod, parallel to and about 1-2 kms from the Ascent of Beit Horon, past El Jib, to

59 The reference is to sheet 9 of the Survey of Palestine, (English) 1:100,000 map and to sheet 8 of the 1:100,000 Survey of Israel (Hebrew) map. Cp. the Note on Maps at the end of this chapter.
However, a glance at the contours of any detailed map showing the Wadi es-Suleiman will show why McNeill for a time was to despair of building the Lod-Jerusalem stretch. He had certainly gone up it himself—as will be shown later on—and had concluded that the utilisation of the wadi for a railway track would cost approximately £4,000-4,500 per mile as against about £150 (approximately) for an all-weather road (61). He said as much to Montefiore. McNeill was, no doubt, for a while frightened off by the unusual steepness of the wadi, whose obvious advantages of being an extremely short ascent into the hills and one of the most suitable links, as the crow flies, between Jaffa and Jerusalem, were unfortunately offset by the slope.

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60. On Beit Horon and the road that has of old been climbing through it to Jerusalem: Vilnay "Yehuda ve' Shomron" (Hebrew), pp. 56-59 (cp. bibliography). Also, Y. Ef al, "The Battle of Givon and Joshua's Campaign into Southern Palestine" (Hebrew), pp. 82-83, and note 14, p. 89; also a very good photo on p. 112, (in Liver; cp. bibliography). Also M. Gihon, The Fortification System of Judaea (Hebrew), pp. 417-418, including a very good historical road map (also in Liver; cp. bibliography). A good map of the roads and tracks in southern Palestine before the coming of the railways will be found in Baedeker's Guide of 1891 (cp. bibliography) facing p. 14. This map, and the one attached to Gihon's article, show the stretch of road from Lod to Beit Horon going straight east and cutting off the southern sweep of the Nahal Ayalon (Wadi es-Suleiman/Nahr el-Kebir). This was probably also the layout McNeill had in mind. The official British History of the Great War, Egypt and Palestine, vol. II, part 1, p. 195 (cp. bibliography) calls the track leading up the Wadi Selman (Salman/ Suleiman) by the name of "ancient road". The map case attached to the same volume, map 9 (Battle of Nabi Samwil) which is very detailed, clearly shows an "ancient road" running up the Wadi Selman, beginning at about 1,050 feet at Beit Likia and ending at approximately 2,550 ft, near El Gib (Givon).

of the ground that could only have been overcome by an inordinate number of cuttings (possibly tunnels and bridges) which alone would have enabled the track to gain elevation. Indeed, 61 years later, it is recorded that Allenby's troops on their way to capture Jerusalem had extraordinary difficulties in climbing the same wadi (62). But that was far off. Far more interesting, however, is the fact that only a few months later, early in 1857, Montefiore himself and his wife, climbed up, at considerable personal risk, through the same wadi (or one of its tributaries) and for the same purpose as McNeill, namely, to find a passage for the railway to Jerusalem! As for McNeill himself, after proposing a road Lod-to Jerusalem, to Montefiore, he apparently overcame his temporary fright of the Wadi-es Suleiman. He continued his efforts at least until 1862, for a railway and nothing but a railway to Jerusalem and his idea of having Rails only between Jaffa and Lod, and a road from there onward is never mentioned again (63). However, the proposed Be'il Horon alignment was to crop up again.

A totally unknown aspect of the McNeill-Chesney expedition of late 1856 is that the two men explored not one route to Jerusalem, as suggested by the reminiscences of Mrs. Finn, and by Elath and Grunwald, 


63 The writer had occasion in 1970, in connection with the present research, to visit the western outlet of the Wadi-es-Suleiman and was left wondering how the weak locomotives of the end of the 1850's had been expected to negotiate the gradients of the wadi.
but two! Lane-Poole's biography of Chesney states explicitly—a fact strangely overlooked—that "...during the ride to Jerusalem the party had divided, in order to examine two routes, and careful observations were made, and levels were taken in view of the possibility of carrying the proposed railway from Jaffa" (64). Putting together what is known about McNeill's conclusions regarding the line, Jaffa-Lod-Beit-Horon-Jerusalem, it is quite clear that he proceeded from Jaffa via Lod. Chesney, on the other hand, as explicitly stated by Lane-Poole (65), rode from Jaffa to Ramle, with the intention of reaching the Cisterns (pools) of Solomon. From Ramle, General Chesney (who was 67 years old) and his companion, Captain Burgess, rode to El Bab, which perhaps was El Kubab, (Mishmar Ayalon) and, more likely, Bab el Wad (today's Sha'ar Hagai). From there they went to a place called Ishoma, where they spent the night. As a reference to any map will show, there never was a place called Ishoma. The odds are that Chesney stayed at the village of Ishwa (today's Eshta'ol), near Artuf (Hartuv), a place that would fit very nicely with the general route, Ramle-Solomon's Pools, that Chesney proposed to take (66). From "Ishoma" Chesney ultimately reached the Pools of Solomon by a pretty good, but rocky, road with a "winding ascent" (67).

64 Lane-Poole, p. 438. As already mentioned in Note 17, both men were met at Jaffa by the Vice-Consul Khafat, who, eight years before had suggested to Palmerston a Jaffa-Suez railway.

65 Lane-Poole, p. 437, et. seq., for the following details in the text.

66 It is quite likely that Lane-Poole, the editor, by mistake read in Chesney's handwriting "Ishoma" instead of Ishwa. Both El Kubab and Bab-el-Wad were on the main road, Ramle-Jerusalem. Ishoma/Ishwa is called Ashuwa in Baedeker's map mentioned above, in Note 60, and on a map of the British War History mentioned in the same note it is referred to as Eshta.

67 Lane-Poole, ibid.
A reference to the map will show that there are two roads from Ishwa to the Pools of Solomon, both ultimately meeting after climbing the western slope of the Judaean hills. Both follow ancient Roman roads (68). One goes up very steeply through Makseya (Deir Abū of Chesney’s times). The other winds its way up with only a moderate gradient further south through Beit Nati (69). As the road past Beit Nati is probably the easiest ascent of all in Judaea from the coastal plain onto the main ridge of the mountains, rising most of its course almost imperceptibly, and therefore eminently suitable for a railway (a characteristic that cannot be applied to the steep climb past Makseya [Deir Abū]), it might perhaps be assumed that it was this road that Chesney explored. After reaching Solomon’s Pools, Chesney turned north to Bethlehem, and from there continued to Jerusalem.

After this, nothing more is heard of the second, southerly, railway route from Jaffa to Jerusalem. It can only be guessed why. Possibly the reason was that the proposed track would have taken the tentative line too far south, and building it would have proved too expensive. However, just as the proposed railway through Beit-Horon, or rather the line through the neighbouring Wadi-es-Suleiman, was due to crop up again in slightly changed guise, so the idea of the line to Jerusalem via Bethlehem was again due to be at least partly resurrected. An

68 Personal reconnaissance of the writer.

69 Today Netive Ha’lamed Hey has replaced Beit Natif.
interesting aspect of Chesney's ride was that his tentative line would have used partly, in its upper extension, or in its entirety, the ascent of the Wadi es-Sant, the Valley of Elah, with its ancient road to the coast down which the future King David passed on his way to meet Goliath the Philistine. From the Pools of Solomon to the north, Chesney's track would have followed the age-old ridge road from Hebron to Jerusalem. Summing up, Chesney's railway would have run approximately thus: Jaffa-Ramleh-Artuf-Wadi es Sant-Solomon's Pools-Bethlehem-Jerusalem.

It seems to have been the opinion of scholars who dealt with Montefiore's Jerusalem Railway Scheme, that no development of consequence occurred in this matter for several years, following the February 1857 decision (outlined above), "that nothing more could be done in this matter." In fact, nothing could be further from the truth. It is indeed remarkable that the same chapter in his Diaries (chapter VIII in Vol. II) which recorded the apparent demise of his plan, contains quite a number of entries attesting to his undiminished interest in the railway.

**MONTEFIORÉ'S RAILWAY ACTIVITIES ON HIS FIFTH VISIT TO PALESTINE, 1857**

Sir Moses must have left London on his fifth visit to Palestine almost immediately after the negative meeting at Count Strzelecki's house (70). On his way he met at Malta his associate in the railway scheme, the young Lawrence Oliphant. In Alexandria he was the guest of the engineer, Galloway

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70 Loewe II, p. 63, et seq., also the Hebrew edition (Warsaw 1899; cf. bibliography) of his Diaries, p. 91.
who was to accompany him to Palestine—as it turned out—in connection with Montefiore's railway scheme, which was apparently still alive. While in Egypt, Montefiore took a ride in the first railway just opened in the Levant. He went by train from Alexandria to Cairo and back (71). On reaching Jaffa, Sir Moses was welcomed, as were his predecessors McNeill and Chesney, by Mr. Khayat, the local British Vice-Consul, who has been mentioned before (72). Khayat used the opportunity to venture his opinion that there would soon be a railway from Jaffa to Jerusalem, "with or without the British" (73).

To anticipate a little—on Montefiore's return from Jerusalem, he received a report at Jaffa on the sorry state of the "garden" (i.e., the plantation) he had purchased in the neighbourhood. The Diaries note that he consoled himself with the thought that the property would increase in value once it was decided to build a railway to Jerusalem, in which case the garden would be most suitable for the railway station (74). From which episode it might be inferred that the problem of the railway

71 For all these details, cp. Loewe II, p. 64, et seq.

72 Cp. note 6, above.

73 Loewe, II, p. 65

74 Cp. Loewe, II, p. 67. The plantation mentioned became, several decades later, the Montefiore Quarter of Tel Aviv, on the road from Tel Aviv to Petah Tikvah. What made Montefiore, or his emissary, the Engineer Galloway, consider the place suitable for a railway station, remains a mystery, as it was 2-3 kms. distant from the then existing walls and gate of Jaffa. In due course, however, two stations (Tel-Aviv South and Tel-Aviv Central) came to be built in the vicinity, and if present plans (1976) are carried out, Israel's main railway line from Haifa to Jerusalem will pass by the quarter within a few years. The whole plantation episode once more demonstrates the financial motives of Montefiore's railway scheme.
was still a matter of interest to him. As it was, Galloway, the engineer, went to inspect the plantation on behalf of the ailing Montefiore (who was 72 years old at the time). Perhaps its was he who pointed out to Sir Moses the garden's favourable location for a station.

However, easily the most fascinating chapter in Montefiore's fifth journey is the tale of his going up to Jerusalem, and of his sojourn in the Holy City. This, like McNeill's and Chesney's peregrinations of several months earlier, has never been dealt with thoroughly before. Sir Moses left Jaffa for Lod accompanied by Mr. Galloway, his host in Alexandria (75). As for Galloway's business, the Diaries state plainly that he only came to Lod to ascertain what facilities the place offered "for the projected railroad to Jerusalem" (76). From this it can be inferred that Galloway was not a plain engineer, but a railway engineer. As a guess it might be surmised that he may have been the same Galloway Bey (or perhaps his son?) who some 22 years earlier had planned the first abortive railway in Egypt (77). The question whether he came to Palestine on his own, or whether Montefiore had invited him because he had not given up his railway scheme, must remain unresolved. The statement in the Diaries, that Galloway only came as far as Lod, did not conform to

75 Montefiore's Diaries never state expressly that his host in Alexandria was the same man who accompanied him to Palestine. But there were scarcely two men by the same name.

76 On Montefiore's and Chesney's journey, cf. Loewe, II, p. 66, et seq. The use of the Americanism "railroad" instead of the British "railway", in the Diaries seems to be due to their having been published in the U.S.

the actual facts (78). A contemporary despatch of James Finn, the British Consul in Jerusalem, to Lord Clarendon, the Foreign Secretary in London, said explicitly that Montefiore had arrived in Jerusalem attended by Mr. Galloway, the celebrated engineer of Egypt, "they having come together over the road which is generally recommended for a line of railroad between Jaffa and Jerusalem" (79). Finn also reported that Galloway considered the railway practicable but unusually expensive, probably on account of the difficult country.

The question is which was the road Montefiore travelled from Lod to Jerusalem. The road that had been "generally recommended"? The reason for the expression, "generally" is unknown, for all its interest. But the Diaries are quite definite as to the route he took. Montefiore and his wife rode on May 19, 1857 from Lod to Gieb. They did so at considerable risk for themselves as night had set in when they were climbing the hills. They arrived in Jerusalem next day (80). Montefiore's Gieb is undoubtedly El Jib (Givat). A glance at any map will show that going up to "Gieb" from Lod, he could only have gone into the hills up the steep, and at night positively dangerous, Wadi es-Suleiman, or possibly up one of its parallel ridges. This means that he almost certainly used the same track that McNeill had taken some months before him, parallel

78 Loewe, II, p. 66. Here Loewe says in explanation that somebody (McNeill, cf. Loewe, II, p. 60) had previously suggested having a railway as far as Lod only, the continuation to Jerusalem to be a road.

79 Hyamson, II, p. 240-242. Referring to despatch No. 184, dated June 6, 1857. 'Finn was the husband of E.A. Finn, author of The Reminiscences'.

80 Loewe, II, p. 66.
to the historical Ascent of Beit Horon. There is the only reasonable intimation of where Montefiore had wanted to build his railway, i.e., following McNeill's trace: Jaffa-Lod-Wadi es-Suleiman (or Beit Horon)-El Jib-Jerusalem.

Consul Finch himself, in Jerusalem, assured Montefiore of his "hearty desire" for a railway, and noted that Sir Moses stressed the advantages of such a line for Turkey—and his own unwillingness to lose (81). More interesting is Finch's report as to the reactions of Count Pizzamano, the Austrian Consul, to Montefiore's railway scheme, which was apparently known in detail in Jerusalem. After a snide reference to Montefiore—"A Jew is always a Jew"—Pizzamano counted four reasons why Montefiore's scheme was doomed to failure: a) the Porte would never give a guarantee for a 7% return on investments; b) the railway would only serve a few pilgrims and would never pay (something that McNeill had also feared); c) there was no commerce in Jerusalem to support the line (a point that proved for a time only too true, after the railway had been built in 1892); d) the Jaffa-Jerusalem line could not—Pizzamano did not specify—be extended to Damascus, or even Baghdad. This last possibility has already been referred to before, in evaluating McNeill's and Chesney's motives. It proved from an unimpeachable source, Consul Finch, that somebody, whoever it was, had already spoken loudly enough for Pizzamano to try to refute, of a railway to Syria or even Mesopotamia.

81 For this and the following details, regarding Pizzamano's remarks, cf. the source listed in Note 79.
Here, in the middle of 1857 was proof that Palestine was at long last coming into its own again, as a Land of Tranquility, not for caravans, but for railways (82).

**MONTEFIORE'S 1862 RAILWAY SCHEME FOR JERUSALEM**

Following Montefiore's fifth visit to Palestine, his railway scheme seems to have been dormant, for a few years. It came to be resurrected, perhaps about 1861, and certainly in 1862, when, in the words of the Diaries, "...a revival of the scheme for the construction of a railway from Jaffa to Jerusalem prompted him (i.e., Montefiore) to take a prominent part in the exertions of a committee appointed for the purpose..." (83). McNeill too and Chesney had by now joined forces with Montefiore (84), and his old associate of 1856/57, Sir Culling Eardley was still with him (85), the earlier incident regarding the use of the line for missionary purposes notwithstanding. Details of Montefiore's activities in 1862 are not quite clear. He became either patron, or director, or chairman, of a company (or a committee) for the building of a railway.

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82 Pizzamano's opposition to Montefiore's railway scheme was fed by the fact that he had his own plan for obtaining a firman for Austria, to build a carriage road (not a railway!) from Jaffa to Jerusalem. Cf. Loewe, II, p. 69, and also p. 110. Also cf. Avitsur, ("70 Years", Hebrew) pp. 4-5; cf. also Note 37.

83 Loewe, II, p. 125.

84 Loewe, II, pp. 131, 133; Lane-Poole, pp. 453-454; Grunwald, pp. 248-249; Elath, pp. 142-143.

85 The last reference in the Diaries to the Jerusalem railway is in connection with Montefiore's visit to Sir Culling, who was sick (he died next year, in 1863) to tell him of hopeful developments regarding the line. Cf. Loewe, II, 134; Grunwald, p. 249.
a railway between Jaffa and Jerusalem (86). What is quite clear is that at the age of 77, he must have made immense efforts to find supporters for his scheme, and indeed the list of his associates in 1862 is much more impressive than the one of five years earlier.

Amongst the personalities he mobilized either as supporters or directors were, apart from Chesney, Culling and McNeill, General Sir Edward Sabine (1788-1833), soldier renowned scientist and President of the Royal Society; and Lord Dufferin (1862-1902), a rising statesman destined to become Governor-General of Canada. He also enlisted former Cabinet members, bankers and landed proprietors, apparently some with Whig and some with Tory affiliations, such as Lord Clanricarde, Lord Mounteagle, Sir Thomas Fremantle, Cyril Graham and Thomas A. Hankey (87). Another figure, fleetingly mentioned in the sources as having been interested in the Jerusalem scheme in 1862, was the railway contractor John Watson, who wanted to invest moneys in the construction of the railway and in the improvement of the port of Jaffa (88). Nothing detailed is known of him, but at least he deserves credit for having been the first entrepreneur to link the improvement of the roadstead of Jaffa with the building of the railway to Jerusalem. He certainly was not the last man to propagate this idea.

86 For sources, cp. note 84.

87 cp. Elath, Grunwald, and Loewe. Most of these personalities will also be found in the Dictionary of National Biography.

88 cp. Lane-Poole, p. 456; also Elath, p. 145 and Grunwald, p. 249.
The vicissitudes of Montefiore's efforts for his scheme, such as his failure to gain the support of Lord Clarendon, of Lord John Russel, and of Lord Stratford de Redcliffe (the "Great Elchi"--the late ambassador at Constantinople), have been described by Elath and Grunwald. What counts is that his intensive work failed, in 1862 as previously in 1856/57. Though he was later once quoted in connection with another railway plan for Palestine—not his—his own idea for the Jaffa-Jerusalem railway was dead, after having a history of some 25 years, from 1838/39 onward. Montefiore was to die in 1885, seven years before the railway to Jerusalem became a reality.

All that was left were two questions. What made Montefiore revive his 1856/57 plan in 1861/62? And why did his plan miscarry? There is no definite answer to the first question but an interesting coincidence should be noted. Both in 1856/57 and also five years later, Montefiore's efforts coincided with the equally abortive Euphrates Railway Scheme set in motion, the first by William Patrick Andrew, and the second by Henry Blosse Lynch, with both of whom Chesney (and at least with Andrew, also McNeill) had been closely connected (89). Since London had been the centre of the developments regarding the various stages of the Euphrates scheme, Montefiore must have known about them every time, and quite conceivably they may have served to spur him on. As for Montefiore's

89 Lynch's efforts, 1862-1872, on behalf of the Euphrates scheme, have been exhaustively dealt with by Elath, especially from p. 141 onwards. Lynch had been a member of Chesney's ill-fated Euphrates expedition in the 1830's. For his colourful life, cf. D.N.B. Cf. also Grunwald, p. 249.
ultimate failure: nowhere after his 1856 meeting with Palmerston (who did nothing in a practical way) is there any indication that the British Government in any form, or at any level, showed the slightest interest in the Jerusalem railway. And nowhere, in the sources, is there any indication that after meeting Palmerston, did Montefiore try any more to gain official backing. Indeed, he never seriously claimed that his scheme would be of benefit to Britain, as distinct from British investors. It should be noted that the British government did not, in fact, support the Euphrates scheme either. However, it might be assumed that the main reason for the miscarriage of Montefiore's plans should be found in the absolute unwillingness of the Turkish government to further any plans that would have enabled foreign factors, or bodies, to obtain any foothold whatsoever in its territory. This may have applied with particular force to Palestine, the cockpit of warring faiths and international intrigues. The stranglehold of Turkish xenophobia on the life of the Ottoman Empire is an unending theme of all observers at that period and right up to World War I, and is too recurrent even to merit specific quotations from sources. Elath says that the Turkish refusal to grant the Jerusalem line any significant concessions, was also due to French antagonism to British activities in Southern Syria (i.e., Palestine), an area which they regarded as their own special preserve (90). Several more examples of French attempts to sabotage railway projects, British, German-Turkish and Turkish, will be noted in the following chapter. Incidentally, it

90 Elath, p. 146. He quotes Hoskins (cf. Bibliography), p. 429. Hoskins has a great deal to say about the French determination to preserve their interests.
might be noted that 1862, the year Montefiore gave up his railway scheme for Jerusalem, was also the year Lady Judith, his wife, died.

Just one more instance should be mentioned, linking Sir Moses, in a very minor way, with a railway in Palestine. A Hebrew book having Montefiore's links with Palestine for a subject, and published in Warsaw in the mid 1870's, states that he, on some unspecified occasion, expressed the opinion that it would be desirable to have in due course a company that would build a railway between Jaffa and Port Said (91). Nothing more than this passing reference is known about the scheme. By the time it appeared, Khayat, the British Vice-Consul, the man who first suggested a rail link between the continents and between Egypt and Palestine, in 1848, had been dead for several years.

OTHER RAILWAY SCHEMES BETWEEN 1862 AND 1880: SANDWITH, ZIMPEL, SCHICK, LUDWIG SALVATOR, ERLANGER, CONDER, AND OTHERS

During the 30 years that were to pass between the demise of Montefiore's scheme of 1862 and the actual opening of the first railway to Jerusalem in 1892, there was quite a surprising number of other plans to build railways in Palestine, apart from the ones noted above. The memory of some survives just as a short accidental note somewhere. Some of them cannot even be exactly dated chronologically. Some never amounted to more than an idea. Some almost progressed to the beginnings of fruition, only to collapse for relatively paltry reasons, or just because the time and circumstances were not ripe. Details are rare and

scattered, as abortive schemes to construct railways in a relatively remote corner of the Ottoman Empire were of interest usually only to the initiators. And these mostly did not trouble to detail their plans for posterity—once they had miscarried.

Between 1861 and 1865 there served in Haifa as British-Vice-Consul (a post abolished shortly thereafter) Thomas Bockhouse Sandwith (92). In a memorandum of 1871, Sandwith stated that while he was serving in Haifa the idea cropped up to build a railway from Haifa—according to him the best harbour on the Syrian coast—to Mesopotamia. Very unfortunately he did not state who the originator of the idea had been (93). The proposed track was to have run along the northern slopes of the Carmel range, through the Jezreel Valley and into the Jordan Valley to a point south of Lake Tiberias. Then it would have climbed the heights of the Hauran and would have crossed the Syrian Desert approximately along latitude 33°, north, to end at Baghdad. A branch line from the Hauran northward to Damascus was also envisaged (94). Sandwith’s memorandum was prepared for a British Parliamentary Select Committee that inquired, once more, in 1871, into the Euphrates Railway Scheme (95).

The plan, or idea, outlined by Sandwith never materialized. Nevertheless, it was noteworthy on a number of counts. 1) it was the

92 Hyamson, I, p. XVIII.
93 Parliamentary Papers, 1872, No. 534, p. 28.
94 Details as quoted by Elath, p. 173.
95 Elath, p. 164.
first instance of a railway being explicitly proposed for northern Palestine, having Haifa as its terminus; 2) it was one of the first railways proposed for Palestine that had been deliberately planned with a view to its international utility, and based on the concept of Palestine as a "bridge" for traffic (96); 3) as far as the stretch Haifa-Jezreel Valley-Hauran-Damascus was concerned, the proposed line was to have been the modern counterpart of the age-old Via Maris; 4) the proposed line already foreshadowed the branch of the future Hejaz Railway, of which more in the following chapter; 5) the proposed line also foreshadowed several more projects to build a railway from the Mediterranean to Mesopotamia (and possibly India) that were to be raised during the 70 years following the mid-1860's. It might be added that, considering the technical means that were available at that time--there were as yet no diesel engines that need no water--the building of a line across the arid Syrian Desert would probably not have been feasible.

Unfortunately no exact date can be assigned to the project mentioned by Sandwith, and there is no way of knowing whether the railway scheme of Dr. Zimpel, which also dates in the early 1860's, was earlier or later.

(96) Khayat's proposal of 1848 for the railway Jaffa-Suez, quite undoubtedly had its international aspects, as has been pointed out. On the whole, however, its importance would have been predominantly local. Regarding length, convenience, and prospective customers, it would have been inferior as a means of international communications to the Alexandria-Cairo-Suez railway then being planned.
Very little is known about Charles F. Zimpel (97). He was born in 1801 and claimed--on one of his title-pages--to be a doctor of medicine and of philosophy. He also called himself a railway engineer. He was a German-American, and the date of his death is not known (98). In a very late American source, Zimpel is described as an American civil engineer who came to Palestine "peddling Sunshine Pills"--whatever they were (99). As far as can be judged from a list of his writings, he was a religious enthusiast of sorts, who wanted the Jews to return to their homeland. Vilnay, who states that Zimpel had been engaged in building railways in America and in Europe, furnishes the titles of some of Zimpel's publications about traffic projects in Palestine (100). They were not available to the writer.

97 Zimpel's name, or biography, could not be found in any available German sources. There are only a couple of his minor writings, not very relevant to the problem in hand, to be found in the National Library in Jerusalem, and attempts of the writer to locate his other writings elsewhere were unsuccessful.

98 Regarding Zimpel, cf. Hecker, p. 785; also cf. the following notes. It is an interesting fact that Grunwald, in his monograph on the Jerusalem railway, does not mention Zimpel.


100 Vilnay, in "Jerushalayim" (Hebrew, cf. Bibliography), p. 352, lists the following writings by Zimpel:

A. Strassenverbindung des Mittelländischen mit dem Todten Meer und Damaskus, über Jerusalem, mit Heranziehung von Bethlehem, Hebron, Tiberias, etc., 1865. This booklet may have been translated into English.

B. Plan d'un chemin de fer de Jaffa à Jerusalem, 1:100,000, 1864. This plan seems to have been appended as a supplement to the foregoing booklet. The first of these publications dealt with the construction of roads, the other with a railway to Jerusalem. Zimpel's pseudo-religious, and pro-Jewish writings (without any references to a railway) that were viewed by the writer in Jerusalem, were:

a) Die Israeliten in Jerusalem, 1852;

b) Weltstadt Jerusalem, 1853.
However, some details of Zimpel's intentions can be gleaned from a slim booklet that he published in 1865 (101). In this he said that he had proposed in a separate booklet the building of a port in Jaffa and also of a railway to Jerusalem (rather like the British contractor, Watson, some time before Zimpel). He claimed that he had prepared some 400 feet long, of the railway to Jerusalem with a branch, a first proposal in this direction, to Bethlehem. He further said that he intended to submit his plan to the ministries in Constantinople with the view of obtaining a concession. Zimpel based his plans on the fact that 60,000 travellers a year went up from the coast to Jerusalem. Incidentally, he also mentioned the previous efforts of Montefiore and Lord Dufferin to obtain a like concession. A postscript by Zimpel stated that on January 1, 1865, he received a communication from Edhem Pasha, the Turkish Minister of the Interior, which said he was prepared to furnish the desired concession, if Zimpel would, within six months furnish proof that he had the necessary financial means. This, under the circumstances, was a palpable impossibility and probably shows that the Turks did not take Zimpel seriously. But, that Zimpel was not entirely a fly-by-night adventurer is perhaps proved by the fact that amongst his associates was the German engineer, surveyor, and archaeologist, Humann, the future successor of Schliemann in the excavations of Mycenae (102). An even

101 Mahnruf an die ganze Christenheit, und nicht minder an die Juden, für Befreiung von Jerusalem ("A Call of Admonition to all Christendom, and not less to the Jews, for the Liberation of Jerusalem"), Frankfurt am Main, 1865, in particular pp. 8-9 and 15.

102 Hecker, p. 785.
more famous companion of Zimpel (at least in terms of the history of Palestine) was the renowned German Conrad Schick, veteran resident of Jerusalem, builder, engineer, historian, biblical expert and topographer, one of the most famous figures in the country during the 19th century (103).

The trace Zimpel had so laboriously prepared is quite clearly described by Schick as far as its hilly section is concerned (104). There is little doubt that Zimpel knew about the travels of McNeill and Montefiore up the Wadi es-Suleiman in the north, and Chesney's journey up the Wadi es-Sant in the south. He chose neither possibility, and planned his line through the Wadi Sarrar (Nahal Sorek), past Artuf, through the hills past Bir Bir (Bethar), to reach Jerusalem through the Wadi-el Werd, terminating in the Valley of Rephaim, where it was closest to the walls of Jerusalem. In fact, he was the man who traced the railway to Jerusalem as it was indeed built in 1892, and as it still operates today. Schick was to have his own railway plan which will be discussed later, and criticised the proposed layout, and rightly so, on account of its passing through a narrow and difficult ravine, on account of its uninspiring scenery (which was only too true), and on account of its inordinate length, as it came into Jerusalem in a wide sweep from the south-west. He seems to have minimized the fact that the length

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104 Schick, pp. 125-129.
of the trace was compensated by its easy gradient throughout. Incidentally, it should be noted that Zimpel, too, chose an historical ascent to Jerusalem, one already used by the Philistines when attacking David (105). But it had always been one of the lesser used tracks in the hill country, probably because of the very narrow and blockable defile, just where it leaves the plain. Its inhospitality may have been the reason why it had been left alone by previous planners of the line to Jerusalem.

There is a possibility--at present unverifiable like many of the plans described in this chapter--that Zimpel may have been the planner of a much more ambitious transportation scheme for Palestine. The source for this is the usually very correct and reliable Hecker (106). According to him, Zimpel wanted to have a railway line Damascus-Dega'a-Jordan Valley-Jericho-Jerusalem-Jaffa, plus unspecified branches. Of this the Jerusalem line would have been only a small section. If true, this would make Zimpel not only the "father" of the Jerusalem line, but also the progenitor of an important stretch of the future Hejaz Railway as well. However, it should not be overlooked that there is a very puzzling parallel between this scheme reported by Hecker, and the road scheme of Zimpel listed by Vilnay (107).

105 Cf. Samuel II, chapter 5, verses 18, 22.

106 Hecker, p. 785. It might be added that the railway enthusiast, engineer, Max Hecker (1879-ca. 1965) was an early resident of Palestine, apparently served in the Austrian railway troops (in Palestine?) in the First World War, and later became a famous architect in Jerusalem.

107 Cf. Note 100, A.
Zimpel dropped from view after 1865, and also his railway projects, which must have started earlier. His Epitaph will be found in the words of Christoph Hoffmann, the leader of the German "Temple Society" in Palestine at that time. "The efforts of Dr. Zimpel regarding the laying of a railway from Jaffa to Jerusalem failed in 1865 despite the preliminary researches that were made with great sacrifice. They failed on account of the unwillingness of the Turkish government" (108).

There were other schemes, which mostly, like Zimpel's, cannot be dated except in the widest terms. The Jerusalem correspondent of the Jewish, Hebrew-language newspaper "Hammagid", published in the East-Prussian town of Lyck, reported quite incidentally, in the autumn of 1864, that an engineer had arrived in Palestine in connection with a railway scheme. The correspondent, who signed himself "Adir", said that the engineer, whose name he unfortunately failed to mention, represented a company which wanted to build a line between Jaffa and Jerusalem. There were no other particulars, but the same news item mentioned however that the Turkish authorities were adamant not to let strangers open the ways of the home-land. It also linked, in its quaint language, the redemption of Israel with the building of the railway (109). This was a sentiment that many were to share in the future. Anyhow, it seems clear that the idea of a railway was still going strong.

The cooperation of Conrad Schick with Zimpel has already been mentioned above. Most of the relevant details regarding this were taken from an


article, published in 1867 in a German periodical, "Petermann's Geographische Mitteilungen" (which still exists today). The article is valuable for more than its description of Zimpel's line (110). It refers to the fact that various European, and even American, companies or private persons, had planned to build a road, or "according to circumstances", a railway, from Jaffa to Jerusalem. After giving details of Zimpel's plan, Schick goes on to list other possible alternatives for a trace to Jerusalem. After considering three wadis, including the well-known Wadi-es Suleiman (Schick: Wadi Solomon), all leading down from Jerusalem to the coast, via el Jib and via Biddu/Kulibeibeh (111), Schick came to the conclusion that all three were too steep to enable a railway to be built. Instead, he proposed in his article yet another possible trace for the railway Jaffa-Jerusalem, which he thought feasible on account of its suitable gradients. Schick's track would have gone north from Jerusalem, following the contours of the main Judaean ridge parallel to the Mediterranean-Dead Sea watershed, and slightly west of it. The track would have passed Tel el Ful, and at Kalandin (Atharoth) would have turned north-west beginning an easy descent into the wadi just north of Upper Beth Horan (Beit Ur). It would then have continued west, parallel, but slightly north of the Ascent of Beit Horan. It would have reached the coastal plain about el-Burj, and would probably have continued through Barfiliya, Jimzu and Lod, to end at Jaffa. In other

110 Schick, pp. 124-129. As for the credentials of Dr. h.c. Conrad Schick (1822-1901), cp. Z.D.P.V. (Zeitschrift des deutschen Palastina Vereins), 1902, which carried his obituary.

111 All these wadis will be found on any 1:100,000 map of Palestine or Israel.
words, Schick's trace would have been a modified and modern version of the very ancient road through the Ascent of Beth Horan. Schick's plan never materialized.

In 1869, the road from Jaffa to Jerusalem had been completed to serve the visit of the Austrian Emperor Francis-Joseph, who came to visit the Holy City, on his return from the opening of the Suez Canal. Travelling on the new road by horse-carriage took the better part of one day, and usually much longer (112). Travel was very strenuous at its best-travellers had to push the carriages up steep sections—and the road deteriorated quickly as the Turks did nothing for its upkeep. Its capacity was very small. Consequently, the need for a railway had not abated, and still more plans were put forward. In 1872, a Jerusalem paper, "Ha'Havatseleth", referred to rumors that His Exalted Majesty, the Sultan (Abd el-Aziz) had made a "covenant" with a company to build a railway from Jaffa to Jerusalem. The paper also stated that no particulars were known as yet (113). Again, as before, no details are available about this particular scheme. But there is just a chance that the paper referred to a railway plan initiated by a Frenchman named Forbes (?) who in 1872, or 1873, obtained a firman from the Porte, for the construction of a line from Jaffa to Jerusalem as well as (as Zimpel had intended) a port at Jaffa. Avitsur also mentions this plan (114).

112 Cf. the Paris journal (Hebrew), "Ha'levanon", Vol. 6, No. 39, 11.10.1869.

113 "Ha'havatseleth", (Hebrew) Vol. 2, No. 19, of 7 Adar Beth.

114 Avitsur, p. 5. As the name he gives is spelled in Hebrew, there is difficulty in reconstructing the French name. Forbes has an English tinge. This is the only source that could be found for the 1872/73 scheme except for an oral confirmation by Dr. Avitsur, who also referred the writer to a booklet by Dietrich Lange on the Temple Society in Palestine. This booklet was not available.
The plan should have been realized within 18 months, but failed through lack of funds. Hecker, on his part, mentions that in 1873, a concession was granted to a French company, and that in the following years preliminary works were started several times, but that the firman ultimately lapsed (115). It is not clear if Hecker and Avitsur refer to the same undertaking, but it is likely. Also to 1873 belongs a very short reference to a railway in an illustrated book on Palestine by the Swiss brothers Thevoz. They just say that engineers had arrived in Palestine from Constantinople to trace a railway (116).

Another reference to a railway suggested for Palestine in its wider sense, i.e., including Transjordania, dates from 1874. In a book describing Turkish military activities in Yemen, the Ottoman Major Ahmed Rashid advocated the building of a strategic railway, apparently from Damascus to Mecca and Jedda. This proposal seems to have been the first harbinger of the overall concept of the Hejaz Railway that was destined to be built after 1901, down the Transjordan plateau (117).

About 1876, or shortly thereafter, there appeared in England a book, destined to reach eleven editions by 1894, by an Anglican clergyman, James Neil, who had been the incumbent at Christ Church, Jerusalem. The book, "Palestine Re-Peopled", was violently anti-Catholic, and contains a confused tale of a proposal in 1855 by an Abbé Michon who advocated the

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115 Hecker, p. 785.

116 Thevoz (cf. Bibliography), p. IX.

117 Hecker, p. 785, quoting a reliable source.
removal of the Papacy from Rome to Jerusalem, its links with the outside world to be provided by a railway. Far more credible was Neil's statement, elsewhere in the book, that in 1875 a route had been surveyed for yet another railway, from Jaffa to Jerusalem. Its construction, Neil observed, would doubtlessly be immediately followed by a coast line through Philistia, connecting Jaffa with Cairo. The survey that had actually been carried out, Neil suspected, was proof that its Catholic promoters, acting with the blessing of the Pope, were indeed trying to further the removal of the Papacy to Jerusalem. Otherwise, Neil argued, the then state of the country would have made such a railway a losing proposition. At the end of his book, Neil had an appendix, entitled, "A Papal Railway for Palestine." In it he quoted the Rome correspondent of the London Times, to the effect that in July-August (1876) a certain Signore Pierotti had been received by the Papal Secretary of State and then by the Pope, Pius IX, himself. Pierotti already had an authorisation of the Sultan to build both a port at Jaffa and a railway to Jerusalem. He received the blessing of the Pope for his undertaking, the Pontiff observing that he hoped the undertaking would result in profit to the Catholic religion in Palestine (118).

In 1876 the Turkish reformer, Midhat Pasha, provided the Ottoman Empire with its first constitution, and liberal winds began to blow for

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118 Neil (cf. Bibliography) pp. 34, 75, 76, 174. It might be added that Neil, p. 110, referring to Isaiah, ch. 46, 19-20, claimed that the term "Kirkarah" used there by the prophet, actually referred to railways!
a time, just as they had at the time of the Hatt-ı-Humayun in the mid-1850's. Perhaps this climate encouraged entrepreneurs and planners, for in the following years another spate of railway plans can be recorded, including even projects envisaged by the Turkish government itself. Again it should be stressed that little is known of most of the plans and many dates are only tentative. None of the plans came to fruition, but their cumulative effect may ultimately have led to actual building being carried out when the time was ripe.

Sometime about 1877-78, the Austrian Archduke Ludwig Salvator travelled from Kantara in Egypt, along the ancient northern Sinai route—the Via Maris—to Palestine. He was a travelling writer, and a gifted illustrator. He also published a book (one of several he wrote) about this journey (119). In the text accompanying his drawings he made several references to railway schemes for Palestine. In his preface he mentioned proposals for a harbour at Jaffa, and for a railway through the valley of the Jordan. Details cannot be ascertained. Later in his book he speculated about the feasibility of a railway connection along the coast, i.e. from Egypt to Palestine. He came to the conclusion that a line along the coast of northern Sinai was impracticable on account of shifting sands—a view to be amply disproved when the British built an efficient line along this coast in the First World War. However, the concept of having a line from Egypt to Palestine seems to have been quite familiar with him (as it had been to Montefiore and Neil about the same

119 Ludwig Salvator lived 1847-1915. Particulars about him can be found in Webster's Biographical Dictionary.
time). The Archduke ended up with railway plans of his own (120). Beside a railway through the Jordan Valley, he wanted a harbour at Beyrouth instead of at Jaffa, with a railway to run down the coast to the same unspecified point in Palestine. The Jordan Valley line he suggested, though it appears from the context that he was not the originator of the idea, was to crop up in the future in various guises. He seems, though, to have been the first to have broached the idea of having a line along the coast, from south to north, a modern version of the Via Maris, in its northern section. He hardly anticipated his idea to be carried out only in 1942, as the Haifa-Beyrouth-Tripoli line.

Meanwhile the idea of a Jaffa-Jerusalem railway (which Ludwig Salvator apparently had not considered) was again mentioned by Yehiel Mikhal Pines, one of the pioneers of modern Jewish Palestine (121). He noted about 1878, "...Montagu told me that he was making efforts regarding the building of a railway from Jaffa to Jerusalem. He said that


121 Y.M. Pines (1842-1913) was a "practical Zionist" long before there was Zionism, and was also of great influence as the local agent of the "Sir Moses Montefiore Memorial Fund." He came to Palestine in 1878, and in due course became the author of several books, one of which is quoted below.
the House of Rothschild will also take part in the scheme" (122).

This note in the reminiscences of Pines is followed, some 20 pages later, by another remark saying that the railway to Jerusalem will pass the village of Jindas very soon, and ends "...this week the engineers already came to start the work" (123). No more mention of any railway is made by Pines in any of his writings and his short note tantalizingly leaves open the question of who had sent the engineers and why was their work not proceeded with. It might be added that the memory of Jindas, which no longer exists, is preserved still by "Jindas Bridge", about one kilometre north of Lod. This handsome bridge, built in the 13th century by the Mameluke Sultan Beybars and still preserving his coat-of-arms, leopards, was built in order to carry the Lod-Northern Palestine road--i.e., the eastern branch of the Via Maris--across the Nahal Kebir (today's Nahal Ayalon). The same wadi would have had to be crossed by any railway proposed to go to Jerusalem along the McNeill-Montefiore track of 1856/57 from Jaffa to Lod, and along the Beit Horan/Wadi es-Suleiman alignment. Whoever intended to build the 1878 line apparently wanted to cross the riverbed in the vicinity of the old bridge (124).

122 Pines (cf. Bibliography), p. 26. Montagu was very probably Samuel Montague, later Lord Swaythling (1832-1911), the Anglo-Jewish financier and philanthropist. Cf. D.N.B., Supplement, p. 118. It was the same Montagu, apparently, who, about a decade later offered Joseph Navon his help when the line to Jerusalem was actually being built. Cf. Grunwald, p. 251.

123 Pines, p. 46.

124 Jindas Bridge can be found on the 1:100,000 Survey of Palestine Map, sheet 9. It still carries all the traffic from Jerusalem to Lod Airport. It has by now served travellers for over 700 years. A few meters to the west of it, a modern steel bridge does indeed carry a railway, the main line from Jerusalem and Beer-Sheva to the north.
Whoever it was, it was certainly neither Montagu nor Rothschild, as Pines would have been sure to have advertised the fact. Perhaps--but this is pure conjecture--the "Jindas Line" was the line for which a French company had obtained a concession about 1878 as mentioned by Oliphant (125).

Two more possible railway lines might be assigned to about 1878, one of them only in a negative way. The British traveller, V.L. Cameron, in a book discussing British overland links with India, briefly considered a railway from El Arish to Kuwait, or Basra, that necessarily would have cut across southern Palestine, and southern Transjordania. However he did not consider the line feasible on account of the difficulties presented by the Syrian Desert (126). Cameron had in person visited the Levant, and actually listed 10 possible railway routes to the East, of which the above-mentioned was No. 7. The others did not include Palestine. In a way he revived the hazy outlines of the ca. 1835 railway scheme from Ismailia to Kuwait, mentioned at the beginning of this chapter. Why he considered El Arish as a terminus (an idea never raised again), which is notorious for its shallow unapproachable coast, and not Gaza, or Jaffa, remained unexplained.


The second railway scheme that can be tentatively assigned to 1878, is one that foresaw Haifa as a terminal, and bore a close resemblance to the Sandwith plan mentioned earlier. This is noted, just in passing, by the biographer of the Syrian Desert, Mrs. Phelps Grant, who failed to furnish details that could be followed up. She refers to a proposed railway from Haifa (or Acre), via Salkhad (in the Hauan), Wadi Sirhan, Jauf, to Kuwait or Basra (127).

To 1879, a date that for once is definite, belongs another railway plan for a line from the Mediterranean to Jerusalem, one that had a novel, original twist and was to have a history lasting to 1914. In an article in the "Palestine Exploration Fund Quarterly," the future Colonel Claude Conder, who was to achieve scholarly fame, with the future Field-Marshall Herbert Kitchener, on account of their "Survey of Western Palestine" advocated a railway from Haifa (via Nablus) to Jerusalem (128). His proposal no doubt carried weight, as already in the 1870's the then Lieutenant Conder was known as an authority on Palestine. In support of his idea he stressed the fact that his layout would have had much easier geographical conditions to contend with than the proposed line Jaffa-Jerusalem, though the line advocated by him was considerably longer. He no doubt also took into account the

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the fact that while the exposed roadstead at Jaffa was notorious for its storminess in winter, disembarkation at well-sheltered Haifa was rarely hindered by the weather. What he intended was, obviously, to carry his railway from Haifa along the road to Megiddo, and thence across Samaria to Nablus (Shehem). From there he would have continued his trace along the easy ridge of Palestine's mountain backbone into Jerusalem. In other words, he would have used the ancient highways carved out for him by history. Incidentally, in his article Conder provided an explanation why the direct and short line Jaffa-Jerusalem, through the Wadi es-Suleiman (or Beit Horan) previously considered by McNeill and Montefiore, was not feasible at that time. He said that it would have involved a climb of some 500 feet (some 150 metres) within the distance of half a mile (about 800 metres). A glance at a map will show that he referred to the lay at the land at Beit-Horan, or just south of it, though he did not say so expressly. Further proof of which layout he referred to (and opposed), will be found in what he wrote immediately afterwards: that the only possible "other" alternative was through the Valley of Sorek (Wadi Sarrar through which the line was ultimately built). But, as already noted, Conder did not want the Jaffa-Jerusalem line, whatever its layout. In his 1879 article Conder, by the way, mentioned the Haifa-Euphrates Valley Railway, which he thought impracticable. It is a pity that there is no way of knowing whether he was referring to Sandwith's proposed Haifa-Mesopotamia line of some 15 years earlier. Possibly he referred to the scheme mentioned by Mrs. Phelps Grant. Perhaps these two schemes were identical. There is no solution to the problem.
Conder was to return to the subject of railways in Palestine the following year, 1880, in the same publication (129). He again mentioned the "long proposed" Euphrates Valley Scheme, which he had opposed, but he voiced his support of a railway from Haifa to the Transjordanian uplands with--as Zimpel and Sandwith had suggested--a northern branch to Damascus and ultimately, Aleppo. But he also had another idea. He wanted a "southern branch" to "Moab", whatever that meant, to be used by the Mecca Pilgrims from Syria. It might be assumed that Conder knew nothing of Ahmed Rashid's proposed Hejaz Railway, of 1874, mentioned above. He probably wanted to adjust the functions of the ancient "King's Highway" from Damascus down the Transjordanian Plateau to modern conditions. Whatever the truth was, he foresaw with almost uncanny accuracy the railways that were in fact to be built years later. namely the Turkish Hejaz Railway, and the French line connecting Damascus and Hama-Aleppo via Raphia. While Conder was first in mentioning the possibility of serving the pilgrim trade, he was first also, in his article, in advocating the building of the Haifa-Damascus/Moab line up the Yarmuk Gorge, as was actually done in due course by the German Meissner Pasha. It will be noted that he was also right in advocating a Jaffa-Jerusalem line up the Wadi Sarrar (if it was to be built at all) as it finally was. Conder seems to have had a better "railway touch" than his contemporaries, of which Lawrence Oliphant was one. Conder stated incidentally, that he was aware of Oliphant's railway schemes, of which more later.

Before turning to Oliphant's railway scheme, in their way the best documented of the late 1870's and the early 1880's, mention must be made of some other railway plans, very few details of which have survived. Even their exact dating is, again, uncertain. One of them is mentioned by Grunwald as belonging to the early 1880's (130). Grunwald bases himself on a despatch from Constantinople to a German-Jewish periodical in 1888 (131). This said that a firman for a railway granted several years before to Baron Erlanger and Colonel Maud (for a line to Jerusalem) had expired, after having been twice extended. A deposit of £4,000 had been forfeited. According to Grunwald, Erlanger represented a banking firm that also used to finance railways and had branches in several capitals, including Paris. It can only be surmised who this banker was. Possibly, at a guess, it was Emile d'Erlanger, a financier with his seat in Paris, who is known to have dealt with "steam tramways", i.e., very light railways, mainly for passenger traffic, the precursors of the later electric tramways (132). Nothing more is known about the Erlanger plan, but it should be mentioned that according to one reliable source, a Franco-Belgian

\[130\] Grunwald, p. 249

\[131\] Die Jüdische Presse, XIX, Berlin of 4 October, 1888, p. 391.

\[132\] These, admittedly unverifiable, particulars, were gleaned from a notorious anti-semitic German lexicon by E. Ekkehard (cf. Bibliography). Nothing is known about Erlanger's associate, Maud. Perhaps he should be spelled Maude and was British? There had been an Anglo-Indian general Frederick Francis Maude (1821-1897).
syndicate in 1880 considered building a "steam tramway" between Jaffa and Jerusalem (133).

Though the annals of those years there flits yet another railway scheme, about which next to nothing is known, except what was said about it in a passing reference many years later (134). This was a proposal for a railway between Port Said and Gaza. The man who suggested it was Sir Charles Moore Watson—not to be confused with the contractor John Watson of Chesney's and Montefiore's days. He was a soldier and administrator who served in Egypt in the 1880's (135). Nothing more is known about him, and even the date of his scheme is conjectural. In any case, Watson's plan was only one more elaboration—of which more were to follow—of the idea of linking Egypt with Palestine along the ancient Via Maris. Khayat had suggested Suez as a terminus, Ludwig Salvator considered Kantara, Montefiore at one time had had Port Said in mind, and Watson apparently had had the same idea.

Evidence, tangible for a change, regarding a Turkish firman of August 5, 1878, containing a concession to build a port at Jaffa, and


134 P.E.F.Q., 1915, p. 143

135 Watson (1844-1914), is mentioned in the D.N.B., Concise, Supplement, p. 174. He was for a time chairman of the Palestine Exploration Fund.
Paris, le 15 Avril 1880.

À Monsieur le Président du Conseil des Ministres.
à Paris.

Monsieur le Ministre,

Création d'un Port à Jaffa.

Sous les auspices d'un certain nombre de Membres du Parlement et encouragés par un voeu formulé par la Société de Géographie commerciale de Paris, en date du 16 Février dernier, les concessionnaires du Port de Jaffa et des Chemins de fer à ouvrir dans la contrée, et les Membres du Comité de fondation, soussignés, ont l'honneur de vous demander l'aide du Gouvernement, pour mener à bonne fin une entreprise qu'ils considèrent comme nécessaire au maintien et au développement de l'influence de la France en Syrie et en Palestine, en même temps que favorable aux intérêts de notre commerce et de notre marine.

Études faites.

La concession du Port de Jaffa et du Chemin de fer de Jaffa à Jérusalem nous a été accordée par le Gouvernement Ottoman le 5 Août 1878 et nous avons depuis cette époque terminé les études nécessaires pour la construction du chemin de fer et
a railway from that place to Jerusalem, is contained in a file located in the National Library in Jerusalem (136). The contents of the file were acquired by accident through the good offices of a member of the Israeli Embassy in Paris, who found them being offered for sale. What links, if any, there are between the documents in the file, and other railway schemes for Palestine at the time, cannot be established.

Amongst the documents there are three memoranda, one undated, one dated April 15, 1880, and one bearing the year 1880. The file contains the names of Messrs. H. de Satteley, E. Lavalley, A. Champillon, and A. Robin, whose identity could not be discovered. There is in the file also a letter by a high French naval officer--signature unreadable--advising against the proposed scheme. Nothing came out of it anyway.

But the memoranda are interesting on account of the motives they reveal for that particular French attempt to build a first railway in Palestine, indeed in the Turkish Levant as a whole. The memoranda, at least two of the three, were addressed to the Président du Conseil des Ministres, i.e., the Prime Minister, at Paris, who was at the time, Jules Ferry, famous for his expansionist policies. They are remarkable for their blatant chauvinist, anti-British reasoning, and their insistence on the benefits of the proposed railways (more were envisaged for the future) for French prestige and "gloire". The concessionaires asked

136 File V, 1733. Permission to quote it is gratefully acknowledged.
for 5 million francs each for building port and railway (10 million altogether) as a subsidy, and went to great lengths to prove that these undertakings would lead to a peaceful conquest of Palestine and Syria. In exchange for the subsidy, the French government was offered a naval base—flanking the northern entrance of the Suez Canal, it was stressed. In contrast with other schemes that stressed benefits for the Turks, religious motives (in disguise), or commercial results, this French initiative frankly regarded the railway (and the port) as a means for the peaceful conquest of territory. As already noted, the concessionaires failed in 1880, despite their appeal to nationalism. But it was not the last time that the French were to mix nationalism with railway schemes in Palestine.

The year 1880 was also remarkable for an attempt, the first by the Ottoman government itself, to initiate railway building on its own, instead of waiting for foreign concessionaires. The Turkish Minister of Labour, Hassan Fehmy Pasha, on June 6, 1880, submitted to the Grand Visier an exhaustive report and recommendations as to the public works that should be carried out within the Empire. Railways figured largely in the report. Amongst the lines proposed was one that was to run from Aleppo (with a branch from Tripoli) to Homs, Damascus, Jerusalem, Jaffa and El Arish. A later extension, apparently from Damascus to the Hejaz, was envisaged. The whole system was intended to link up with the Turkish trunk line Constantinople-Baghdad. The scheme never even came near implementation, but the ideas behind it proved that even the Turks began to appreciate the importance of railways (137).

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137 Hecker, p. 787.
Oliphant's Proposed Railways, 1880.

(From: The Land of Gilead)
OLIPHANT’S RAILWAY PLANS

Lawrence Oliphant has already been mentioned before in connection with Sir Moses Montefiore's efforts on behalf of the Jaffa-Jerusalem railway scheme in 1856. At that time he had merely been one of Sir Moses' associates. Now, 24 years later, in 1880, he came to the fore with a railway scheme of his own, that was remarkable on account of its imaginativeness, its wide scope, and the ample details that are available about it. Its publication was accompanied by the first map of Palestine ever to contain a (proposed) railway network (138). Oliphant's colorful personality has already been noted above (139). He was a Zionist long before a Zionist movement had been started by Theodore Herzl. He went to Palestine in 1879, and for a few years even settled with his wife in the Druze village of Daliath el-Carmel near Haifa (140). The result of his sojourn in Palestine was two books, "The Land of Gilead" (1880) and "Haifa" (ca. 1885).

Apart from being a Zionist visionary and a religious mystic, to judge from his biography, he seems also to have had some understanding

138 Oliphant's remarkable railway map of Palestine, dating from 1880, is contained in his "Gilead" (cf. Bibliography), facing p. 302.

139 Cf. Note 45.

140 Oliphant's stay in Palestine is amply described in his two books, listed in the text further on. For the particular Jewish aspects of Oliphant's life, there is a good bibliography in the article on him in the Encyclopaedia Judaica.
of business affairs. Especially he seemed to have grasped very well—as he had in 1856—the importance of railways for the development of Palestine. Railways, and the reasons for them, figure in both his books, and most prominently in his first one. In this, he fervently advocated the establishment of a Jewish colony in the mountains of Gilead (141). The colony he intended to develop was to depend to a great extent on its railway links. In his second book there is a complete chapter, entitled, "The First Palestine Railway", apart from numerous other references to railways (142).

Oliphant's rail schemes merit a closer look, because, while his colonizing plans have been amply discussed, nobody so far has troubled to examine the place of railways in the context of these plans. Nobody has ever described Oliphant's railway plans in detail. Yet they deserve attention, both on account of their initiator's overall aims in 1880, and also in the larger framework of railway development in Palestine.

What Oliphant proposed were actually several railways, starting as one line from the coast of the Mediterranean, and then branching out on


142 Cp. "Haifa", pp. 63-67 for the complete chapter and also pp. 60, 204, 212, 244, 245, 265, 267, 342.
on their various ways. His proposed lines, as noted above, are shown on the railway map attached to his book on the Land of Gilead. It should however be strongly stressed that not all the lines he discussed in his book are actually shown on his map, and where shown, they do not all conform to his proposals in the text. What Oliphant envisaged were the following traces: 1) a line from the Bay of Haifa/Acre, cutting across lower Galilee to the Jordan Valley. He offered two alternative routes for this line, (a) one northerly track going straight west-east from Acre (Haifa) to Tiberias; (b) one south-easterly track, crossing the Valley of Jezreel to reach the Jordan rift at Beisan (143); 2) a continuation of the above-mentioned line from the coast to the Jordan Valley, from the Jordan to the north-east to reach Damascus; 3) a continuation of the trunk line from the coast, down the Jordan Valley, to serve the proposed Jewish colony of Gilead, overlooking the valley from the top of the Transjordanian Plateau, and stretching down to the Dead Sea. This line was to continue south, along the Rift Valley, or parallel­ ing it on top of the Mountains of Joab, to end on the shore of the Red Sea at Akaba; 4) a line to climp up to Jerusalem from the east, branching off the Jordan Valley trunkline just north of the Dead Sea; 5) a line branching off the above-mentioned trunkline to Akaba just south of the Dead Sea. This was to climp out of the Rift Valley, from the Aravah into the southern Negev, cross it to the west, and continue through Sinai to

the Suez Canal, joining the Cairo-Suez railway at Ismailia. It will be seen that Oliphant's proposals were nothing if not far-reaching. As far as northern Palestine, and northern and central Transjordania were concerned, he personally had visited most areas he wanted his lines to serve, and knew what he was talking about. He apparently had little, if any, first-hand knowledge of southern Transjordania, the Negev, and Sinai.

The line Oliphant proposed from Haifa (or Acre) across the Jezreel Valley to Beisan, was the least original of his concepts. It had been in the mind of planners, at least from Sandwith onward. It was the natural layout for a track, almost straight, with no natural obstacles, and was to have more protagonists in the future, until it was finally built by the Turks with German help, some 20 years later. From Beisan the line would have turned north to Tiberias. For some unknown reason, perhaps because the then Muttesarif at Acre preferred it, Oliphant favoured the second alternative for a line from the coast to the Jordan Valley (144). This alternative was original, and quite his own. It was topographically quite feasible, but it was never again suggested, probably because (in contrast with the Jezreel Valley layout) it led across fairly desolate country, with little chance of ever having a prosperous hinterland. Oliphant wanted to lead this line south-east and east from the Bay of Haifa/Acre, through the flat Wadi Malik (or Malik, today's Nahal Tzipori), to the Sakhel Battef (Emek Beit Netofa) (145); From there he would have continued past Eilabun, down

145 Oliphant, ibid., p. 329.
into the plain of Majdal (today's Migdal), and thence to Tiberias.

From Tiberias, either of Oliphant's proposed lines would have continued due north, to climb the steep slope to about today's Rosh-Pina. It would then have gone north parallel to the Hule Marshes, and then would have turned east, about Tel-el-Kadi (today's Tel Dan), climbed the plateau near Banias, and would then have crossed today's Golan, to end at Damascus (146). Two points should be noted. First, Oliphant's map does not show the layout of his track past Banias, but instead shows the railway climbing the Golan, across the "Bridge of the Daughters of Jacob," south of Lake Hule (rather like today's road), a trace he never mentioned. Secondly, Oliphant was quite aware of the technically very difficult climb from the Hule plain to the Banias plateau--a problem that the ancient lateral highway going up in the same direction also had to solve (147). However, he maintained that there was nothing to compare with this track for linking the capital of Syria and the grain-rich Hulean, with the coast at Haifa or Acre.

Oliphant seems to have fallen in love with this project of a railway to Damascus (in the same way he enthused about the Gilead line), as he enlarges about the possibility of buying the Turkish government-owned Hule marshes very cheaply. He then saw the railway company

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146 Cp. Oliphant p. 20, et seq., where he gives quite an exhaustive description of where he wanted to lay down his line.

147 The ancient highway referred to was the one that linked (especially in winter) Damascus with the coast, via Banias, by-passing the snow-blocked Hermon range.
reclaiming them to pay for the lines' construction costs. What he envisaged was indeed to come true--minus the railway--when the Hule Reclamation Concession was granted to the Jews some two generations later. Another argument also runs like Ariadne's thread through all of Oliphant's considerations, here and later. This was that the Damascus line would be instrumental in opening up both the Hauran and the Jezreel Valley for the export of the grain that was grown in great quantities in both regions.

An intriguing, if obscure, point is also made by Oliphant. He said that the proposed line "has recently been carefully surveyed by Mr. Charles Austin, C.E., who considers it a very practicable route for a railway." It is a pity that nothing can be ascertained either about the engineer Austin, or who sent him, or which of Oliphant's two alternative lines he had surveyed. There is also the possibility that this is the only extant reference to yet another, totally different railway scheme. Perhaps Mr. Austin carried out his survey for the often-proposed Haifa-Mesopotamia railway, already condemned by Conder. This question will have to remain unanswered, as will the problem why, in 1880, Oliphant carried his trace as far north as Banias, when there were more southerly alternatives, as he was to learn about 1885.

As noted above, Oliphant wanted to carry the southern continuation of the trunk line from the coast down the Jordan Valley, either from Beisan or Tiberias. In trying to open up this desolate region, he
already had had a predecessor in the person of Zimpel in the 1860's. His line was intended to serve as the outlet for the produce of the Jewish colony he strove to establish on the heights of Gilead. It is not clear how he wanted goods to move up and down the slopes of the Transjordanian plateau. His scheme to utilize the relatively level expanse of the Jordan Valley for communication purposes was certainly not the last. The plan was to crop up, perfunctorily, in the first third of the 20th century. On the other hand, what was an original concept of his was to build a branch railway (not a main line as envisaged by Zimpel) from his trunk line, to climb into Jerusalem and end there, with no continuation to the coast. Alternately he wanted a feeder "tram" (perhaps horse-drawn, as was the rule elsewhere at that time)\(^\text{149}\). How he saw this feeder line climbing the 1,150 metres difference in altitude between about Jericho and Jerusalem, he did not explain. He thought the journey Haifa-Jerusalem would take about 5-6 hours by way of the Jordan Valley. The idea of reaching the Holy City by a roundabout way through the broiling Jordan Valley, going down to almost 400 metres below sealevel in the process, was indeed most singular and must have been an after thought of his Gilead scheme. Oliphant apparently never cared much for Jerusalem, and only had visited the town perfunctorily.

Oliphant wanted his Jordan Valley line to continue south to Akaba—probably after the development of the colony justified a further building

\(^{149}\)Ibid., pp. 301-302.
stage. His ignorance of the topography of the areas further south now became apparent. He considered two possibilities. One was building along the eastern shores of the Dead Sea—an impossible undertaking, as there the mountains fall straight into the lake, with lengthy stretches lacking a coastal strip altogether. However, Oliphant seems to have suspected these difficulties, as he suggested, as an alternative, leading the line up to the top of the plateau of Moab. Then he wanted to proceed south, parallel to the ancient north-to-south highway, the "Derekh Hamelekh" (the "King's Highway") that by his day had turned into the "Darb el Haj", the Pilgrim's Road to Mecca. Oliphant, aware that his proposed railway, Damascus-Tiberias-Jordan Valley-Akaba, almost followed the Pilgrim's Road, sensibly considered turning the Hadji's transportation needs to good account (150). In this he only had the same idea Conder had had, and anticipated the basic idea that was to lead to the building, after 1900, of the Hejaz Railway.

As for the necessity of carrying his railway from the Jordan rift into the top of the plateau, Oliphant suggested using for the purpose a wadi he knew, Wadi Kefren (or Kufrein) (151), which marked the southern limit of the areas he had surveyed in Transjordania. At that time this wadi did not serve as an important link of communications, but Oliphant recognized its possibilities remarkably well (152). Thus,

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150 Ibid., p. 303
151 Ibid., p. 280
152 At that time the main track from the Jordan to the plateau went up through es-Salt. But some 85 years later, Wadi Kefren was used to carry, if not a railway, at least the American-built highroad from Jordanian Jerusalem (1965) to Amman.
instead of building along the shores of the Dead Sea, he envisaged his line climbing Wadi Kefren, then to turn south towards Ma'an. There, Oliphant expected, perhaps as a sort of bonus, to find "large" coal and iron deposits, probably to provide more export freight for his trains (153). From Ma'an the railway was expected to descent to Akaba, presumably along the ancient branch of the "King's Highway" to the shore of the Red Sea. The British, in the Second World War, were to build a railway down this highway, but it was never completed down to Akaba. This alternate trace of the proposed railway down the TransJordanian Plateau, is not shown on Oliphant's map. Quite incidentally he mentioned the fact that the famous explorer and scholar, Sir Richard Francis Burton, had already, at one time, proposed Akaba as a railway terminus (154). From which remark it can be learned that yet another famous man had thought of a railway in Palestine at an early date, and that Oliphant's scheme of having a rail-link between the Mediterranean and the Red Sea at the Gulf of Akaba had also been thought of before.

Neither did he fail to stress that his own railway plan for building down, or parallel to, the Rift Valley, would have been much more economical, because it was shorter and easier, than the vaunted Euphrates Valley

153 Ibid., p. 302.

154 A biography of Burton (1821-1890) will be found in the D.N.B. (Concise), p. 176. Cf. also Oliphant, p. 302.
Scheme, for the purpose of having another route to India. Finally, he took care to point out the advantages that would accrue to all of Syria, and to Palestine, from having an independent outlet of their own to the Far East for exports and imports, quite independent of the Suez Canal passage. Oliphant's idea of a railway through Ma'an to Akaba was destined yet to have a colourful history. It was to lead to an international crisis in 1906, and came to be built only in 1975.

There remains the extension of Oliphant's rail system—for such it was—to Egypt. As already noted, this line would have branched off the rift valley trunk line just south of the Dead Sea. Its indispensable prerequisite would have been the—almost impossible—continuation of the trunk line down the Jordan valley along the impassable eastern shore of the Dead Sea (155). This line, according to Oliphant's map, would have climbed out of the Arava rift to the west through today's Nahal Tsin to about today's Sde-Boker in the Central Negev. It would then have led in a wide sweep westward, across northern Sinai, passing somewhere south of El Arish, to end on the Suez Canal at Ismailia. There it would have linked up with the Egyptian railway network linking Alexandria, Cairo and Suez.

It might be reasonable to assume that, like his back door line to Jerusalem, the plan of a railway to Ismailia in Egypt must have been only an afterthought, not clouded by actual knowledge of the areas

155 Having the line to Egypt branch off Oliphant's alternate track on top of the Transjordanian Plateau would have been quite impossible, owing to the steep broken slope of the plateau towards the Arava rift.
involved. It must have been sort of an appendix to the line that was obviously uppermost in Oliphant's mind, namely the railway that was to have been the mainstay of his proposed Jewish colony in the Gilead. It would quite obviously have been preposterous to build a railway in a huge semi-circle from Haifa (or Syria) to Egypt, most of it through empty country, and difficult of construction to boot, when a much shorter direct line, considerable stretches of it through inhabited areas, could have been built along the coast with no natural obstacles on its way. What Oliphant cared chiefly about was a line to support his proto-Zionist dream. He himself said: "I believe that the successful creation of a colony to the east of the Jordan, connected with the sea coast by a railway... would bring a stream of immigrants... and capital" (156).

At the risk of some possible redundancy, it might be of use to sum up the reasons advanced by Oliphant to prove the usefulness of the railway proposed by him. A few of them have already been mentioned in passing. According to Oliphant, apart from its contribution to drawing immigrants and capital to Palestine, a claim curiously reminiscent of later Zionist propaganda, the railway linking the Mediterranean and the Red Sea would have benefitted the commerce of his proposed colony. He foresaw the line opening up "the heart of the country" as a whole, and being instrumental in providing an opening for the produce of the Hauran and the Valley of Jezreel—chiefly wheat, but also sheep and

156 Oliphant, p. 341.
cattle. He cited Conder as to Haifa being the best harbour on the Syrian coast, and foresaw the railway making it the biggest trade depot in the country. He based his prophecy on the fact that even at the time he was writing (before there was a railway in the country), 4-5,000 camel-loads of grain arrived daily on the coast from the Hauran during the harvest season (157). To Oliphant, Haifa, not Beyrouth, was the natural outlet of the lands across the Jordan. This conviction led him to inveigh against what was apparently a contemporary project, to build a "tramway" from Meserib in the Hauran to Damascus, there to link up with a French road to Beyrouth and its new harbour (158). As already noted, a by-product of Oliphant's line from Haifa to Damascus would have been the reclamation of the Hule marshes. As likewise already noted, Oliphant's trunk line to the south would also have served the pilgrim traffic to Mecca, making it an obvious forerunner of the Hejaz railway. In this connection Oliphant did not even forget to stress the security aspect of his line to the south, as a factor contributing to the pacification of the turbulent border areas of the Syrian Desert. Nor did this aspect escape the eyes of the Truks when they actually built the Hejaz line two decades later. Mention has already been made of the fact (which bears repeating) that Oliphant saw the line to Akaba as a gateway of Palestine and Syria, as a

157 Oliphant, p.338.

158 Oliphant, p. 100. His remarks throw an interesting light on French building plans in Syria. It is not clear whether the "tramway" was to have been horse-drawn or a light steam line. The proposal mentioned by Oliphant actually materialized some ten years later, when a French company in the early 1890's did indeed build a narrow-gauge railway--ie., bigger than just a tramway--from Meserib to Damascus. This was to be the first railway in Syria proper and its express purpose was to tap the wheat of the Hauran. This line, and the timing of its construction--to kill a British railway from Haifa--will be discussed later.
whole, to the trade of the East. He therefore also conceived his Akaba line as a commercially and technically more competitive alternative to the long-discussed Euphrates Railway Route from Europe to India (159). Finally, Oliphant also pointed out in his book, "Gilead", the great benefits of having a railway linking the great centers of Islam--Damascus, Jerusalem, and Cairo. This, besides the exchange of trade between Syria and Egypt, enabled Syria to export sheep and horses, fruit and cereals, to the Valley of the Nile (160).

Oliphant's proposed railway network never materialized. Neither did his Jewish colony in the Land of Gilead. Yet it cannot be denied that he made a convincing case for his plans, except for his roundabout lines to Jerusalem and to Egypt. The railways from Haifa to Damascus and down the Transjordanian Plateau, came to be built in due course, though not always exactly as he had planned. Oliphant's misfortune seems to have been that he was too far ahead of his time. Considering the failure, for financial or political reasons, of Montefiore, Chesney, and all other railway entrepreneurs after 1856, it might well be said that Oliphant never had a chance. Nor, as far as is known, did he have backers. The fact that the Turkish government, in the guise of Hassan Fehmy-Pasha, also at the same time had railway plans, as mentioned above,

159 All details concerning Oliphant's arguments in favour of his railways will be found in the pages listed in Note 141. For the sake of completeness, it must be mentioned that Oliphant's activities were also mentioned by A.A. Druyanov (Ketavim le'toldoth Hibbath Zion, etc. [Writings Regarding the History of Hibbath Zion], 1919) and N. Sokolov (History of Zionism, 1919; Hibbath Zion, 1935), but both did not mention Oliphant's railway plans specifically (cf. indexes in each book). From what both writers say, it is clear that the Turks had no interest in Oliphant's schemes in toto. Stein (cf. bibliography) also mentions Oliphant's schemes (p. 14).

160 Oliphant, p. 304.
also militated against Oliphant in 1880. However, he did not lose his interest in the subject of railways in Palestine, and will be mentioned again in connection with yet another scheme.

The fact that railways were still a current topic about 1882-83 is attested by Dr. Selah Merrill, at that time American Consul in Jerusalem. According to him there was "quite a railway land-sales boom" in the Holy City, that led to what he called "increased Jewish immigration" (161). It cannot now be ascertained what railway scheme Dr. Merrill was referring to. Perhaps the reference was to the schemes of Erlanger-Maud, or of de Saulcy, both mentioned already, and dateable about in the early 1880's. The increase in Jewish immigration reported by Merrill, was probably the influx of Jews after the Russian pogroms of 1881. But it is curious anyway to see it linked with a railway building plan.

SURSOCK'S DAMASCUS RAILWAY SCHEME IN THE 1880's

In his book, "The Land of Gilead", so copiously quoted above, Oliphant mentioned in passing a Mr. Sursock, a Greek banker, who had bought in 1872 the greater part of the Valley of Esdraelon (i.e., the Valley of Jezreel; 161). In fact, he was referring to Messrs. Sursock, Greeks, reputedly the richest bankers in Syria at the time, with

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161 Quotation from Marion Harland, "Under the Flags of the Orient", 1897, p. 293. The Rev. Dr. Selah Merrill (1837-1909) was a Congregational minister, archaeologist, and at three different periods American Consul in Jerusalem. Cp. Webster's Biographical Dictionary.

As far as is known, considerable difficulties attended the acquisition of the lands for the Jewish suburb Ohel Moshe (or Maskereth Moshe, near today's Mahane Yehuda Quarter) in Jerusalem, founded in 1883. Exorbitant prices were asked for the land, on account of rumours that the station for a proposed railway was to be located in the vicinity. After a while the rumours subsided, and so did the prices.

headquarters in Beyrouth (163). These people were, in 1882-83, the initiators of one of the most serious railway building schemes yet set in motion in Palestine. May, though not all, the details known of the Sursock line can be found in "Haifa", Oliphant's second book on Palestine (164). Oliphant himself was, according to Hecker, a fervent supporter of the new scheme, namely a railway from Acre, with a branch from Haifa, to the Jordan, with a later extension to Damascus (165).

In "Haifa", as already noted, there is a full chapter entitled "The First Railway in Palestine" (166). In it Oliphant described the holders of the new railway concession as 10-12 men of means, both Moslems and Christians, all residents of Syria, and--an important fact--all of them Ottoman subjects. The most influential amongst them were the Sursocks, who were particularly interested in the line as a means of exporting the grain grown on their Jezreel holdings. Continuing, Oliphant described the layout of the line, substantially the same track he himself had proposed before in 1880, with a possible refinement, a short spur to the foot of the Nazareth hills. He stated that the line had already been surveyed past Beisan--which he saw as a prospective commercial and industrial centre--down into the Jordan Valley and past

164 Oliphant's "Haifa" is not a continuous story, but consists rather of a collection of a series of reports for the delectation of American newspaper readers.

165 Hecker, p. 788.

166 Oliphant, "Haifa", pp. 63-57; the date the chapter was written was June 13, most probably 1883.

163 Oliphant, "Haifa" (cp. bibliography and note 142 above), pp.42,60. The Sursocks (also spelled Sursuk and Soursouk) were absentee landowners, a later generation of whom was destined after the First World War to sell its holdings in the Valley of Jezreel into Zionist hands, thus providing one of the cornerstones of Jewish Palestine. The family still flourished in Beyrouth in 1975, where there is a Sursock Quarter.
The old Majami Bridge, to a point just south of the Sea of Galilee.

In fact, what Oliphant described was the trace of the Turkish line from Haifa, as it was actually built some 15 years after his death.

As for the continuation of the line up onto the Transjordanian Plateau, Oliphant said that there were two alternatives—both, it should be noted, were markedly different from his own 1880 scheme. One was to climb up along the shoulder of the ridge overlooking the Yarmuk River (i.e., follow the Yarmuk Gorge as was ultimately done); the other one proposed climbing up along the eastern shore of the Sea of Galilee, and then turning north-east to clamber the plateau through the Wadi Samakh (167). Both alternative tracks were to have crossed the Jaulan (i.e., the Golan, which in his earlier book Oliphant, not quite correctly named Hauran), described as magnificent pasture and wheat land. Oliphant conspicuously favoured the second alternative.

He also foresaw a short branch line to Mezerib, the great wheat emporium, and— he did not forget to mention—one of the most important resting places on the pilgrim's road to Mecca (168). The line, was, of course, to end at Damascus.

Perusal of the chapter will show that, besides ignoring his original idea of leading the railway past Banias, Oliphant also no longer referred to his proposed line down the Jordan Valley, in support of his Jewish Colony. But, then, he was describing a scheme not his own,

167 Wadi Samakh, also called Samakh, terminates on the shore of the Sea of Galilee (Lake Tiberias) just north of today's Ein Gev. Through part of it passes the main road to the Golan completed about 1970.

168 Mezerib has already been mentioned as the terminus of a proposed French "tramway" from Damascus. It was to become the terminus of a French railway. Cp. note 158.
Initiated by people who were moved by commercial and not quasi-Messianic motives. However, in his chapter he did not forget to reiterate his conviction that now all the Damascus trade that went to Beyrouth could be diverted to Acre or Haifa. Oliphant's chapter, especially devoted to the first railway in Palestine, ended with a plaintive footnote telling his readers that since he had written the chapter the Sursock concession had lapsed. But he added that he expected it to be renewed (169).

Whether or not the Sursock concession was ever renewed--Erlanger's was renewed twice--is not clear. Probably it was not, since the whole scheme came to nothing--as had others before it. In any case, its lapse was not the end of the references to the proposed Mediterranean-Damascus railway in Oliphant's "Haifa". Quite apart from the special chapter on it, he referred to the line time and again. Amongst other things, it can be learnt that although the survey of the line had been completed halfway to Damascus, the money for financing it could not be obtained in London "owing to intrigues". He also blamed interference by the "Haifa-Red Sea Canal"--whatever that might have been (170). Anyhow, an attempt, unsuccessful, seems to have been made to obtain English, as well as local, financing. Perhaps Oliphant had tried to interest his own old connections in England. A few pages later Oliphant noted bitterly that the concession had lapsed through "the combined greed

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169 Oliphant, "Haifa", p. 67.

170 Ibid., p. 204. As for the Canal: In 1855, a Captain (apparently the later Rear-Admiral) William Allen (1793-1864) published in London, "The Dead Sea, a new Route to India", in which he advocated a shipping canal from Haifa to the Red Sea, by way of the Dead Sea. If the above identification is correct, Allen died some 20 years before Oliphant mentioned the Canal scheme, and its interference must remain obscure. Cp. also D.N.B., Vol. I., p. 320.
and apathy of the first grantees," presumably the Sursocks and their associates, though the meaning of the word "first" is not clear (171).

The proposed railway seems to have fascinated Oliphant so much that he set out from Haifa to personally reconnoitre the area around the Sea of Galilee. The date is not known. He expected the region round the lake to flourish again, as in old times, on account of the railway, and especially mentioned that the concession permitted the holders to work steamboats on the lake, an improvement of which he expected much (172). He also personally rode up the Wadi Samakh, from the lake to the plateau, a trace, as noted, that he preferred (173). Incidentally, he also suggested a road being built from the railway to Nablus, making Haifa its port. However, the idea of a road was curious, as Conder, several years earlier, had suggested a railway to Nablus, which indeed was later built by the Turks. Perhaps Oliphant feared the hilly terrain of Samaria.

One of the most interesting references to the line is the one mentioning Gottlieb Schumacher's survey of a Roman road up to the plateau, in order to find a feasible trace for the line to Damascus (174). Schumacher, who was thus linked with the proposed railway, was an architect and an engineer, American-born of German extraction, who had grown up in Haifa, and later became a renowned expert on Palestine, and more especially on

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171 Oliphant, "Haifa", p. 212; Hecker, p. 788. The above-mentioned development, and others mentioned by Oliphant, may belong to 1884-85. The chapter on "The First Railway", as already noted, was written in the summer of 1883.

172 Ibid., p. 66. A list of the references like the above, to the railway not contained in the special chapter, will be found in note 1842.

173 Ibid., pp. 245, 265.

174 Ibid., p. 267; Hecker, p. 788.
the lands across the Jordan, about which he published many researches (175). In fact, his interest in Transjordania arose out of his railway surveys. The Roman road he followed is presumably the one still shown on today's maps as starting right at the north-eastern end of the Wadi Samakh to continue straight north-east across the Golan. This ancient road was undoubtedly one of the tracks of the Via Maris that climbed out of the Jordan Valley, from the shore of the Sea of Galilee to the plateau, ultimately joining the even more ancient King's Highway in its progress to Damascus (176).

That stretch of the Roman road which linked the head of the Wadi Samakh with the shore of the lake, has not been found, but as the road necessarily had a continuation down from the plateau, it probably ran right down the wadi, where it may have been obliterated by the rainfloods during the past 1900 years. Alternately, it followed the ridge overlooking the wadi on its way to the shore. In any case, Schumacher's attempt to plan a trace of the railway along the Roman road, is proof of the unchanging communication patterns in Palestine from ancient times to the present century.

The particulars about the Sursock line provided by Oliphant, and later supported by Hecker, are borne out by quite a detailed description of the same proposed line in a German technical journal devoted to railways that was published in 1884 (177). It surely must have been the first reference ever to a railway in Palestine in this journal. Some of the


176 The Roman road is clearly shown on Sheet 4, Teverya, of the 1:100,000 Survey of Israel map, 1975.

details provided by this trade publication follow. Incidentally, the
journal did not identify the Sursocks by name, but merely called them
"the concessionaires". As for the details: the concession for the
railway was signed on December 28, 1882; the concession provided for a
single-track line (to be double-tracked if results warrant, gauge,
whether normal or narrow, not stated) 85 kms long, to be started six
months, at the latest, after the approval of the building plans; the
line to be completed within two years. It was further stated that the
survey of the line had been completed by "a young German engineer" in
the summer of 1883. This was undoubtedly Schumacher, who according to
this, had surveyed the whole line, from the coast into the Jordan Valley,
and not only the ascent from the Jordan to the Golan, as Oliphant
seemed to imply. Further, the line was ultimately to be prolonged to
Damascus. As for the layout of the line: it was to start at Acre
(Akko), and continue across the River Kishon (at km 14), pass Haifa
(km 17; a spur line is not mentioned separately), pass Hayatiye
(km 25); Tel-esh-Shammam (km 32; today's Kfar Yehoshua); Afule
(km 45; a branch to nearby Nazareth is not mentioned); Beisan (km 67);
Jisr el-Majami (km 80); to end near the Yarmuk at km 85. Also,
the concession for the line was to run 99 years (to 1981); building
material was to be imported duty-free; the deposit prior to the granting
of the concession amounted to T. 2,000 (Erlanger had to deposit
T. 4,000—which were lost); the yearly payment for the completed line
was to amount of T. 2 per km (an incredibly low sum!); the Turkish
government was to have the option of buying the line after the lapse of 30 years.

The German journal did not fail to comment on the unusually favourable terms granted to the concessionaires. It also remarked on the commercial importance of the line, as facilitating the export of wheat from the country. This export, through Acre and Haifa, was stated by the journal to have amounted after 1882 to the equivalent of more than 10 million German Marks (= 69 million Piastres, probably about 500,000 Pounds Sterling). Nevertheless, in the journal's opinion, the line would probably have begun to pay only after it had been continued through the Hauran to Damascus. The probable benefit of the new railway to the German (Templar) colony of Haifa, was also mentioned.

Some further details on the line of "Sursock Cousins", on the deposit paid by them to the Porte (the equivalent of approximately 40,000 German Marks—probably the 2,000 Turkish Pounds mentioned above), and on Oliphant's interest in the line, will also be found in the columns of the Zeitschrift des Deutschen Palastina-Vereins (178).

THE EARLY 1890's: THE ELIAS-PILLING HAIFA-DAMASCUS SCHEME, AND ITS FRENCH COMPETITORS

As already noted, the Sursock line came to nothing. But only some eight years later a very similar plan was proposed for a railway to Damascus, with Haifa and Acre again as its terminals. However, before this 1891 line is described, and in order to preserve some sort

178 Z. D. P. V., 1894, p. 57.
of chronological sequence, it should be mentioned that in the years between the failure of the Sursocks and the initiation of the following schemes in northern Palestine, there cropped up two more schemes for railways in the south of the country. The initiators were again, at least nominally, Ottoman subjects, Lutfi Effendi (to be exact, he was an Egyptian) and a Jerusalem Jew, Yossef (Joseph) Navon (later Navon Bey). The schemes they advanced were a) a railway from Palestine to Egypt, and b) a railway from Jaffa to Jerusalem. Lutfi wanted to have a line from Khan Ynes to Port-Said, and Navon was interested, originally, in a railway between Syria and Egypt via Palestine. For a time there seems to have been some links between the two men, but Lufti's idea miscarried—presumably because, as before, neither the Turks nor the Egyptians, or rather the British occupation authorities, were interested in a railway across Sinai. (179). In the end Navon carried on alone and limited himself to a Jaffa-Jerusalem line. The story of his long, and ultimately successful, labours, that resulted in the construction of the first railway to Jerusalem, will be detailed in the following chapter, that will at long last, deal not with abortive schemes in Palestine, but with projects that came to fruition in 1892 and after.

179 The question of why neither the Turks, nor the Egyptians or the British, apparently wanted to pierce by a railway the "cordon sanitaire" across Sinai, is a fascinating one, and deserves closer study. The fact is that there never seems to have been enough support for such a line to be really built, until its construction was forced by the exigencies of the First-World War. Communication between Palestine and Egypt was provided by sea, ever since the introduction of steam made ships more attractive than camel caravans.

As for Lutfi's scheme and his temporary collaboration with Navon, cp. Hecker, 797; Hartmann (cp. bibliography), p. 61; Hyamson II, pp. 480-481; Altneuland (cp. bibliography), 1905, p. 56.
Returning to 1891—on September 30th of that year, the Syrian, probably more correctly—Lebanese, Christian businessman, Youssouf Effendi Elias obtained a concession for building a railway from Haifa/ Acre to Damascus, i.e., he intended to revive the defunct Sursock scheme. He possibly was a "strawman", who, as an Ottoman subject, would have had less trouble in obtaining a concession than a "foreigner". His partner was the British entrepreneur Robert Pilling, who was to look after the financial aspects of construction. The concession also included permission to construct harbour works at Haifa and Acre, and apparently also to run a boat service on the Lake of Galilee, to feed the railway (180).

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The Elias-Pilling line is fleetingly mentioned by several sources: Karkar, p. 113; Issawi, p. 251; Hecker, p. 798; Altnueland, 1905, p. 56; and P.E.F. Quarterly, 1914, p. 190. The following details have been taken from Hartmann (cp. bibliography) pp. 56-64, who has a very good map of the area through which the line to Damascus was to be built; Cuivet (cp. bibliography), pp. 42-43; and Altnueland, 1904, p. 23. The impression is that Professor Hartmann, though writing in 1894, was more reliable than Cuivet, who wrote in 1896, but whose account contains some obscurities, as for instance a branch line from Nedjha to Haifa 35 kms long, that just cannot be tracked down, as there is no place called Nedjha. On the other hand, Hartmann makes a slip in dating the Elias-Pilling concession in 1890. Cuivet gives the correct year, 1891. It should be mentioned in passing that Hartmann pointedly referred both to the Sursock and the Elias-Pilling schemes as "British", as opposed to several "French" schemes, also referred in his article, which dealt with railways in "Middle Syria" as a whole.
Building the new line actually started on December 12, 1892--some 3 months after Navon's Jerusalem line had been opened (as will be detailed in the following chapter). Some 5,000 people attended the ceremony at Wadi Rushmiya, outside Haifa, when Sadik Pasha, governor of the mutessariflik of Acre laid the first stone (or turned the first sod) [181]. According to Hartmann, in his description of the line, it was to have been 232.65 kms long, from Haifa to Damascus [182]. The firman stipulated that it had to be completed by September 1895, within some 33 months--a considerable task under the primitive conditions prevailing in Palestine. It was to have had normal gauge, 1,435 mm, as against the narrow gauges of the completed line to Jerusalem (1,000 mm) and the French lines designed for Syria (1,050 mm [183]). The cost of the line was envisaged as 1 million £ St., plus an additional 2-300,000 Pounds Sterling for harbour works at Haifa and Acre. The track of the new line, along its first section to the Jordan river, seems to have conformed exactly to the one already surveyed by Schumacher for the Sursocks [184]. The ascent onto the Golan plateau, however, was not to follow Schumacher's choice of the Wadi Samakh. Instead the trace was to rise gradually, from about Samakh (today's Tsemah, a place not to be confused with Wadi Samakh, not too far from it), along the ridge bordering the Sea of Galilee on the east. It would have gone north, passing in a wide curve east of today's Sussita (Hipp), and then passing Bir esh-Shakum, to turn

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181 Cuivet, p. 43; Hartmann, p. 64; P.E.F.Q., 1914, p. 190.

182 Cuivet, p. 43, counting from Acre to Damascus, puts the length of the line wrongly at 185 kms. His many details will be cited later.

183 Altneuland, 1904, p. 23. Width of the gauge is the only detail Hartmann and Cuivet forgot to mention. Most of the other following details are taken from Hartmann.

184 The map attached to Hartmann's article shows the trace of the Elias-Pilling line exactly.
sharply east, north of Skofiyé, to gain the plateau past El-Al at Khis’in. From there it would have gone east to Sheikh Sa’ad, and then north and north-east to Damascus (185). Hartmann provides an exact list of the stations the line would have had. A good many, from Haifa down to the Jordan, are identical with those of the future Turkish line, whose remains are still extant (186).

The Elias-Pilling railway, though initiated by British-Lebanese interests, also had its "Jewish" aspects. As noted already, its track would have passed Bir esh-Shakum, on the slopes of the plateau down to the Sea of Galilee, north of Sussitta. This place was a site of the—at that time, 1892, already abandoned—Jewish colony of Bnei-Yehuda, which had been founded in 1887 by settlers from Safed (Tsfath). The settlers had been supported in their endeavors by Lawrence Oliphant, but after his death in 1888, and after holding out precariously for 10 months, they had been forced to leave. In a memorandum dated 1895, they spoke hopefully of their anticipation that "within two years" the railway would pass

185 Sheet 4 of the Survey of Israel 1:100,000 map will be useful in tracing the Elias-Pilling line in the context of today.

186 The proposed stations of the Elias-Pilling Railway were: Acre (Station planned near the east gate of the fortress, and not near the south gate, where it was ultimately built after 1902); Haifa (tentatively at the eastern end of the town); Beled esh-Sheikh; Haratiye (at the eastern end of the Kishon bridge); Tel esh-Shammam—station for Nazareth (6 kms south of El Majdal, today's Migdal ha'Emek); a station midway between the villages of El Afula and El Fule; Shatta (Beith Hashitta); Beisan (south of Khan Anmar); Jisr-el-Majami; a station for Tiberias (250 meters east of Samak/Tsemah); Bir esh-Shakum; El-Al; Khisfin; Ein Dakar; Tsil; Sheikh Sa'ad; Nawa; Jazim; Inchil; Es-Sanamein; Ghabaghib; El Hadj; Kisweh; Damascus (near Bawa beth Allah gate). Hartmann, pp. 63-64, is the source of the list. Details of the layout are also confirmed by the map attached to his article.
their village, and that perhaps a station (as really had been intended) would be built on their lands (187). A direct link to Haifa and Damascus might indeed have saved their settlement, but it was not to be.

An interesting feature of the proposed line would have been its branches. According to Hartmann (Cuivet had different details that will be discussed later), there was to have been a branch Alule-Jenin, as yet not surveyed in 1894, that would have been sure to have been continued at some later date south. It would have linked with the, by then functioning, line Jerusalem-Jaffa, with a possible extension to Gaza (188). This line would have been a revival of the Conder plan of 1879 (and of Oliphant's road proposal). Another branch would have run, according to Hartmann, from Nawa, on the trunk line to Damascus, to Hasbeya, in the valley of Coele-Syria, under the western slope of Mount Hermon. The possible uses of this branch are not clear, and its layout, necessarily passing Banias, can only be guessed at. It was never suggested again. However, an eventual link-up of the proposed line, via Nablus, with the south can be taken for granted, and was even attempted, more than twenty years later by the Turks.

Cuivet, in his description of the Elias-Pilling railway, gives slightly different details, about its layout. According to him the line was to have passed either round the southern, or the northern (!) end of the Sea of Galilee; a branch from the Hauran (i.e., Nawa) to Banias (40 kms long) would have been obligatory; the continuation Banias-Hasbeya (30 kms) — optional; an untraceable branch Haifa-Nedjha (35 kms) was to have been optional. Finally, there would have been an

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187 Vilnay, "Golan" (cp. bibliography), pp. 86-87.
188 Hartmann, pp. 61, 64.
optional branch Nawa-Bosra eski-Sham (60 kms), which indeed was later built by the Turks, to further grain transport.

Most contemporarily sources--Hartmann, Cuivet, Issawi and Karkar--agree unanimously that the new line ran into financial trouble about from its inception. At a certain date, the concession of Elias-Pilling was apparently taken over by a Mr. Hills, the proprietor of the then well-known "Thames Iron Works" near London, whose company was to have invested £600,000 in the scheme (189). In the end, after the concession had apparently been renewed once or twice, and work had been done sporadically, the Syrian-Ottoman Railway (or Syrian or Haifa, Railway, to distinguish it from Sursock's "Hamidiye" Railway of 1883) gave up the ghost. What distinguished it from other, more ephemeral plans was, that some 8 kms of the line, Haifa to Yajur (Yagur of today) had actually been built, with some 5 kms more of earthworks to the Kishon river, ready for rail-laying (190). This according to later reports. Though it was known, on account of Pilling and Hills, as a British company, it apparently could not raise enough funds in London to continue its activities (191). The line and its works were abandoned, and its desolate state was commented upon by a contemporary German-Zionist traveller in 1898 (192). Part of the line's financial troubles may have been due to its having been conceived as a normal gauge railway, which, though more efficient, would have been much more expensive to

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189 Altneuland, 1904, p. 23.

190 Ibid.

191 Cp. sources listed in Note 180. Also, Grothe (cp. bibliography), p. 45.

192 Babus (cp. bibliography), p. 143.
build than its narrow-gauge sisters at that time planned, or operated, in Palestine and Syria. However, the main reason for its failure was undoubtedly, the fact that while preparations were being made at Haifa, the French Hauran-Damascus line (to be prolonged to Beyrouth) was already being built.

Before it gave up the ghost, the Elias Pilling-Hills line had had an immediate, and curious, effect that threw an interesting light on relations between the commercial and financial ventures of the European powers—in this particular case, England and France—within the Turkish Levant territories. This subject will be dealt with more fully in the following chapter. Meantime, it suffices to note that the attempt of the Syrian Ottoman Railway to draw the commerce of Damascus and the agricultural produce of the Hauran to the ports of Haifa and Acre, aroused considerable uneasiness at Beyrouth, where the French, having built a port, had a great stake in developing the export and import trade of Damascus and all Syria (193).

About 1889, the date is not quite definite, one Youssouf Effendi Motran—another Christian, like Elias, by his name, and another "straw-man"—obtained a concession for a railway or a (steam-tram) from Damascus to Mezerib, the grain centre of the Hauran. He speedily transferred his concession to a Belgian company "Societe Ottomane des tramways de Damas, et voies economiques en Syrie", which in turn passed on its rights to the French company that held the concession for transportation works (road and railway) between Beyrouth and Damascus, and afterwards became known as the "Societe des chemins-de-fer (not tramways!)

193 On this subject, Hartmann, pp. 57-59; also Issawi p. 248 et seq; Karkar p. 113. There are other references elsewhere.
Ottomansconomiques de Beyrouth-Damas-Hauran en Syrie (194). The line, for which Motran obtained his concession, seems to have been a successor of the one on which Oliphant, some years before, vented his ire, as it would have competed with his own scheme of drawing the Hauran grain trade to Haifa. So great became the anxiety of the French company over the possibility that the Elias-Pilling line would draw itself the Hauran wheat traffic, that it started construction of the Damascus-Meşerib railway (1,050 mm gauge; 103.25 km long) late in 1891, a full year before the competing line was begun from Haifa, and only weeks after the concession for the Haifa line had been granted (195). The illuminating fact should be noted that the "British" Haifa-Damascus railway, and the "French" Beyrouth-Damascus railway were both started almost simultaneously late in 1892. The Haifa line, as stated above, bogged down speedily. But the French line from Beyrouth was to be opened for traffic on August 3, 1895 (and still operates today (196). However, the Damascus-Megerib line had already been completed in a great hurry exactly one year earlier on August 3, 1894, after less than three years' work (197). Thus, by a fait accompli (which logically must be mentioned here, though chronologically it belongs to the next chapter), it did indeed succeed in canalizing the Hauran wheat trade away from Haifa and its unfinished line. It also provided the curious spectacle of a railway "hanging in the air" for a full year, having no continuation either in the south, at Meşerib, or in the north at Damascus. It is a pity that no details are available as to how rails, and especially

194 Co. Hartmann p. 59 et seq; Issawi, p. 248 et seq.; Kifkar, p. 139. It should be noted that this line, or company, ultimately was to enter history under the name "Societe' ottomane du chemin de-fer Damas, Hama, et prolongements" (D.H.P.) The company bore an unholy medley of names at various times.
195 Issawi, p. 251; Cuivet, pp. 42-43.
196 Ibid. Hecker, p. 798. Cuivet, p. 42, gives 1.3.1894, which is most unlikely as building time would have been 16 months.
197 Ibid. Cuivet, p. 42, gives the date as 22.7.1894, which conflicts both with
rolling stock, were hauled into the interior of Syria. The road Beyrouth-Damascus, over the high passes, both across the Lebanon and Hermon ranges, must have provided the only means of transportation. The line Damascus-Mezerib was also noteworthy for another curious, and revealing, fact. For about three-fifths of its length it ran parallel to the proposed track of the competing British line. Only a few hundred metres—if that—would at some places have divided the two railways (198).

The successful French fight to kill the British railway from Haifa in a way was only a preview of what was to happen a few years later, when the Turks, under German technical direction, were in fact forced to build their own Hejaz Railway parallel to—but east—of the Mezerib line. The Mezerib (also known as the "Hauran") railway was the second line, after Navon's Jerusalem line, to operate anywhere in Palestine/Syria. Both these undertakings were French financed. The Mezerib line was yet to have an interesting history as a French instrument to snatch business from competitors. It will be mentioned again repeatedly as the history of railways in Palestine unfolds.

It is hoped that the numerous building schemes listed and detailed above will serve as proof that there were quite variegated activities pertaining to railways in Palestine during the period 1838-1892.

198 For the parallel tracks, cp. the map attached to Hartmann's article. Some of the Hauran villages on the way to Damascus would have boasted simultaneously of two stations, had the Elias-Pilling line been built. The list of the stations on the Damascus-Mezerib line, that were actually built, reads as follows: Damascus-Boranka; Dareya; Sahnaya; Kisweh; Dinnun; Es-Suraikiye; Ghabaghib; Es-Sanamein; El Kouneye; El Kuteibeh; Sheikh Miskin; Dail; Mezerib. At least three of these stations would also have had parallel stations of the line from Haifa.
Notes on Maps

Bibliographic details regarding the maps used in preparing the foregoing chapter are contained in the notes accompanying the text. Nevertheless, it might be useful to summarize these maps in a handy list, together with some maps and atlases that will be found useful as background material.

1. **Baedeker, K., Palastina und Syrien,** Handbuch für Reisende, Leipzig, 1891. Containing very exact 1:700,000 maps of Northern and Southern Palestine in pre-railway times.


6. Survey of Palestine. Published set of sixteen 1:100,000 maps of Palestine. Set used is 2nd edition, based on 1924-34 surveys, revised 1942, and reprinted 1945.

The "Atlas of Israel" has historically not always correct maps, showing railway development in Palestine. The "Times Atlas of the World" and the "National Geographic Atlas" have detailed, exact, and useful general maps of Palestine/Israel.
III. RAILWAYS IN PALESTINE

1892 - 1914
RAILWAYS BUILT OR PLANNED IN PALESTINE

1892-1914

Note to Map.

The attached map is NOT a key map for chapter III. For technical reasons, such as lack of space, a great number of details were omitted from the map. Thus the map is intended solely to provide an OUTLINE of railway developments in Palestine, 1892-1914.
RAILWAYS
BUILT OR PLANNED
IN PALESTINE
1892 - 1914.

LINES BUILT
LINES PLANNED
(LINES PLANNED: SELECTION ONLY, LAYOUT AND DATES APPROXIMATE)
Background and Sources

The year 1892 was a seminal year in the history of railways in the Holy Land. In this year the first railway in the country - the meter-gauge line Jaffa-Jerusalem - was inaugurated. Thus, 54 years after Moses Montefiore had first thought of building a railway in Palestine, the sound of a locomotive's whistle was indeed heard in the land. Apart from its intrinsic importance, the opening of the new line had two notable aspects. The building of the line had been initiated owing to the perseverance of a Jerusalem Jew, Yossef (Youssef) Navon; and it was owing to Navon's activities that not the progressive Lebanon, but one of the more backward regions of Syria, namely Palestine, had become first in having a regularly operating railway (1).

In contrast with the decades since 1838, described in the foregoing chapter, that were full of ephemeral railway building schemes, which could be often reconstructed only through a single reference, the period 1892-1914 came to be progressively well documented as far as actual railway building in Palestine was concerned. There were to be more hard facts to go upon, since Palestine

(1) On the unexpected fact that in all of wide-flung Syria, it was backward Palestine that had its first working railway, cp. Hartmann (see bibliography), p. 56.
after 1892 gradually ceased to be a total backwater. Railways came in for an ever-growing deal of contemporary attention, that expressed itself not, as previously, in incidental news items, and in the fanciful flights of enthusiasts, but took shape in serious surveys, by qualified observers, in reputable publications (2). However, it should also be mentioned that beside the railway projects actually carried out during the two decades preceding the Great War, there were also quite a number of utopian schemes for the construction of railways that were never carried out. Compared with the dozens of fanciful plans that cropped up in the years to 1892, their number was not at all smaller, and they will also be noted in the following pages.

Special mention amongst the sources must be made of German-Jewish Zionist publications, that, from the turn of the 20th century onward, showed quite a surprising and continuous interest in the development of railways in Palestine, and which will be frequently quoted. The

(2) Palestine's railways were dealt with, after 1892, by the Palestine Exploration Fund Quarterly, the Geographical Journal of the Royal Geographic Society, by at least one British Parliamentary Report, the Asiatic Quarterly Review, the Proceedings of the Central Asian Society, the "19th Century and After..." (all British), by the National Geographic Magazine (American), the Eisenbahn Archiv, Petermann's Geographische Mitteilungen, and by the Zeitschrift des Deutschen Palästina Vereins (all German), most of which were checked and utilized for the purposes of this chapter, as far as they were available. A few issues of the above could not be viewed, though it is known that they carried items referring to railways in Palestine. All the above-listed sources were contemporary, except for a few that summarized pre-1914 developments in the years 1915-1917.
remarkable interest shown by early Zionist reviews in the railway affairs of the Holy Land (a fact never previously commented upon) may have been based on the importance of railways - in Zionist eyes - as symbols of progress in the ancient homeland. In the absence of interesting industrial developments in Palestine under Turkish rule, news about the planning and building of railways seems to have served as a substitute.

During the period that will be reviewed, 1892-1914, four major railway projects were started in cis - and trans-Jordanian Palestine, within the boundaries defined in chapter I. These were the following lines:

1) Yossef Navon's meter-gauge Jaffa-Jerusalem railway, financed by French interests;

2) The "British" Elias-Pilling-Hill standard-gauge Haifa-Damascus railway;

3) The French 1,050 mm. gauge "Hauran" line, Damascus-Meserib;

4) The Turkish, German-built, Hejaz Railway, Damascus-Dera'a-Ma'an-Mudawara [Medina], with its four branches:
   a) Dera'a-Samakh-Afule-Beled esh-Sheikh-Haifa;
   b) Afule-Jenin-Sileth ed-Dahr;
   c) Dera'a-Bosra eski-Sham;
   d) Beled esh-Sheikh-Acre (Akko).
Of these four lines, three were actually completed, namely nos. 1, 3, 4. One, no. 2, the British-initiated line Haifa-Damascus, ran into financial trouble immediately after it started construction, and was abandoned. Two of the above lines, nos. 2 and 3, have already been dealt with in the foregoing chapter, as their antecedents belong to the years prior to 1892. They will not be mentioned in the following chapter, except when necessity arises. The remaining two lines, the Jaffa-Jerusalem railway, and the Hejaz Railway, will be dealt with in two stages: First, in the general context of railway development and planning in Palestine after 1892, and thereafter - in detail. The many building schemes envisaged for Palestine between 1892 and 1914, but never executed, will also be reviewed in the general context of railway development in the country up to the First World War.

**Actual Railway Developments**

Sometime in the middle 1880's Yossef Navon, the young scion of a distinguished Jewish-Sepharadi family in Jerusalem, conceived the idea of building a railway from Jaffa to Jerusalem. His name has already been
fleetingly mentioned in the foregoing chapter. (3) It cannot now be established how far he was aware of earlier schemes for a Jaffa-Jerusalem line, but since his business partner for a time had been his relation, Haim Amzalag, it might be assumed that he was. This on account of the fact that Amzalag had become British-Vice-Consul at Jaffa, as successor of Assad Khayat, who, as set out in chapter I, in 1848 had had a railway scheme of his own, and also had dealings with Montefiore, at the time when the latter had been involved with his own railway schemes. (4) Navon himself was full of grand schemes for the improvement of Palestine's economy, and at a time also pondered a harbor for Jaffa, just as had Zimpel some 20 years before him, who had envisaged combining such a harbor with a railway to Jerusalem.

In order to further his railway scheme, Navon moved to Constantinople and, after pulling the appropriate strings, managed, in 1888, obtaining a "Firman" (roughly - concession) from the government, permitting him to build a line from Jaffa to Jerusalem.

(3) Interesting details about Navon, his life and ventures, will be found in Grunwald (cp. bibliography), p. 249 passim. Grunwald also lists a considerable number of sources regarding Navon, and apparently is the only writer who has ever compiled an accurate biography of this interesting son of Jerusalem. Additional details about Navon, and his accomplishments, will be found further on in this chapter, in the section devoted to the Jaffa-Jerusalem Railway.

(4) Cp. Grunwald, p. 250, and Ben Zwi (see bibliography) p. 381. Khayat was discussed in chapter II.
His concession was to run for 71 years, and provided for rail extensions to Gaza on the coast to the south-west, and to Nablus in the north (5). According to a reliable contemporary German railway publication, Navon's concession included the right to build a branch line via "Ascalon" (Majdal) to Gaza, and then to El Arish (6).

The papers of the British Consulate in Jerusalem contain an elaboration of Navon's activities, and, incidentally, provide a glimpse of yet another railway scheme, otherwise unknown. According to a despatch from the then consul, John Dickson, of late 1892, to the then Foreign Secretary Lord Roseberry, Navon's concession "originated with an Egyptian, Lufty (should read - Lutfy!) Bey, who wanted to build a railway between Egypt and Palestine." Navon took up the idea, and got in touch with Lutfy, and between them they worked out the idea of Lutfy building a line, along the coast, to El Arish, while Navon was to build from there to Jaffa and Jerusalem (via Gaza). Dickson ended his despatch by noting that the original scheme fell through, but that Navon secured a concession for the Jaffa-Jerusalem line, with possible extensions -

(5) According to Avitsur (cp. bibliography), p. 86, the late Mr. Y. Fogelson of Haifa, about 1963, still kept a French translation of Navon's Firman. Owing to Mr. Fogelson's death a few years ago, the writer was unable to ascertain the present whereabouts of the translation. All details in the text are therefore based on Grunwald.

(6) Eisenbahn Archiv, 1893, p. 932.
be it noted - not to Gaza and Nablus, but to Damascus and Aleppo (?). Here, then, was a revival of Zimpel's and Oliphant's direct north-to-south railway schemes, that were to be raised yet again and again also in the future. It is not quite clear whether, or when, Lutfy Bey gave up his own plan entirely. There is a reference to his being active for a railway Ismailia-Katia (east of Kantara on the Suez Canal)-El Arish-Palestine, that dates from as late as 1891 (8). There is some room for speculation how Navon obtained his own concession for his internal east to west line, destined to serve local Turkish interests only, while, on the other hand, Lutfy's international, or even intercontinental, railway, north-to-west, was left in abeyance. Egypt had just a few years previously, in 1882, passed under British domination, and it might be quite possible that the Turks at that particular time were not anxious to grant a concession which would, in war-time, provide their mighty neighbor with a facile means of crossing the no-man's-land of the Sinai peninsula. Other building plans, similar to Lutfy's, were to crop up

(7) See Hyamson (cp. bibliography), vol. II, pp. 480-481, quoting despatch no. 361, dated November 11, 1892. This was apparently written in connection with the inauguration of the line to Jerusalem, late in September. Navon's railway, and Lutfy Bey are also mentioned by Hartmann in Z.D.P.V., by Hecker, about 1913, and by Karkar in the 1960's (cp. details in the bibliography).

(8) Prof. Dr. W. Guastalla in "Altneuland" (henceforth shortened to Alt.; cp. bibliography) 1905, p. 56. He based himself on the "Bulletin de la Société Khédival de Géographie du Caire," of 1891, which is not now available for checking.
in the future. In the meantime, however, Navon's Jaffa-Jerusalem railway was opened for traffic on September 26, 1892. It will be described in detail later on.

Without attempting to repeat what has already been described at the end of the foregoing chapter, it might yet be usefully recapitulated here that, while Navon's line started operating late in 1892, construction of the French Hauran railway, Damascus-Meserib was already underway, having started in 1891. Some three months after Navon's line was opened, construction of the "British" standard gauge line Haifa-Damascus also began. Thus in 1893 Palestine had one working line, with another two building. As already noted, the British-financed line soon ran into financial trouble, to give up the ghost entirely in 1898, after lengthy death throes. But the Hauran line was actually completed, and by the summer of 1894 Palestine, in its wider sense, had two working railways.

Less than six years later, on May 1st, 1900, the Sultan, Abdul Hamid II, published an "Irade" (Imperial Rescript), announcing his intention to build an all-Moslem railway from Damascus to the Holy Cities in the Hejaz, Medina and Mecca. The new pilgrims-railway was to be built entirely by Moslems (an aim speedily abandoned) and financed entirely by Moslems (an object indeed ultimately achieved). The Sultan, in his capacity as the all-Moslem

From Jaffa to Jerusalem

The journey to Jerusalem may be made either by train, in a carriage, or on horseback. By train it takes 3 hours and 30 minutes; by the carriage road 7 to 8 hours driving, and 11 to 12 hours riding. Both journeys are exceedingly interesting, by reason of the biblical associations attached to the country through which one passes. We shall therefore describe them both. Those who go from Jaffa to Jerusalem by the railroad will find they lose nothing by returning from Jerusalem to Jaffa by carriage.

JOURNEY I

From Jaffa to Jerusalem by Rail

Jaffa to Jerusalem, 54 miles. 1 train daily. Leaves Jaffa, from the 1st October to the 10th March, at 1.30 P.M.; from the 10th of March to the 7th October, at 2 P.M. Railway fare—1st Class, 70 piastres 20 paras = 15 francs; 2nd and last Class, 25 piastres = 5 francs 32 centimes.

<table>
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<tr>
<th>Dist. Miles</th>
<th>STATIONS</th>
<th>From 1st Oct. to 10th March</th>
<th>From 10th March to 1st Oct.</th>
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<tr>
<td>123</td>
<td>Jaffa</td>
<td>Aff. 1 58</td>
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<td>143</td>
<td>Ramleh</td>
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<td>25</td>
<td>Sedje</td>
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<td>314</td>
<td>Deir Abin</td>
<td>3 37</td>
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<td>47</td>
<td>Bittir</td>
<td>4 35</td>
<td>5 16</td>
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<tr>
<td>54</td>
<td>Jerusalem</td>
<td>5 10</td>
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On an emergency one can go by the luggage train—generally mixed—which leaves Jaffa from 6 to 7 o’clock in the morning.

Timetable of Navon’s Jaffa-Jerusalem Railway, for about 1907.

The attached map shows the original, 1892, layout of the track. The section of the line re-laid by the British in 1918, and still working to-day, is shown in red.

(Source: Meistermann, Guide, 1907).

Pick, chapter III.
Khalif called on his co-religionists all over the world - from Indonesia through India and Egypt to North Africa - to contribute to the sacred enterprise. His proposed scheme met with considerable ridicule in the outside world that - in view of the notorious Turkish sloth, graft, and technological impotence - rightly doubted the Ottoman Empire's capabilities of undertaking a project of such magnitude (9). In fact, however, the line came to be built, and at an extraordinary speed, considering organizational and topographical difficulties, to reach Medina in the autumn of 1908. It came to be the only tangible expression the Pan-Islamic idea ever achieved, though the motives for its construction were mainly the wish to further purely Turkish interests, and its religious connotations were probably balanced (if not overshadowed) by its military, and to limited extent - commercial, advantages for the Ottoman Empire. The man who actually carried out the vast undertaking in the field was the German Heinrich August Meissner, who will be frequently mentioned later on in this chapter.

(9) Hecker (cp. bibliography), p. 1063; Paenicke, p. 6. Also Ruppin, who gave the date of the Sultan's Irade as January 1st, 1900. For a concise history of the Hejaz Railway and its background, cp. the article "Hijaz Railway" in the Encyclopaedia of Islam (see bibliography).
The Turkish Hejaz Railway, and the various branches it sprouted, ultimately came to be of great importance for Palestine in the early 20th century, and also later. The often-proposed Haifa-Damascus railway was eventually incorporated in it. The Hejaz line and its construction will be exhaustively described later on. In the general context of the railway history of Palestine to 1914 it came to overshadow significantly all other developments. Its gradual completion, its branches, its achievements, its setbacks, and its influence on the life of the country, came to be of interest far beyond the boundaries of Palestine proper.

Proposed Railway Developments Never Carried Out

Apart from the major railway undertakings outlined above, Palestine after 1892 also continued to have its share of railway schemes, some ephemeral, some serious, that were never carried out, or came to fruition only after 1914. Most, though not all, were the more or less direct descendants of earlier schemes that had flitted through the annals of the country. Most, though not all, shared a common characteristic with earlier schemes since 1838. Except for the few that utterly ignored the physical configuration of the country, they proposed layouts similar to the ones envisaged for their predecessors, i.e. layouts roughly conforming to the country's ancient system of roads, tracks and trails.
Railway affairs and planning in Palestine about the turn of the century were extensively referred to in a reputable German Zionist publication dated 1902 (10). This periodical, "Palastina," after describing the probable advantages that would accrue to northern Palestine from the - as yet unbuilt - Haifa-Damascus line, mentioned the necessity of prolonging, across central Palestine, the already working Jaffa-Jerusalem railway via "the oasis" of Jericho, unto the Transjordanian plateau, to Kerak. Amman, at that time was still a village, and Kerak, one of the biggest settlements in the lands across the Jordan. At Kerak, according to this Zionist review, the line would have joined the envisaged Hejaz Railway, thus providing a direct link with the Mediterranean. This proposed extension would have been sort of counterpart to the more northerly Haifa-Dera'a branch of the Hejaz line. In addition, the periodical also advocated another, third, railway, across southern Palestine. This would have led from Gaza, on the coast, through Ma'an, to Kerak (invariably spelled Korak or Horak), there to join the Hejaz Railway, as yet only in its early stages. In view of the forbidding geographical features of the areas involved, these were quite extraordinary speculations that probably were based

(10) Palastina (cp. bibliography; henceforth shortened to Pal.), 1902, pp. 84-85. The details described, as evidenced by the context, probably referred to 1901.
only on abstract speculations in the mind of the writer, whoever he was, who seems to have been ignorant of any actual knowledge of the geography of Palestine, except from what he could have learnt from a map. No such layout had ever been proposed before, or were ever suggested after. In case the Hejaz Railway was not to materialize, a not unlikely possibility, the Zionist journal proposed to prolong the line from Gaza, via Kerak, Medabah, and es-Salt, to Meserib, there to link up with the already existing French Hauran line to Damascus. It was also proposed to have a rail track from the Gaza terminus to the seashore, or, failing this, a mono-rail between town and shore. This mono-rail proposal was to remain unique in the history of railway schemes in Palestine. It almost certainly owed its conception to quite a famous mono-rail line that had been put into operation in Germany just about that time. (11) Quite incidentally, the same Zionist journal also mentioned a) a Gaza-Jerusalem railway "planned by the Turkish government," and b) a (Haifa-) Nablus- (Jerusalem-) Hebron-Ismailia railway, planned, allegedly, by "the British," whose building however it was stated was still quite uncertain. (12)

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(11) The reference is to the Wuppertal Monorail that was still operating in Germany in 1978 between Elberfeld and Barmen. This line was originally opened on March 1st, 1901, only a short time before the Gaza proposal came to be aired. Cp. Hamilton Ellis (see bibliography), pp. 522-523.

(12) For sources, see note 10. A railway across Sinai was also mentioned by the Royal Geographical Journal, 1902, p. 506.
Clearly, the journal's correspondent's imagination had had a field day, but the very fact that all these fanciful schemes were thought worthy of publication at that time is of interest. Possibly they even had some basis, as they were printed about the time when another railway scheme, of more reputable parentage, was abroad.

About 1901-1902, as far as could be established, though details are uncertain, the famous British irrigation expert, Sir William Willcocks, advocated a railway across the Syrian Desert, from Baghdad to Damascus, to link up with any proposed lines in Syria-Palestine, and with a terminus at Haifa. Willcocks was a renowned engineer, and though his scheme was not at all original, having been preceded by almost 40 years by the Sandwith scheme mentioned in the foregoing chapter of this survey, his very name may have given a fillip to Zionist railway speculations, such as the ones mentioned above, and others that were yet to come (13).

(13) Willcocks was the builder of the original Assuan Dam in Egypt; cp. Webster (see bibliography) col. 1575. Herzl mentioned him in his "Diaries" for March 1903. He was also a friend of the Zionist agricultural expert, Professor Otto Warburg; cp. Entziklopediya Ivrit (see bibliography), vol. 16, col. 474. Willcocks's scheme for a railway from Mesopotamia to the Mediterranean is mentioned in the Entziklopediya Ivrit, vol. 6, col. 522, where it is stated that the terminus was to have been Haifa. Here it is also noted that his scheme was based on a plan - otherwise unknown - of Sir Moses Montefiore, and his contemporary H. B. Lynch (both of whom were mentioned in chapter II of this survey). The approximate date of Willcocks's plan, and a reference to its alleged intention to "outflank" from the south the German-financed Baghdad Railway, initiated about that time, will be found in Rohrbach (cp. bibliography), pp. 23-24. Willcocks's line will be found also in the book of Carpenter (cp. bibliography), published 1922, but written before the First World War.
The year 1903 saw the Zionist expedition to Sinai, that set out from Kantara, and proceeded to El Arish along the coastal track that the Austrian Archduke Leopold Salvator had already inspected from a railway point of view 24 years earlier, as noted in the previous chapter (14). About the time the Zionist expedition was on its way, there seems also to have been some British interest in a line from Egypt to Palestine, as evidenced by an article in the important journal "Engineering," that also published an appropriate map (15). In any case, in view of the lack of good communications along the coast of northern Sinai, it is quite certain that any Zionist plans for the area of El-Arish, which was the only one suitable for possible settlement, would never have been feasible without a railway from Kantara, British or Jewish-financed. Herzl, when visiting Egypt, mentioned his railway plans

(14) For Th. Herzl's Sinai project, and the investigative expedition, see Patai (cp. bibliography), especially p. 133.

(15) Cp. Pal., 1903/04, p. 218. Unfortunately the relevant edition of "Engineering" could not be traced. The same source, Pal., also mentioned an article by an English Major Rycroft (also quoted elsewhere by Zionist sources) who about that time advocated a railway from Egypt to Palestine via El-Arish. Unfortunately, Rycroft's original article could not be traced either, as its origin was not mentioned. Pal. itself saw a connection between a British interest in a railway leading north from Egypt, and the British agreement of 1899 with the Sheikh of Kuwait, inferring from this that Britain wanted to have a means of linking its sphere of influence around the Suez Canal with its sphere of influence at the head of the Persian Gulf.
to Lord Cramer who, however, reacted cautiously. (16)
Zionist preoccupation with railways - practicable or not -
at this very early stage of the Herzlian movement was
very obvious. El Arish, and the harbor they envisaged
there, were seen in Zionist eyes as a focal point of
rail-carried trade between Russia, Persia, Asia Minor,
Syria and Palestine, on the one hand, and Egypt, East
Africa, and South Africa (just occupied in toto by the
British following the Boer War) - on the other. (17)
Of course, making El Arish an international, rail-fed,
trade depot would have postulated a railway from Syria
and Palestine on the one hand, and also a railway running
up the whole length of Africa, on the other (i.e. the
much-touted, but never completed, Cape-to-Cairo line).
But practical considerations do not seem to have much
inhibited the Zionist railway enthusiasts, as evidenced
the statement in the journal, "Palastina," regarding a
railway to El Arish: "The unlikely to-day no longer belongs
to the realm of the impossible!" (18) A variation on the
theme of the railway from Palestine to Egypt carried a
line Jaffa-Gaza- El Arish not to a terminus at Kantara,
but to Ismailia. (19) Nor did Jerusalem fail to be

(16) Herzl, at the meeting with Cramer, mentioned
"railways," in the plural. Cp. his "Tagebücher" (Diaries)

(17) Pal., 1903-04, p. 219. As early as September 21, 1898
Herzl, in his "Diaries" envisaged the building of a railway,
by Jews, from the Mediterranean to the Persian Gulf.

(18) Ibid; In the original German version: "Und zu
den Ummöglichkeiten zählt das Unwahrscheinliche heute nicht mehr!"
(19) Pal., 1903-04, p. 11.
included in yet other railway schemes. The fledgling Hejaz Railway was credited once more, as in 1901-02, with an east-to-west branch, leading to the Holy City (20). Also, a note on the completion of the French-Syrian standard gauge Rayak-Hams-Hama railway (21), quite correctly foresaw its extension to Aleppo; it likewise envisioned the further extension of this line to the south, a possibility that already had been mooted before, and was to crop up many times more. This southerly, standard gauge, extension should have led from Rayak, via Rasheya, Hasbeya, Nazareth, and Nablus, to Jerusalem (22).

In 1904 the Rayak-Jerusalem line, linking up at Aleppo with the German-financed Baghdad Railway then under construction, cropped up again (23). This was a scheme that made some sense, both geographically - as it led down the construction-wise easy Rift Valley - and also economically, as it passed relatively populated and fertile country. However, unlike the Hejaz Railway, that mostly wasteland, it would not have touched the politically important chief town of Syria, Damascus, for which a terminus at Jerusalem was no substitute. In any case,

(20) Ibid.
(21) Rayak, from which the standard line started in 1902, was a station of the 1,050 mm. gauge French railway Beyrouth-Damascus, opened in 1895.
(22) Pal., 1903-04, p. 239.
(23) Alt., 1904, p. 25.
nothing more was heard of the Rayak-Jerusalem scheme for some years, though it was by no means dead. The year 1904 as a whole seems to have been fairly barren of new railway plans, probably because so much actual construction work was going on in the country, from Haifa to Damascus, and from Damascus to Ma'an and further on, that conditions were not propitious for further insubstantial visions. The sole insignificant exception was the idea of a branch line, only a few kms. long, from the Jaffa-Jerusalem line at Ramle, to the grape-rich Jewish settlement of Rishon le Tsion (24). From the context of the note mentioning this proposed line, it appears that the idea did not originate with the railway company, but must have been the brainchild of settlers who wanted an easy way (there were no decent roads) to move export wines to the port of Jaffa. Geographically the idea was absurd, as it would have involved a needlessly roundabout way to the coast. But, in a way, this branch was the forerunner of the later Sarafand Camp line that was built by the British in the 1920's and practically terminated on the outskirts of Rishon. The idea behind the proposal, namely to facilitate Jewish agricultural exports, found tangible expression 21 years later in the Jewish-initiated "citrus railway" from Petah Tikvah to Ras el-Ain. Both

(24) Alt., 1904, p. 90.
those branches, that were actually built, will be mentioned in chapter V. The year 1904 may also have seen the first proposal to build a branch line in Transjordania from Ma'an to Akaba, but this scheme will be further discussed in the section devoted to the building of the Hejaz Railway.

In 1905, a Professor Dr. W. Guastalla summarized railway developments in Palestine and adjoining areas about that year for the readers of a Zionist journal. Besides tracing then current developments, the author referred to Lutfy Bey's efforts of about 1891 - already mentioned above - to have a railway Ismailia-Katia-El Arish-Palestine, and expressed his conviction that a railway from Port Said (be it noted, not from Ismailia or Kantara) would be built in the not too distant future. He then referred to a railway scheme that, it seems, he assumed his readers to be familiar with. He noted that he saw no chance of an early realization of a line from Akaba, through the Et-Tih Desert of Central Sinai, to Egypt. However, at the same time he said that he did not entirely discount the possibility of such a railway being laid down eventually, to join the Hejaz Mecca Railway across Sinai with Egypt for the benefit of Moslem pilgrims. Indeed, it should be noted that, had it ever been built, this line would have had to be laid down practically right

on top of the age-old Derb el Haj, the Pilgrims' Highway, that led across Sinai from Suez to the Hejaz. Guastalla said in his review that the two railways he discussed, Egypt-Palestine, and Akaba-Egypt, had been mentioned already in 1902 in the British "Statesman's Yearbook" (26). The possible building of an Akaba-Suez line, which would have implied a threat to the British hegemony in Egypt, was to lead in 1906 to the Akaba Crisis between Britain and Turkey, a development that will be referred to again. In discussing railway possibilities in Sinai, Guastalla cited the noted French geographer Jean-Jacques Reclus, who about 1885 had already predicted the importance of rail transportation in the area.

Apart from the Akaba Crisis, the year 1906 was notable for the revival of a railway building scheme first proposed by Conder in the late 1870's - as set forth in chapter II, and also mentioned by Hartmann in 1894 (27). This was the line (Haifa-) Jenin-Nablus-Jerusalem, mentioned in 1906 as being the object of widespread "daily discussions" (28). This line would have branched off the - meanwhile completed -

(26) Unfortunately, the 1902 edition of the "Statesman's Yearbook" was not available to the writer for checking. Another scholar who expressed his opinion that the building of a trans-Central-Sinai railway was "inevitable," was Prof. Martin Hartmann, in his book "Die Mekka Bahn", p. 29 (cp. bibliography).

(27) Hartmann in Z.D.P.V. (cp. bibliography), 1894, p. 64.

Haifa-Damascus track at Afule. However, while the Haifa-Damascus link had been built by the Turkish government itself, it was not at all clear whose idea the Jerusalem extension was. The news item that referred to this new scheme also said that the proposal did not find favor in "high places." This on account of the fact that while the Hejaz Railway, to which this new line would have belonged, had been financed by world-wide Moslem donations, to further the transport of pilgrims, the new line would merely have eased the travels of Christian pilgrims from the coast to Jerusalem. There were two more references to the proposed Jerusalem branch in 1906. One was by the outstanding scientist and "practical Zionist" (so called because he did not belong to the visionary enthusiasts with which the movement abounded), Prof. Otto Warburg, who deemed the proposed line of great importance (29). The other reference cropped up later in the year as a news item, that was qualified by the remark, that though important enough for the internal trade of Palestine, the Jerusalem line was being fought "for religious reasons." (30).

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(29) Cp. Warburg in Alt., 1906, p. 112, where he discussed Syria (1) as an area for economic development and settlement ("Syrien als Wirtschafts- und Kolonisationsgebiet").

This was not by any means the end of the line. It was finally started a few years later, to end up, however, not in Jerusalem, but in Sinai during the first World War.

To 1906 also belonged an interesting general summary of railway developments in the Levant area, including Palestine, which appeared in "Altneuland," the Zionist periodical that has already been copiously quoted, together with its sister-publication "Palästina," in the notes accompanying this survey (31). From the context it appears that the author was more than others familiar with his subject. This summary mentioned, once more, the possibility of building an east-to-west line linking the French rail terminus at Jerusalem, via Jericho, with the Turkish Hejaz Railway at Amman. However, the writer stressed the great technical difficulties of building a track across the deep Jordan Rift Valley, and concluded that for the time being such a project would not be feasible on account of the very heavy cost that might be involved. This same writer also mentioned a contemporary scheme for a coastal line, from Gaza to Iskanderun (Alexandretta in Cilicia, and adjoining Anatolian Turkey proper), or "at least from Gaza to Haifa, or Beyruth respectively" (32A). However,

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(31) Alt., 1906, p. 112. There is reason to believe that there was some connection between "Palästina" and "Altneuland," seeing that they appeared alternately for various periods, but never at the same time. From the point of view of contents and aims there was no difference between them, and contributors seem to have been substantially identical.

(32A) Ibid.,
he regarded the building of the coastal railway, at that time at least, as hopeless, on account of the opposition of the Sultan - who probably did not care to offer any prospective invaders from the sea the benefits of a means for the large scale transport of troops. It might be assumed that the memory of the French naval descent on the Levant coast in 1860 was still fresh in Turkish memory (32B). The off-hand remark of the writer, regarding the refusal of the Turks to have a railway along the coast, may well explain why such a railway (or railways) was never built in the period 1892-1914, or after, to 1918. This, despite the many proposals that were made, and despite the reported authorization - at least twice - of such lines. The actual facts however were that all the lines built during the Turkish period, either ran inland like the Hejaz Railway, or led from the coast to the interior, like the Jaffa-Jerusalem line, and the Haifa-Damascus line (and in Syria the lines Beyrouth-Damascus, and Tripoli-Homs). Finally, it should be added that the writer of the 1906 survey thought the scheme of the Haifa-Jerusalem extension, mentioned earlier, both useful and capable of early execution.

(32B) Cp. Hitti, p. 695; Langer, p. 75; Glubb, p. 116 (all listed in the bibliography).
Despite the objections of the Turks to a line along the coast - which anyhow never seem to have found public expression - the idea of a link between Palestine and Egypt again seems to have been in the air, perhaps in 1907, perhaps the year before. This is evidenced in a description of Palestine by an American traveller (33). He envisaged a harbor at Haifa, where a breakwater-cum-wharf had indeed already been built by Meissner Pasha for the Hejaz line. The American visitor also anticipated the building of a line from Haifa to Jaffa, or to a point further inland on the French Jaffa-Jerusalem railway.

He also expected a coastal railway to be built to link Cairo via Port Said with Jaffa, to continue from there to Jerusalem and Damascus. Unfortunately, it cannot now be ascertained how far the schemes he mentioned were mere repetitions of older plans, or whether they represented original proposals. But what he wrote was significant as to general trends.

1908 was notable for more railway plans. Amongst these were Meissner Pasha's efforts to have the line (Haifa-) Afule-Nablus-Jerusalem built. These were abortive, and will be further noted in connection with the Hejaz Railway. About the same time, Professor Martin Hartmann, whose 1894 Z.D.P.V. survey of railways in "Middle Syria"

(33) Dunning (cp. bibliography), pp. 8, 9, 265-266.
Top: Probably one of the oldest surviving photos of Jerusalem station, showing Navon's rolling stock. The locomotive on the turn-table, with its kerosene-lit headlight, was built by Baldwin, Philadelphia. The covered windows of the carriages probably denote compartments that were reserved for ladies. The station building shown still stands substantially to-day. The photo dates to about 1893.

(Source: Jerusalem Municipal Archive)

Right: A goods train of the meter gauge Navon railway to Jerusalem winds its way up through the Wadi Sarrar gorge east of Deir Aban (Artuf). Note telegraph poles, and heavy stonework round culvert. Date - unknown. The locomotive is one of the original 1892 Baldwins.

(Source: Imp. War Museum, London)

Pick, chapter III.
has already been quoted, in a book on the "Mecca Railway" incidentally stated his opinion that the building of a track from Palestine to Egypt was merely a question of time (34). There were other reports that probably referred to developments in 1908, though owing to the delay in the publication of periodicals, some were printed only in early 1909. One of them mentioned that a French-Turkish consortium was trying to get a concession - which, the report said, would doubtlessly be given - for a 300 kms. long line Jaffa-Gaza-El Arish-Port Said (35). Another item, also published in early 1909, said that government approval had already been given (presumably in 1908), for a link Haifa-Saida (Sidon) - Beyrouth (36). The same item also noted that the project of line Haifa-Jaffa-Alexandria (the last representing a departure from the usual list of termini in Egypt), was "ready for approval." Considering that nothing more was ever heard of all these schemes, they can be safely consigned to the limbo that had engulfed previous utopian plans. In passing, it should just be recorded that the last-mentioned item also included the tidings that an Arab company was forming to provide the town of Jaffa with electricity and also a tramway net (37).

(35) Pal., 1909, p. 29.
(36) Pal., 1909, p. 143.
(37) Ibid. The writer responsible signed himself Jakeb Trachtenberg, Zurich.
The line Haifa-Beyrouth, mentioned above, as belonging either to 1908 or 1909, had definitely already been remarked upon in 1908, in the same source, the journal "Palästina" (38). At that time this journal carried the news from Haifa that the Beyrouth Tramway Company had requested a concession for a "light railway" to be built between Haifa and Beyrouth. The intention was, the report said, to carry passengers only. A line like this - possibly an electric trolley - would have made little economic sense, but would have been cheaper to build than a conventional railway. This particular report was perhaps more credible than others, seeing the Beyrouth tram company had indeed been running trolley service, 19 kms. long, towards the north via Jouniyeh to Ma'amltein, ever since 1898 (39A). A line towards the south, via Sidon (Saida), to Haifa, would not have been unthinkable, and was indeed later concessioned (39B).

A scheme that can be, more or less definitely, dated to 1908, was that of yet another railway across the desert to Mesopotamia. Its originator was an Englishman, C. E. Drummond-Black. He suggested, as had been done before, a track from Port Said, across the Sinai Desert, to Akaba.

(38) Pal., 1908, p. 222
(39A) Ruppin (cp. bibliography), p. 298.
(39B) Imhoff, p. 266.
From there he wanted to continue, through Jauf, to Basra on the Persian Gulf. In view of the fact that this scheme emerged just two years after the Sinai Boundary Dispute, i.e. the Akaba Crisis, that erupted because the British wanted to forestall building just such a trans-Sinai railway by the Turks, it might be imagined that Drummond-Black's plan had few chances of realization. No details are known about this plan or its sponsor, except a note in a study about the Syrian Desert, that could not be followed up owing to circumstances (40).

The year 1909 could boast of a railway plan for Palestine that, for once, originated with the Turks themselves, i.e. the government in Stambul. The initiator of the plan was the Ministry of Public Works, and its roots went back to 1908. Its background was the Young Turks revolution and their wish to carry out improvements throughout the Ottoman Empire. The main source for this plan is the invaluable monograph of the Engineer Max Hecker, a long-time and well-known resident of Palestine, who was an expert on railways, and wrote only a very few years after

(40) Phelps Grant (op. bibliography), p. 267.
the event. (41)

While the Young Turks, after their rise to power in 1908, evinced little interest in the Hejaz Railway, which had been the Sultan's pet scheme (as will be detailed further on in this chapter), they developed quite grandiose railway schemes for the rest of Turkey. These schemes included one railway in Palestine that was potentially important indeed. The reference is to a line from the rail junction at Rayak in Syria (Lebanon), through Palestine to El Arish, at that time administrated by the Anglo-Egyptian government. It would have been some 385 kms. long. According to Hecker, this line was a top priority for the Turks in early 1909, and was especially remarkable for the fact that it was to have been of normal (1,435 mm. and not 1,050 mm.) gauge. This was the gauge of the railway the

(41) Hecker (cp. bibliography), pp. 1067-1070. Hecker is a prime source on railway developments in Turkey in general prior to the First World War. He was extraordinarily meticulous and detailed in his observations, a good many of which were based on personal knowledge. In Mandatory times, Hecker became a renowned architect in Jerusalem. He died in a kibbutz in the 1960s.

Apart from Hecker and Woods, mentioned elsewhere (cp. bibliography), there may be at least two other sources as to the pre-war period. One is the dissertation of Hermann Schmidt, "Das Eisenbahnwesen in der asiatischen Türkei," of 1914. This was lost by the Jewish National Library in Jerusalem, which had it. The other possible source is Leon Dominian "Railroads in Turkey," which was published in the Bulletin of the American Geographical Society, vol. XLVII, nos. 11-12 of 1915, and may have contained relevant particulars, but was not available to the writer.
French had built from Aleppo via Homs to Rayak, whose continuation to the south the proposed Turkish line would have been. The choice of the normal gauge by the Turks would have been the exception in Palestine and clearly showed up its potential military importance. It would have enabled troops to be transported directly, without transshipment at Rayak, from Aleppo - linked by the German Baghdad Railway with Anatolia - down to the borders of Egypt. Indeed this line, including the French-owned section in Syria, would in fact have constituted a southerly extension of the Baghdad Railway from Constantinople (42).

The strategic importance of the line was stressed by the fact that it was intended to build a great part of it through the Jordan Rift Valley, to keep it as far away as possible from the coast. The military aspects of this proposed line were so obvious as to be commented upon by Rohrbach, a German nationalist writer, as late as 1911 (43). He pointed out that building the Rayak-El Arish line would result in British "self-examination," (Selbstbesinnung), in view of the possibility that the proposed line might turn into a strategic factor, in case "German-Austrian-Turkish cooperation" might become necessary "in the direction of Egypt." To avoid any possible misunderstandings,

(42) Lynch (cp. bibliography) in the Asiatic Quarterly Review, vol. 31, 1911, p. 232. Lynch said the line had been marked "in red" on Turkish official maps, to stress the urgency attached to its construction.

(43) Rohrbach (cp. bibliography), pp. 26-27.
the author added that Germany was interested in the existence of railways for two reasons: one, to assure the Turks "peace with honor," and the other, to have means of communications by means of which troops could be despatched to Egypt "to ward off an English attack on Germany" (1).

The Rayak-Jerusalem-Egypt railway, which was in several ways the successor of the lines proposed some three decades earlier by Ludwig Salvator and Oliphant, was never built, but the scheme itself was to crop up again, before 1914, was even to be mentioned with slight variations in the middle of the First World War, (44), and even came to be revived in a way in the British mandatory period. (45)

The years after 1908-09 also had their rail schemes, which will be discussed below, but their numbers were few, perhaps because of the unsettled state of the Ottoman Empire that suffered from internal revolts, massacres, and insurrections (also in Arabia), and foreign war (in Libya and the Balkans). Also the actual construction of lines, mostly branches of the government-sponsored Hejaz

(45) Cp. chapter V of this survey.
Railway, went on apace, a development that may have led private entrepreneurs to become cautious for fear that the authorities might not be anxious to grant concessions to prospective competitors (such as the French Hauran line, that in those years systematically tried to undercut the vital Hejaz line). Also, by 1908 the Ottoman Government, by building the line to Medina, had proved to the world, and to itself, that it was indeed capable of undertaking railway construction on its own, and was thus less open to grant concessions to foreign nationals, whose undertakings may have led to foreign — especially French — pressures. However, a few of the plans mooted in earlier years may not have been entirely dead, and further versions kept emerging up to the outbreak of the Great War.

One of the entirely new railway schemes that emerged in Palestine prior to 1914 was that of a, some 40 kms. long, line from Amman on the Hejaz trunk line to the French phosphate concession area at es-Salt. The concession actually was never worked, and the rail track never built, but the line continued to have a spooky existence for several years. Its existence was assumed by quite serious observers, and it figured at least on two contemporary maps (46). This line was also the successor of the many, __________________

(46) Imhoff, p. 266 (cp. bibliography), who wrote on the German side, actually believed the Salt line to be extant in 1914. So did Woods, p. 53, on the British side. He even showed an Amman-es Salt railway on one of his very good and detailed maps, opposite p. 52, as did Imhoff, opp. p. 266.
equally utopian, plans for a railway from Jerusalem to Amman, and was even expressly described as being "the first leg" of it. However, the always reliable Hecker, about 1913, already stated that the difficult line had not been built, owing to doubts about its ability to pay for itself (47).

There was another pre-war scheme that deserves mention on account of its quaintness, and because, though it concerned not a fully fledged railway, at least it involved a local and suburban network. In 1911 it was reported from Jerusalem that a French company had asked to be given a concession for building and operating electric tramways in Jerusalem (48). Six lines were proposed:

1) Jaffa Gate - Beth Lehem, an obviously suburban line;
2) Jaffa Gate - to the municipal boundary, along Jaffa Road to about the village of Lifta, on the Holy City's western outskirts;
3) Jaffa Gate-Mea Shearim quarter - Schneller's German Orphanage, in the north-western outskirts;
4) Damascus Gate - to the northern outskirts along Nablus Road;
5) The German Colony (on Beth Lehem Road) to the Greek quarter at Katamon;
6) Jaffa Gate - Dome of the Rock. The last line, it was noted in the report, would

(47) About the line being the first section of a track to Jerusalem, cp. Woods, p. 53. On the line having been given up, cp. Hecker, p. 1073.

have been sure to have encountered technical difficulties, as it would have had to cross the Old City. The fate of this concession was that of the concession reported a few years earlier for building a tramway at Jaffa — nothing was heard of it again.

For 1912 the very reliable Hecker reported an agreement between the Turkish Government and the Khedive of Egypt, on the construction of a rail-link between Palestine and Egypt, preliminary surveys for which had been entrusted to a British company (49). Very unfortunately, nothing more seems to have become known about this scheme, which, in any case, came to nothing. Hecker also noted that the French were "once again" (neuerdings wieder) agitating in favor of a railway Rayak-Egypt, that had been proposed by them earlier. How far this French proposal may have been identical with earlier proposals (recorded above as French, Turkish, or with no known "parentage") to link the Syrian network with the Nile, could not be established (49A). Anyway, the general concept was not new, and nothing came of it. Here it might be added, anticipating somewhat, that if the French could not have their own railway to the south, they could at least sabotage another. By May 1914 they had at least succeeded in pressuring the Turks into

(49) Hecker, p. 1075.
(49A) Gooch and Temperley (cp. bibliography) provide interesting background details regarding French schemes, and scheming, concerning railways in pre-1914 Palestine. See vol. X, part 2, pp. 135, 136, 171, 182 and also index, pp. 911, 914-16. Cp. also Stein, p. 49.
giving up construction of their own, long-anticipated, railway, Haifa-Afule-Nablus-Jerusalem, of which more in the section devoted to the Hejaz Railway (50).

One more nebulous scheme for a railway turned up in a survey, for 1913, in the columns of the "Luah Erets-Yisrael" of A.M. Luncz (51). Here it was reported that "England" intended to build a railway "from the Harbour of Said to Beer Sheba, and from there to India. This railway would have a branch to Hebron and to Jerusalem." It is, of course, impossible to verify what plan Luncz referred to, but the fact that he mentioned the line at all may serve as a pointer to the fact that railways at that time were not outside the scope of public interest (52).

Finally, the German Lieutenant-General C. Imhoff, in an article in 1915, summarized the Turkish rail network as it was prior to the outbreak of the First World War. He noted - apart from existing lines, substantially as they were already listed at the beginning of this chapter - three items referring to Palestine:

(50) Regarding the French hatchet work on the line to Jerusalem, cp. Hecker, p. 1073-74.

(51) Luncz (cp. bibliography), 1913, p. 38. The "Luah" was a yearbook devoted to events in Palestine.

(52) Luncz, in his yearbook for 1914, p. 4, also referred to the usefulness of railways to tourists in Palestine.
1) A French concession for a tramway to be built in Jerusalem;

2) A concession expressly designed to link Jerusalem with the (French) railway network in Syria. This covered the construction of a track, 175 kms. long as the crow flies, Jerusalem-Nablus-Nazareth (En Nassira)-Megerib;

3) A concession intended to link Rayak, in Syria, with either Ramleh or Lod on the (French) Jaffa-Jerusalem line, with a possible extension to El Arish and a later junction with the Egyptian network about Ismailia.

Unfortunately, owing to Imhoff's rather haphazard formulation, it was not at all clear whether these concessions referred to 1914, or whether they constituted a re-hash of earlier reports of earlier developments—which may be likely. The Jerusalem tram concession was mentioned by him with the 1892 Jaffa-Jerusalem line, and may have been a garbled version of Yossef Navon's original concession. The Jerusalem-Megerib scheme bore an uncanny resemblance to the, by then working or planned, Turkish Jerusalem-Nablus-Afule-Beisan-Samakh-Megerib line. And the Rayak-Egypt proposal bore an obvious similarity to earlier schemes, including the one mentioned by Hecker. On the other hand, the details listed by Imhoff regarding railways in other parts of the Ottoman Empire were remarkably...
exact, and thus the possibility still remains that he did refer to new developments that took place in 1914. Incidentally, in his article, which appeared in the very authoritative "Petermann's Geographische Mitteilungen", Imhoff vouched for the interesting item that just before the War, on April 15, 1914, France had reached an agreement with the Ottoman Empire, an agreement later, in June, acceded to by Britain and Germany, that settled the question of railway construction within the Turkish dominions. According to this agreement, France was to relinquish its interests in the Baghdad Railway, in exchange for Germany's consent not to claim railway concessions in Syria (including, it may be assumed, "Southern Syria," i.e. Palestine). The outbreak of war was to make this agreement, which might bear further investigation, academic (53).

This concludes the necessarily short, preliminary overall review of railways operating in Palestine 1892-1914, and of the abortive railways schemes in the same period.

(53) For all the above details see Imhoff, pp. 264-266. The article was accompanied by an illuminating map. Among his sources Imhoff included Schmidt (cp. note 41), and an article on the military importance of the Turkish railways by a Major Kübel, of the Royal Bavarian General Staff, published 1913 in a German military periodical. The writer tried in vain to obtain a copy of the article through interlibrary exchange. No copies seem to have survived in Germany.
The following pages will be devoted to a more detailed description of the building, and significance, of the two most important lines in the country in that period, namely, the Jaffa-Jerusalem line and the Hejaz Railway and its branches. Both these lines have never before been described in depth, though monographs dealing with some of their aspects have been published (54).

(54) The original draft of this chapter also included a detailed survey of two more railway lines, started and respectively completed in Palestine in the period under review. These were the Elias-Pilling-Hill Haifa-Damascus line, and the French "Hauran Railway," Damascus-Mezerib. Both these lines were dealt with in general outlines in chapter II. Owing to limitations of time and space, the details given there will have to suffice. Some little of the material excised from the present chapter will, however, as far as relevant, be included when the building of the Hejaz Railway is described.
The Jaffa-Jerusalem Railway

Background and Sources

As described in chapter II, the antecedents of the Jaffa-Jerusalem railway went back to 1838, or thereabouts, to the time when the possibility of building the line occurred to Sir Moses Montefiore. In the five following decades there were a good many additional schemes, most of which never came alive, or died in their infancy. Looking back, it becomes fairly clear why the time for such a line had not been ripe. As was noted in the previous chapter, the line would not have enjoyed Turkish support, as the Ottoman authorities were not anxious to see foreign influences, particularly in Jerusalem, enhanced by means of a railway that would have facilitated easy communications, secular and clerical, with Europe. Concessionaires would have been foreign subjects, apt to call on their governments for support, a possibility that the Turks could not contemplate with pleasure.

There were other reasons, too, for the fact that the line was not built, amongst them that financial support in adequate amounts was not, when the test came, available either from British or French sources. The Russians, in any case, had other things to worry about in their relations with the Turks in the decades following the Crimean War of 1853. Financial support from interests
representing the two western powers was presumably not forthcoming because the Turks, unlike their later habits regarding railway projects elsewhere in their Empire, refused to provide the proposed line with kilometic guarantees, or any similar incentives (55). They even balked when Montefiore asked for some other gesture of financial goodwill, as was detailed above. Under the circumstances, any railway to the Holy City would have been a sure money-loser, as it could have depended for its revenues only on pilgrims, and to a very limited extent on transporting imports for a not very populous area, and on no exports at all. It was also not at all clear how far a railway, whose outlays for construction and upkeep would have been formidable, would have been able to compete successfully with the much cheaper traditional means of transportation in the country - camels for goods, donkeys, mules, and horses (and later - after 1869 - carriages). Owing to all these problems the line Jaffa-Jerusalem remained a pipe-dream for many years, and as late as 1894, two years after the line had been inaugurated, a qualified observer noted that it had been the least-likely-to-be-built railway in Syria (56).


(56) Hartmann, in Z.D.P.V., 1894, p. 56.
Deir Aban (Artuf) station, with the train Jerusalem–Jaffa coming in. Waiting for it are participants in a botanical excursion, headed by the agronom Aron Aronson. Date, about 1910.

(Source: Ha'arets)

Right: Section of the, since 1918, abandoned track of the original 1892 line from Jaffa to Jerusalem. The trees in the background belong to the Ramle (British) military cemetery. The track is now a path. A 1892 culvert is still showing.

(Source: Pick)

Pick, chapter III.
The Jaffa-Jerusalem line was probably one of the most-written-about railways in the world, its diminutive length notwithstanding, and small wonder. Pilgrims, tourists and scholars — probably most overseas visitors to Palestine, and not least amongst them Theodor Herzl — used it, and described it, some in passing, and some more fully (57). To Jews, especially, it symbolized progress and closer links of the diaspora with the sacred sites. Travellers, however, were by no means the only sources. Most visitors used guidebooks on their journey, and no guidebook, English, French or German, from the 1890’s onward, lacked details, including descriptions, lists of stations, timetables and prices, pertaining to the train ride to Jerusalem (58). Thus contemporary guidebooks are most useful when trying to visualize the line. The Jerusalem railway was also mentioned in periodicals, Zionist or specializing in orientalia, which, on their part, often quoted news items published in the general press. At least one British Parliamentary Paper also dealt with the line (59). Relatively numerous references

(57) No effort will be made here to list all the travellers who went by rail to Jerusalem. Apart from the founder of Zionism, Th. Herzl, the Kaiser, Wilhelm II, in 1898, was the most distinguished amongst them. Listing them all would require a separate, extensive, bibliography.

(58) Cp. Baedeker’s guides, in both German and English editions, Cook’s travel guides, and Meisterman’s excellent French handbooks, etc.

(59) Parliamentary Paper no. 288, of May 1893 (cp. bibliography). A copy of this paper was catalogued by the library of the “Technion” in Haifa, and was seen perfunctorily by the writer in 1972. When he tried to xerox it on another occasion, it had disappeared.
to the line can also be culled from the contemporary general Jewish press, both local and European. There likewise must have been mention of the line in geographical publications of that time, and in technical journals, though, with one exception, none were available for checking. Monographs, articles, and books dealing with the economy of Palestine, invariably mentioned the line, and so did some reminiscences of local residents. The line was also documented by contemporary photographs, that can be found, usually quite incidentally, in travelogues, reminiscences, and even on postcards. Maps, in guidebooks, and specialized publications, and also general maps, provide valuable pointers as to the layout of the line in the field, and as to the changes that occurred in the track as time passed (60).

All in all, it might be said that quite a surprising number of general descriptions are available of the Jaffa-Jerusalem line, this despite the fact that, in terms of European or American railways, it was, after all, a most insignificant venture, owing its importance only to the context in which it was built and operated.

(60) For instance, a map by Conrad Schick (mentioned as an expert on Palestine in the previous chapter) in the Z.B.P.V. for 1893, and one in the 1907 guide by Abbé Meisterman provided clues as to the original track of the line, about Ramle and Lod, and also as to the still existing 1892 Lod station, before changes were made in the rail trace by the British in 1918.
On the other hand, really thorough and detailed descriptions of the line, or of some of its aspects, have been remarkably few. An early account of it, of 1896, was published by Guivet. Many particulars were given by Hecker shortly before the First World War, but unfortunately he did not write a continuous narrative, his valuable observations being interwoven in the framework of a general description of Turkish railways. In recent times, Avitsur also dealt extensively with the subject (in Hebrew), but again only within a general survey of railways in the Holy Land, and unfortunately not quoting sources. Far and wide the best researched recent monograph on the Jerusalem line is the one written by Grunwald. However, he saw this first railway in Palestine mainly in terms of the personality of its initiator, Yossef Navon, omitting practically all geographical and technical details. In the following pages an attempt will be made to assemble all the known facts about the Jerusalem line, including data that have not been utilized before.

Navon: His Background and his Concession

As has already been recorded above, the name of the man who was to enter history as the innovator who built the first railway in the Holy Land was Yossef (Youssouf) Navon. Some perfunctory details about Navon's life have been noted at the beginning of this chapter. At the risk of
some repetition, his antecedents will now be outlined more fully. Fortunately, Navon's story is pretty well documented, and even his photo survives (61).

Navon belonged to a distinguished Jewish-Sepharadi (Spanish) family that settled after 1492 (the year of the expulsion of the Jews from Spain), in Turkey, at Adrianople, and in Constantinople. The family became very rich. It produced many scholars and important rabbis, both in Turkey, and in Palestine, where a branch of the family had later settled. Navon's maternal uncle was Haim Amzalag who, as British Vice-Consul in Jaffa, played an important role in the Jewish community in Palestine and also - as noted above - came in close contact with Sir Moses Montefiore when he visited the country. Yossef Navon himself, born in Jerusalem in 1858 (62), was educated in France. On returning home he became, at a very early age, a partner in the, at the time very well-known, Jerusalem banking firm of the Swiss, Jakob Frutiger. Being possessed, apparently, of considerable drive and business acumen, and having good connections with both the Ottoman authorities and with all sections of the local population, he quickly

(61) Grunwald (cp. bibliography), p. 249 passim, has a very good biography of Navon which has been drawn upon here. Grunwald also has a very good bibliography. A photo of Navon in full regalia as a Turkish "Bey", wearing a fez, a sword, and some five assorted decorations, appeared in September 1968 in an article on the 76th anniversary of the Jerusalem line in the Israeli "Ha'arets." The writer was S. Shvah, who is an expert on Palestine of the 19th century (cp. bibliography).

amassed means of his own. He also became active in communal affairs together with his uncle, Amzalag, and is said to have been instrumental in the purchase of lands for the first Jewish settlements in Palestine, Petah-Tikvah and Rishon le Tsion. He was reported to have shown considerable diplomatic agility in his negotiations. Navon also bought lands around Jerusalem in order to establish Jewish suburbs, and at some time or other seems to have considered plans for water supply and electricity installations, plantations, and also a harbor at Jaffa. It is reasonable to assume that a man of this calibre and vision must have been familiar with Montefiore's railway plans (that surely drew attention in the country, seeing that they extended through many years), and also with other abortive schemes, such as Chesney's and Zimpel's. Sometime after 1885 he decided to pursue railway plans of his own, and began to work towards obtaining a concession for a railway. The fact that, unlike his predecessors, he was an Ottoman subject, gave him an advantage the others had not possessed. In due course he moved to what may be termed the "fount of concessions," the capital, Constantinople, to further his plans (63). After efforts lasting some three years, and, no doubt, considerable expense, Navon finally received his "Firman," on October 28, 1888.

(63) Grunwald, p. 251.
It was the latest of several earlier concessions for a line Jaffa-Jerusalem, following the ones granted to Forbes, the French, Erlanger, and possibly others, all of which were discussed in chapter II. All the others had lapsed on account of lack of support and money. It remained to be seen if the 30 years old entrepreneur would do better (64).

The details of Navon’s concession are known in general outlines, and, as mentioned (in a note), a copy in French was available until recently. It was to run for 71 years, i.e. to 1959, and, according to the most reliable sources, gave Navon the option to build branch lines to Gaza (probably by way of Bethlehem) and to Nablus, within four years. According to another source, British, and normally impeccable, Navon received the option of building a line through Damascus as far as Aleppo. This second version is however highly unlikely, in view of the French presence in Syria - but it should be mentioned (65). The line to Nablus would have run on top of the ancient highway along the main Judaean-Ephraimite mountain ridge. But there is no indication of the prospective track to Gaza,

(64) Avitsur (Tevah Va'arets) p. 86; Grunwald, p. 249.

(65) The sources mentioning the Gaza/Nablus options were: Avitsur, "70 Years" (Hebrew) p. 6, and id. (Tevah Va'arets) p. 86; Eisenbahn Archiv, 1893, p. 932; Grunwald, p. 251; Hecker (who was an expert local resident and closest to events in terms of time) p. 797; Issawi (cp. bibliography; he quoted Hecker) p. 251; and Karkar, pp. 117, 137.

The source mentioning Navon’s Damascus/Aleppo option was: Hyamson (quoting British consular despatches from Jerusalem), II, pp. 480-81.
though a German source claimed that it would have run through Ascalon (i.e. Majdal) (66). The branches to Gaza and Nablus never came near implementation (67). Whatever intentions Navon ever had of integrating his concession with the then current plans for a Palestine-Egypt Railway (mentioned at the end of chapter II, and at the beginning of this chapter), also came to naught. He had paid the sum of 5,000 Turkish Pounds to the Ottoman authorities, as a deposit towards the building of the Jaffa-Jerusalem line. He now had to succeed where all others, including Montefiore, had failed, namely in building his railway.

Navon's Financial Manoeuvres, and his Company's Final Shape

It was clearly beyond the power of a single concessionaire to finance the building of a railway line in a primitive country, into which everything had to be imported from overseas at high cost, from engineers to the last rail bolt. Therefore Navon set out to find financiers. Indeed, there is no reason to assume that he ever wanted to build the line solely by himself, or even that he wanted to keep control over it. There are several different accounts

(66) Eisenbahn Archiv, 1893, p. 932.

(67) Professor Karkar who, as a native of Jerusalem, should have known better, in his book (cp. bibliography) wrongly assumes that the two branches were built to 1892. Cp. pp. 117, 137. He also gives the duration of the concession, on p. 137, as 79, instead of 71 years.
as to how he proceeded. However, the main trends of events are clear, though details may be open to corrections. According to the most reliable source on this particular stage of developments, Navon, having been unable to raise enough local resources (which was not surprising), tried his fortune in Europe (68). The Jewish banker Gerson Bleichröder, acting on behalf of the Deutsche Bank in Berlin, which later financed the Baghdad Railway (69), according to Grunwald, offered to buy the concession. An English group is said to have offered 80,000 Pounds Sterling for it, and Messers Samuel Montagu and Arthur Cohen, the bankers (70), are said to have promised Navon to advance all the funds necessary for construction, at 5%, to enable him to remain in sole control of the concession. In this connection it should be recalled that in chapter II it was noted that the same Montagu had visited Palestine in the 1880's and at that time had evinced some interest in a railway to Jerusalem (71). However, all this came to nothing, and Navon ended up by enlisting French-gentile-interests in building his line. This development, which resulted in giving the French a - relatively - important

(68) Grunwald, p. 251. The following details in the text have been taken from here.
(69) Karkar, p. 120.
(71) Apart from chapter II, op. also Avitsur ("70 Years"), p. 5.
additional foothold in Palestine, was not without its good reasons. French, about the end of the 19th century, were more than ever interested in extending their influence in the Ottoman Empire, and railways were a goodly and tried means for this purpose (72). Also, Navon had French education and a French cultural background, apparently admired everything French, and probably just wanted to reserve the business for France. At some stage of proceedings he was also promised the Légion d'Honneur, which he was later granted, for services to France in the Levant (73).

From one of the various available, and often contradictory, accounts it appears - though details may be subject to revision - that in 1889, one year after being granted his concession, Navon formed the "Société Ottomane de chemin-de-fer de Jaffa à Jérusalem et prolongements," with a registered share capital of 4 million Francs (= 160,000 Pounds Sterling) (74). The shareholders of the company, according to the same source, were Navon himself, his

(72) Karkar, p. 113 passim, on French railway activities in Turkey.

(73) Grunwald, p. 250-251. As already mentioned in note 62, Navon went to live in Paris. As a resident of Paris, he was mentioned twice in Herzl's "Diaries," for 1901; once on March 21, where Navon is characterized as the "seller of shares" in the Jerusalem railway, and once on June 13, where he is mercilessly described as an "oriental Jew with the face of a bird of prey," and a "slinking rascal."

(74) Grunwald, p. 251-252; Karkar, p. 137, gives the foundation date as 29.12.1889. The company may later have changed its name to "Société Ottomane des chemins-de-fer de la Palestine" - an interesting name, possibly indicating plans for expansion. Issawi, Hecker, and Ruppin knew it as the "Société Ottomane de chemin-de-fer de Jaffa à Jérusalem," i.e. without the reference to "prolongements."
previously mentioned banking partner in Jerusalem, the Swiss Frutiger, and Messers Thomas Berger and Gaston Auloyneau of the Banque Ottomane, who were representing the French interests in the company that were to become dominant in it to the apparent eventual exclusion of all others (75). According to Hecker, who wrote about 1912/13, the "Societe" was founded in December 1889, in Paris, by a M. Collas. It might be noted that the same Collas had tried, as early as about 1880, to obtain a concession from the Turks for building a railway to Baghdad (76). Leaving aside the moot point of whether the original company had been founded by Navon himself with French participation, or whether it had been founded by M. Collas as a purely French enterprise, the fact was that Navon sold his concession to the company - that is, possibly, to himself. The amount he was paid by the company was one million Francs (£40,000 Pounds Sterling), which probably was not excessive recompense for all the expenses, probably including bribes, he had incurred during the years spent at Constantinople, trying to obtain his firman (77).

(75) Ruppin, p. 308, who was an expert observer on the spot, though some years later, said the company was founded by French capitalists in Paris. Hecker, p. 1081, who had the same qualifications as had Ruppin, and was also writing some years after the events, claimed that the directorate of the company was located at Jaffa, but that the seat of the company was Paris. This may, of course, have reflected later developments. In any case, French influence seems to have been very strong from the beginning.

(76) Wolf (op. bibliography), p. 12.

(77) Eisenbahn Archiv, 1893, p. 931; Grunwald, p. 251.
Carrying out the construction work was entrusted to the French "Société des travaux," against payment of 10 million Francs, of which direct building costs were to amount to 8.5 million Francs, the remainder, presumably to be spent on rolling stock, equipment and incidentals. The same company that was to build the line, simultaneously or later, also acquired the right to run it, against a yearly lease of 600,000 Francs (78). The railway company's share capital, which was, as noted above, 4 million Francs, did not, of course, suffice to cover construction costs. Therefore debenture bonds to the amount of 9 million Francs were issued (79). According to another source, debentures, originally planned to the amount of 20 million Francs, were later reduced to an issue of 10 millions.

The idea was to allot 5% of the anticipated net earnings towards the payment of the shares, with 95% of earnings

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(78) Eisenbahn Archiv, 1893, pp. 931-32. Grunwald, p. 251, quotes the name of the company as "Société des travaux publics." Hecker, p. 797, has the name as "Société des travaux publics et constructions," under the direction of the Swiss Eberhard. However, as one can learn from the Encyclopedie Larousse (1960 edition), another important engineer was the French-Alsatian Rene Koechlin (cp. entry under his name). Cuivet, p. 605, passim, described the work of construction and stressed that it was carried out by a French company, mentioning no names.

earmarked for the payment of debentures (80). In connection with the debenture issue it should be remarked that according to a reliable source, namely Grunwald, they were issued at an advanced stage of the construction work, when cash was becoming scarce (81). French Catholic circles had meanwhile become interested in the line - another intrusion of religion into railway activities, the likes of which have already been dealt with in the previous chapter. These circles have remarked on the fact that the line, then under construction, had no Turkish kilometric guarantee, which would have made the buying of debentures an unattractive proposition to the general public. Since these Catholic circles were interested in furthering Catholic pilgrimages to the Holy Land, and in increasing French influence generally, they therefore invested 9.75 million Francs in the line's debentures, in order to enable it to be completed (82). Despite the slight discrepancy in the amounts mentioned, the debentures bought by the - unfortunately not further identified Catholics - seem to have been the 9 or 10 million Francs debentures mentioned earlier. The

(80) Ruppin, p. 308. Hecker, p. 1311, gives the initial total capital invested as 9.85 million Francs. Karkar, p. 133, for 1911, some twenty years after the line had been built, gave the following figures in Turkish Pounds: Shares - 160,000; debentures - 394,000, total 554,000. This would be the equivalent of some 14 million Francs. For his figures he cites Mears (cp. bibliography). For comparison: Hecker, p. 1084, gave total investments in the line about 1912-13, as 14,850,000 Francs.

(81) Grunwald, p. 252.

(82) Ibid.
purchase of these debentures probably finally put control of the Jerusalem railway into French - and clerical - hands. Avitsur, in discussing the line, also mentions that the contemporary Jewish Jerusalem press remarked that the local French clergy had invested their private savings in Navon's venture (83). However, Jews were apparently not forgotten, at least on the local financial level, as the veteran banking houses of Chelouche and Valero acted as the agents of the line on the Jaffa end, and the Jerusalem end, respectively (84).

The Line to Jerusalem in Outline: The Choice of Routes

Work on the Jaffa-Jerusalem railway started in the spring of 1890, the first spadeful of earth being cut with great ceremony, though in driving rain, at a spot somewhere near Mikveh Yisrael and Yazour, a few kms. outside Jaffa. The date was either March 31st or April 1st (85). Work proceeded fairly rapidly, at first.

(83) Avitsur ("70 Years") p. 6; id. (Tevah 'Va'arets), p. 86.

(84) Shvah, p. 16.

(85) Grunwald, p. 251, states that work was begun in August 1889, an unlikely date as the railway holding company itself was only organized towards the end of the year. Most other sources mentioned March 31, 1890. Hecker, p. 797, gave the date as April 1st, probably because he was a stickler for details, of German origin, and work may have actually begun the day after the ceremony. Practically all sources agree as to the spot where work was started, near Mikveh Yisrael and Yazour (today's Azer). Some sources stated the spot was 4 kms. distant from Jaffa, which is an error by 2-3 kms.
Twenty-three kms. of the line, to Ramle, were completed by April 1891, one year after work had been initiated. By December 4th, 1891, the line had reached Km. 46, a short distance west of Artuf. After the railway company had received the above-mentioned monetary infusion, building was resumed. The line was officially opened at Jerusalem station on September 26, 1892, after a building time of some 30 months. The building stages of the line have been summarized by Hecker (86).

The line had seven stations (87):

<table>
<thead>
<tr>
<th>Name of Station</th>
<th>Distance (Kms.)</th>
<th>Height above Sea-Level (Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Jaffa</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>2) Lod</td>
<td>19.1</td>
<td>54</td>
</tr>
<tr>
<td>3) Ramle</td>
<td>22.6</td>
<td>95</td>
</tr>
<tr>
<td>4) Sejed</td>
<td>39.5</td>
<td>183</td>
</tr>
<tr>
<td>5) Deir Aban (Artuf)</td>
<td>50.3</td>
<td>270</td>
</tr>
<tr>
<td>6) Bittir</td>
<td>75.9</td>
<td>576</td>
</tr>
<tr>
<td>7) Jerusalem</td>
<td>86.6</td>
<td>747</td>
</tr>
</tbody>
</table>

The Société des travaux publics and its heads, the Swiss Eberhard and the Frenchman Koechlin (88) had before them at least three possible tracks by which they could

(86) Hecker, p. 1077.
(88) See above, note 78.
reach Jerusalem from Jaffa. While there is no documentary evidence to illuminate the reasons that led the planners of the line to build along the route they eventually chose, their motives were fairly clear, and will be discussed below. As for the line itself, as actually built, details will also be summarized below.

The three possible routes the builders could choose from were: a) The northernmost track, from Jaffa to Lod, and thence towards the south-east, up the "Ascent of Beth Harran" (Beit Ur in Arabic), and then into Jerusalem from the north. This was the shortest route that had been explored in the 1850's by McNeill, Montefiore and Galloway; b) The central track, starting out, again, from Jaffa to Lod, then turning south-south-east to Ramle, and from there going into the hills through the Wadi Sarrar (Nahal Sorek) and its tributaries, past Bittir, to reach Jerusalem from the south-west. This was the layout advocated by Zimpel in the 1860's; c) The southernmost track, again: leading from Jaffa to Lod, and then past Ramle, to gain the western entry to the Wadi es-Sant (Emek Ha'elah), then to climb east into the hills towards Bethlehem, finally to reach Jerusalem from the south. This was the route explored in the 1850's by Chesney (89).

Judging from what is known of Navon's (or Colas's) company, and the financial difficulties that accompanied it

(89) The three routes to Jerusalem, and their sponsors, were discussed at length in chapter II, above.
Top: General view of Jaffa, with Navon's station and rail yard in the bottom right hand corner. The photo was taken during World War I, when the line to Lod had been taken up. Hence the desolate aspect of the station (and of the roadstead).

(Source: Dalmann, 100 Fliegerbilder)

Right:
Jaffa station and train to Lod and Jerusalem. Photo dating to 1893.

(Source: Vilnay/Album du Terre Saints)

Pick, chapter III.
throughout, cheapness in the construction of the proposed line must have been of paramount interest. Thus the route through the Wadi Sant must have ruled itself out from the beginning, on account of the considerable southerly detour it would have involved. There remained the two other routes. Of these, the northerly one, though the shortest by far, probably less than 70 kms., involved climbing the very short, but very steep, ascent of Beth Haran, or a parallel, but equally difficult, trace. This would have necessitated a great deal of artificial structures to carry the line by means of loops, bridges, and possibly tunnels, up the sudden difference in height between the plain and the top of the Judaean hills (90). Building these structures probably would have exceeded the, in any case, limited means of the company. Also, seeing that building a cheap, narrow gauge, colonial-type, railway had probably been decided upon - no standard-gauge railway was ever mentioned in the sources even as a possibility - there must have been grave doubts whether a small narrow gauge locomotive of necessarily limited power could ever have pulled a reasonable pay load, goods and passengers, up the steep incline. Also, the country east of Lod,

(90) As noted in the previous chapter, Schick, in the 1860's, had already commented (in Petermann's Geographische Mitteilungen, 1867, pp. 124-129), on the many structures that would be needed to carry a railway past Beth Horon.
which the line would have traversed, was notoriously **arid** - to this day practically no major settlements are to be found in it - and the absence of water resources likewise may have militated against the northern track.

**The Final Route: Progress of Construction**

Thus, as it turned out, the route actually chosen was the central one, by way of the Wadi Sarrar - a vindication of the, in his day, much ridiculed, Zimpel. This trace, though more circuitous and longer than the Beth Horon track, had a relatively easy climb into the hills, suitable also for narrow-gauge traction, needed only relatively few and simple artificial structures, and therefore was as cheap as could be had. It also had adequate water resources all the way, and even in the hills (91). The distance, as the crow flies, between Jaffa and Jerusalem was 65 kms. or thereabouts. The trace of the new railway between the two towns, on the other hand, was almost 87 kms. long. The long detour apparently paid for itself by the cheapness of building the track. Whether, or how far, the company building the track used the layout prepared by Dr. Zimpel is not known.

(91) Springs, ranging in flow from copious to adequate, were available along the track to Jerusalem at Wadi Sarrar, Sejed, Artuf, Deir esh-Sheikh and Bittir, all of them stations built during the various stages of the line's operations after 1892.
The track of the new line was described as early as October 1892 by Schick (92), who also had a map attached to his survey. From this, and also from later maps, it can be learnt that the original layout of the line differed in some respects from its later course. The terminus of the line at Jaffa - which was still in existence in a derelict state until a few years ago, was situated some 500 meters north-east of the center of the town as it then was, about halfway between the "German (Templar) Colony" and the seashore. There seems to have been an intention originally to start the line from a jetty built into the sea, north of Jaffa, and to lead it from there, straight east, through the village of Abū Kebir (93). This plan may have been abandoned because it was not feasible, or too costly, to lay the track right across the village, and the many surrounding orange groves. The uncertainty as to where it might be possible to lay the track in the immediate vicinity of Jaffa may have been the reason for the start of the work, in the spring of 1890, further east, about Mikveh Yisrael/Yazour - as noted. In the end, the line was carried, in a big semi-circle, round the orange plantations, and only a short distance away from

(92) Palestine Exploration Fund Quarterly, 1893, pp. 20-23. Meistermann's Palestine Guide of 1907 also has a good map of the Jerusalem railway.

(93) The proposed line, and the jetty are shown in a map in Baedeker's guide, 1891 edition, facing p. 13.
Montefiore's grove, that some 35 years earlier had been considered the site of a potential railway station. The trace followed by the railway since 1890 remained substantially unaltered until 1948, when the track between Jaffa and Tel Aviv, that had meanwhile grown up, was taken up. Infant Tel Aviv grew up, after 1909, right next to the rails of the Jerusalem line. Its first street, Herzl Street, crossed the railway, and the daily passage of the trains provided one of the few entertainments vouchsafed the inhabitants of the first all-Jewish city. Ruppin, in his memoirs, said that a special train once, in 1912, stopped beside his home, near the German Colony, in order to carry his desperately sick wife to Jerusalem (94). The old right-of-way of the line inside Tel Aviv, including a deep cutting and a bridge next to the former German Colony, is still shown on all maps.

The biggest changes in the original layout of the Jerusalem line were made by the British early in 1918, between the approaches to Lod and those to Ramle. They will be described in chapter IV, and will be remarked upon here only fleetingly. They have not been described before and though apparent on maps, and quite traceable in the field, have never come in for attention. Thus, on approaching Lod, which in 1890 was still quite a small place, the line turned south-east (and not south, as relaid

(94) Ruppin, Memoirs (cp. bibliography), p. 144.
by the British), and passed west of the village, the small station (still standing today) being located near the southernmost buildings, not very far from the mosque and St. George's church. The line then crossed the Lod-Ramle road, and continued south, its progress still marked to this day by a double-row of cactus hedges. The present Lod Junction station, in its present shape, was built only in the 1920's, and is situated west of Navon's original station. The object of the later British changes was to prevent the line to Jerusalem from crossing their own war-built line from Egypt to the north at right angles, and to lead it instead into the railway yard they had built, leaving it again in an easy curve to the south-east and Ramle. Navon's original track continued south from Lod, then to turn east in a sharp curve into Ramle station. The traces of the original track from Lod to Ramle, including some stone culverts, are still visible today, and one stretch the old track still serves as the approach road to the local British war cemetery (95).

(95) The above details are based on a personal reconnaissance of the writer who incurred much curiosity from the police, owing to the fact that Ramle prison is located near the old rail track. The old track is also shown on one of the aerial photos, dated 1918, in Dalman (cp. bibliography).
From Ramle onward Navon's track was identical with today's main line to Jerusalem, with the possible exception of some re-aligned sections where the line entered the Judaean hills, and possibly also some kms. further east, where the line crossed the Wadi Sarrar twice. Thus, from Ramle the track turned south to the village of Na'an (today's Na'an), and from there turned south-east to cross the lower course of the Wadi Sarrar (today's Nahal Sorek) to reach the station of (Ain) Sejed. This place seems to have been chosen for a halt, on account of its big spring. Today, one solitary eucalyptus tree, unnoticed by passing travellers, marks the site of the long-vanished station. The whole stretch of the wadi seems to have been malarial, and building it reportedly cost the lives of many construction workers, Palestinian fellahs, Egyptians and possibly also Algerians (96). The station at Sejed was to be abandoned probably about 1915, when Meissner Pasha began to build the Turkish wartime railway to Beer Sheba and Sinai. His line branched off to the south, just east of where the Jerusalem tracks bridge crossed the Wadi Sarrar. This branch led to the building of what came to be known by the British as "Junction Station"

(96) Avitsur, pp. 6/86, who seems to rely on contemporary publications. Cuivet, p. 606, definitely states the workers to have been Palestinians, Egyptians, and Algerians. A great many of the above data were taken from Cuivet.
(the later mandatory Wadi Sarrar station, today's Nahal Sorek). With the building of Junction Station, the stop at Sejed, some 2.5 kms. down the line, became redundant.

From Sejed, Navon's line continued south-east for some six kms., to Km. 46, to stop there, owing to financial difficulties. When these had been resolved, as told above (97), work on the line was resumed, probably early in 1892, continuing towards the east to Deir Aban (or Artuf, today's Hartu'). From there the line started its very winding ascent into the hills, the average gradient being a negotiable 3/4 in 500, on the average, making use of the first gorge-like, and later wider, valley of the Wadi Sarrar. About halfway up, the line branched off into one of Wadi Sarrar's tributaries, the Wadi Bittir, to pass Bittir itself, where a station was built (whose ruins still stand). Owing to the clever layout of the track, no tunnels were required (a considerable saving) all along the ascent into the hills. There was no stop between Deir Aban (Artuf) and Bittir. Today's station at Bar-Giora apparently came into use, under the name Deir esh-Sheikh, only about the First World War. From Bittir the line continued up its curvaceous way through the Wadi el-Werd, to the Jerusalem plateau, on the main ridge of the Judaean

(97) Grunwald, p. 252; also Hecker, p. 1081.
hills. The station at Jerusalem was located at the northern end of the Valley of Rephaim, which debouches from the Wadi el-Werd. The end of the track was some 15-20 meters distant from the main watershed in the hills, dividing the coastal plain from the Jordan Rift Valley. The section Deir Aban (270 meters above sea-level) to Jerusalem station (at 747 meters) involved a climb of 477 meters over a distance of some 36 kms. The terminus of the railway in Jerusalem, between the "German Colony" and the road to Bethlehem, was about 500 meters distant, across the Hinnom Valley, from Jaffa Gate, that provided the link between the Old City and the suburbs then growing up. The total length of the line, completed owing to the drive of the by then 34 years old Yossef Navon, was 87 kms., as noted before (or 86.6 kms., to be exact) (98).

Technical Details

The new railway was built as a narrow-gauge line for reasons of economy. Its exact gauge (there were many types of narrow gauges to choose from) was presumably

(98) The foregoing description of the geographical features of the line is based, apart from on Avitsur, Cuivet and Schick, mainly, but not exclusively, on Hecker, pp. 768-69, 797, 1077, 1310-11. Other sources, used occasionally, will be found in the bibliography, for instance the Eisenbahn Archiv.
determined by the availability of rolling stock, most, or part, of which was purchased second-hand. The gauge used was 1 meter (1,000 mm.), in terms of width between the rails (99). The gauge was not extraordinarily narrow for that time. To this day even narrower lines operate all over the world (100), and have done so for almost a century. Apart from cheapness and ease of construction, a narrow-gauge was chosen for Navon's mountain line because no high running speed was envisaged and traffic volume was not expected to be great. The roadbed could be made narrower than on normal gauge, curves could be made sharper - an advantage in hilly country - bridges and cuttings would be relatively inexpensive to build. Most

(99) Eisenbahn Archiv, 1893, p. 931, quite erroneously claimed the line to Jerusalem had been built on the 1,040 mm. gauge. Karkar, p. 137, even says the line had been built on the 1,050 mm. (French-Syrian) gauge, which is totally wrong.

(100) Cp. current editions of "World Railways" and of the "Railway Directory" (see bibliography). World Railways' tables summarizing gauges for each continent are especially enlightening on this subject. Most of Africa is to this day being served by narrow-gauge lines, as are Japan, Indonesia and parts of South America. This on account of their cheapness and ease of construction. There are many meter-gauge lines in mountainous areas all over the world, including Europe. Narrow-gauge railways, running quite important regular services, use tracks of 600, 610, 670, 750, 950, 1,067 mm. etc. The only extraordinary narrow-gauge network that ran, and still runs, in Syria and Jordan (and nowhere else) was the network of 1,050 mm., built by the French, and after them by Meissner Pasha in the Levant after about 1891.
"colonial" railways at that time had been built, especially by the French, on the narrow-gauge (101).

Rails for the new line were apparently purchased from the cheapest sources. They were supplied from France and Belgium, and were very light, each 7 meters long, and supported each by 10 wooden ties (102). The radius of the narrowest curve was 100 meters. The strongest gradient (not the average climb, already noted) was 20°/000, just where the line led into Jerusalem station. This short and very steep section was to give trouble to locomotives (even modern diesels) ever since. As already noted, the line had no tunnels. It did have 176 bridges and culverts, mostly small and stone-built. The few (6) large bridges, with one exception all in the hill section, had 10-30 meters spans. Their iron superstructure was supplied by the firm of Eiffel in Paris. There is no evidence of there having been a signalling system, but to judge from the tales of later locomotive breakdowns and minor derailments, there must have been a telegraph line running alongside the tracks that was used to summon

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(101) Here might be the place to note that the "British" railway envisaged by Elias-Pilling-Hill from Haifa to Damascus after 1892, had been planned as a normal gauge-and expensive - line. As described in the previous chapter, this line was killed by the French - narrow - Hauran railway, that was built at a much faster rate, and completed at lesser expense. The British line was undoubtedly forced to give up on account of its heavier expenses. The episode might serve to demonstrate the greater feasibility of narrow-gauge lines in undeveloped colonial areas.

(102) Most of the technical details regarding the line will be found in Cuivet, pp. 605-609, though Hecker, on various pages, supplied useful bits of information. Also see Eisenbahn Archiv, 1893, pp. 931-32.
help in case of need. Stations were simple two-storey structures, as can be judged from surviving drawings and photos (103). Of the seven stations, only the two termini seem to have had shunting facilities, and several tracks. The smaller stations, like Bittir, seem to have had only crossing tracks for trains and 1-2 switches (points). Jerusalem, and probably also Jaffa, seem to have had turntables for the locomotives. They also had prominent water-towers. Perhaps the smaller stations had them also (104).

The Jaffa Harbour Extension

One curious, and almost totally unknown, addition to Navon’s railway must be mentioned. This was a short spur running from the harbour (actually – landing place) at Jaffa to the town’s railway station, several hundred meters away. This ran along what was then the road to Petah Tikvah, Kalkiliye, and Nablus (later Bostrrous Street, (103) The stations that had survived to 1972 were: Jaffa (derelict); Lod (complete with platform, serving now as headquarters of Magen David Adom, the First Aid Society. It survived the mandatory period – according to small-scale maps, as an Arab boys school); Bittir (roofless and derelict since 1948); and Jerusalem (with mandatory wings). Ramle’s original station was blown up about 1947 by the Jewish Resistance; Sejed has totally disappeared; and Deir Aban (Artuf) was demolished at an unknown date, perhaps after the 1927 earthquake. Cp. also following note.

(104) There are some interesting photos (and drawings) of the line. Cp. Shva, Dalmann (aerial photos dating to the Great War), and Vilnay ("Tel Aviv-Yaffa"), p. 117. Some extant photos of the Navon line will be found in the Archive of the Jerusalem municipality, and in the collection of the Imperial War Museum, London. There are probably other photos that have survived elsewhere.
and today's Rehov Eilath). The branch had its beginning on a jetty that was built into the sea and had a crane at its end. This short line almost certainly was used to move the rolling stock of Navon's line from the shore (where it had arrived by sea) to Jaffa station. From its solid appearance - shown on a photo - and the lifting device at its end, it must have been intended also as a permanent structure for unloading goods destined for Jerusalem. From the rigging of the ship in the background of the same photo, it is apparent that the picture was taken in the 1890's. The gauge of the track was certainly 1 meter. There also survives a photo - of date unknown - that showed a pair of rails running down Bostrous Street, when it was Jaffa's main thoroughfare, and though the photo is old, it cannot be dated. Also, the gauge of the rails appears narrower than one meter. However, the one-time existence of this spur cannot be doubted. It may have been taken up at an unknown date, in the early 1900's, as Hecker, just before the First World War complained that there was no rail link between harbour and station. It was certainly relaid by the British, first as a 600 mm., and then as a normal gauge track, after their
Rolling Stock and other Details

As for the rolling stock of the Jaffa-Jerusalem line, the locomotives had been built by the - still existing - Baldwin Locomotive Works of Philadelphia, U.S.A. The carriages had been manufactured by Messers Dyle and Bacalan, about which firm nothing is known, but it may have been Belgian. The total rolling stock seems to have included five locomotives, 15 passenger carriages, and 42 goods wagons. These details - taken from a German-Zionist periodical - have never been listed before. The passenger carriages, of a type suitable for the tropics, had open platforms at each end to permit movement between them. They were 2.50 meters broad, a respectable width, considering that the track itself was only of one meter gauge. Some of them made up the Kaiser's special train when he returned from Jerusalem to Jaffa in 1898 (106). There were two

(105) The Jaffa railway jetty is shown in Vilnay ("Tel Aviv"), p. 117. He dates the photo to 1893. The line down Bostrous Street is shown on a photo kept by the Zionist Archives in Jerusalem. The picture has certainly been tampered with, as it shows an out-of-scale car, and the shadows of passers-by point in different directions. The rail track shown, however, seems genuine enough, and whoever worked the picture over surely had no reason whatsoever to add a railway track. However the track seems to be of 600 mm., and the photo may date to after the British occupation, and before the track was taken up in the 1920's. The same picture is included in Ruppin's "Memoirs." Cp. also Hecker, pp. 768, 1540, on the absence of a rail link.

(106) There is a photo of the Kaiser's special train in the archives of the American Colony Photo Service, now in the possession of Mr. Horace Spafford Vester of Jerusalem. For details of the rolling stock, cp. note 108, below.
classes - first and second - to which a third class may have been added later, to fight the Jaffa-Jerusalem horse-carriages, that provided cheaper transportation than the two original classes. From contemporary accounts, it appears that the first class carriages had separate compartments, some of them reserved for the benefit of Turkish and Arab ladies. The second class carriages merely had benches, running along the sides. Lavatories seem to have been conspicuous by their absence, at least during the first years of the line's operations, sometimes, it appears, with awful results (107). The rolling stock, according to all observers, was relatively old and not in good condition, as attested by its many breakdowns, having been bought (partly or entirely) and probably very cheaply, from the one meter Panama-Colon railway. The original owner of the rolling stock (or parts of it) had been the French-financed Panama Canal Company of F. de Lesseps, that had failed in 1889 (108).

Contemporary sources agree that Navon's line had been not only cheaply, but also shoddily, built, the stock was ill kept, and travelling on it, at least in its

(107) Shvah, p. 118.

(108) Details about the rolling stock, and its origin, were taken from Eisenbahn Archiv, 1893, p. 931. The most interesting details, however, were found in Altneuland, 1904, p. 53. These were correlated with the photos collected by the writer. There are also details in Dunning (cp. bibliography), p. 10; Avitsur, pp. 6/86; Hecker, p. 1310; and Shvah.
first years of operations, was sometimes downright
dangerous. The staff of the line in 1904 included
103 persons. The locomotive drivers, and probably also
all the other employees in responsible positions, were
French and Italians. The station master in Jerusalem
was a M. Picquart. The treatment of passengers gave
reason for complaint (109). Though conditions of travel
may have improved as time passed, Herzl, as his Diaries
show, still seems to have regarded going up to Jerusalem
by train as exquisite torture.

Little as there seems to have been invested in the
line, its construction swallowed considerable amounts,
but sources remain divided as to what the actual sums
had been (110). The various views as to the cost of the
line were summarized by Hecker (111). According to his
own evaluation, building costs per km. came to 110,000
Francs approx. Other estimates quoted by him ranged from
97,000 to 121,300 Francs per km.

(109) For the sorry travelling conditions, cp. Avitsur; Grunwald, p. 252; Hartman, Z.D.P.V., 1894,
pp. 56-57; Hecker, pp. 797, 1310; Schick, Z.D.P.V.,
1893, p. 23; Shvah, 116, passim.

(110) For the financial background of the under­
taking that built the line, see above pp. 146-51, and
notes 74, 79, 82.

(111) Hecker, pp. 1058 and 1310-11. On this also
cp. Grunwald, p. 252, who made an apparent error in his
conclusion: building costs per km. - 5,900 Francs!
Right: Photo of 1893 showing railway jetty, with crane at its end, built into the sea at Jaffa. On the left the long-since demolished city wall. The spur from the jetty led to Jaffa station.

(Source: Vilnay/Album du Terre Sainte)

Boutrous Street in Jaffa, with track linking Jaffa station with landing place on shore. Date is unknown, but may be as late as 1912. The much-doctored photo (note outsize car, and different slant of shadows of persons, bottom left) clearly shows the rail track. The wide ties may denote a meter gauge line relaid to 600 mm width. (Source: Zionist Archives)

Pick, chapter III.
Completion of the Line and Reactions to it

The first working train seems to have reached Jerusalem on August 21, 1892. On September 26, 1892, the 5th of Tishrey 5653 by Jewish reckoning, between the Jewish holidays of Rosh-Hashana and Yom Kippur, there dawned the day on which the first railway in Palestine, and indeed in all of Syria, was inaugurated. The event was attended by much pomp and circumstance, and took place in the presence of Turkish dignitaries, some of whom had arrived in the country only for this occasion (112). The hero of the festivities seems to have been—very rightly—the "father" of the whole scheme, Yossef Navon, who in due course was decorated by the Sultan with the order of the "Mejidiyeh," and was later raised to the rank of "Bey"—henceforth to be addressed as "your excellency" (113). He seems to have received foreign decorations as well, and also was later made a "Chevalier," of the French Legion.

(112) There survived plenty of descriptions surrounding the inauguration ceremony. Cp. Grunwald, p. 252, and Schick, Z.D.P.V., 1893, pp. 22-23. The London Jewish Chronicle also noted the forthcoming event, on September 9, 1892, p. 9. What seems to be an authentic photo of the first train in Jerusalem on inauguration day will be found in Carpenter (cp. bibliography). Also cp. notes 117/118.

Of Honour (as noted before) for his services to France (114). Rejoicing amongst the Jewish community, especially in Jerusalem, was, of course, great. Progress of the work had been watched—probably anxiously—by the local Hebrew-Jewish press, the "Hatsvi," and the "Ha' Havatselelth," since its inception (115). The expected arrival of the first train, led the father of modern Hebrew, Eliezer Ben-Yehuda, to write an enthusiastic poem in honour of the occasion, though he laboured mightily under the handicap of having no word for "railway." However, he soon remedied the matter by inventing an appropriate term that is still being used today (116). Unfortunately, the archaic style of Ben-Yehuda's quaint poem bears no translation. However, his poem made it quite clear that to him (and others) the sight of the first train signified one more link with the outside world and the arrival of enlightenment in the Holy City.

The completion of the new railway and its first working weeks were watched and commented upon by the Jewish press, both local and overseas. The event was

(114) Cp. Grunwald, p. 252, who, p. 249 passim, lists a considerable number of sources dealing with Navon.


(116) Ibid. Having no biblical term available, he first used the word "Kittar," meaning simply "steam." He later settled on the term "Rakeveth," from "Rehev" (vehicle), which is still used today.
also marked by the gentile world (117). Most interesting were, of course, Jewish reactions, which, owing to the limitations of time and space, can be noted here only perfunctorily, though they certainly deserve more than superficial treatment (118). Particularly obvious was

(117) Eisenbahn Archiv and Z.D.P.V. in Germany, Annual Register, P.E.F. Quarterly and Statesman's Yearbook in Britain. Beyond doubt there were references to the line's completion in the daily press, at least in England and France. Regrettably, European dailies of that period are not available in Israel for checking.

(118) A perfunctory, and certainly not exhaustive, list of Jewish publications that dealt with the Jaffa-Jerusalem railway in its earliest operational stages would look as follows:

a) The Jewish Chronicle, London, September 9, 1892, p. 9;
b) id., October 28, 1892, p. 6, note;
c) Ha'Havatseleth, Jerusalem, no. 1, p. 1, 8 Tishrey, 5653;
d) id., no. 2, p. 9, 1 Marheshvan, 5653;
e) id., no. 3, p. 21, 7 Marheshvan, 5653;
f) id., no. 4, p. 25, 14 Marheshvan, 5653;
g) id., no. 6, p. 42, 28 Marheshvan, 5653;
h) HaMelits, St. Petersburg, 28 Av, 5652;
i) id., 22 Ellul, 5652;
j) id., 16 Heshvan (6.11.1892), 5653;
k) Ha'Or (supplement to "Ha'Tsvi"), Jerusalem, 6 Ellul, 5652. This issue contained Ben-Yehuda's above-mentioned poem, that was written in anticipation, one month before the arrival of the first train.
l) Ha'Tsfirah, Warsaw, no. 192, p. 828, 16 Ellul, 5652;
m) id., no. 208, p. 894, 8 Tishrey, 5653.

The Jewish Chronicle wrote, of course, in English. All the other publications were in Hebrew.
the pride of most correspondents in the fact that Progress had been brought to Palestine by a son of the Jewish people, and a native of Jerusalem to boot. Nor were rumours lacking - the various writers probably knew little of the line's financial straits - that the new railway was going to be extended to Jericho, and from there to the Golan, and towards the Haifa-Damascus railway (the Elias-Pilling-Hill project), that just at that time was getting into its stride (as described in the foregoing chapter). The extension of Navon's railway from Jerusalem, it was hoped, was going to benefit the Jewish holdings on the Golan - meaning the colony of Bnei Yehuda, mentioned earlier, that was just then in its death throes - and especially the settlements that, "God willing," would be established on the lands that the Baron Rothschild, the famous benefactor, held on the other side of the Jordan river.

However, comments on matters of lesser importance were not lacking either. Almost from the first, the Jerusalem periodical Ha'Havatseleth, after discussing the uses of the line for the transport of passengers, mail and goods, mentioned the necessity of having also a cheap third class on the trains. This wish was voiced, almost simultaneously, and independently, by the non-Jew, Conrad Schick, in the P.E.F. Quarterly in London. He also deplored the high fares (119). However, the operating

(119) Ha'Havatseleth, no. 2, cp. above list. Also Schick in the P.E.F.Q., 1893, p. 23.
company was out to make as much money as fast as possible. Since there were few goods to be transported from the coast, and none at all from Jerusalem, passengers were almost the only source of revenue. However, it should be noted that the line also had the exclusive right, or duty, to carry the Turkish mail to the coast. All the various foreign postal agencies operating in Jerusalem, on the other hand, still had to send their mail to Jaffa by road. From 1897, the trains even had a "Bureau ambulant Jaffa-Jerusalem," a travelling post office in a special compartment on the trains, whose cancelled stamps were to become of considerable curiosity value in the future (120).

The Line to Jerusalem in Operation

Some five weeks after the new line had been opened, there was a report - the first but by no means the last - of a train being late, on account of a locomotive breaking down. Some two weeks later a train was derailed at Ramle - less than two months after services started. This could, of course, have been caused by any big stone that may have strayed in between the light rails. Altogether it seems

(120) "Holyland Judaica Philatelist" (published in Redwood City, Cal.), September-October, 1975. The Turkish railway cancellations were also described, on various occasions, by the "Israel Philatelist."
that accidents, derailments and collisions with fellahs, and their beasts, that were not used to the modes of modern locomotion, were not uncommon, but lessened as time went by. Once a goods wagon - it was reported - tore loose at Jerusalem, and careened brakeless for 11 kms. down the line to Bittir, where it went off the rails (121).

During the first winter, 1892-93, services were suspended for five days, owing to the tracks being blocked by landslides caused by the rains (122).

Frequencies of service apparently changed, as schedules were adjusted to the needs of traffic. Trains, to judge from extant photos, were made up of 3-5 passenger carriages, and one goods, or luggage, wagon. When service started in 1892, there was one train a day in each direction, leaving Jerusalem at 06.30 in the morning and arriving (theoretically, going downhill was faster) at Jaffa about 09.00. It then returned from Jaffa at 15.00 (3 p.m.) and was due to arrive in Jerusalem at 18.00 hours (123). However, to judge from all accounts, trains were invariably late, covering the distance of 87 kms. in anything up to six hours. This led the Ashkenazi Chief Rabbi in Jerusalem, the venerable

(121) This bit of information was found in one of the contemporary Jewish periodicals, but regrettably the writer mislaid details.

(122) Avitsur, pp. 6/86.

Shmuel Salant, to publish a public warning in the press, only a few weeks after service started, not to use the Friday afternoon train from Jaffa, for fear of desecrating the Sabbath (124). Perhaps people thought that, since observant Jews were permitted to travel on ships on Sabbath (as there was no possibility of disembarking), the same rule applied to trains. Train schedules were obviously designed to enable travellers to leave Jerusalem in the morning and return the same day. This, of course, was an unheard-of advance in a country where getting to the coast by carriage, riding, or on foot, traditionally required 1-2 days. In passing, it might be mentioned the line's clocks, very important adjuncts to operations, according to Hecker, were set once a fortnight by the chronomètre of the French Messageries Maritimes' mail steamer when it arrived at Jaffa from Marseilles.

Service Schedules

The new line was, as far as can be ascertained, operated by the company that built it, the "Societe des travaux publics" (125). In order to make as much money as

(124) Ha'Havatseleth, 5 Marheshvan, 5653, p. 21.

(125) Grunwald, p. 252. As already noted in passing, above, the Eisenbahn Archiv, 1893, p. 932, said that the line was leased for its first five years against a yearly payment of 600,000 Francs.
possible, trains were run every day, regardless of religious holidays, Moslem Fridays, Jewish Saturdays and Christian Sundays (126). Since not all trains, at all times, took six hours to climb to Jerusalem, the mean travelling time up seems to have been $3\frac{1}{2}-4$ hours. Some 20 years after the line started operations, the average speed of trains was given by Hecker as 23 k.p.h. (127), this no doubt owing to the shoddy track and the decrepit rolling stock. At that time the number of daily trains was given as two, in each direction, probably because the number of travellers had increased. There was also by that time a nightly goods train, indicating more imports and commercial activities. Shick, in 1893, knew of no goods service, but did mention an "excursion train," leaving each Sunday from Jerusalem for Bittir, where people "took the air" (128). But a reliable contemporary railway publication, also of 1893, claimed that there were two daily goods trains (129). In 1907, Meisterman's French guide informed travellers that there was only one train daily, in each direction, and leaving Jerusalem at 08.00 o'clock in the morning.

(126) Not one of the contemporary sources, including guidebooks, like Baedeker, and later, Meistermann, failed to mention that trains were worked daily.

(127) Hecker, p. 1311.

(128) For source, cp. note 123. The writer distinctly remembers a World War II successor to Schick's 1893 "excursion train." This was one regular daily milk-and-vegetable 4-axled goods wagon, a suburban service, coming into Jerusalem from Bittir every morning, headed by a shunting locomotive.

(129) See overleaf.
(07.40 in the winter), to reach Jaffa at 11.40 (11.10 in winter), and one departing from Jaffa at 14.00 (2 p.m.; 13.20 in winter), to arrive in Jerusalem at 17.50 (5.50 p.m.; 17.10 in winter). Regarding the goods transport, the guide struck a happy mean, noting that a goods train left Jaffa every morning between 6 and 7 o'clock, in an emergency also taking passengers who could not wait for the regular afternoon train (130). However, Baedeker's guide, probably referring to about 1909-10, expressly referred to two trains daily, that took three hours and 35 minutes to get to Jerusalem (131). From all of which it can only be inferred that the Société des travaux was adept at changing its time-tables. Presumably, whenever necessary, special trains were run for pilgrims of all sorts, as was done for the Kaiser in 1898. There was at least one recorded instance, in early 1909, of a trainful of soldiers being despatched from Jerusalem to Jaffa because of demonstrations (of unidentified aims, Young Turk? Anti-Austrian?) that took place there (132).

(129) Eisenbahn Archiv, 1893, p. 931. (To previous page).
(130) Meistermann, 1907, p. 30.
(131) Baedeker, Mediterranean (cp. bibliography), p. 493.
(132) Pal., 1909, p. 28. The note in Pal., so early in the year, may have referred to events in 1908. Bosnia and Herzegovina were annexed by Austria from Turkey on 6.10.1908.
Fares Policy: Passengers.

As already noted, from the beginning of operations, and for quite a number of years, trains had only two classes. Indeed it is not entirely clear whether there ever was a 3rd class. In any case, the available 2nd class was equivalent to European 3rd, and not recommended for ladies (133). Prices, 15 Francs in the first class (one way) and five Francs in the second (one way), were unanimously regarded by most observers as exorbitant, and did not appreciably change, at least for the first 15 years (134). Special trains cost a minimum of 700 Francs (135). These prices, coupled with the notorious unpunctuality of the trains and the uncomfortable ride (136), did not gain the railway many admirers - except when they compared train travel with journeying on top of a camel. Apparently many, if not most, overseas visitors only took a one-way trip on the railway (there were for a long time no cheap return tickets either), and preferred to return by road, which also had the advantage of going through a different scenery, rather than by way of the not very exciting haul up

(133) Baedeker, p. 493.

(134) Cp. Baedeker, Eisenbahn Archiv, Meistermann, Schick, etc.

(135) Alt., 1904, p. 54.

(136) Hartmann, Z.D.P.V., 1894, p. 57; Hecker, p. 797.
(through the dreary Wadi Sarrar). Initially, the daily number of passengers seems to have been some 150-200 per train. Later statistics could not be found (137).

Goods Rates: Road Competition

While receipts from passenger fares were the line's mainstay, it did also hope to earn money by the forwarding of goods - a hope exemplified by the presence of 42 goods wagons. However, in this field the line faced difficulties - as mentioned before - owing to the fact that while some important imports like foodstuffs, building materials, and kerosene, though in limited quantities, were available for transportation from the coast, goods wagons had to return empty in the absence of exports from the hill country. As late as 1904, moreover, 12 years after the start of the service, prices for the movement of goods were regarded as inflated, especially for the types of bulky commodities that could not be transported by camels, whose weight limit was about 300 kgs. each (138). Transportation rates, however, seem to have been lower for goods that could be handled by the competitive road transport.

(137) Habéléts (cp. note 118), for November 11, 1892.

(138) Alt., 1904, p. 54; this source also holds good for the following details.
As Jerusalem grew, goods transport by rail seems to have increased gradually, and in 1904 the average goods train carried 40 tons at 90 Piastres each, at a time when 94 Piastres were worth 20 Gold Francs. In any case, during the first years of its existence the railway to Jerusalem did indeed run into fierce competition, both from horse-coach drivers, who underbid the line for passengers, and from camel owners, who underbid it for the transport of goods, and moreover could offer delivery "from door to door." (139) Just the same, competition arose about the same time in Syria, with the railway generally winning. In Palestine, on the other hand, coach and camel were helped in their fight by the bad service and high prices of their competition.

Financial Difficulties

According to a contemporary technical journal, in order to break even, the operating company would have had to raise 3,932 Francs a day, or some 1,435,200 yearly. (140) Owing probably, to a great extent, to the competition of road transport, the company failed to do so, and in early 1894, after only 1½ years of operations, it was forced to

(139) Avitsur, pp. 7/87; Grunwald, p. 252; also Shvah.

(140) Eisenbahn Archiv, 1893, p. 932. The yearly figure should read 1,434,680.
suspend services (141). A contributory reason for the failure was, no doubt, the fact that unlike other lines elsewhere in Turkey, in which the government had been actively interested, and which - possibly had the backing of foreign powers, the Jerusalem line had (as already stressed) no kilometric guarantee, which, no matter what financial results were, would have guaranteed it a fixed annual income (142). Building the line, according to the usually very accurate Grunwald, had cost nine million Francs, with another five millions going for the purchase of land (the company did not have a land grant either), rolling stock, and incidentals, a total of some 14 million Francs. Seeing that the owning company had raised between something less than 14 millions, to something under 15 million Francs - accounts differ - it is obvious that it could not stand operational losses for any length of time, and as its failure in 1894 showed - it did not (143). Nonetheless, some accommodation was reached with the debenture holders and in May 1894 the line resumed its operations (144).

(141) Avitsur, pp. 7/87; Grunwald, p. 252; Hecker, pp. 797, 1546; Ruppin, p. 308.

(142) As to the beneficent results of kilometric guarantees, cp. Karkar, pp. 110, 114, 116-121, and 132. A kilometric guarantee, once granted, meant that the Turkish government was going to pay a fixed yearly sum for each km. operated by a company, no matter what financial results were.

(143) For the line's total capital, cp. note 80, above, also Grunwald, p. 252, and Hecker, p. 1084.

(144) Grunwald, p. 252; Hecker, pp. 797, 1546-47.
The Line Getting into its Stride

Business seems to have improved somewhat in the following years, perhaps because of a general amelioration of conditions in Palestine, and an increase in the traffic in the harbour of Jaffa. The efficiency of the line may have grown as time passed, and there probably were stringent savings. In the long run its staying power was undoubtedly greater than that of its unorganized competitors. A table compiled about 1912-13 showed that the total income of the Jerusalem Railway increased from 519,409 Francs (ca. 5,970 Francs per km.) in 1895, to 1,388,755 Francs (cp. 15,963 Francs per km.) in 1911, though yearly dividends never reached 1%. (145) But in the twenty years between its collapse in 1894 and the outbreak of the Great War in 1914, the Jaffa-Jerusalem railway never again ceased running, and thus the vision of Yossef Navon seemed to have justified itself.

As for Navon himself, about 1894, when his railway got into difficulties, he left Jerusalem for France, ostentatiously to raise funds for his undertaking. He left a wife and

(145) Hecker, p. 1564.
children, a partnership in a bank, as well as honorary consulships for Belgium, Holland and Portugal. He never returned to Jerusalem before his death in Paris 40 years later, in 1934. (146)

(146) Grunwald, p. 253. Th. Herzl's characterization of Navon after he had settled in Paris will be found in note 73, above.
Title page of an Arabic manuscript praising the project of the Hejaz Railway. The manuscript was composed, about 1900, by Muhammed Arif ibn Ahmad al-Munir al-Husayni'l Dimashqi, a Turkish official in Damascus. The name of the work was "Al-Sa'ada al-namiya al-abadiya fi'l-sikka al-hadidiya al-Hijaziya" ("The Book of the Increasing and Eternal Happiness—the Hejaz Railway").

The manuscript—never published—contains 157 hand-written pages in literary Arabic prose, with a table of contents in Turkish. It is being kept in Istanbul.

Pick, chapter III. (Source: Landau)
The Concept of the Hejaz Railway and its Background

Of the railway lines that came to operate in Palestine, Cis- and Transjordanian, during the period 1892-1914, by far the most important, historically and from the point of view of extent, was the Turkish-owned Hejaz Railway (HR in the following pages). This linked Damascus and Syria as a whole, with the Hejaz and Medina in particular, though it never reached Mecca, as had originally been envisaged. The HR also linked Damascus with Haifa, and the Mediterranean, by means of a branch, that joined its trunk line at Dera'a (the Biblical Edrei). The HR came to be the only state-owned line the Ottoman Empire had in the period under discussion. Its financial basis was certainly Turkish, its concept was almost certainly Turkish, its execution was to a great extent German, and personified in the figure of its chief-engineer and planner, the Saxon Heinrich-August Meissner (1). As will be seen in the following pages, the German share in the construction of the HR, as represented by

(1) The person of Meissner (later Meissner Pasha), will be described in due course. He will also figure very prominently in Chapter IV, dealing with his World War I activities in Palestine.
Meissner was not much less than the much more publicized German share in the building of the Baghdad Railway (2).

The ideas underlying the concept of the HR can only be guessed at, as the motives for building this line with German help may (or may not) lie buried in the archives of the defunct Ottoman Empire. But it can be regarded as a reasonable working hypothesis that the "father" of the HR was His Majesty, the Sultan Abdul Hamid II (1842-1918; reigned 1876-1909). On May 1st, 1900, he issued an "Irade" (Imperial Rescript), announcing the proposed construction of the railway, to celebrate the forthcoming 25th anniversary of his accession to the throne (3). The man to whom fell the main task of furthering the affairs of the new line in Constantinople, and at court, was Izzet Pasha, a native of Damascus, who had grown up in Syria. He functioned as the Sultan's second secretary, and was to share his fall some years later. Izzet Pasha was then, and

(2) The Baghdad Railway was intended to be for the easterly, Mesopotamian, reaches of the Ottoman Empire, what the HR was intended to be for its south-westerly possessions, namely the Hejaz, and, in a general way, Arabia as a whole. The Baghdad Railway, and the German share in its construction, have been the subject of very numerous articles and books. Their listing would go beyond the requirements of this survey. Its most salient features can be found in Kankar, p. 120 passim, and pp. 136, 141, also in Woods p. 36 passim, also in Hecker, Issawi, and Jastrow (cp. bibliography).

(3) There are many references to Abdul Hamid's paternity of the HR. See Auler, p. 24; Blanckenhorn, p. 8; Hecker pp. 789, 1063 (cp. bibliography), and elsewhere.
later, credited by many with having been the man who had suggested to the Sultan the building of the line in the first place (4). However, in view of Abdul Hamid's well-documented autocratic tendencies, it is somewhat unlikely that he would have taken over, in toto, anybody's ideas—even those of his second secretary—if he had not been willing to do so. It must be remembered that railway development had already been relatively lively in the early years of his reign, i.e., since 1876 (5). From this fact it might be learnt that Abdul Hamid was alive to the possibilities that the building of railways would open up for his empire. Also, as noted unanimously by observers who wrote as much as fifty years apart, the Sultan was increasingly susceptible to German influence (6). This found expression in the appointment of General Colmar von der Goltz, in 1883, as the reorganizer of the Turkish Army. In 1888 there began the German onslaught on the railway building field in Turkey.

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(4) Auler, pp. 24-25; Blanckenhorn, p. 8. Hecker, p. 1065, flatly states (possibly following Blanckenhorn) that the concept of the HR originated with Izzet. Alt. 1904, p. 220, also said that Izzet Pasha was the originator of the line, quoting "Annals de Géographie" (15.5.1904), as source. Alt., 1905, p. 278, quoted the German "Kölnische Zeitung" as to Izzet Pasha's vital contribution to the building of the line.

(5) For details of the railway kilometrage built in Turkey after 1876, cp. Hecker, pp. 1076-1078.

and by 1893 a line had been built—some 580 kms. long—from Constantinople, via Eskishehir to Angora (Ankara). By 1896 the branch Eskishehir-Konia had been completed by the Germans, later to become part of the Baghdad Railway (7). These schemes, that actually came to fruition, were probably enough to convince the Sultan of German capabilities in the field of railway construction. In 1899, one year before the initiation of the HR, a preliminary convention was signed by the Porte and the Deutsche Bank for the building of the Baghdad Railway (8). This was followed in 1900, as noted above, by the Irade announcing the project of the HR. A year later a German was appointed to build the line.

The concept of the new line was ostensibly very simple, as initially published. Intended to run, more or less, alongside Trans-Jordanian Palestine's old caravan route leading, roughly north-to-south from Damascus to Arabia, the new railway was billed to be chiefly of religious importance. It was to link Syria with the Holy Cities of Medina and Mecca in the Hejaz. Incidentally, it was also to provide more secular access to them from the rest of

(7) German railway activities in Turkey were described in extenso by Becker and also by Karkar. Issawi and Poenicke also dealt with the subject, and also Woods.

(8) Karkar, p. 122.
the outside world. But its declared main aim was to ease travel for all the devout Moslems from Syria--5-6,000 of them(9)-- from Anatolia, Northern Mesopotamia, Asiatic Russia and the Balkans, who annually faced the rigours of a 40-day march, and the threat of Bedouin attack (when not bought off), over a route some 1,500 or more kms. long, in order to carry out their obligatory devotions at the sacred shrines. It was also quite possibly expected that the new line would increase the number of prospective pilgrims and also draw people who would otherwise have gone by boat to Jidda and thence to Mecca. The new railway was quite certainly expected to increase the religious standing of the Turkish Sultan, in his capacity as the Khalif of the Moslem world as a whole (10).

The HR, having been touted as a religious undertaking, was to be financed purely by Islamic means, i.e. by voluntary contributions of the Moslem world. In view of

(9) Auler, p. 23

(10) The average overall number of pilgrims engaged in the Haj was give by Auler p. 23, as 30-60,000 annually. There were also different estimates, as the number of "Hajis" in various years was probably never definitely established. Contrary to Auler's low figures, the number of the Syrian pilgrims alone was at time estimated as between 10,000 and 20,000.

There are references galore (apart from those in Auler) to the religious aspects of the HR. Cp. Alt., 1905, p. 350; Blanckenhorn, p.4; Hecker, p. 771; Ruppin, p. 299; also Guthe, and Pick. For the benefits of the HR, as seen by a contemporary--Syrian/Moslem--observer, cp. Landaus.
the lengths to which Abdul Hamid had to go to finance his earlier Anatolian lines and also the proposed Baghdad Railway—looking for foreign backers, distributing liberal concessions that might have had political strings tacked on to them, and acquiescing in kilometric guarantees for his foreign-owned lines—this proposed new mode of financing the HR by means of religious contributions was nothing less than a stroke of genius. It was to liberate the new line from foreign financial tutelage (and political dependence), and was to assure it—as indeed it turned out—of a steady flow of money. It was also to save the Turks from the necessity of paying a high rate of interest on the funds used for construction (11).

However, it probably soon became evident to observers that the HR was to have some more uses, besides being a means to facilitate pilgrimages. It had at least some economic aspects. Once built, it could serve to transport the produce of the Hauran, and of the more southerly Ajlun—namely wheat. It could serve as a means to develop Transjordania's economic life, rather as the transcontinental railways in North American had done, and as the Trans-Siberian Railway precisely at that time was intended to do,

(11) Details regarding the financing of the HR will be found further on in this chapter.
though the area affected was of course smaller (12). Far more important than the economic aspects were the potential military uses of the proposed line and they were to come to the fore gradually, when the line was actually being built. The military aspects were inextricably mixed up with political ones. No attempt will be made here to separate them, and they will be described as a unit in the following pages.

It has already been noted in the foregoing chapter that the original concept of a railway to link Syria with the Hejaz seems to have originated with the Turkish Major Ahmed Rashid in the early 1870's. He had had purely military benefits in mind, namely the suppression of rebellion in Yemen. These potential benefits were, of course, as obvious in 1900 as they had been some 30 years earlier, but it was an interesting fact, though not much commented upon, that in its early years, while the line was being planned, and afterwards, initiated, its military value was a subject practically unmentionable. There were good, and mainly financial and political reasons, for not mentioning the military uses of the HR. Financial contributions towards

(12) For the potential, and afterwards actual, economic aspects of the HR, cp. Alt., 1906, p. 83; Auler, pp. 63-64; Blanckenhorn, p. 5; Poenice, p. 12; and Ruppin p. 354.
the construction of the line were going to be solicited from all over the Moslem world, also including countries under British, French, and Dutch rule. Asking European colonial powers to permit their subjects to contribute funds to a project that would have furthered Turkish-military power, would not have been a clever thing to do. But, as time passed, and the line grew, references to its military aspects went on increasing. In 1906, the German officer in the Turkish service, Auler Pasha, who wrote the most important description of the HR in its early stages, innocently, but significantly, described its transport capacity in terms of troop-trains and military movements (13).

As already stated above, military and political considerations were inextricably mingled in the concept of the HR. As for its political background—a very short survey of Turkey's international status at the beginning of the 20th century, will serve to stress the potential importance of the new line.

The decline of the Ottoman Empire had become apparent, in the 18th century, if not earlier, and had been continuing

(13) Auler, pp. 54-55, 63. Further references to the military aspects and value of the HR, ranging in date from 1906 to 1914-15, will be found in the following sources: Alt., 1906, p. 84; Hartmann (Mekka-Bahn), p. 13; Hecker, pp. 785, 1073, 1552-53; Pal., 1907, p. 39; Rohrbach (Bagdad Bahn), pp. 13, 14, 29; Ruppin, p. 299; Woods, p. 52. Many other references will be found elsewhere.
ever since. The progressive dissolution of the "Sick Man of Europe" had become even more apparent after Abdul Hamid's accession in 1876, and had assumed catastrophic proportions after 1878 (14). The personal status of the Sultan, both as the sovereign ruler of the Ottoman Empire, and as the Khalif of the Moslem World, had suffered almost fatal diminution. A review of railway developments in Turkey will however show that while the Empire was in the process of dissolution towards the end of the 19th century, Abdul Hamid seems to have been quite alive to the importance of rail links (15). It is reasonable to suppose that he was also aware of the importance of railways as a means towards diminishing the centrifugal forces that were working inside the Empire. There is very little room for doubt that the intention to stem the break-up of the Empire (plus other factors) led to the building of Turkey's most famous rail tracks, the Baghdad Railway and the Hejaz Railway.

(14) Cp. Gilbert, map. 7, "The Decline of the Ottoman Empire", and also map 13, "The Growth of Balkan Independence". Areas lost to Turkey after 1878 included: Ardahan and Kars in Eastern Anatolia, 1878; Bosnia and Herzegovina, 1878; Bulgaria, 1878/85; Cyprus 1878; Egypt, 1882; Northern Greece, 1881/97; Serbia, 1878, Rumania 1878; Tunisia 1881, etc.

(15) Abdul Hamid's willingness to have railways built has already been noted at the beginning of this section. Cp. note 5, and also Karkar. Cp. also K. Grunwald's piece of research on "Türkenhirsch", the story of the Jewish financier Baron M. de Hirsch, who linked Constantinople by rail with the rest of Europe. His trunk line was completed in 1888.
A glance at the map will show that after the loss of most of the Balkans and of most of the southern littoral of the Mediterranean (the loss of Tunisia in 1881 and of Egypt in 1882 was merely a continuation of the process that started in Algeria in 1830) there were two areas the Turks would have wanted to hold on to. One was Mesopotamia and the other—Syria/Palestine and their continuation along the shores of the Red Sea, towards the Yemen, including the Holy Cities in the Hejaz. The center of Arabia at that time was, for all practical purposes, a no-man's land into which the Turks did not care to venture. But it could have been held in check and subjugation of sorts, by the two branches of an Anatolian Trunk line. One of these two branches would encompass Arabia from the north and east, going in the process, towards the Persian Gulf. The other would envelop Arabia roughly from the west and south going towards Aden. One of these branches was to become the famous Baghdad Railway that by 1900 had already been talked about for a number of years and about which many descriptions were to be written (16). This branch of the,

(16) As already noted, articles and books about the Baghdad Railway are far too numerous to be listed. The following is only a selection. Details will be found in the bibliography. Articles: Hecker; Wolf; Woods. Books: Bode; Chapman; Earle; Hübner; Jastrow; Poenick, Rohrback; Rothmann. Cp. also note 2.
Turkish soldiers laying the track of the Hejaz Railway somewhere in Transjordania. Note total absence of mechanical equipment. Party on right is carrying rail on shoulders. Also on right: Officers on horseback, and sentry at attention.

(Source: Auler)

Right: The entrance to the only tunnel on the Hejaz Railway main line, at Kasr, south of Amman.
Note small locomotive with side-tanks of work train. It is hauling behind it a flat-car with two large water-containers. Man on top of first one holds water-hose.

(Source: Auler)

Pick, chapter III.
at that time already partially built Anatolian Trunk line, was to lead to the Persian Gulf, and had a capability of being extended through Persia and Baluchistan to India. From its inception it had great political, strategical and commercial implications, that destined it to become a serious source of dissension amongst the great powers. The problem of financing it was not a matter of consequence. The only problem was who was to pay for its construction. As it happened, the Germans were to win out. The second of the two branches of the Anatolian trunk line was to become the HR, which, from a commercial point of view, led exactly into the wilds of nowhere, and which, therefore, none of the great powers was anxious to finance. No weighty books (apart from short descriptions) were to be written about it either.

The Wider Background

It might be noted that, unlike the Baghdad Railway, that was to become a direct continuation of the Anatolian trunk line, the HR could not be built as a continuation of the Anatolian main line from Constantinople. Its starting point would have had to be Damascus. The link between it and the Anatolian main line would have had to be provided by the French rail network in Syria, that by the terms of its exclusive concessions had the sole right of providing a connection (at that time not even built) between Damascus
and the North. Though the French had every reason to extend their rails in Central and Northern Syria, they had no incentive to build towards the desolate south that promised no returns, and which would ultimately have led any line built by them into areas in which Christians were not at all welcome. Though the French, for a variety of historical reasons, to 1914 were to have a monopoly on railways in Syria, the very idea of their building a French line into Arabia never cropped up. Even after they had built their Hauran line in 1894, they never had any intention whatsoever that could be documented of building any further south than Meserib. Thus from the very dawn of its concept, it was clear that the HR had to be built by the Turks alone.

However, financial considerations apart, the project of a HR held political and strategic advantages for the Turks that rivalled, and possibly overshadowed those of the Baghdad Railway. Mesopotamia under Turkish rule had become a quiescent backwater, with no local political movements, or local dynasties, for that matter, to disturb its tranquility. Syria, on the other hand, had become affected by foreign influences, like the Egyptian occupation of 1832-1840, that had resulted in the forced grant of autonomy to the Christian, western-oriented, Lebanon. These events, and other less apparent forces, had led to an Arab political awakening that threatened the fabric of
Turkish domination (17). The building of the HR—and of its French links to Anatolia proper—would undoubtedly contribute in emergencies towards keeping Syria well garrisoned and submissive, as the envisaged railway would enable troops to reach without delays trouble spots like volatile Damascus.

But keeping Syria and its Moslem majority, and its minorities like the Druzes, docile, was only one of the problems that the building of the new railway could have solved. Possibly of even greater concern to the Turks was the task of keeping the Hejaz and its independent-minded Sherifian-Hashemite Dynasty loyal. While the Hashemites were merely suspect, the Hejaz itself, in a more tangible way, was in a permanent state of uproar (18). This was a state of affairs the Sultan in his capacity as Khalif, and responsible for the Holy Cities, could not possibly afford to overlook. This was where the prospective HR came in, as a means of strengthening the links between Constantinople and Medina and Mecca, for the benefit of Abdul Hamid as

(17) There are many descriptions of the Arab renaissance, the classic one amongst them being G. Antonius' "The Arab Awakening" of 1938. Cp. also Glubb, p. 117 passim.

(18) Reference to the permanently disturbed state of Arabia abounded in contemporary sources, such as Auler, p. 62, who mentions "almost yearly disturbances", and Hecker, p. 1552, and also in Zionist publications. There were also relevant references in the British "Annual Register." Cp. also the article "Hijaz Railway" in the Encyclopaedia of Islam; also Poenicke, etc. See also following note.
the spiritual head of Islam. Incidentally, the proposed railway would also serve to keep in check the practically independent, tribes of North-Central Arabia in the Nejd, whose puritan Wahabis regarded the Turks as "unbelievers" any way, and as a legitimate object of attacks. Apart from the necessity of imposing order in Syria, the Hejaz and Nejd, the Ottoman Empire also had to cope with almost permanent trouble in the Yemen, where a large permanent garrison had to be maintained (19) in order to keep pacified the local Zaidi dynasty. This was politically practically independent, and from the religious aspect belonged to the Shia branch of Islam, while the Turks were mainly Suunis. All these facts, while not strictly referring to the areas being surveyed, should yet be borne in mind when dealing with the background of the HR in general. While at various times there were to crop up plans--unrealizable, and never realized--to extend the HR from Mecca to Sana'a the capital of the Yemen, and thence to Aden (20), the line, even if only completed to the Hejaz, was sure to become an important factor in knitting Western

(19) Cp. Ops., I, pp. 208-09. Here there is a concise description of the chronic unrest in Arabia, including the Yemen, in a short evaluation of the importance of the HR on p. 211. Also cp. Auler p. 62-63.

(20) Ops. I, p. 211. note. More especially, Hartmann (Mekka-Bahn), pp. 7-8. Other references to a possible rail link with the Yemen, might be found elsewhere in contemporary sources.
and Southern Arabia, to the main body of the Empire—as it indeed later did. After the HR had been built down through Transjordania to the Hejaz, Turkish troops could, in an emergency, be marched south from Medina, or could be transported by sea from Jidda to the Yemeni coast. No doubt, all these political and strategic duplications of the line were not lost on the Sultan, and contributed mightily to his decision when he issued his "Irade" in May 1900.

As it turned out, the proposed line to the Hejaz within a few years came to fulfill some of the hopes the Sultan may have had regarding it. It did not come up to the most sanguine expectations General Auler Pasha—already mentioned above—may have had about it. It did not, as he had expected, enable the Turks to transport three infantry battalions, 2,400 men and their equipment, from Damascus to Ma'an in southern Transjordania in one day over some 450 kms. (21), nor did it shorten the travelling time from Constantinople to the Hejaz to 6 days (22). What it was to achieve in fact, in 1905, five years after the Sultan's Irade, was to move no less than 28 infantry battalions from Damascus, at previously unheard of speed, to quell one of the periodical insurrections in the Yemen. As the line at the time was only partially ready, each

(21) Auler, p. 54.
(22) Auler, p. 63.
battalion rode by train in 1-2 days from Damascus to Ma'an. From there it marched in 4 days to Akaba. There it embarked, to reach to part of Hodeida, in the Yemen, after a sea journey of 5 days. The whole journey from Syria to Southern Arabia lasted 11 days—by-passing on the way the British-controlled Suez Canal (23). There were to be other instances in later years of the military-political uses of the HR that might buttress the assumption that the line was not conceived for the use of pilgrims only.

Finally, mention should be made of a threatening factor that may, or may not, have influenced the Sultan in 1900 when he decided to build the line. It certainly was forcibly brought to his attention in 1906, at the time of the Akaba Crisis, of which more later on. This factor was the latent British threat to the integrity of the Ottoman Empire. This threat had expressed itself in the British occupation of Cyprus and of Egypt, in a creeping encroachment in the Sinai peninsula east of the Suez Canal, in the British foothold around Aden, and in pressure around the head of the Persian Gulf. The British threat was usually quiescent, and came to the fore mostly through the pressure of circumstances, but it existed. It found its most tangible expression in the de-facto protectorate over the Suez Canal, that was in no practical way mitigated by the

(23) Auler, p. 55.
by the Canal Convention of 1888, assuring everybody unimpeled passage. The British control of the Canal could theoretically turn into a stranglehold any time Turkey wanted to move forces from the Mediterranean into the Red Sea without tacit approval from London. Thus the HR, in 1900 or later, would have appealed to the Turks as a dry-land by-pass of the Suez Canal, and an instrument of robbing Britain of the possibility of pressuring the Porte into submission if occasion arose. Conversely, should Turkey in a remote contingency have to face Britain, the HR would be of use to transport troops from Anatolia and Syria by way of Akaba towards the Sinai Peninsula, with all the implications for the defence of the Suez Canal. Furthermore, the line, wherever its terminus came to be, could be used (as was done) to bolster up the Turkish garrison in the Yemen, thus possibly enabling it to carry out an attack on British-held Aden. In other words, the building of the HR would make it a potential threat to Britain at both exits of the Red Sea. This eventuality was indeed to come to the fore in the First World War, when there was indeed a Turkish attack on British outposts at Aden (24).

(24) Ops., I, p. 221, passim
As already noted, no mention of the political and strategic implications of the HR was made by the Turks, who presented the line as a purely religious undertaking. Outside observers—as far as can be made out—seem to have accepted such a description of the line, perhaps because they did not bother to inquire into the project more closely. They did not think the Turks capable of building such a line—a view that will be touched on later. Only when the line actually came to be built, its implications became clear with a vengeance, and were—only then—widely commented upon (25).

Concluding this review of some of the background for the Sultan's decision to build the HR, it should be pointed out that the lines' background has been painted with some wider strokes than were warranted by the boundaries set for this inquiry in Chapter I. This was done because

(25) As for the emergence, after 1900, of the political and military aspects of the HR, cp. notes 18-23, in which the statements of Auler figure prominently. Further sources that should be mentioned: Blanckenhorn pp 4-7, (who stressed the importance of the line as competing in all respects with the Suez Canal); Hartmann, pp. 13, 23 (in addition to pages 7, 8 already mentioned); Hecker, pp. 128-129; Rohrbach, p. 27. Issawi and Karkar also referred to these aspects, though many years later. As light relief, of sorts, it must however be noted that as late as 1906, Alt., p. 238, contrasted the strategic and commercial importance of the Baghdad Railway, with the "purely religious" (!!) purposes of the HR. However, here too, the writer mentioned the usefulness of the line for the suppression of rebellion in the Yemen. He also referred to British nibbling at the edges of the Ottoman Empire.
the HR was the first amongst the railways actually built in Palestine that had truly international implications. It perhaps would never have been built—and by the Turks themselves, an event without precedent—and it certainly would not have been pushed forward with the determination actually devoted to it, had the line been intended for local use only. Thus, some space had to be spared—for once—for a description of the line's concepts that overstepped the confines of Palestine proper. Failing this, the line and its building could not be seen in their proper focus. Finally, it must be added that the HR as envisaged in 1900, and as later built, was a latter-day successor, almost step-by-step, of the biblical "King's Highway" (Derech Hamelekh) and of its successor the Moslem "Darb el Haj" (Pilgrim's Road). These ancient highways were not local roads, as pointed out in Chapter I; they were international highways, and part of the system of communications that made Palestine a "Bridge". Their importance could not be gauged except by a reference to their terminals in Syria (and possibly Asia Minor) and in Arabia—as was done in Chapter I. Much in the same way, the concept underlying the HR could not be properly outlined without referring to its implications outside Palestine, as was done above.

Doubts and their Refutation

The very idea of the Ottoman Empire building and operating a state-owned railway met only disbelief, or
downright ridicule, from outside observers (26). People were not inclined to believe that the notoriously inefficient, slatternly, and technically backward Turks, would be able to carry through, or even start building, a 1,700 kms. long railway from Damascus to Mecca, and that in a geographical context that ranged from neglected and partially depopulated areas to downright waterless desert. Disbelief in the capacity of the Turks seems to have been so abysmal, that the proposed means of financing the line—not by means of the usual concessions and kilometric guarantees, but through all-Moslem donations (as noted above)—did not seem to have even formed the subject of discussions. It was obvious to observers that in view of the ingrained predilection of the Turks for graft and peculations that had become a tradition, any donations that came in would inevitably disappear before being put to the use for which they were intended. There was no reason to expect that what probably was the greatest state-initiated project ever undertaken by the Ottoman Empire would ever come to a successful conclusion.

In the event all observers were confounded. The HR was begun, it was financed, it was completed (at least as far as Medina) and it was put into operation with

(26) As for the outside world’s disbelief in Turkish capabilities: Cp. General von der Goltz Pasha's introduction to Auler; Blanckenhorn, p. 3; Guthe, p. 28; Hecker, p. 1063; Issawi, p. 252; Pal. 1908, p. 128.
The railway network of Palestine about 1907.

Note the rail-gap between north and south, and the proposed Afule-Nablus-Jerusalem branch of the Hejaz Railway, that was never completed between Nablus and Jerusalem. In the top right-hand corner of the map: The French Damascus-Meserib line, and, paralleling it, the competing Damascus-Dera'a section of the Hejaz Railway.

Source: Blanckenhorn

Pick, chapter III.
great speed. Having been finished, it probably was the only railway in the world that had no loans to pay off, no interest payments to consider, and no debt at all. It became probably the biggest, and perhaps the only, Turkish state-initiated undertaking ever successfully concluded. Incidentally, the HR became the only tangible expression the idea of "Pan-Islamism" ever had (27).

Building the Hejaz Railway - A General Survey

As far as can be ascertained, the Turk's lost no time in implementing the Sultan's Irade of May 1900. In the autumn of that year, on September 1st, to be exact, work was started. The date was that of Abdul Hamid's accession (28), and in the following years was to mark the opening of the various sections of the line, ending with the inauguration of the last section of the railway to Medina on September 1st, 1908. A "General Board" for the construction of the HR, acting under supervision, or patronage, of the Sultan, came to hold sittings at the Yildiz Kiosk in Constantinople. The Chairman of the Board, actually or possibly nominally, on account of his other tasks, was the Grand Vizier. Members included Izzet Pasha (the


(28) Cp. Hecker, p. 1064; and especially, Pal., 1907, p. 278.
driving force of the whole undertaking), the Minister of Public Works, and other dignitaries (29). The General Board seems to have been active until about the fall of Abdul Hamid in 1909, and supervised the building of all the HR, except for its branches built after the Sultan's deposition (30). Obviously, the General Board could hardly direct day-to-day activities on the line from Constantinople, and therefore a local board was appointed with its seat in Damascus to supervise actual building. The head of the local board, apparently with the title "Director-General", became Marshal Kiazim Pasha, a professional soldier, and the commanding officer of the 5th Army Corps stationed in Syria. This curious two-hatted appointment that went to Kiazim throws some light on the links that existed between military considerations and the HR, even at that very early stage. Kiazim Pasha, whatever his military merits,

(29) Cp. Poenicke, p. 2, quoting the "Frankfurter Zeitung" of December 10, 1900. For this, and additional details, see also Hecker, p. 1064; Alt. 1904, p. 220; and Alt. 1905, p. 278 and also pp. 350-351.

(30) It seems that some time after the Young Turk Revolution, instead of the Grand Vizier, or the Ministry of Public Works, the Ministry of War became responsible for the HR. It is quite certain that after 1911 the Evkaf (Wakf) Ministry, that controlled the administration of religious holdings, took over the line, in order to mark it as religious property. This was probably done in order to keep it out of the clutches of unbelievers—presumably the French. The French, as will be detailed later, shortly before the Great War, tried to take over at least the profitable Haifa-Damascus line of the HR. Exact details, however, remain obscure. Cp. Hecker, p. 1073; Poenicke, p. 13; Ruppin, p. 300.
certainly did not have the organizing capabilities for building a railway (31).

There is reason to believe that the sanguine intention of the Turks was to use for their very own railway, not only local equipment exclusively—except for locomotives—but also to use only local manpower, exclusively Moslem (32). In the event it seemed to become very clear at the outset that Turkish-made rails were unuseable, and wagon production was limited to a few special vehicles, of which the most note-worthy was a "mosque-wagon", fitted for ritual ablutions and, according to one source, provided with a collapsible minaret, 6 feet high (33). As for the all-Moslem work force,

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(31) Kiazim is mentioned by Poenicke, p. 3, and also figured in reports of the Jewish Zionist Press. Auler, p. 26, characterized him as a forceful organizer, but from his photos he seems to have been an old man. Cp. also Blanckenhorn, p. 9. Kiazim was replaced about 1902—perhaps temporarily—as he still figured in the opening in the rail section to Ma'an, acting as driver of the locomotive hauling Auler's train. According to Poenicke, p. 4, he was replaced by Nazim Pasha. Alt., 1905, p. 278, mentioned an "executive commission", headed by Reshid Bey, Vali (governor) of Beyrouth, and including Nizam ed-Din Bey, Kaimakam (lower-rank governor) of Haifa. Perhaps this committee, also engaged in building the HR, was sort of for lower-ranking officials. It was never mentioned again.

(32) For the Turkish intention to manufacture rails and wagons, cp. Hecker, p. 1064. For the intention to use only local manpower, Alt., 1904, p. 220.

(33) For the inability of the Turks to produce rail equipment cp. Hecker 1064. For the "sumptuously outfitted" mosque-wagon, see Alt., 1905, p. 307; Auler (1906) p. 43, and Auler (1908), p. 63. The minaret was mentioned by Carpenter, p. 242. There is some reason to believe, that the mobile mosque was, in British mandatory times, turned into the state-wagon of the Emir (King) Abdallah of Transjordan. Abdallah's state-wagon still exists (minus wheels) on the grounds of the Israel Railways workshops in Haifa Bay. It was there seen by the writer in 1975, serving as the synagogue of the workers in the workshops.
this seems to have been divided into two categories: professional and non-professional. For the problem of obtaining unqualified workers, an ingenious solution was found. This was the employment of army troops, on a large scale, a procedure that will be discussed later on. But as for the professional manpower needed—the entire lack of engineers with railway-construction experience in Turkey, threatened to put an early end to the whole HR scheme.

This state of affairs was forcefully characterized by a despatch to the German "Frankfurter Zeitung" of December 10th, 1900. The despatch described the utter helplessness of the Turks in the face of the necessity of taking practical steps to start building their line—as decided on by the Sultan (34). Thus, the Turks, willy-nilly, had to turn to foreign technical consultants. One of them was the German expert, Kapp von Gültstein, who in 1901, following a direct request of Abdul Hamid, and after a field trip, prepared a memo for the Sultan, outlining a proposed track of the HR, in its first sections (35). In the same year, 1901, 

(34) Also, cp. Poenicke, p. 2.
(35) Pal., 1907, p. 278. Kapp prepared another memo in 1905 and seems to have given important counsel while the HR was being built. When called on for advice by the Sultan, in 1901, he was engaged in building the Rayak-Hama railway for the French, though he was German. He is variously described as "Geheimer Rat" (Secret Counsellor) and "Geheimer Baurat" (Secret Construction Counsellor), which was a high rank. He was also mentioned by Hecker,, p. 1062, and Auler, pp. 47, 66. His name was variously given as Kapp, von Kapp and Kapp von Gültstein.
an Italian engineer, by the name of La Bella, was hired, apparently as chief construction engineer. He fell down on the job and was replaced by the German Meissner (36). Details and dates regarding La Bella are lacking and there are indications that his successor had been decided upon already late in 1900.

On December 6th, 1900, the German Ambassador at Constantinople informed his Foreign Office in Berlin that the German engineer, Heinrich August Meissner, had accepted the Turkish government's offer to act as chief engineer in charge of the construction of the HR (37). As will be detailed in this, and in the following chapter (dealing with railway construction in the First World War), the appointment came to be of considerable significance in the fortunes of the Near East. At the time it occurred, in 1900, it marked the extension of German influence—though personified by one man only—into a part of Turkey where it had not been obvious before. Until comparatively recently, very little indeed was known about Meisser, far less than about the Jaffa-Jerusalem line's Yossef Navon. His biography, and this a spare one, was only published in 1958. In view of the many references to his activities in this, and in the following


(37) Poenicke, p. 3.
chapter (IV), the recording of some details about this remarkable man, will not be out of place (38).

Heinrich August Meissner was born 1862 in Leipzig, Saxony, and died 1940 at Constantinople. He grew up in Dresden and finished high school at 19, in 1881. In 1885, he graduated as Bau-Ingenieur (building engineer) from the Technische Hochschule (Technical College) in Dresden. He first went to Turkey in 1885, at the suggestion of an uncle, who worked in the Turkish capital. He definitely returned to Turkey in 1887, having in the meantime taken courses in Turkish, and amassed some practical experience in Germany. Railway construction in the Ottoman Empire at that time was in a process of expansion and many new lines were envisaged (39). Meissner, on returning to Turkey, became engaged in building railways chiefly in the Balkans, under the supervision of the expert, von Kapp—already mentioned above as the man who lent his expertise to the

(38) Biographical details about Meissner have been taken mostly from Poenicke's short study of the man and his work (cp. bibliography) published in 1958. It might be noted that no details whatever about Meissner, or even his name, could be found in any German encyclopaedia, contemporary or later, or in any technical publication or biographical handbook. Meissner himself does not appear to have published anything, as, despite diligent searches, his name could not be found in the catalogues of German libraries.

(39) About railway construction in Turkey in the 1880's, cp. Karkar, Grunwald ("Turkenhirsch") and Issawi, pp. 91-93. All these sources are listed in the bibliography. Issawi mentions the impetus given to railway construction in Turkey at that time by the German (he may actually have been Austrian) Wilhelm von Pressel. Also, cp. Poenicke, p. 2.
Sultan (40). Meissner gradually worked his way up to senior engineer, chiefly apparently, because he displayed iron will power, acquired fluency in the Turkish language, adjusted himself to conditions in the country, and got along well with his superiors and subordinates. At the end of 1896, Meissner was posted to Constantinople as "scientific chief for railway construction" ("wissenschaftlicher Leiter für Eisenbahn-Bauwesen"). Thus, when he was offered the post of chief constructor of the HR, he had some 15 years of practical experience in railway building in Turkey to draw upon and he accepted (41). His contract was to run for three years, and it was extended later. In fact, when he had finished his task in 1908, after the HR had reached Medina, his contract had to run for more than one year. What influence on Meissner's appointment his former chief, von Kapp may have had cannot now be verified. As a high-ranking engineer, with considerable experience in Turkey and (unlike the middle-class Meissner) with a "von" to his name, he must have been a very prestigious personality, and he was probably inclined to push the interests of a


(41) Cp. Poenicke, pp. 2, 34. References to Meissner's appointment, its implications and consequences, are so numerous in the available sources that they cannot be listed.
fellow-German whom he had come to know from his work.

Once appointed, Meissner fixed his headquarters at Damascus, so as to be in touch with the local commission, headed by Kiazim Pasha. He later seems to have had a house at Ma'an, too, when the building of the HR had progressed towards the Hejaz. Meissner had a huge organizational problem that faced him. But first he had to plan the layout of the line, probably basing himself on the preparatory work done by von Kapp. In this he was helped by the work of the frequently mentioned Turkish engineer Haj Mukhtar Bey, who became one of his chief assistants. Mukhtar Bey had done the preliminary tracing of the new line possibly even before the appointment of Meissner (42), and he certainly continued it in cooperation with him. However that may have been, most of the decisions and a great part of the work in the field fell to the more experienced Meissner, who also bore the final responsibility (43). In any case, Meissner was able to lay out himself only the Transjordanian section of the track with which this survey is concerned, and the section to the south of it, to El Ula, i.e., the

(42) Auler, p. 27, said that Mukhtar Bey had set out on his way "shortly after the publication of the Sultan's Irade" (on May 1st, 1900). Cp. Also Pal., 1907, p. 37.

(43) Poenicke, P. 4.
more difficult stretches of the line from the point of geography. Further south he was not--even as chief engineer--permitted to go, as Christians were not allowed to enter the confines of the "sacred" land of Hejaz. This fact is mentioned here because of its curiosity value (44).

Mukhtar Bey's procedure for laying down the preliminary tracing of the HR was as ingenious as it was indicative of the influence of history on the building of railways in a country crossed by ancient highways. Unlike railway builders elsewhere, who normally (though not always) had a wide choice of possible routes, Mukhtar had his trace planned for him by the geography of Transjordanian Palestine, and by the dictates of past experience. Mukhtar faced the task of planning a railway from Syria to Arabia. Consequently, he joined in 1900 (or 1901 at the latest; dates are not certain) the "Haj", the yearly pilgrim's caravan from Damascus to Mecca. He jotted down his observations while the pilgrim's caravan travelled down the ancient "King's Highway" that led south, along the border between the Transjordanian plateau and

(44) For Meissner's inability to enter the "sacred" Hejaz, cp. Hecker, p. 1065, and also Poenicke, P. 4. Also, Alt., 1905, p. 279.
the Syrian Desert to the east of it (45). Meissner, besides personally surveying the northern sections of the proposed line, based his final layout of the track on the notes of Mukhtar Bey, and on the maps sent to him by his Moslem assistant.

While Meissner had to consider climatic and geographic-environmental difficulties rarely faced by similar undertakings, he at least had one advantage. Apart from his terminals, Damascus at the one end and Mecca (or Medina as it turned out) at the other, he had no other fixed points to worry about, no intermediate towns of significance had to be touched and served. As far as was practicable, he could build his railway in a straight line and this he did, as reference to maps will prove. One immediate by-product of the line—of importance also from the general view of the welfare and security of the areas traversed—was the building of a telegraph-line, that apparently considerably preceded the laying down of the rails themselves (46). The final shape of the track, as it crystallized after some alterations necessitated by French

(45) For Mukhtar Bey's joining the Haj Caravan, Cp. Auler, p. 27, and Blanckenhorn, p. 34. For the track used by the caravan, cp. Kauffman.

(46) Cp. Auler, p. 27; Blanckenhorn, p. 35. The railway telegraph was laid down for the special benefit of the builders, but there seems to have been state-owned telegraph lines in parts of Transjordania, not connected with the HR, cp. Alt., 1906, p. 155, and Pal., 1907, p. 37.
opposition in the Hauran while the line was being built, will be discussed further on. The layout of the HR south of Ma'an/Mudawara, that in any case was only of relative interest, will not be discussed (47). However, for the sake of completeness it should be mentioned that the total length of the HR, as proposed in 1900, was some 1700-1800 kms, the exact kilometrage would have depended on the, at that time, not yet finalized trace. Of this, the stretch Damascus-Mudawara, on the border of the Hejaz, with which alone the present study is concerned, was some 572 kms long (48). The section from Mudawara to Medina was some 730 kms long. The section from Medina, via the port of Jidda, to Mecca, planned but never built, would have been some 510 kms long (49).

(47) Detailed descriptions of the track of the HR will be found in Hecker and also in Auler's monographs of 1906 and 1908. There is also a description, though only of part of the line (to Batn el-Ghul) in Blanckenhorn. Talbot (cp. bibliography) also described the HR and has interesting photos. Hamilton (cp. bibliography) also has a chapter on the line.

(48) There is no distinct geographical line dividing Transjordania and the Hejaz; but Mudawara (more exactly the scarp at Batn El-Ghul, not too far away) is usually taken to mark the border between the two areas. There, too, the political border between Saudi Arabia and Transjordan has passed since the middle 1920's.

(49) The figures regarding the length of the HR were taken from Blanckenhorn, pp. 38-39, and Hecker, pp. 1316-18. Other sources may give slightly different distances. Blanckenhorn and Hecker referred to the line as actually built. If the line had included the French Hauran railway via Meserib, as had originally been planned, instead of the Damascus-Dera'a stretch, total length would have been some 12 kms shorter.
As already mentioned, construction of the HR began in the autumn of 1900, even before Meissner joined the project. It is not generally known that building the line did not start at Damascus. The first stretch of the track was laid from the terminus of the French Hauran line at Meserib towards Dera'a (50).

The HR had, naturally, been planned to run south from Damascus, along the top of the Transjordanian plateau towards the borders of the Hejaz. The first area it would have had to cross was the grain-rich Hauran. However, since 1894, the French-built railway Damascus-Meserib had already been running south, across the Hauran, closely following the old Pilgrim's Highway to Mecca. The logical intention of the Turks was to buy the French railway (a southerly continuation of the Beyrouth-Damascus line), and to convert it into the first section of the HR (51). Indeed, the spectacle of the Turks building their own separate railway across the Hauran, right alongside the French one, would have been preposterous. The French thought so too, and therefore started raising their selling price (52). Haggling seems to have gone on for some time and meanwhile the Turks started

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(50) The French line Damascus-Meserib, opened in 1894, was dealt with at the end of chapter II.

(51) Incorporating the French Hauran railway in the HR would have saved the Turks building some 123 kms of track. For their original intention: Alt., 1906, pp. 239-240; Auler, pp. 27-28; Hecker, p. 1065; Pal., 1902, pp. 46-44; Ruppin, p. 299.

building the first 14 kms of their line towards Dera'a, with the intention of turning south from there, towards Zerka, Amman and Ma'an (as they eventually did). Their intention also was— they had no choice—to bring in their rolling-stock, rails and equipment via the French Beyrouth-Damascus railway, across the Lebanon and Hermon ranges, to Meserib (53). This they did, to the great financial benefit of the French Hauran line (which they tried to buy). All of a sudden the normally dormant French line, that had been built in the 1890's to kill the British Elias-Pilling-Hill line from Haifa, and after succeeding had not proved a good investment (54), showed growing and unexpected profits. The profits made by the French owing to their exorbitant prices—they had the monopoly on heavy transports—again drove up their selling price (55). Indeed, the French seem to have assumed that they could blackmail the Turkish

(53) For the Turkish dependence on the French railway regarding transport of material from the harbour of Beyrouth, see Auler, p. 32; Carpenter, p. 32, Poeniecke, p. 6; and Woods, p. 53.

(54) For the fight of the French against the proposed British Haifa-Damascus railway, cp. the end of the previous chapter.

(55) For the benefits gathered by the French by their price-gouging, see Alt., 1904, p. 24, where an increase in French net earnings of some 116,000 Francs in 1901 (the year transports started) as against 1900, is noted. The same source also noted that earnings went on increasing to 1904 (when the Turkish branch to Haifa—to be described later—came into operation). Cp. also Poeniecke, p. 6, note, who quotes the German Consulate General in Cairo regarding the Hauran line's inflated prices. Cp. also Poeniecke, p. 10. Alt, 1904, p. 260, also mentioned French earnings from the transport of Turkish material.
government, because without the use, or acquisition, of their
Hauran line, the construction of the HR could not be proceeded
with. Dickering over the purchase price seems to have gone
on for a year (perhaps more, there are no exact details).
Anyhow, meanwhile on September 1, 1901, the first section of
the HR, Meserib-Dera'a had been completed, and Meissner and
the Turks could now think of continuing the track from Dera'a
to Zerka (56). A reference to the map will show that the
first 14 kms section to Dera'a, ran west-east, in order to
permit an unimpeded continuation to the south. The line from
Mesorib could not have been carried on straight towards the
south as it would have been blocked by the upper gorge of
the Yarmuk river. Even if it would have been feasible to
cross the gorge, the further progress of the line south
would have been stymied by the Ajlun Hills. The more easterly
track, actually followed down from Dera'a, promised a con-
tinuation unimpeded by natural obstacles.

(56) According to Auler, p. 28, it was the Turks
in particular who wanted to buy the Hauran line, while
Meissner himself on May 1st, 1901, started building not
only the Meserib-Dera'a section, but also (!) the Damascus-
Dera'a main line. According to this source, Meissner
stopped building south from Damascus only because the
Turks kept on haggling with the French. Perhaps, Meissner--
the German--from the beginning wanted to kill the French
line. The data furnished by Auler for the start of the
work, May 1st, 1901, is more acceptable than the normally
given date, September 1st, 1900, as it is hardly possible
that Meissner needed a full year to September 1st, 1901, to
build 14 kms.
An incidental result of the utilization of the Hauran railway during the first stages of the building of the HR, and a result whose consequences last to this day, was Meissner's decision to fix the gauge of the new line at 1,050 mm. This was a most unusual gauge, even considering that the Turks at the outset had decided on a narrow gauge railway, as this was cheaper in every respect than the normal-width tracks used in Anatolia and also easier to build (57). A 1,050 mm gauge at that time was without precedent (and still is), but it was chosen by Meissner because it happened to be the gauge of the French Beyrouth-Damascus-Meserib line. It thus would enable him to move the HR rolling stock directly from Beyrouth Harbour and on to the new track without troubling over gauge breaks (58). Thus, when shortly afterwards the French changed over to building their lines in Syria on the normal gauge, 1,435 mm, the HR was left without through-running capability between Anatolia and Damascus and with a gauge-break at Rayak. This was to have fateful consequences during the First World War, as will be described in chapter IV. Meissner could

(57) For the gauge of the HR, and its adoption: Alt., 1904, p. 220; Auler, pp. 32, 36; Hecker, pp. 756, 1312; Ruppin, p. 297. A check of professional publications of various years like the "Railway Directory" and "World Railways" will show, that the 1050 mm gauge was in the past, and still is, unique.

(58) It should be noted that the French themselves discontinued building 1,050 mm tracks within months after they had caused the HR to build on that gauge. Their Syrian line Rayak-Hama, finished 1902, and Hama-Aleppo, of 1906, were built on the normal gauge, 1,435 mm, apparently because they wanted to link their Syrian network with the German Baghdad Railway, then being pushed towards Northern Syria.
The Haifa terminus of the Hejaz Railway's branch to Dera'a and Damascus. Aerial photo taken by German aviators late in World War I, hence the empty rail-yard.

Bottom right-hand corner: Jetty with two rail spurs extending into the sea. This jetty, built by Meissner approximately 1903-05, and later widened by filling, played a vital role in the unloading of rolling stock, rails, equipment, and coal, from ships unto the new railway. Top of picture looking south-west.

(Source: Dalmann, 100 Fliegerbilder)

Pick, chapter III.
not foresee this in 1901. What made the French in the 1890's choose the 1,050 gauge in the first place is entirely unknown. It may possibly have been the wish to isolate the 1,000 mm Jaffa-Jerusalem railway. More likely, it may have been the necessity to widen the normal meter gauge favoured by the French in colonial areas, in order to fit locomotives with the mechanism of the Abt rack-and-pinion system that was indispensable for climbing the steep sections of the ascent over the Lebanon range. The system is still in use today. Whatever the reason, the 1,050 mm gauge was to survive in the Middle East for 75 years.

By 1902 Meissner had been in charge of building operation for almost two years, and another section of the HR, 80 kms long, from Dera'a to Zerka was duly opened on September 1st of that year (59). Meanwhile, the Turks, i.e., the General Construction Board, headed by the Grand Vizier in Constantinople, and the Local Building Board at Damascus, had had ample time to become exasperated with the attempts at blackmail of the owners of the Hauran line. It was, as far as can be made out, in 1902, that two rather momentous decisions were taken to break the French stranglehold over the fledgling HR. These two steps were either suggested by Meissner, or strongly supported by him. How far the fact that Meissner was a German,

(59) Opening dates, throughout, are based on Hecker, pp. 1076-78. Auler also had dates, also Poenicke.
and his opponents French, influenced his attitude, remains a moot point.

One decision was to build a line Damascus-Dera'a, as the first section of the HR. This was to parallel the Hauran line Damascus-Meserib, which the French refused to sell at a reasonable price. The second decision was to start building a branch railway from Haifa to Dera'a. This was designed to move stock and building materials from the Mediterranean to Transjordania over a purely Turkish line, thus neutralizing the French-run harbour at Beyrouth, and the French line to Meserib (60).

As for the reasons for the first decision—it seems that the French, confident of their strong bargaining position, insisted on selling only for 7 million Gold Francs, while the Turks after prolonged negotiations, were prepared to go as high as 6.5 million Gold Francs, but no more. The French, i.e., the DHP (the Damas-Hama et prolongements Company) would not budge owing to their (mistaken) assumption that the Turks would never build a second line through the Hauran. What clinched the argument in favour of the Turkish parallel railway was Meissner's offer to build the 123 kms section Damascus-Dera'a at the cost of 30-40,000 Francs per km, which, at the most would have run to 4,920,000 Francs, as against the French price of

(60) Blanckenhorn, p. 4, said expressly that the Turks did not want the "sacred" HR to be controlled by a feeder line operated by unbelievers.
7 millions (61). As a result, the Turks, actually Meissner, started building their very own Damascus-Dera'a section, concurrently with the continuation of the trunk line from Dera'a to Zerka, in the south. It seems that, in fact, they did not start construction at Damascus (except perhaps for earth works), but began to lay their track from Dera'a to the north, as at Damascus there was no link with the French railway from Beyrouth over which materials were brought. For a time tracks seem to have been pushed forward from Dera'a simultaneously towards north (Damascus) and south (Zerka). Material for the HR was for a time carried from north to south over the French Hauran line via Meserib to Dera'a. From there it was moved north again to build the section to Damascus that was to compete with the Hauran line, over which the material had been brought in the first place. That is, the Hauran line, which the French had refused to sell, was instrumental in assisting in its own downfall. The world, at large, and

(61). Cp. Pal. 1902, pp. 46-47. Also Alt., 1904, p. 220, and Alt, 1906, pp. 239-240. Also see Blanckenhorn, p. 4. Further to this subject: Hecker, p. 1065, stated that failing to get their 7 million Francs, the French in 1904 were awarded, in compensation, 3.4 million Francs, and the concession for the Hama-Allepo railway. Ruffin, p. 300, said the same in effect, only he mentioned Ltq. 150,000 in compensation.
the, probably fuming, French, were in due course treated to the unlikely spectacle of the sparsely inhabited, and relatively desolate, Hauran being served by two railway lines running alongside each other, sometimes at a distance of only a few hundred meters, with some god-forsaken Syrian villages actually being served by two stations (62). The French Hauran line that had been built—as noted before—to kill the proposed British Haifa-Damascus railway of 1892, had now been hoisted by its own petard, being destined to be undermined by the Turkish HR. In due course, there was to develop a price-cutting war between the two lines (63). Meissner was able to put the Damascus-Dera'a stretch, 123 kms long, into operation on September 1st, 1903 (64). The French promptly sued and were ultimately awarded less than half of the 7 million they had asked for their line originally, and also got a building concession in the north (65).


(63) Hecker, p. 1545, said expressly that after its completion, the HR deliberately lowered tariffs, in order to fight the French competition. Poenicke, p. 7, says quite explicitly that Meissner decided in 1902 to build the Haifa-Dera'a branch (of which more in the following text) in order to hurt the French, "for commercial reasons."

(64) Hecker, pp. 1066, 1078.

(65) Cp. note 61, above.
Meissner had become an instrument of poetic justice, and the French Hauran line passed out of history. It is not known if, and when, it ceased operations. But Meissner had not quite done with it. At the beginning of the First World War, the rails of the French line were ordered by Meissner to be taken up, to be re-used on the Turkish military railways he was building (66).

As for the second decision of the Turkish authorities namely, to build a branch of the HR trunkline from Haifa to Dera'a, this had the effect of introducing the HR into Palestine proper. The first step towards the building of the new branch, was the purchase by the government of the remaining effectives of the defunct Elias-Pilling-Hill railway, whose concession had lapsed about 1898 (67). The purchasing price was £155,000. At the time, the event may have seemed to have been an event of local importance only, but in fact it was a step fraught with very weighty consequences, both in peace and war, leaving its imprint on all the remaining years of Turkish rule in Palestine to 1918. It might well be argued that to have called this section of Meissner's overall project, merely a branch of

(66) Cp. the first part of chapter IV.

(67) Cp. Pal. 1903/04, p. 240, quoting the German Consulate in Beyrouth. Also Blanckenhorn, p. 14; Hecker, p. 1065; Ruppin, p. 300. The Elias-Pilling-Hill line was described towards the end of chapter II.
the HR was a gross misnomer. In fact it was nothing less than a latter-day revival of the often-proposed Haifa-Damascus line, hailing back to the days of Sursack, Oliphant, and even earlier, and quite an independent Palestine Railway in its own right, that for historical and technical reasons utilized for part of its run the tracks of the Pilgrim's Line to the Hejaz. If further proof was needed of the tentative links of the Haifa-Dera'a-Damascus track with the Hejaz project, it might be found in the fact that never, in almost 50 years of operation, scheduled trains ran (excluding special occasions) from Haifa to the Hejaz, or even to Transjordania south of Dera'a Junction. They invariably ran from Haifa to Damascus, and vice-versa (and in fact continued doing so for about 30 years after 1918, while the Hejaz main track was derelict).

All the Turks inherited from the British-sponsored Haifa-Damascus railway when they purchased its remains in about 1902, were another 5 kms of railless embankment (68). Just as Meissner had been working simultaneously on two Transjordanian sections of his railway (Dera'a-Zerka, and Dera'a-Damascus), he now repeated the process. While the HR trunk line progressed south from Zerka to reach Katrani (124 kms in all, via Amman) on September 1st, 1903 (the same day the line also reached Damascus), work was started

(68) Cp. Auler, p. 27; Blanckenhorn, pp. 13-14; Pal., 1903/04, p. 240.
on the Haifa branch on 11 April 1903, to reach Beisan.
This branch was, of course, also of 1,052 mm, the excursion section having been re-laid. (at 59 kms) on January 14, 1904. On May 24, 1904, the line reached Jisr el-Majami (today's Gesher), on the Jordan, 17 kms from Beisan. An indication of the urgency with which the line was now being driven forward, will be furnished by the opening dates, that for once, unlike on the main line, did not at all conform to the day of Abdul Hamid's accession (69). Perhaps the broiling climate in the Jordan Rift Valley had also something to do with the opening dates, as Meissner probably tried to have the section in the valley ready before the onset of the summer heat. Jisr el-Majami halt, whose location below sea-level was variously given as -246.5 or -247 meters, was the lowest point on earth ever reached by a railway.

The next stretch of the line, Jisr el-Majami, Samakh (today's Tsemah), to its junction with the track Meserib-

(69) Dates taken from Hecker, pp. 1076-78. A glance at the dates will show that only the Haifa-Dera'a branch was opened piecemeal, as sections were being finished. There were reports that trains on this branch were run before tracks and bridges had been entirely finished. The Haifa-Beisan stretch, opened officially in mid-winter of 1903/04 seems to have run trains sometime in the autumn of 1903, cp. Blanckenhorn, p. 15. The Jisr el-Majami-Dera'a section, as Blanckenhorn, pp. 26-27, told it, operated while bridges were still unfinished, necessitating transfers from one train to another, waiting on both sides of an unfinished bridge. The main line sections, on the other hand, were invariably opened on September 1st, Abdul Hamid's day of accession.
Dera'a, was declared open on October 15th, 1905. This was, far and wide, the most difficult to build, and expensive, section of the HR as a whole. It led up the steep Yarmuk Gorge, from the Jordan Valley to the Transjordanian Plateau about Dera'a. It was apparently declared open while some bridges there were still unfinished, and the track unsettled enough to be carried away by winter flash-floods (which aspects will be referred to again). But the cardinal fact was that by late 1905, the Haifa-Damascus line at long last had become a reality. This section of the line, to where it joined the very first stretch of the HR, 2 kms south of Meserib, was altogether 73 kms long (70). This building feat had been accomplished in the astoundingly short time of 18 months, as work in the Yarmuk Gorge had presumably been carried on from both ends, from Samakh and from Dera'a. In due course, after the line had been run in, the 2 kms of track linking the French terminus at Meserib with the new section were taken up (71). The French Hauran

(70) The section through the Yarmuk Gorge was opened on 10.15.1905 as correctly stated by Hecker, p. 1078. On p. 1066, he mistakenly dated the line to 1904. Auler, p. 28, dated the opening, erroneously, as September 1st, 1905. Sickness amongst the workers moved the date by 6 weeks, cp. Alt., 1905, p. 279. Poenicke, p. 11, also erred in giving the date as 9.1.1905.

(71) As for the length of the link line to the French Meserib station--2 kms in all--cp. Alt., 1904, p. 348. Blanckenhorn, p. 28, about 1905 stated that 2 kms was still there. Hecker, p. 1066, writing about 1912/13, said the link line had been taken up. This was only natural, since with the completion of the Haifa-Dera'a branch, the French Hauran line was no longer needed by the Turks, after 1905.
line to Merserib, now became once more a dead-end, and Meissner's stubborness and determination had won out over the rapacity of his opponents. Henceforth, Haifa replaced Beyrouth as the Mediterranean outlet of the HR. Through its harbour installations, improved by Meissner (as will be described further on), supplies for building the HR trunk line were moved, until it had reached Medina late in 1908. Thanks to Meissner, Turkish rolling stock, equipment, and also fuel, were no longer held to ransom and the "sacred" Pilgrim's railway became free of foreign tutelage.

While the Mediterranean branch of the HR was being pushed forward, the building of the main line itself proceeded at no mean pace. The section Katrani-Ma'an, 132 kms. long, was completed with great festivity on September 1st, 1904. The special train Damascus-Ma'an, bearing dignitaries from Constantinople, and at their head Turkhan Pasha, the Minister of Evkaf (religious properties), had Kiazim Pasha and Meissner, by now also Pasha (72), at the throttle of the locomotive (73). Thus, the HR had now reached the southern limits of the inhabited areas of Transjordania. On September 1st, 1905 the section Ma'an-Mudawara, 113 kms long, was inaugurated. Mudawara is

(72) Cp. Poenicke, p. 9. Meissner had been made a Pasha, an extraordinary distinction, in March 1904.

(73) For the opening ceremony, cp. especially Auler, p. 69, passim, but also Poenicke, p. 4. All dates have been taken from Hecker, pp. 1066 and 1076-78.
approximately the southern limit of the area covered by this survey, and thus the further progress of the HR into the Hejaz will not be dealt with, except for a few dates to round off the general picture. Tebuk, 120 kms from the Mudawara, was reached on 9.1.1906, El Ula, 287 kms from Tebuk was reached on 9.1.1907. The last section of the HR, 323 kms long, to Medina, was opened on September 1st, 1908, shortly before Abdul Hamid's ouster. The final stretches of the line, inside the Hejaz, were built "telepathically" by Meissner, who was barred from the sacred Hejaz on account of being a Christian. On-the-spot supervision was carried out by Mukhtar Bey and probably other Moslem engineers Meissner had trained. Yearly construction averages, 1302 kms from Damascus to Medina in eight years, had been very high, 163 kms yearly, by any standards, even for civilized and climatically easy countries. South of El Ula, though, the line's tracks had been finished very roughly, perhaps owing to the need for speed, perhaps because Abdul Hamid wanted to see his prestige project completed. The last 323 kms of the line were more in the nature of a field-railway, but served well enough for a decade, to 1918. In Medina, anyway, an imposing station was built (74). This closes the general description of the building of the

(74) Cp. Hecker, p. 1067. For the fortunes of the HR south of Ma'an, in the First World War, cp. chapter IV. For the rehabilitation of part of it after 1960, cp. chapter V. According to Blanckenhorn, Abdul Hamid was too hesitant to inspect the HR in person, while it was being built, but cinematographic pictures of it were shown to him. The imposing rail terminal at Medina is shown on two rare photos in the travelogue by Moritz (cp. bibliography).
HR trunk line and its Haifa branch. The following section will be devoted to details pertaining to the project.

Building the Hejaz Railway - Details: The Financial Base of the Line

When Abdul Hamid decided on building the HR in 1900, the Turks faced three, at that time seemingly insoluble, problems: A. Financing the line; B. Technical planning; C. Actual building. As set forth above, they succeeded in solving all three problems, with the help of Meissner. It should be noted that Meissner's success added to the stature of Germany in the eyes of the Turks—he at least finished his project while the Baghdad Railway was not completed until 1940. He also raised the prestige of Germany in the world as a whole (75). But it must be stressed, that no evidence could be found that Meissner ever had official Imperial German backing.

Financing and building railways in the Ottoman Empire had always been an involved operation (76). It became, therefore, quite a surprising fact that the only state-owned railway in corrupt Turkey, built and operated through desolate areas, that promised no early, or even any, returns, became the only railway in the world that had no trouble whatever in financing its construction, that

(75) Cp. Talbot, Woods, Ops. (see bibliography), who are but a few amongst the many who praised the building of the HR.

(76) For many details, see Karkar, who refers to the subject on many pages.
never came to be in financial difficulties of any consequence, that had no debts, no loans to repay, no interest due, and no stock holders clamouring for dividends. It did not fear competition, its budget was ever balanced, and it usually had some surplus of income over expenses. This remarkable state the HR owed to the fact that from its beginning it had been billed as a "sacred" undertaking—probably the only railway in history on which such a designation had ever been bestowed. Its fixed income was based on two sources, funds coming in from inside the Ottoman Empire, and monies coming in from outside sources. Donations that came in from now-Turkish areas, ranging from French North Africa, through Egypt, to British-India, the Dutch East Indies and even China, were truly voluntary gifts (77), offered to the Sultan-Khalif as the head of Islam. However, outside donations were overshadowed in terms of money, by contributions from inside the Empire, some obtained by more or less gentle prodding. To these were added sums funnelled into the HR by the Turkish government itself. All these funds came to be regarded as hallowed to the Cause of Islam, and, according to Meissner himself, were the only funds in all the Empire untouched by graft and peculation (78).

(77) Cp. Blanckenhorn, p. 7, who already about 1906 estimated donations from outside the Ottoman Empire to have reached the equivalent of 15-17 million Francs, while still continuing to come in.

(78) Cp. Poenicke, p. 3, who quotes Meissner as cited by the German Consulate General in Cairo (6.22.1904). Poenicke also states that when Meissner took over about 1901, funds for the construction of the HR totalled 13.5 million Francs, while by 1908, donations had passed the 74 million Francs mark.
Apart from outright donations, the HR was to have, and had, the use of monies and other tangible assets, as follows:

1. Regular income from government taxes, customs and excise duties, stamp taxes, and deductions from the income of officials; 2. Irregular income from levies on titles and decorations, and receipts from the sale of skins of beasts slaughtered during the Koorban Bairam Festival; 3. Proceeds from the production of coal mines in northern Anatolia (probably Ereğli) and from the exploitation of natural resources in Transjordania, around the Dead Sea (salt? phosphates?) and in the Yarmuk Gorge (shales?). Regarding the latter revenues no details became known; 4. The right of acquisition, free of charges, of unlimited stretches of land, needed for the construction of the HR track; 5. Free use of gravel for ballasting, and of building stones for stations and bridges; 6. Probably free delivery of wood, where available, from private sources (79). The entire cost of the line, built by these funds, both according to Hecker and Ruppin, was 95 million Francs (80).

(79) Details from Blanckenhorn, p. 7; Auler, p. 25— who put the average yearly income of the sacred railway at 7.5 million Francs; Ruppin, p. 300. Pal., 1903/04, p. 112, published a quaint list of forced contributions from dignitaries in exchange for honours: 1,000 Piastres for the Grand Cordon of an order, with diamonds; 500 Piastres—without diamonds. Passport dues were also funnelled into the line. Also, on the subject see Hecker, pp. 1064, 1084, 1315.

(80) Cp. Hecker, p. 1315; Ruppin, p. 300. In Alt., 1905, p. 306, there will be found a detailed financial report of the HR for an average building year, probably 1904. The report showed a considerable credit balance of 36.2 million Piastres, on a total yearly income of 205.5 million Piastres. Unfortunately no means could be found to convert Piastres into Francs, but the proportion between credit balance and total income is significant.
Manpower and Construction Speed

The helplessness of the Turks when facing the necessity of converting the grand design of the HR into actual fact has already been alluded to. So was also the appointment of Meissner, who converted Abdul Hamid's project into reality (81), in appreciation of which fact he was raised—as also already noted—to the rank of Pasha in March 1904 (82). Meissner became the "soul" ("Seele") of the HR (83), but even he needed helpers, and thus assembled round him a team of engineers, though a remarkable small one. According to one source, Meissner's helpers in 1904 totalled 25 Turks and 10 foreigners. The Turks seem to have been trained on the job. According to another source, Meissner's assistances, sometime in 1905, numbered 43 altogether, amongst them 17 Turks, 12

(81) Cp. Poenicke, pp. 2-3; also Woods, p. 53.
Meissner in the beginning seems to have been signed on for a period of 3 years. This was apparently later extended by another 6 years. His appointment would have lapsed only 12 months after the actual completion of the HR to Medina in 1908. Cp. Poenicke, p. 10, quoting the German Consulate in Beyrouth (9.21.1908). In 1910 Meissner book up a top-ranking engineering post with the Baghdad Railway, only to return to Palestine in World War I, for further railway construction. Of this, more in Chapter 4.

(82) Poenicke, p. 9.

Germans, 5 Italians, 5 Frenchmen, 2 Austrians, 1 Belgian and 1 Greek (84). Germans seem to have been Meissner's mainstay; at least one of them seems to have died while building was underway (85). It should be mentioned here that another German beside Meissner, or rather after Meissner, held an important post with the HR. This was Paul Dieckmann, who from 1908 onward seems to have acted as traffic manager. He reorganized the railway after Meissner's departure (to be dealt with later), and after the young Turks came to neglect the line following Abdul Hamid's fall (86). Dieckmann was to become a key figure, at the side of Meissner in World War I as will be noted in the following chapter. He also published some articles on the development of railways in Palestine in the 1920's, as will be mentioned in Chapter V. Anyway, while the Germans were on the job, the Turks did not lack capable men for top level planning and management.

As for the actual day-to-day construction of the new line, that led through sparsely populated, sun-baked country, and later on through downright arid wilderness, the Turks in

(84) Cp. Auler, p. 25, and Blanckenhorn, p. 9. There were other references to Meissner and his team: Alt., 1904, pp. 218, 261; Alt., 1905, p. 278; Pal., 1907, pp. 204-205 (where the Sultan's order to Meissner to look into the question of constructing a harbour at Haifa is mentioned incidentally); Pal., 1907, p. 279; Pal., 1908, p. 128.

(85) Blanckenhorn, p. 15, referred to the death of the engineer Keller while building the Jordan-Meserib section of the HR Haifa branch.

(86) Hecker, p. 1073; Poenicke, p. 15.
Right: Time-table of the French Railway Damascus-Meserib. Note the additional information, and the reference to the fact that Kisweh village also had a station of the rival Hejaz Railway.

(Source: Meistermann, Guide, 1907)

Bottom: Post-1918 photo of Meissner's original iron bridge over the river Yarmuk, in the Jordan valley. Note Roman bridge showing under iron span. The proximity of the old road, and new rail, bridge, tends to show that lines of communication did not appreciably change their layout over the centuries.

(Source: British Naval Intelligence Handbook, ca. 1919)
the beginning faced a serious manpower problem. They solved it in an ingenious—and money-saving way. They used conscripted soldiers as their work force. These included specifically raised and trained railway-construction battalions, pioneers and communication troops for specialized work, and plain infantry regiments for unskilled labour. At first the soldiers worked side-by-side with civilian labourers, raised by local contractors. As the track moved into ever more desolate areas, subject to Bedouin attacks, both hired labourers and contractors became balky, and the importance of the soldier-workers under military discipline grew, until they practically took over construction work. Their numbers rose from about 2,600 men at the beginning, to about 5,600 sometime later (about 1903), to some 7,500 men about 1907, plus 1,800 men working at the southern end of the track in the Hejaz, reaching a final total of over 9,000 men (87).

These men received their regular army pay, plus additional sums out of the funds of the railways. The additional pay was calculated according to the work done, and was pitifully small. However, the men seem to have worked with religious fervour throughout, on their "holy" railway, despite the attacks of Bedouins, the lack of water, that had to be carried to the railhead by train, the

(87) Auler, p. 26; Blanckenhorn, p. 8; Poenicke, p. 5. There were other references as well, for instance, Hecker, p. 1065.
harsh climate, and sickness, like an early cholera epidemic (88).

It was only thanks to the patient, uncomplaining, work of its uniformed slaves that the Turkish government was able to carry out its undertaking, at insignificant expense, with which no other railway construction project in Turkey could compete. The fervent dedication of the Turkish conscripts—many of whom seem to have been kept under the colours even after their 3 year term of service was over (89)—and the apparently faultless organization of work procedures carried out by Meissner (90), resulted in work being pushed forward at a phenomenal pace—already commented upon above. Rail-laying may have been carried out occasionally at the top-rate of 2–3 kms a day. Depending on whether the construction of the Haifa branch is included in the averages, yearly construction rates have been variously given as between 150 and 183 kms yearly, with 163 kms per year, as noted above,

(88) Cp. Auler, pp. 48-52, who provided harrowing statistics. The digging of 1 cubic foot of earth brought 1 Piastre, a miniscule sum. Digging up rocks paid slightly more. The daily earnings of a soldier did not seem to have exceeded some 3 Piastres. Officers received an unspecified amount of extra pay. Auler also provided interesting details and photos, as to how the work of the soldiers was organized and carried out, apparently with no mechanical equipment at all and only by means of shovels, pick-axes and sheer brawn. Cp. also Blanckenhorn, pp. 8-10, and Hecker, p. 1315.

(89) Auler, p. 51

(90) Auler, pp. 48-50; Blanckenhorn, pp. 9-10.
the most acceptable figures. In the last year of construction 1907-1908, a construction rate of 323 kms was reached, as also noted before, though this was in the Hejaz outside the area dealt with in this survey (91).

As has also already been noted earlier, in another context, while the new line was still being built in more or less settled areas, civilian contractors and their labourers had been hired--and available--to work beside the soldiers. The civilian work force was used mainly to build more intricate edifices, like stations and bridges over wadis, while the soldiers amassed some experience in laying rails, and stringing telegraph wires. But the further the track moved into the desert, the less were the civilian contractors, and their workers, prepared to risk their earnings, or their lives. In the end most of the work on the line was done by Kiazim Pasha's conscripts (92). As the soldiers were less adept at building bridges than their civilian counterparts, it seems to have been a frequent occurrence that rail laying went on faster than the completion of bridges, with the curious result that, so as not to slow down...
construction, rails were temporarily laid down into dry wadi beds, and out again on the other side, until the bridges were completed. This was to have dire results when the flash-floods of winter arrived (93).

The Layout of the Track

Some details should be added about the track layout of the HR, which, incidentally, remained unchanged for over 70 years, excepting the stretches of the Haifa branch that ceased operating altogether. Only the trunk line from Damascus to Mudawara will be dealt with, and the branch to Haifa, and their extensions. The remainder of the track, from Mudawara to Medina, approximately 730 kms long out of a total of 1302 kms, will be ignored as not falling within the limits of this survey.

The main line of the HR from Damascus to Mudawara, was some 572 kms long and was declared open on September 1st, 1905 (94). A reference to one of the many available maps that show the track of the HR will prove that its layout was adopted with three chief considerations in mind: A. The track was to be led, as far as possible, parallel to the Pilgrim's Highroad from Syria to Medina and Mecca, that is in as straight a line as was feasible, from north to south,
and later, towards the south-east; B. Natural obstacles were to be avoided as far as possible. Therefore, at least in Transjordania, the track was to be lead along the top of the plateau, not far enough east to encroach on the confines of the Syrian Desert, and not far enough to the west to oblige the line to be built across the headwaters of the big wadis that flow from the plateau into the Jordan Rift Valley. In fact, crossing the important wadis of Transjordania was successfully avoided everywhere. The wadis were the Sheria el-Menadire/Yarmuk, the Wadi Zerka/Yabbok (except in its flat easternmost reaches), the Wadi Zerka Main (Arnon), and the wadis Mojib, Kerak and el-Hesy. In fact the only sizeable river actually crossed by the HR after it had been built, was the Nah el-Awaj, just south of Damascus; C. Existing water resources were to be utilized, as far as possible, i.e., this track was to pass, if at all feasible, past the wells and artificial rain-water pools of ancient vintage that were dotted along the Pilgrim's Road (95).

The northern terminus of the HR in its first years, was Kadem Station (696 meters above sea-level), in the Meidan suburb on the southern outskirts of Damascus. On

(95) Amongst the many maps showing the track of the HR, the best ones are those attached to Blankenhorn and Guthe. Ruppin and Woods also have adequate maps. The maps contained in publications dealing with the HR in the First World War, for instance, Ops., are also very detailed. The layout of the HR, at least to Mudawara, will be found on most modern maps.
12.31.1911 the line was extended 3 kms north into town, to the imposing new Hejaz Station (96). Later, the state-owned main station was linked by a short spur with the French-owned Beramkeh stations, to the west of it, the terminus of the railway to Rayak and Beyrouth (97). From Damascus the HR track ran in graceful curves—to avoid local hills—generally parallel to the Derb el-Haj, crossing on its way the Nahr el-Awaj (the ancient Parpar). It left to the east the impassable basaltic area of the Lejja.

(96) Hecker, p. 1078.

(97) The history of the railway stations serving Damascus, though only indirectly pertaining to this survey, is not uninteresting, and perhaps deserves rescue from oblivion. A background to it is provided by the map of the environs of Damascus in Meistermann's Guide (cp. bibliography) of 1907. As noted in the text, the original terminus of the Turkish HR was Kadem Station, in the Damascus suburb of Meidan. The track of the HR was later extended 3 kms parallel to and very near the French Hauran railway's track, into Damascus, to the Turkish Hejaz Station. According to Luke's Guide (cp. bibliography) of 1925, Kadem Station seems to have been called Kanawat Station for a time, later to revert to the name Kadem.

The French Beyrouth-Hauran Railway had its main terminus at Beramkeh Station in the western part of the town, and from there turned south in a wide curve to Meidan Station, in the suburb of Meidan, whence it continued south to end at Meserib. The French Meidan Station is not to be confused with the HR's Kadem Station, situated very near it, also in the suburb of Meidan. As noted above, the Turkish extension Kadem-Hejaz Station ran parallel to the French section Beramkeh-Meidan, but apparently was not linked with it for some ten years. For the missing link, cp. Hecker, p. 769. It seems, though there are no proofs in documents, that only when the French line to Meserib was taken up by the Turks at the beginning of the First World War, the French section from Beramkeh to the south was finally linked with the HR at Kadem Station, the French Meidan Station being left derelict. The section Beramkeh-Kadem, linking the French and Turkish tracks, became of vital military importance in the Great War, as it joined the HR (to Sinai and the Hejaz) with the French-built railway leading to Rayak and north, to Aleppo and Anatolia.
and crossed the Hauran plain, to reach Dera'a, 123 kms from Damascus (529 meters above sea-level), on the Wadi Zedi, the headwaters of the Yarmuk. From Dera'a the track of the line turned east in a wide sweep, to bypass the Hills of Ajlun, and then continued south (east of the Pilgrim's Road, but parallel to it), passing Zerka, to climb a tributary of the Wade Zerka/Yabbok, up to Amman, at km 222, 737 meters high. Amman at that time was but a small Circassian village, and did not figure largely in the descriptions of the railway.

Just south of Amman the track hit its most difficult section. It had to overcome a NE to SW ridge that could not be avoided. In the process the line had to climb in hairpin bends, over a distance of 12 kms, to a height of 941 meters. This involved an unusually steep gradient, 20:1,000 (i.e., a climb of 2 centimeters over a distance of 10 meters), as against a gradient of 18:1000 that was normal on the line. This particular section also involved the building of extraordinarily narrow curves of 100 meters radius, as against the 125 metre radius curves built elsewhere on the line. The section south of Amman necessitated building a bridge containing 10 arches, each 12 meters wide. To this section also belonged the biggest edifice on the whole HR. This was a double-tiered viaduct, 20 meters high,
containing 14 arches, each 6 meters wide (98). Just south of this viaduct it also became necessary to bore a tunnel, 140 meters long, the only one on the HR main line. Passing various places (Ziza, Katrani, Kala'at Aneizeh) the line then climbed gradually, always paralleling the Pilgrim's Road, to Ma'an, at km 459, 1074 meters above sea-level. It was on this stretch of the line that lack of water began to trouble building operations. Some of the water was supplied by artesian wells, but most of it had to be taken from ancient and reconditioned cisterns and pools (i.e., tanks of the Indian type), that depended for their contents on winter rains, if any. Most of the stations were located near such sources. While Meissner could, and did, later provide for the water needs of normal service by ordering locomotives with extraordinarily large water-tenders, during the period the line was built, water troubles multiplied the farther the railhead crept into more arid country, and workers as well as building operations had to be provided for. For their relief Meissner used water trains, and flat cars carrying water tanks. As a result, lack of water never once stopped building activities.

South of Ma'an the track of the HR turned south-east to climb the highest point it was to reach, 1,168 meters at km 515. From here the line descended down the escarpment that is generally taken to form the boundary between the Transjordanian plateau and the northern Hejaz. The

(98) A photo of the viaduct, which played a role in World War I, will be found attached to chapter IV.
descent was accomplished, by what was then regarded as a considerable technical feat—in a series of double-hairpin curves, necessitating very extensive cutting operations. The descent, 5 kms long, led into the poetically named Batn el-Ghul (Belly of the Monster), at 994 meters, and from there the track continued to Mudawara, at km, 572, on the border of the Hejaz. The whole 113 kms long section from Ma'an to Mudawara led through practically waterless, lying desert (99). Thus differences in height on the HR as a whole ranged from −247 meters in the Jordan valley to 1,168 meters in southern Transjordania.

Technical Details: Trunk Line

On the trunk line between Damascus and Medina (there are no details as to the stretch to Mudawara only) Meissner and his aides built 462 bridges and 1,070 culverts, 1,532 edifices in all, all constructed of stone, with arches 3-12 meters wide. There was also one iron bridge, 15 meters

(99) The details listed in the text regarding the layout of the HR were assembled from Auler, Blanckenhorn, Guthe, Hecker and Poenicke (cf. bibliography), who all had plenty to say on the subject. Blanckenhorn and Poenicke also had relevant photos. Many references to the HR and its layout will be found in the German Zionist publications, that have already been quoted liberally. See especially Alt., 1904, pp. 347-349. An interesting contemporary account of the line, including photos, will be found in Talbot (see bibliography), pp. 117-127. A recent description of the HR and its history, including map and interesting photos, was published by K. Becker in the German periodical "Orient", 1963, pp. 193-195. The author apparently had visited Jordan and Saudi-Arabia in the 1960's.
long, over the Nahr Awaj. Constructions were exceptionally solid, and unless deliberately destroyed, lasted to this day. The line's rails, most apparently made in Germany at Meissner's orders, weighed 21.5 kgs. per meter. Sleepers (cross-ties) were, over most of the line, made of steel, and not wood, to avoid warping, owing to the extreme temperature changes in the desert climate. Curves of 100 meter radius were the exception, as already noted, 125 or even 150 meter radii being the rule. Gradients, as noted, were 18:1,000, those of 20:1,000 being the exception. The track was built to sustain speeds of 25-40 kms.p.h., which was relatively high, considering the narrow gauge of 1,050 mm (100). Out of some 75 stations, altogether, between Syria and the Hejaz, 38 were located on the stretch Damascus-Mudawara, in about 1906. Later there were 39, one having been opened, one closed, and the Hejaz terminus at Damascus added (101). Most stations seem to have served as crossing-points only—at least on the trunk line—as there was little

(100) The technical details assembled in the above text represent a summary of dozens of references in many sources. Lack of space makes listing the individual sources impossible. However, they were checked and double-checked. Details regarding the bridges will be found, for instance in Auler, p. 33; Blanckenhorn, p. 14 passim; Hecker, pp. 1312-13; Poenicke, pp. 9-11. Likewise in Alt. 1905, p. 307, and also elsewhere.

(101) The stations of the HR, both trunk line and Haifa branch, will be found in a separate appendix.
passenger traffic, except for pilgrims going all the way to Medina, and almost no goods traffic. Stations, at least the minor ones, seem to have had only two sets of rails, with two switches (points). A few seem to have had goods sheds, and loading ramps, usually unused, but useful for military stores in certain eventualities. Station buildings, of which photos have survived (102) were simply but strongly built, of stones. They were two-storied, had some rooms for staff, and sometimes for soldiers, and were fitted for defence against Bedouin attack. The fact that the HR stations were simultaneously fitted as strongpoints, thanks to Meissner, was to cause T.E. Lawrence considerable trouble in the Great War. Stations were linked by telegraphy, but apparently there were no signalling arrangements, and none were needed, as the incidence of traffic was not expected to be dense. Trains were despatched as soon as the telegraph reported the line to be clear. Some stations, however, were imposing buildings, such as the Hejaz Terminal in Damascus, that was built for show, and still stands. (There was also a handsome station at Medina). Other big stations were Damascus-Kadem, Dera'a, Amman and Ma'an (103). As evidenced by remaining photos, and maps, these biggish stations had multi-storied administration and staff buildings.

(102) Photos will be found in Auler, Behder, Moritz, Philly, Poenicke, Steuben, etc.

(103) For details about the stations, cp. Hecker, p. 1314, also Auler, Blankenhorn, and Poenicke.
goods-sheds and facilities (sleeping quarters) for travelers. Each had several sets of tracks for shunting, most had engine-sheds and turntables, or reversing triangles. There were, ultimately, big and well-equipped workshops (run by their own electricity supply) at Damascus. There seem to have been extensive servicing facilities at Dera'a and lesser ones at Ma'an. Ma'an also had extensive barracks for the troops protecting the line. A hallmark of the bigger stations, and of many of the smaller ones, were their characteristic water towers, supplemented in most cases by wind-driven pumps, that drew water from the wells bored by Meissner, where geological conditions were favourable. So much for the trunk line of the HR (104).

Technical Details: The Haifa Branch

As for the main branch of the HR--the Haifa Dera'a line--its rather chequered history beginning with the Sursock and Oliphant projects of the 1880's has been dealt with elsewhere in this survey. The following pages will deal with this line in its more down-to-earth aspects, its layout, stations, and technical details. Above all, it should be noted, by way of introduction, that this line--

(104) The technical description of the HR main line has been much shortened from the original draft of this chapter.
Wester's Palestine's second railway after Navon's Jaffa-Jerusalem line, was destined to be of considerable importance for the country, commercially in peace time, and militarily (thanks to the Sinai extension it was to sprout) in wartime. The building of this branch of the HR was also Meissner's responsibility (105).

The terminus of the Haifa railway came to be located just east of what used to be the eastern wall of the old town. There a handsome station building was put up, probably about 1903-05 (there is no date), that for a time was to serve as the headquarters of the new branch. Next to the station, a stone memorial-column, that still stands, was to mark the building of the line. Actually, the track of the new line continued some distance north-west of the station, onto a solid stone-built pier, that jutted into the sea. The pier, also built by Meissner, (though again the date cannot be fixed) served commercial lighters and passenger traffic. But its main purpose became to assist in the construction of the new line, equipment and coal being discharged over it. Over it were unloaded not only rails and sleepers, but also locomotives, passenger carriages and goods wagons, that enabled the Haifa branch

(105) For sources for the following details, cp. the ones listed in notes 99-100 above.
to dispose of quite considerable rolling stock, long before
it joined the HR trunk line at Dera'a and became—as had been
intended in the first place—a supplier of the trunk line
too (displacing the French Hauran railway). In fact, the
Haifa-Dera'a line could not have been built at all without
the handling of all its equipment over Haifa pier. This
pier was furnished in due course with adequate mechanical
handling equipment, that enabled it, under Turkish auspices,
to render the same services the French harbour at Beyrouth
had given the HR main line in its first stages. Some 30
years later, Meissner's pier was incorporated in the British-
built Haifa harbour. There is little doubt that Meissner,
by building his unloading facilities in a way laid the basis
for Haifa's later prosperity as a port (106).

From Haifa the new branch led south-east, on top of
the defunct Elias-Pilling-Hill line that had been bought

(106) Pal., 1907, p. 205, described Haifa's harbour
facilities in detail: A stone pier 420 meters long (?) from
photos it might be assumed that it was perhaps 42 m long)
and 18 meters wide, with three cranes, of 18, 15 and 12 tons
lifting capacity. It was stressed that the cranes were capable
of lifting locomotive boilers, from which it might be assumed
that disassembled locomotives were put together at Haifa.
Other railway stock was transported from ship to shore by
lighters. Yearly imports through Haifa of coal from Britain
(for 1906) were given as 25-30,000 tons. Equipment brought
in at that time, after the use of Beyrouth harbour by the
Turks was discontinued, included, apart from rolling stock,
rails in great quantities (20,000 tons for 1906) and wooden
and steel sleepers (5,000 tons). Cp. also Pal., 1907, p. 38,
where it was stated that "everything is now being landed in
Haifa".
(as previously noted) from the concessionaires. It continued parallel to the Carmel range, and close to it, so as not to get near the dangerous bogs and quicksands that skirted the Nahr el-Mukattah, the Kishon river. Here, as during most of its course (except in the Yarmuk Gorge) the new railway adjusted to the dictates of geography, and incidentally followed what used to be the ancient Shikmona (Haifa)-Megiddo highway. Some 4.5 kms out of Haifa there was to be built a few years later, the station of Beled esh-Sheikh (now Tel Hanan), the junction of the future branch to Acre. However, while the line was being built, its first halt was at Shomariyah, at km 11, within the narrow pass between the Carmel range and the hills of Sheikh Abrek (Beth She'arim). This pass had served from times immemorial as the western gate of the Valley of Jezre'el. The railways used this gateway too, after crossing the Kishon river on a handsome five-arched stone bridge, a typical stone design developed by Meissner for most of his river crossings. Shomariyah halt seems to have marked the branching off of a short spur to a quarry, from which ballast was taken for the track. The halt was abolished after the necessity for it ceased. Shortly after, the track parted company with the ancient track to Yokne'am and Megiddo, that turned east-south-east, following the Carmel, and keeping to its floodless slopes. The railway
kept going east, straight across the swampy and, in winter, flood-prone, Valley of Jezre'el. But it enjoyed immunity from floods owing to its elevated embankment. Its first station in the Valley was Tel-esh-Shammam (Kfar Yehoshua). From there it continued, as the bird flies, straight across the Valley, to Afule. This place was, in 1903, when the line was being built, no more than a couple of hovels, but it was intended as a station for Nazareth up in the hills of Galilee, some dozen kms to the north. A few years later, Afule was to become a most important railway junction on the HR, after the extension of the railway to the south (Jenin, Nablus and Sinai) was taken in hand.

From Afule the rail track continued on a south-easterly course, past Zarin (ancient Jezre'el), where it joined the old highway from Megiddo, the famous Via Maris, so often mentioned in chapter I. From past Zarin the rail trace started dipping deeply into the Beisan (Beth Shean) Valley. On its way from Afule, at some 62 meters elevation, to Shatta halt, at -77 meters, the line descended 139 meters within the distance of 14 kms, going below sea-level in the process. About Beisan station, at km 59 from Haifa, 121 meters below sea-level, the track reached the threshold of the Jordan Rift Valley (107). From here the line turned

(107) The layout of the Haifa--Dera'a branch, unchanged since Meissner's days, can be checked on any reasonably-scaled map. The above description of the Palestine section is based on Mandatory and Israeli 1:100,000 maps of various dates.
What appears to be a special Haifa Branch train for dignitaries, or staff, standing on the Jisr el-Majami bridge over the Jordan, ca. 1904. The bridge marked the lowest spot on earth ever reached by a railway, -247 meters. Note light, and well-ventilated rolling stock. Transjordanian Plateau in the background. (Source: Auler)

One of Meissner's imposing iron bridges over the Yarmuk Gorge. Another bridge, all stone, shows under the iron span. The work train on the bridge included a flat-car with the two obligatory water-tanks on it (at right end of central span). (Source: Auler)

Pick, chapter III.
north into the Valley, descending ever deeper. The track proceeded in wide curves, winding around the sources of the various wadis, descending to the Jordan. At km 76, only 17 kms out of Beisan, but 126 meters deeper, the line reached Jisr el-Majami (today's Gesher), there crossing the Jordan on a solid stone bridge (108). This was at the time, and still remains the deepest point on earth ever reached by a railway, i.e., -247 meters. Only 3 kms further on, the line crossed the Yarmuk river, very near its confluence with the Jordan, on another bridge. Here, for some time after the line was built, there was a halt, Jisr el-Saghir. The name was taken from an old, at that time still useable, Roman (?) bridge nearby. The proximity of old bridge and modern railway may have served as proof of the fact that traffic lanes, whatever the period, are subject to the dictates of natural features that govern their layout. From there the track started climbing, slightly at first, on its way out of the Jordan Valley, to reach Samakh (Tsemah), at the southern extremity of the Sea of Galilee. Samakh station served as the stop for Tiberias, with which, for some time at least, there came to be a steamboat service. Samakh was 87 kms distant from Haifa, 186 meters below sea level. So far the new railway had encountered no insurmountable natural or technical obstacles (109).

(108) A view of this bridge with a train on it, and taken from Auler, p. 5, is attached to this chapter.

(109) For the progress of the line, cp. Alt., 1904, p. 23, 1905, p. 279, 1906, p. 240; and Hecker, p. 1316. Other sources might be found.
At the time the line was being built there was at least one contemporary report that at one juncture it had been intended to continue the railway north, past Samakh, and then round the northern shore of the lake, to pass Tiberias, Majdal (Magdala, Migdal) and Capernaum (Kfar Nahum), to cross the Jordan near its debouchment into the lake (110). However, nothing further was heard of this plan, which might have provided the town of Safed (Tsfath), with a not-too-distant rail connection. The reasons for the abandonment of this layout, if it was ever seriously contemplated, were not far to seek. A line round the northern shore of the lake would have had to pass the extensive swamps of the B'teiha plain, after crossing the Jordan near its mouth (near today's Almagor). From here it would have had to continue south-east along the shore of the lake, finally to turn east, to climb the Golan through the Wadi Samakh (not to be confused with the townlet of Samakh, mentioned above, not too far from it towards the south). As mentioned in the foregoing chapter, the possible ascent through the Wadi Samakh, had already intrigued Oliphant and Schumacher in the 1880's. But the ascent through this wadi would, most likely, have been too short and steep for a railway to climb. It was also waterless. Meissner had another plan.

As actually built, the new railway turned sharply, almost due east, from Samakh, and climbed to the Trans-

(110) Alt., 1904, p. 23.
jordanian plateau through the steep, very narrow, but well-watered Yarmuk Gorge. The availability of plentiful water was crucial to the operation of the steam-locomotives that were to haul the trains on the same 74 kms long incline from Samakh to Dera'a, from -186 meters to 529 meters elevation, a difference of 715 meters in all. Here it should be mentioned that the supply of water was so plentiful, that within a short time after the line had been completed, about 1908, plans were mooted to convert the railway to electric traction, using the waters of the Yarmuk and of its tributaries (and utilizing probably, local waterfalls) to drive the generating turbines (111). Nothing came out of these proposals, though a generation later the Ruthenberg Electricity Project did indeed harness the Yarmuk waters to produce power, but that was done outside the gorge. If the Yarmuk gorge ever did produce fuel, it was in the shape of oil bearing shales, that were burnt by locomotives in the Great War—of which more in the following chapter.

The section of the railway leading through the Yarmuk Gorge from Samakh to Dera'a proved the most expensive, and most difficult to build on the Haifa Branch, and indeed on

(111) Hecker, p. 1314; Ruppin, p. 355.
the HR as a whole. It was on this section that the line struck out along a route that—an almost unique instance in the history of railway building in Palestine—had never before served as a route for travellers. While most, by far, of the lines in Palestine had followed, and later in their history, were to follow, tracks that had been almost literally carved out by the feet of men and beasts over the ages, Meissner made his track climb up where no road of any importance had ever passed before, since the Gorge had been practically impassable until opened up by man-made improvements.

The railway ramp from the Jordan Valley to the Transjordanian Plateau contained originally, and after the closing of Tel el-Shihab halt, only 6 stations, most of which were designed only (in the absence of a dense population) for replenishing the water tanks of locomotives. In some places the track of the rails was literally carved out of the hillsides. The line had to cross the gorge, from one slope to the other, on some very elaborate bridges, most built of stone, the very high ones of iron (112). In one place, a long detour had to be made into a side-valley, in order to gain height. Completion of some of the

(112) Blanckenhorn (op. bibliogrphay) in his description of the HR had some very striking views of the engineering works in the Yarmuk Gorge. His photos showed bridges completed and under construction and also tunnels. Auler also had photos, and also Talbot. Photos will also be found in British Intelligence Handbooks of post World War I vintage.
of the longer bridges lagged, so while they were being completed, auxiliary tracks were built in various places, leading down to temporary structures over the Yarmuk, which the locomotives could cross only with much effort. The number of bridges and culverts between Haifa and Dera'a was 443, most of them in the Yarmuk Gorge. Amongst the bridges there were 6 iron viaducts, two with a single 50 meter span, and 4 with three spans, of 30-50-30 meters, that would have been considered imposing structures even by European standards. One of these viaducts, minus rails, still stands today near El Hammeh, 26 meters high. Iron on stone supports was used by Meissner in some cases, as the extreme height of some of the bridges would have made an all-stone structure prohibitively expensive. However, there were also numerous all-stone bridges, some very graceful, with 6-12 arches, up to 12 meters wide each. Some of these bridges were destined to be attacked by Lawrence in 1918, and at least one—by the Jewish "Haganah" in 1946.

The climb through the Gorge forced Meissner to pierce also 8 tunnels through hills and spurs. They ranged in length from 40 to 227 meters, totalling 1.1 kms altogether. Amongst them was even a hair-pin tunnel, on the Swiss model, containing a curve with a radius of 125 meters (113). The steepest gradient was 18:1,000 (less

(113) Most of the above details were taken from Auler, p. 35 passim. But valuable information will be found also in Blanckenhorn and Hecker.
than on the main line south of Amman); the narrowest curves had a radius of 100 meters. Rails were of the same type as on the main line, sleepers of steel. Speeds of at least 30 kms p.h. average, were anticipated (as against 15 kms p.h. on the trunk line section south of Amman). The total number of stations, after the line had been completed, i.e., about 1910, was 15 (114). While the total rolling stock of the HR as a whole will be listed later, it might be mentioned that in 1905, when the Haifa branch was about to be linked to the main line at Dera'a, its rolling stock comprised the following units: 6 tender-locomotives, 8 passenger carriages, 2nd and 3rd class, all German-made; 28 open and 34 covered goods wagons, made in Belgium (115). So much for the history of the Haifa branch of the HR (116).

Planned Branches Never Built

The Haifa-Dera'a railway was by no means the only

(114) The list of stations will be found in a separate appendix

(115) A tender-locomotive, apparently one of Meissner's early units, survives to this day in the "Ha'aretz Museum, Tel-Aviv. Another photo of very early date (1903) will be found in the Entsiklopedia Ivrit, vol. 6. The source of the details in the text is Alt., 1905, p. 364.

(116) As in the case of the section describing the HR trunk line, considerations of space have made it impossible to quote sources for each and every detail listed in the text. Auler, Blanckenhorn, Gurhe, Hecker and Poenicke, were used as sources, as well as the Zionist German periodicals Alt. and Pal. for the years 1902-1912 approximately.
branches of the HR envisaged during the period of Meissner's activities in Palestine. Some further branch-railway projects can be documented and were already fleetingly mentioned earlier in this chapter. One, the line Amman-EsSalt, was never built. Another, the line Ma'an-Akaba, was a project that led to an international crisis in 1906, was briefly resurrected in 1914, and came to fruition only in 1975, some 35 years after Meissner's death. One was a proposed line El Hussan-Meserib, never built, about which very little is known. Finally, there was the railway Afule-Jerusalem, that Meissner proposed, following much earlier suggestions, but was not allowed to build. This line was started some years after his departure from Palestine in 1908. It never got to its destination, Jerusalem; and after a short stretch of it had been built by 1914, was diverted by Meissner, after his return to Palestine in the First World War, to Beer Sheba and Sinai, as will be described fully in the following chapter. These still-born projects of the century's first decade will be dealt with—very concisely—in the following pages. Sometime in 1894, the German geologist, Professor Max Blanckenhorn, whose later monograph on the HR has been liberally quoted in this survey, discovered a considerable field of natural phosphates in the neighbourhood of Es-Salt, in the central part of the Transjordanian plateau, not far from the slope into the Jordan Rift Valley. Though it later
became apparent, following several spot-checks by British, French and German experts that the quality of the local layers did not warrant their exploitation for export, the building of a feeder-line Es-Salt-Amman, on the HR trunk line, was mooted early. It would have been 38-40 kms long.

It had already mentioned earlier, that the Turkish government intended to exploit the Transjordanian resources in raw materials for the purpose of financing the HR. The Frenchman, Gaudin, about whom very little is known except that from 1905 he acted for a time as Director-General of the HR, seems to have made strenuous efforts to have the phosphates at Es-Salt exploited. His intention was, no doubt, to earn funds for the further construction of the line, both by selling the minerals and by exporting them, either through Beyrouth or Haifa. He was unsuccessful, and the line was never built. However, as already mentioned earlier in this chapter, it continued to lead a sort of ephemeral existence. It was shown some years later as actually extant on an otherwise reliable German map, and was also shown as late as 1917 on an equally reliable British map.

No less a man than Auler, the German Colonel and Turkish General, who twice wrote monographs on the HR, as early as 1904/05, regarded the prospective line to Es-Salt as the first section of a railway to link the HR at Amman, across the Jordan Valley, with Jerusalem, and the British (sic!)
railway to Jaffa. He thus envisaged a second Turkish trans-Palestine railway to the sea, apart from the one to Haifa. A British expert, Woods, later had the same idea (117).

The second abortive branch of the HR, was the proposed railway from Ma'an to the port of Akaba on the Red Sea. Planning this line fell to Meissner. Whether the idea was his or the Sultan's cannot now be definitely established, but according to a source in 1907 it had been Abdul Hamid's. Meissner certainly pushed the project and was to return to it, of his own volition, in 1914. The exact date when the project was first raised cannot be established either, but it may have been earlier than 1906 (118). The political, commercial, and especially military advantages of the HR as a whole have already been set out above. The proposed Ma'an-Akaba branch would have accentuated these advantages, and would especially have increased the potential, though hypothetical, military threat of the Turks opposite the British in Egypt. The very mention of the Akaba project led to

(117) For the Es-Salt phosphates, cp. Blanckenhorn, pp. 44-46. For the proposed railway: Auler, p. 57; Imhoff, p. 266; Woods, p. 53. Also on the subject: Alt., 1906, p. 112; Pal., 1903/04, p. 11; Pal., 1910-11, pp. 149, 231. Maps attached to Imhoff and Woods showed the Salt line as completed.

(118) Poenicke, p. 14, credits Meissner at least with the technical layout of the line (details of which do not seem to have survived). That referred to 1906. But in Alt., 1905, p. 57, there was a reference to a HR-Egypt line, that cropped up in the British "Statesman's Yearbook" for 1902 (which could not be checked). This may have been, logically, an early version of the Ma'an-Akaba branch. Pal., 1907, p. 278, stated explicitly that already in the autumn of 1904 Sultan Abdul Hamid issued an Irade decreeing the building of a Ma'an-Akaba rail link.
The story of the Akaba Crisis of the spring of 1906 affords plenty of material for further separate research. It has already been inquired into, though with surprisingly little reference to its railway background that formed an integral part of it. How far the Turkish intention to extend the HR to Akaba was the main reason for the tension between Britain (and Egypt) and Turkey, or whether it was a contributory factor only to it—will not be discussed here (120). Suffice it to note that in the event all ideas of building a spur to the Red Sea from the HR were dropped owing to the intransigent British opposition. For a time, during the Crisis, Egyptian troops under British command were encamped at Taba, diagonally opposite Akaba. The Crisis petered out after the Turks decided to back down. They were not prepared to clash with the British Empire at its height over—amongst other things—

(119) Cp. Poenick, p. 12, and Woods, p. 52, but especially the sources listed in the following note (120).

(120) The Akaba Crisis, and in an indirect way, Meissner's railway plans, certainly were to lead to the establishment of Taba-Rafa "1906 Boundary" between Sinai and Palestine/Israel, to which the Egyptians were to cling so tenaciously 61 years later.
Possibly the only surviving time-tables of the early Hejaz Line.

Right: Time-table of the Damascus-Haifa branch line.

(Source: Meistermann, Guide, 1907)

Pick, chapter III.
a stretch of desert railway (121). Meissner's Akaba line scheme, having failed to materialize in 1906, and also in 1914, was taken up by the British in the Second World War, and carried through in 1942, from Ma'an to Naqb Ashtar. Its most difficult stretch, from the plateau down to sea-level, was never built. As, very unfortunately, no details seem to have survived about the trace along which Meissner had wanted to build, it is not known whether the British had followed his plans. The Ma'an-Akaba railways as finally completed in 1975, seems to be close in its layout to Auler's 1906 suggestion, to branch off the HR trunk line at Mudawara (122). It starts not from Ma'an, but a considerable distance further down the main line to Mudawara, and branches off to Akaba near Batn el-Ghul.

(121) Material on "The Sinai Boundary Dispute", i.e., the Akaba Crisis, will be found in Gooch and Temperly (cp. bibliography), vol. V, pp. 189-194. On P. 194, there is a reference to the Turks "running a branch of the Hejaz Railway down to Akaba and having a port there". Otherwise this British standard work blithely ignored the railway aspect of the crisis. Contemporary observers did not ignore it. Auler, p. 56, mentioned the torpedoing of the proposed line by the British, but, rather naively, suggested that building a more southerly track, Mudawara-Akaba, would not equally displease them. Also cp. Blanckenhorn, pp. 5-6; Hecker, pp. 1066-67; Poenieke, p. 14. Hartmann (in: Mekka-Bahn; cp. bibliography) saw in the "Taba Quarrel" of May 1906 a British move to counter the proposed Turkish railway. He, incidentally, regarded a link between the HR and Egypt only as "a matter of time." Cp. Hartmann, pp. 13-14, 23, 29. Also see Alt., 1906, pp. 55, 118-119, 153-154. The Entsiklopedia Ivrith, vol. 6, col. 526, has a good map showing the area involved.

(122) Auler, p. 56
Prior to leaving Palestine in a blaze of achievement after 1908, having built the HR to Medina, Meissner proposed two more branches for the HR (123). Perhaps he did so because he regarded the chances of continuing under the Young Turks, the development of what had come to be called "Djahshet es-Sultan" ("the Sultan's Riding Donkey") to Mecca, as slim. His two additional plans also fell down, and perhaps--there is no evidence--their failure may have contributed to his decision to leave the country. His contract, as noted above, still had some time to run.

One of the additional railway branches proposed by Meissner before his departure was a line from Meserib to El Hüssen (124). This project never appeared again in any source, after being referred to but once. It was to open up a fertile area. Perhaps the reference was to El Hasn (ancient Sussita) on the plateau overlooking the Sea of Galilee. Perhaps the reference was to Hassem, east of Dera'a, a village in the wheat-rich southern Golan, which will be mentioned again in connection with another railway line later on. In any case, Meissner's project was not carried out. The second branch proposed by Meissner, was one leading from (Haifa) Afule, via Nablus to Jerusalem (125). This line was a revival of the Conder scheme of the 1870's mentioned in the previous chapter.

(123) For Meissner's movement after 1908, cp. Poenicke, pp. 15, 34.

(124) Poenicke, p. 15.

(125) Ibid.
The political climate at that time seems not to have been propitious, and Meissner, as an appointee of Abdul Hamid may not have been "persona grata" with the Young Turks, who now came to hold the government's purse strings. There is also the possibility—already noted—that there was disinclination to building a branch of Moslem-financed HR to Jerusalem, a branch that in the main would have favoured the travels of Christian pilgrims. The French owners of the Jaffa-Jerusalem railway would not have cared either to have a competing line to Jerusalem, using Haifa, a far more convenient port of disembarkation than Jaffa. This project of Meissner's also came to nothing, though the line to Jerusalem was begun a few years after his departure. Meissner now had to contemplate three failures (counting from the miscarriage of the Akaba railway in 1906) to carry out projects suggested by him. He left to join the Baghdad Railway.

Developments after Meissner's Departure

In 1909, the Sultan, Abdul Hamid II, the father of the HR, was deposed. With him there also disappeared his Second Secretary, Izzet Pasha, the native of Damascus, who had taken an active interest in the line. The just completed Pilgrim's Railway, a child of the discredited regime, seems to have fallen quickly on evil times (126). Hecker,

(126) Hecker, p. 1073; Poenicke, p. 15.
who constituted an impeccable, practically contemporary, source, and who lived in Jerusalem, near the scene of events, stated expressly that about 1908-09, the HR, that had barely reached Medina under the supervision of Mukhtar Bey, started disintegrating owing to government neglect. Moreover, the mutiny that broke out in the Yemen about 1904-05, had in the following years spread to the Hejaz, where it smouldered endemically. The line to Medina kept being attacked by the Bedouins, who had not relished losing the benefits of protecting, or robbing, the pilgrim caravans that used to pass through their habitats until the railway came. Traffic on the southern sections of the HR probably from Ma'an onward, stopped altogether for a time.

However, the Young Turks had not grasped power in order to further the dissolution of the Ottoman Empire. It might be a reasonable guess--supported by the railway building activities listed below--that they gradually became aware of the military advantages of the HR in preventing the breakaway of the western areas of Arabia. As time passed, the new regime in Constantinople again became interested in the deposed Sultan's "donkey". Details and exact dates are lacking, but the German railway expert Paul Dieckmann was appointed, about 1910-11, to a high
post on the HR, apparently as Director of Traffic, possibly as General Manager, in place of the Frenchman Gaudin. Dieckmann, in due course, put the line in working shape again (127). He was still at his post in the First World War. In 1911, the HR, which had up to then worked under the Grand Vizier (as far as can be inferred from the sources) was put under the Ministry of War, a clear indication of the importance now attached to it, and in which field. However, according to a reliable source, it was supervised by the Evkaf Ministry in 1914. Though chronological details remain obscure, one fact is certain; whether belonging to the Ministry of War, or the Evkaf (the administration of religious properties), the Turks took good care—as appears from the sources—to keep the line out of the clutches of the French, a subject that will be referred to again (128).

(127) It was Dieckmann who described for posterity the never-built line to Jerusalem that will be mentioned further on. Cp. note 132. After World War I, apparently in retirement, he continued to write on railways in Palestine, as will be noted in chapter V.

(128) The sources reporting the putting of the HR under the Ministry of War (and the reasons for this step) are Poenicke, p. 13 (who quotes the German Consulate at Haifa 6.10.1911) and Pal., 1912, p. 224. The transfer of the line to the Evkaf Ministry early in 1914 was reported by Hecker, p. 1073. The chronology of these developments tends to be obscure.
Further Expansion of the Hejaz Railway

About 1911, some three years of Meissner's departure, the HR had overcome its stagnation, and started expanding again. On the last day of 1911 (as has already been mentioned above) a 3 kms extension was opened from Kadem Station, on the outskirts of Damascus, to the "Hejaz Station" in the town itself. The imposing new station had been planned by the German architect Palmer (129). In July 1912, an altogether new branch railway was inaugurated that, though temporarily taken up in the First World War, was to be laid down again, to be still shown on maps to the present day. This was the 33 kms long line to Bosra eski-Sham, an important center in the southern Hauran. This line branched off the HR trunk line at Gasim Junction, some 5 kms south of Dera'a. There were two intermediate stations, Taibeh (at km 10) and Hassem (at Km 23). This was purely a wheat-exporting line, designed to carry the produce of the southern Hauran to Damascus and Haifa, thus competing with the French line from Meserib, that carried wheat to the north from other parts of the Hauran (130).

(129) Cp. note 97, above.

(130) For the Bosra branch, cp. Hecker, pp. 1073, 1078, 1316. Ruppin, p. 297, and other sources gave the length of this branch as 39-40 kms. They did not take into account the distance Dera'a-Gasim, some 5 kms which the branch trains used jointly with the ones going to Amman. The actual branch started at Gasim. Hassem, on this branch, possibly may have been the El Hüssen to which Meissner, about 1908, wanted to build a spur--as noted above.
Some time in 1912, building was also begun of a most important branch on the Haifa-Damascus section of the HR. This was the line whose construction had been proposed--to no avail--by Meissner about 1908, as set forth above. In view of its future importance, this branch deserves a more detailed description. It branched off the Haifa line at Afule, and was planned to extend, via Nablus, to Jerusalem. It was to follow the ancient north-to-south highroad down central Palestine very closely and in its southern stretch practically duplicating it, to come into the Holy City from the north. Apart from having been advocated by Meissner, the line seems to have been talked about as a timely project even earlier (131), and was commonly expected to be of great commercial benefit, linking the north of the country with its center. It has already been mentioned that the concept of the line dated back some 40 years to an idea conceived by Conder, as described in chapter II.

Construction of the new line started at Afule, some 36 kms out of Haifa (132). From Afule, which subsequently acquired a biggish station (still standing today), and

(131) The (Haifa-)Afule-Nablus-Jerusalem railway had already been mentioned in 1906, by Alt., pp. 112, 240, and even at that time seemed to have been a well-known project. It was also mentioned by other sources prior to 1912, for instance by Kann (cp. bibliography).

(132) The whole story of the Afule-Nablus-Jerusalem line, plus a unique map, showing the track Nablus-Jerusalem that was never built, will be found in an article by P. Dieckmann, "Die Zweiglinie Affuleh-Jerusalem der Hedchazbahn", in the Z.D.P.V. 1914, pp. 267-270. Dieckmann, whose residence was given as Haifa, was at that time traffic manager of the HR and knew what he was writing about. For other references to the Afule-Jerusalem line, see Hecker, pp. 1073, 1078; Imhoff, p. 266; Pal., 1912, p. 227; and Ruppin, p. 297.
shunting facilities, the track proceeded south, through the flat expanse of the Valley of Jezre'el, past Mukeibilah halt (km 11), to Jenin, at km 17. This section was opened on February 17th, 1913. From Jenin the track started climbing into the historic Pass of Yible'am (today's Balameh), paralleling at a distance of a few meters the easternmost branch of the often-mentioned—in chapter I—Via Maris. Having attained the Plain of Dothan, and passed Arrabeh halt (km 28), the line continued its way into the Hills of Samaria. There was a station at Sileth ed-Daher (to be mentioned again in chapter IV, dealing with the World War I), at km 40 from Afule. At km 49, the Turks built the only tunnel ever finished in cis-Jordanian Palestine, the 250 meter long Ramin tunnel. Rails had been laid to about this place, ending in an open field, by about March 1914. Their laying was continued only under the supervision of Meissner himself, after his return to Palestine in 1914. However, building the track itself (though railless) had been continued before the outbreak of war, past Ramin (km 51), past Sebastiyeh, into Nablus— itself, at km 77 from Afuleh. There work stopped—as it turned out, never to be resumed again, for reasons explained below. The rails to Nablus were however laid later and the line opened for traffic from the north (Haifa and Damascus) early in 1915.

It is not a generally known fact that the plans for the continuation of the line from Nablus to Jerusalem, a section that had been the raison d'être of the whole project from the beginning, seemed to have grown well into the
blueprint stage. A map exists by the railway engineer (and at that time a high official of the HR), Dieckmann, showing the whole proposed layout of the stretch to Jerusalem (133). According to this map, the proposed line ran all the way parallel to the Turkish Nablus-Jerusalem road (itself the successor of the older highway), deviating from it only where the necessity of climbing geographical obstacles made slight deviations necessary. This was the case near the Ascent of Khan Lubban (ancient Lebanon), about halfway between the two towns. The line followed the watershed between the Mediterranean and the Jordan Valley, along all its way, and came into Jerusalem from the north, practically on top of the watershed, which the ancient north-to-south highway had also followed. As far as can be learnt from the map, the line followed the watershed faithfully into the western outskirts of Jerusalem, and would have had its terminus somewhere around the present-day Rehavia Section. The complete railway, Afule-Nablus-Jerusalem, would have been 163 kms long (practically the same length as the Haifa-Dera'a line). This important line, linking north and central Palestine, and Jerusalem, with the sea and with Damascus, and even with Beyrouth or Aleppo or Anatolia itself, was never to be built. The reasons are obscure, but can be guessed at. What is definitely known is that French

(133) Cp. note 132.
factors—so the sources—whatever their exact identity, killed the continuation of the line from Nablus to Jerusalem. This was sometime in May 1914, only a few months before the outbreak of the First World War (134).

On October 14, 1913 a third branch was added to the Haifa-Damascus section of the HR, following the line to Bosra, and to Nablus. This was the 18 km long spur from Beled esh-Sheikh (4.5 km east, outside Haifa) to Acre (Akko). This branch was presumably built as a sop to the inhabitants of Acre, who had been badly hurt by the fact that the terminus of the line from Damascus had been placed at Haifa. Acre had for a long time been the capital of a Turkish Sanjak (province), and the seat of a Vali (governor). Throughout history it had been the most important town of Northern Palestine, though its harbour had never been safe. The building of the Hejaz lines outlet at Haifa, with its safe anchorage, tended to accelerate the decline of Acre, and the construction of the branch line was probably expected (erroneously as it turned out) to arrest this decline. The new spur-line had no intermediate stops as it led along the coast, through the wastes of the Valley of Zebulun. Construction posed no difficulties, except at two spots; one, where the river Kishon (Mukattah) and its quicksands had to

(134) For the killing of the Jerusalem line by the French, for commercial reasons, i.e., for fear of competition, cp. Hecker, pp. 1073-74, who almost certainly, lived in Jerusalem at the time.
be crossed, and the other where a bridge had to be built across the Na'aman river (ancient Belus), just outside Acre. As finding firm foundations for the bridges caused considerable difficulties, there seems at one time, to have been a plan to lead the line around the eastern borders of the Valley of Zebulun, parallel to the foothills of lower Galilee. Thus the track would have gone past Birwa to turn west and end at a station at Tel Fukhar (ancient Acre) outside the town. This would have involved a much longer track, and nothing further was heard of the plan, but it should be mentioned. The Acre terminus, a handsome building, lasted until the 1960's, when it was demolished. It was situated just outside the town's main gate (135). As noted, the line was opened in October, 1913.

Cost, Returns, Rolling Stock, Etc.

In order to round off the description of the HR, the main line, the Haifa branch, as well as the subsidiary spurs, a few pertinent details should be added regarding building costs, operating returns, rolling stock, timetables,

(135) For the Acre branch, cp. Hecker, pp. 1073, 1078 (where its length was erroneously given as 17 kms) and 1318 (where the correct distance, 18 kms, is noted). Also see Pal., 1911, p. 230, and Pal., 1912, p. 227.
travelling conditions, etc. Construction speeds have already been referred to (136). The following details constitute only representative excerpts from the many sources that are available.

Construction costs of the HR came in for close scrutiny from various sides while the line was being built. On this subject it might be useful to refer again to Hecker, who observed things from a professional point of view, on the spot, only a few years after the line had been built, and after the dust had settled down and details had become known. Referring to figures as known about 1912-1913, Hecker put total construction cost of the HR, including equipment and rolling stock, at 95 million Francs. The average cost per km, according to him, worked out at about 62,000 Francs. Similar figures were also quoted by Ruppin a few years later, who also put the total cost at approximately 95 million Francs, and the average cost per km at 63,000 Francs (137).

(136) Construction rates of the HR have already been referred to above. For the trunk line plus the Haifa branch, 1302 + 163 kms, but without the later branches, construction speed worked out for eight years at about 183 kms per year (with an average of some 150 kms yearly in the early stages). In the last year of construction, 1907-08, 323 kms were laid, but very roughly. Top progress per day seemed to have reached, as an exception, 2-3 kms daily. Cp. Auler, p. 53; Blanckenhorn, p. 10; Hecker, p. 1067; Pal., 1907, p. 278; Poenicke, p. 6.

(137) Hecker, pp. 1089, 1315, 1321; Ruppin, p. 300.
Despite some discrepancies in his figures, it is illuminating to quote also Hecker's breakdown of the cost of the various sections of the HR. According to him, the trunk line Damascus-Ma'an (Medina) cost 58,100 Francs per km. The Haifa-Dera'a branch, on the other hand, cost 78,500 Francs a km. The cost of building the steep ramp from the Jordan Valley to the Transjordanian Plateau, the most difficult section of the entire HR, on accounts of its many bridges and tunnels, amounted to no less than 175,000 Francs per km (138). Nevertheless, the expenses of constructing the HR were considerably less than those of other railways built in Turkey. This on account of the fact that a great proportion of the work had been carried out by troops, at trifling cost (they had to be paid anyway), and owing to the fact that the line, as a "sacred" undertaking, benefitted from donations, and had to pay nothing for its right-of-way, as the lands over which it passed were given or expropriated (139). Since the funding of the line had been based entirely on donations, and taxation, the line, having no shareholders to satisfy, or loans to repay, was entirely debt-free on its completion.

There are few particulars available as to financial returns obtained from the HR, perhaps because the subject

(138) Hecker, p. 1315
(139) Hecker, p. 1321
was of little interest, as the line had not been regarded as a viable commercial undertaking in the first place. Such figures as were recorded by Hecker and Ruppin regarding the financial results of the line between 1910-11 and 1912-13, though they do not tally, at least agree in one respect--namely that the line made profits on its operations, even after costs had been deducted (140). Ruppin, writing about 1915, stressed that pre-war results were even better than it appeared, because operating costs, deducted from profits, actually included improvements and new construction items that elsewhere would have been paid out of earnings. He also noted that the funds of the HR kept on increasing, because donations continued flowing in. Passengers and troop-transport accounted for the greater percentage, by far, of earnings, while goods transport accounted for little. Detailed fares are listed in the note below, also goods transport rates. It might be noted, that at least for a time passengers on the section Dera'a-Medmen, had to pay a special surtax for military protection against

(140) Hecker, p. 1565; Ruppin, p. 301. On the financial viability of the HR in its early stages, see also Auler, pp. 62-66. A most interesting breakdown of the income and expenditure of the HR, though for an early year, 1905, will be found in Alt., 1905, p. 306.
Bedouin raids (141). Overall earnings were apparently good enough, at least at certain periods, to be reflected in price-cutting wars with the French, especially to undercut their Damascus-Meserib Railways. There were also attempts to cut down competition by camels.

The technical equipment of the HR also calls for some comment. Apart from the telegraph line linking all stations (142), there seem to have been—as already noted—no signalling installations. Anyway, none are mentioned anywhere, and none are shown on surviving photos. But equipment of the track itself, must have run into many thousands of tons in terms of weight, and many millions in terms of money. Rails, sleepers (ties) and components of

(141) No comprehensible price lists for the HR could be found, but Blanckenhorn, p. 10, and Hecker, p. 1544, provide prices on the base of kms. According to Hecker, prices in French centimes were: 1st class-11.5 per km, 2nd class-9.5 centimes per km, 3rd class-5.7, to which were added special charges for military protection on the southern section of the trunk-line, this to the tune of 2.2, 1.6 and 1.1 centimes per km. Auler, p. 66, stated that pilgrims about 1905-06, when the line was as yet incomplete, were carried entirely free of charge. In view of the fact that in later years the line did have a surplus, and that pilgrims, before the line had been built, had paid at least 50 Turkish Pounds for travelling expenses, it seems unlikely that prospective Hajis were at all times carried entirely free of charge, all the distance to Medina.

Goods tariffs seem to have been relatively high, seeing that goods trains usually had to return half-empty, or had no freight at all, while they ran on costly imported coal. Freight rates were also divided into three classes, payment amounting to 12.5, 11.5 and 10.5 centimes per ton-km. At certain times serious price cutting was indulged in, so as to kill French competition (where it occurred) as well as the cheap door-to-door transport on camel-back. Cp. Alt., 1904, pp. 219, 348; Hecker, p. 1545; Ruppin, p. 304; and also Auler, p. 43

(142) Auler, p. 27.
the metal bridges, seem to a great extent have been of German manufacture, though purchases were made also from Belgian, American, Spanish and even Russian factories (143). As for rolling stock, most locomotives were German-made, and a few Belgian. At a later stage Swiss-made locomotives were also acquired. Two-thirds of the passenger-carriages were Belgian made, the remainder, German (144).

Rolling stock grew more numerous as the line progressed, and its increase over the years reflected in the sources. About 1913, the HR, including the Haifa branch, and the spurs then open, operated the following stock (145):

1. Locomotives--96. Of these, 26 were tank-locomotives, for short hauls (as on the Haifa branch) and shunting. Seventy were tender-locomotives, coupled with extra-large water-tenders with a capacity of 18 cubic meters. These were intended for long-distance hauls, over waterless sections.

(143) Auler, p. 27; Hecker, p. 1312. Alt., and Pal., also noted purchases of equipment (and coal) from various supplies.

(144) Auler (I, 1906), pp. 42-43; Auler (II, 1908), pp. 63-64; Blanckenhorn, pp. 11-12; Hecker, pp. 1314-15; Poenicke, p. 6.

(145) The following figures regarding the HR rolling stock were taken from Hecker, p. 1320. Additional details were also culled from some of the sources listed in note 144, and some were taken from photos.
have had a carrying capacity of 15 tons or more. A good many of these wagons were fitted with water containers, and rudimentary lavatories, for the transport of pilgrims (147). Some short, two-axled, goods wagons, of some 10 tons capacity, in the first building stages were fitted by Meissner with large water containers. Trailing behind the limited-capacity tank-locomotives, they served as auxiliary tenders on work trains. These water-carriers also were used to carry water for drinking and building purposes to the railhead, when construction was underway. These inconspicuous wagons were Meissner's solution to the perennial water-shortage, and constitute the reason for the remarkable fact that building operations in an arid country never stopped even once on account of the lack of water.

Very little is known about the staff that worked the HR in its prime. Top positions were apparently filled by foreigners, Germans, and French. Subordinate positions were worked by Ottoman subjects, Turks, Christian Arabs, Greeks with a considerable sprinkling of Armenians whose dismissal was to have serious consequences in the Great War of 1914 (148). Little is also know of the line's time-tables. Initially, the HR was worked on a "Turkish System", the hours

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(147) For loading capacities and facilities for the transport of pilgrims, cp. Hecker, p. 1314. Auler also has occasional details.

12:00-24:00 being regarded as "daylight", and the hours
00:00–11:59 as "night"! Blanckenhorn, in his description
of the HR, gave an interesting sample of this confusing
system, in which morning hours counted as "night". Later
the European 24-hour system was adopted (149). Passenger
trains seem to have consisted of 5-7 carriages. Pilgrim and
goods-trains consisted of 10 wagons or thereabouts, but a
good many trains may have been mixed passenger/goods.

is known of load limits, and the details above are also
merely based on odd bits of intelligence. Top speed
anywhere does not seem to have reached the 30-40 kms. p. h.
for which the line was designed. For what is known about
the frequency of trains, posterity has to be indebted mostly
to Hecker, who referred to traffic conditions only a short
time before the 1914-18 War (150). On the main line
Damascus-Ma'an-Medina, there worked, according to Hecker,
3 trains a week, in each direction. The journey of 1,300 kms
was covered, on the average, in 55 hours (50 hours being
a record), which worked out at an average speed (including
stops) of some 23 kms. p. h. On the branch Haifa-Damasucs
there was one train daily in each direction, which relatively
high frequency conclusively proved the importance of this,

(149) Blanckenhorn, pp. 61-63; Hecker, p. 1316.
The most informative time-tables will be found in Meister-
mann's "Guide" of 1907.

(150) Hecker, pp. 1315-16, though there is some
information in scattered other sources.
to a great extent, "Palestinian" line. Average speed was 25 kms p. h. There were 3 trains a day in each direction between Haifa and Acre (151). This remarkable density of train traffic was accounted for by the fact that about 1913 (and until British Mandatory times), there was no useable road between the two towns. Horse-carriages, camels, etc. used the beach as a highway, having to ford the treacherous Kishon river (and the Na'aman river) on the way. The line Haifa-Afule-Jenin was worked by one train daily in each direction, taking four hours for the journey. On the other hand, there were only three trains a week on the branch (Dera'a) Gasim-Bosra, one more demonstration of the preponderance in importance of the cis-Jordanian lines over the Transjordanian ones. There never seem to have been direct trains from Haifa to Ma'an. Goods trains were perhaps not run on a fixed schedule, but as demand arose, also special pilgrim and troop trains. Hours of departure, and certainly of arrival, were not usually adhered to, but at least days of operation were fixed (152). Trains, as evidenced by the various types of carriages (already referred to) seem to have consisted mostly of 1st and 3rd class stock. The few 2nd class carriages may have been used to carry female pilgrims, while the men were carried in the specially

(151) That was a train frequency for the section Haifa-Acre, scarcely exceeded by Israel Railways some 60 years later.

(152) Auler, p. 43; Blanckenhorn, p. 62; Hecker, pp. 1315-16.
The railways in the Turkish Levant just prior to World War I. Map attached to a survey by the German General Imhoff. The map shows the two competing parallel railways down the Hauran; the never-built phosphate-line Amman-es-Salt; the never-executed French project Rayak-Lod/Ramle, with an imaginary French(!) spur Nablus-Jerusalem; and the Turkish Afule-Sebastiyeh branch, with no(!) continuation to Jerusalem.

(Source: Petermann's Geogr. Mitt., 1915)

Pick, chapter III.
fitted goods wagons, also noted above.

No statistics could be found as to the number of pilgrims carried by the HR during the yearly Haj season. Hecker stated that while the Haj lasted, three trains a day, each consisting of 10 wagons, were run. Each train carried 350 people. This gave a total of 2,450 pilgrims a week. In 1910-11, the HR (trunk and branch lines) carried 163,482 passengers, and 65,778 tons of goods. In 1911-12, 171,435 passengers and 77,524 tons of goods were carried (153). No further statistics seem to have been published.

For reasons of space, a number of subjects have not been detailed above (mentioned only fleetingly), amongst them the day-to-day organization of work by Meissner--a complicated task--while the line was under construction, health precautions (in the early stages of work there was a cholera epidemic, that never recurred), water supply, military cover, etc. References to all these problems and their solutions, might be found in many of the sources quoted (154).

(153) Hecker, p. 1565

(154) Some of the problems not dealt with in the text were touched upon by the writer in his short monograph on Meissner Pasha (cp. bibliography: Pick). While the above text was being written, the writer chanced on the handbook on the HR by Frietsch (cp. bibliography), which also contains some notes on the HR.
Summing Up Developments, 1892-1914

Looking at the railway map of Palestine, in its widest sense, in 1914, an observer might well be struck by the great changes that had come about in the area under discussion in the 22 years that had passed since the opening of its first line in 1892. The country beyond the Jordan, undeveloped as it was, had become quite well served by rail-links with Syria, with the Mediterranean littoral, and with Arabia. The northern part of Palestine proper, i.e., cis-Jordania, was also surprisingly well supplied with rail-communications that joined it with all the northern Levant, Transjordania, and (bypassing the Suez Canal) with western Arabia. All the important towns of northern Palestine now had their rail stations or were within reach of them: Haifa, Acre, Nazareth, Jenin, Beisan, and Tiberias. Even Nablus (further south), was on the way towards getting its rail connection, the only exception being Safad. In view of these facts, the more striking was the rail gap that remained between the north of the country, and its populous central regions, that were served only by the isolated Jaffa-Jerusalem railway. Southern Palestine had been left with no railways at all. Even more striking was the absence of any rail link between Palestine and Egypt, though plans for such a link had been in evidence for more than 60 years. A good many natural and historic, highways in Northern Palestine had, by the eve
of the First World War, been succeeded by railway tracks, that had been laid alongside them. However, the most famous and internationally important of Palestine's highways, the ancient "Via Maris" had not yet come to serve as a "guideline" (so to speak) for a railway. This was to change shortly, and with striking effect, as will be detailed in the following chapter.
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A literary curiosity that may—or may not—have owed something to the completion of the Hejaz Railway in 1908. A Passover "Haggadah" printed in Baghdad in 1908, showing an ancient locomotive—perhaps a symbol of departure from Bondage into Freedom—as a final last page decoration.

Pick, chapter III.  
(Source: Private Collection, Jerusalem)
REFERENCES TO RAILWAY CONSTRUCTION
IN PALESTINE, 1902-1912, IN GERMAN ZIONIST PUBLICATIONS
(Selection)

**PALÄSTINA**
1902: pp. 38, 45, 46, 84.
1903-4: pp. 9, 112, 219, 239.
1907: pp. 37, 204; 277.
1908: pp. 129, 222.
1909: pp. 29, 143.
1910: p. 61.
1912: p. 227

**ALTNEULAND**

Note: Not all of the above references were mentioned in the text, since some were overlapping.
## OPENING DATES OF THE HEJAZ RAILWAY

<table>
<thead>
<tr>
<th>Section</th>
<th>Length (Kms)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meserib-Dera'a</td>
<td>14</td>
<td>9/1/1901</td>
</tr>
<tr>
<td>Dera'a-Zerka</td>
<td>80</td>
<td>9/1/1902</td>
</tr>
<tr>
<td>Dera'a-Damascus (Kadem Station)</td>
<td>123</td>
<td>9/1/1903</td>
</tr>
<tr>
<td>Zerka-Katranii</td>
<td>124</td>
<td>9/1/1903</td>
</tr>
<tr>
<td>Haifa-Beisan</td>
<td>59</td>
<td>1/14/1904</td>
</tr>
<tr>
<td>Beisan-Jisr el-Majami</td>
<td>17</td>
<td>5/27/1904</td>
</tr>
<tr>
<td>Katrani-Ma'an</td>
<td>132</td>
<td>9/1/1904</td>
</tr>
<tr>
<td>Ma'an-Mudawara</td>
<td>113</td>
<td>9/1/1905</td>
</tr>
<tr>
<td>Jisr el-Majami-Meserib</td>
<td>73</td>
<td>10/15/1905</td>
</tr>
<tr>
<td>Mudawara-Tebuk</td>
<td>120</td>
<td>9/1/1906</td>
</tr>
<tr>
<td>Tebuk-El Ula</td>
<td>287</td>
<td>9/1/1907</td>
</tr>
<tr>
<td>El Ula-Medina</td>
<td>323</td>
<td>9/1/1908</td>
</tr>
<tr>
<td>Damascus (Kadem)-Damascus (Hejaz Stat.)</td>
<td>3</td>
<td>12/31/1911</td>
</tr>
<tr>
<td>Gasim-Bosra eski-Sham</td>
<td>33</td>
<td>1912</td>
</tr>
<tr>
<td>Afule-Jenin</td>
<td>17</td>
<td>2/17/1913</td>
</tr>
<tr>
<td>Beled esh-Sheikh-Acre</td>
<td>17 (by 18)</td>
<td>10/14/1913</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,535 kms</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

1. 2 kms of spur from Meserib (French Station) - Jisr el Majami - Dera'a track, taken up later.
2. Sections Mudawara-Medina not dealt with in text.
<table>
<thead>
<tr>
<th>Section:</th>
<th>Distance: (Kms)</th>
<th>Height: (Meters Above Sea-Level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Trunk Line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damascus, Hejaz Station</td>
<td></td>
<td>690</td>
</tr>
<tr>
<td>Damascus-Kadem Station</td>
<td>3</td>
<td>696</td>
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<tr>
<td>Kisweh</td>
<td>20.9</td>
<td>739</td>
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<tr>
<td>Deir Ali</td>
<td>30.6</td>
<td>696</td>
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<tr>
<td>Masmiyeh</td>
<td>49.8</td>
<td>618</td>
</tr>
<tr>
<td>Jabab</td>
<td>62.8</td>
<td>643</td>
</tr>
<tr>
<td>Shabab</td>
<td>69.3</td>
<td>624</td>
</tr>
<tr>
<td>Mahajeh</td>
<td>78.1</td>
<td>692</td>
</tr>
<tr>
<td>Ezra</td>
<td>91.4</td>
<td>587</td>
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<tr>
<td>(Kirbet el-) Ghazale</td>
<td>106.3</td>
<td>576</td>
</tr>
<tr>
<td>Dera'a</td>
<td>123.3</td>
<td>529</td>
</tr>
<tr>
<td>Gasim</td>
<td>128</td>
<td>-</td>
</tr>
<tr>
<td>Taibeh</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Hassem</td>
<td>23</td>
<td>-</td>
</tr>
<tr>
<td>Bosra eski-Sham</td>
<td>33</td>
<td>821</td>
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<tr>
<td>Nassib</td>
<td>136</td>
<td>574</td>
</tr>
<tr>
<td>Mafra'k</td>
<td>161.9</td>
<td>697</td>
</tr>
<tr>
<td>(Khirbet es-) Samra</td>
<td>185.6</td>
<td>559</td>
</tr>
<tr>
<td>(Ein) Zerka</td>
<td>203</td>
<td>618</td>
</tr>
<tr>
<td>Amman</td>
<td>22.6</td>
<td>736</td>
</tr>
<tr>
<td>Kas</td>
<td>234.3</td>
<td>941 (steepest section!</td>
</tr>
<tr>
<td>Luban</td>
<td>249.1</td>
<td>774</td>
</tr>
<tr>
<td>Place</td>
<td>Longitude</td>
<td>Latitude</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>Jize</td>
<td>260.1</td>
<td>721</td>
</tr>
<tr>
<td>Daba</td>
<td>279.1</td>
<td>750</td>
</tr>
<tr>
<td>Khan ez-Zebib</td>
<td>295.7</td>
<td>782</td>
</tr>
<tr>
<td>Sawakah</td>
<td>309.7</td>
<td>752</td>
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<tr>
<td>Katrani</td>
<td>326.6</td>
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<tr>
<td>Mezzil</td>
<td>348.8</td>
<td>838</td>
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<tr>
<td>Fretre (2)</td>
<td>368.5</td>
<td>892</td>
</tr>
<tr>
<td>El Hassa</td>
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<tr>
<td>Jurf ed-Dervish</td>
<td>397.7</td>
<td>957</td>
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<tr>
<td>Kal'at Aneize</td>
<td>423</td>
<td>1,052</td>
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<tr>
<td>Wadi Jardun</td>
<td>440.8</td>
<td>1,059</td>
</tr>
<tr>
<td>Ma'an</td>
<td>459.1</td>
<td>1,075</td>
</tr>
<tr>
<td>Ghadir el Haj</td>
<td>475.7</td>
<td>1,000</td>
</tr>
<tr>
<td>Beer el Khatiyeh</td>
<td>487</td>
<td>966</td>
</tr>
<tr>
<td>Akabet e-Hejaziyeh</td>
<td>514.6</td>
<td>1,152</td>
</tr>
<tr>
<td>Batn el-Ghul</td>
<td>517</td>
<td>1,168 (Highest point!)</td>
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<tr>
<td>Wadi Retm</td>
<td>520.2</td>
<td>1,124</td>
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<tr>
<td>Tel el-Hammam</td>
<td>530.2</td>
<td>993</td>
</tr>
<tr>
<td>Ramle</td>
<td>546.3</td>
<td>849</td>
</tr>
<tr>
<td>Mudawara</td>
<td>555.3</td>
<td>804</td>
</tr>
</tbody>
</table>

**Notes**

1. On the 113 kms between Ma'an and Mudawara, there were no water resources whatever.

2. The 730 kms long section, Mudawara-Medina contained 37 stations.
**B. Haifa Branch**

<table>
<thead>
<tr>
<th>Station</th>
<th>Code</th>
<th>B.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haifa</td>
<td>-</td>
<td>1.5</td>
</tr>
<tr>
<td>Beled esh-Sheikh</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td>Acre</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Shomariyah</td>
<td>11</td>
<td>- (Abandoned)</td>
</tr>
<tr>
<td>Tel esh-Shamama</td>
<td>21.7</td>
<td>39</td>
</tr>
<tr>
<td>Afule</td>
<td>36.3</td>
<td>62</td>
</tr>
<tr>
<td>Mukebileh</td>
<td>10.8</td>
<td>88</td>
</tr>
<tr>
<td>Jenin</td>
<td>16.8</td>
<td>150</td>
</tr>
<tr>
<td>Arrabeal</td>
<td>48</td>
<td>300</td>
</tr>
<tr>
<td>Sileth ed-Dahr</td>
<td>40</td>
<td>350</td>
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<tr>
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<td>-78</td>
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<td>Beisan</td>
<td>59</td>
<td>-122</td>
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<tr>
<td>Jisr el-Majami</td>
<td>76.8</td>
<td>-247 (Lowest Point!)</td>
</tr>
<tr>
<td>Samakh</td>
<td>86.9</td>
<td>-187</td>
</tr>
<tr>
<td>El Hammeh</td>
<td>95.3</td>
<td>-146</td>
</tr>
<tr>
<td>Wadi Kleit</td>
<td>107.4</td>
<td>-57</td>
</tr>
<tr>
<td>Sejera</td>
<td>119.5</td>
<td>27</td>
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<td>Mukkarin</td>
<td>124.5</td>
<td>71</td>
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<td>Zeizun</td>
<td>135.7</td>
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<tr>
<td>Meserib (Turkish Station)</td>
<td>149</td>
<td>462</td>
</tr>
<tr>
<td>Dera'a</td>
<td>161</td>
<td>529</td>
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**Notes**

1. The names of stations are spelled differently in different sources, for instance, Wadi Kleit=Wadi Khalid.
2. Sources: As above for Section A, plus Zionist Periodicals.
IV. RAILWAYS IN PALESTINE
DURING THE WORLD WAR
1914 - 1918
The Turkish Railways: Their Task of Holding Palestine as a Military Base

Turkey entered the First World War when its warships bombarded Russian ports on November 29, 1914. It thus joined the Central Powers, and as a result, Palestine, adjoining British-occupied Egypt and Sinai, became a potential Turkish base for an attack on the British Empire's jugular line of communications - the Suez Canal (1).

Palestine's potentialities as a military base, either offensive or defensive, were strictly limited, on account of the extreme paucity of its resources in every respect. It had no importance either as a source of manpower, or of munitions, or supplies, in any quantity. Its value to the Turks, and their German allies, was limited to being an area of transit to the front for military forces that could not be moved by sea, owing to the naval preponderance of the Entente Powers, especially the British, in the Mediterranean. Its sole importance, therefore, consisted in the fact that it was a territory over which soldiers could be shifted, and even in that respect, as will be seen, its usefulness in 1914 was limited.

(1) On the threat to the Suez Canal - cp. Military Operations (see bibliography; henceforth called in short "Ops."), pp. 9-36; cp. also Kress (cp. bibliography) p. 17 for the Turkish aspect. On the general strategic background cp. Friedman (see bibliography) pp. 1-7. For the opinions of a high-ranking British officer, to be closely associated with events in the Middle East, cp. Wavell (see bibliography) pp. 1-28.
The movement of military bodies in World War I on land was accomplished either by road or by rail. Before assessing the military importance of the railways that were operating in Palestine at the outbreak of war, and in order to bring their importance into correct focus, the state of the roads in the country should first be summarized (2).

**Palestine's Roads in 1914**

The only metalled road in Palestine that seems to have achieved more or less European standards was the Jaffa-Jerusalem road built in 1869, on the occasion of the visit to Palestine of the Austrian Emperor, Francis Joseph. That road had apparently been kept since in a reasonable state of repair. Towards the end of the 19th century, some more roads were added with Jerusalem as their hub. These were the road Jerusalem-Bethlehem, suitable for carriages, that was ultimately extended to Hebron, and the road Jerusalem-Jericho, built for pilgrims, but never apparently in good condition. About the turn of the century the road Jerusalem-Nablus was started and completed by stages towards 1914. Its condition

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(2) Details on the state of roads in Palestine will be found in many contemporary sources (books and maps), and the following are only a selection: Brief Record (cp. bibliography; henceforth just "Records") p. 95, and map 2; Kress pp. 59-60, 145, 296; Ruppin (cp. bibliography), pp. 294-295; Wavell p. 8; Wiegand, p.16. Also, Ops. I, p. 27-28; Ops. II, part I, p.19, and the maps in these volumes; and in the map-case belonging to Ops. The important fact should be noted that the references to Wiegand, above, and on the following pages, actually refer to Kress van Kressenstein's report "Kriegsführung in der Wüste" (Waging War in the Desert") that was included in the volume "Sinai", which appeared under Theodor Wiegand's editorship in 1920.

This differentiation was adopted in order to avoid a mix-up with Kress' own, "Mit den Türken um Suez Kanal" ("With the Turks to the Suez Canal"), that appeared in 1935.

Most contemporary writers invariably complained about the state of road communications in Turkish Palestine.
This road seems to have continued the same shape across the hills of Samaria, to Jenin, Afule and Nazareth. This link was in use on the outbreak of war. Its continuation was a track, probably improved, by way of Tiberia-Safed/Kosh-Pinah-Kuneitra to Damascus. This was the only tenuous carriage-worthy link of Palestine with the outside world. There were no links suitable for wheeled traffic with Lebanon and the country across the Jordan. There was a carriage road between Nazareth and Haifa. In the center of the country there was an improved track from Jaffa, by way of Kalkilia to Nablus. There was no good road of any description along the coastal plain - communication-wise the easiest, and militarily the most important part of the country. Travelers preferred to go by sea between Gaza, Jaffa, Haifa, and the neighboring countries (3). There were no viable tracks at all south of the line Hebron-Gaza. In Sinai there were merely camel trails, between watering points on the three historic chief routes across the peninsula, the coastal route, the central route, and the pilgrim's way between Akaba and Suez. As has been noted elsewhere, ever since the distribution of regular steamship services between Egypt and Palestine, about the middle of the 19th century, international traffic preferred the sea, and the ancient highways across Sinai were left desolate. Not one modern road had taken their place.

(3) For land communications in Turkish Palestine, cp. Avitsur (Hebrew; see bibliography) pp. 330-333.
Land transport in Palestine, i.e. horsedrawn carriages, was confined in the hills to the few available roads and improved tracks. In the plains vehicles could move more easily, but only at considerable cost in wear and tear, and beasts—and only in the dry season. In winter, according to all sources, most low-lying areas periodically turned into bottomless quagmire, and were cut up by overflowing wadies (4).

Troops, could, of course, be herded cross-country, in most parts of the Holy Land, at most times. But in wartime their movements necessarily had to be governed by considerations of time and space, and these postulated roads equal to military traffic. Moreover, even if troops were relatively independent of the use of artificial highways, they were dependent on a minimum of supplies and ammunition, which in roadless areas had to be carried cross-country, by literally hosts of camels, mules and donkeys (5), numbering tens of thousands (besides oxen for dragging artillery).

(4) Kress pp. 68, 208, 212. References to the impassability of the coastal plain of Palestine during the rainy season, in Ops. and Wavell are too numerous to list. There are also graphic pictures of troops on both sides, during the 1916-18 campaigns practically drowning in mud.

(5) About 1915 the Turks in Palestine and their German Allies needed 30,000 camels for military transportation purposes. Ultimately they seem to have collected some 20,000. Cp. Kress, p. 63; Wiegand, p. 17. The British in 1917 used some 35,000 camels and 8,000 donkeys. Cp. Record, p. 100. Also Ops. I, p. 23.
The relatively limited, slow, transport capacity of these beasts of burden was further circumscribed by the fact that they had to carry feed for themselves in considerable quantities, which limited their purely military pay load still further. Thus the almost total absence of good roads in Palestine, with only indifferent links between the northern and the southern areas, made the country a military base of severely limited capability.

**Palestine's Railways in 1914**

On the outbreak of war, Palestine - within the limits outlined previously - had four operative railway lines. These will be described here in short, to be analysed more thoroughly later. They were: 1) The French-owned Jaffa-Jerusalem line, going west-east, from the Mediterranean coast up to the Holy City; 2) the French-owned Damascus-Mesopotamia line, going north-to-south, from the Syrian capital to the Hauran; 3) the Turkish-owned Hejaz Railway trunk line, going north-to-south (parallel to line from Damascus via Deraa Junction through Maan, to Medina. There was a short branch from Nessib (south of Deraa) to Basra eski-Sham; 4) the Turkish-owned Haifa branch of the Hejaz Railway, going roughly east-west, from Deraa to the Mediterranean. This line had two short branches, one going north from Beled esh-Sheikh to Acre, and the other going south from Afule via Jenin. This branch had originally been intended to run to Nablus (and to Jerusalem, until vetoed by the French, as described in an earlier chapter). But when war broke out, this branch ended in a field at Silet ed-Daher in the mountains of Samaria.
A glance at a map will show that Palestine in 1914 actually had two separate rail systems, one in the south (line 1), and the other (lines 2, 3, and 4) in the north and east, with a gap of at least 60 kms. between them. There was also a gauge break between them, trains in the south running on the 1 metre (1,000 mm.) gauge, and the others having the 1,050 mm. gauge (6).

The Military Importance of the Existing Lines

The military value of the French Jaffa-Jerusalem line was nil. It led from the sea, that was barred to Turkish shipping, to an inland-town, far from the prospective front-line, which had no contribution to make to the conduct of the war. Its rolling stock, as set out in the previous chapter, was negligible in numbers, and even if the isolated line had been somehow linked to the remainder of the network, the stock would have had to be adapted to the different gauge, and so would the track.

The military importance of the French Hauran line was also non-existent. It had originally been built (apart from the purpose of blocking a proposed British line from Haifa - as detailed in chapter II), in order to draw the wheat export of the Hauran over the French rails to the French-owned part of Beyrouth. The outbreak of war closed down Beyrouth as an outlet, and, in any case, the wheat was badly needed by the Turks in Syria themselves. Consequently, the line ceased to have a raison d'etre. The line was also isolated in the south from the Hejaz Railway's Haifa branch, as a previously existing 2 km. spur, linking the French

(6) Details about the railways described will be found in chapter III.
station at Meserib, with the Turkish station of the same name, had been taken up (7).

The Hejaz Railway, on the other hand, which from its very outset had been built not only for political and religious (and to a lesser extent - commercial) reasons, but considering mainly strategic requirements, kept its great military importance, and after war broke out was to increase it considerably. It led to Arabia, parallel to the British-controlled Red Sea, but at a safe distance from it, and enabled the Turks to retain a considerable garrison in the Hejaz, and to hold the sacred city of Medina to the very end of the war (8). The Haifa branch, however, of the Hejaz Railway, lost all military importance on the outbreak of war. Its two Mediterranean termini, Haifa and Acre, turned into dead-ends after the Allied navies put an end to the Turkish peacetime practice of sending troops by sea from metropolitan Turkey to the Levant and Arabia (9).

(7) When the Hejaz Railway was being built, the Hauran line had been used to bring equipment and rolling stock from Beyrouth to the building sites. After the Hejaz line had been built, the services of the French line were no longer needed, and the Turks had taken up the short section linking the two systems.

(8) Medina was to surrender only in January 1919. Cp. Cps. II, part 2, p. 624. Mecca, on the other hand, which had no railway to back it up, was surrendered by the Turks to the Arabs shortly after the outbreak of the Sherifian Rebellion in the summer of 1916.

While, as noted, the Hejaz Railway trunk line was the only part of the Palestine system that was of military importance, this importance held good only as far as the distant Hejaz front was concerned, that came into being only after the Sherifian Rebellion of 1916 (10). It was to have no influence on Turkish activities against Egypt. The point on the Hejaz Railway nearest to the Suez Canal was Ma'an. Between Ma'an and Suez there intervened the deep break of the Arava Rift Valley, and several hundred kms. of waterless desert. The Hejaz Railway, therefore, never had an influence on the Egyptian front. A plan, to be discussed later, to build in 1914 a branch from Ma'an down to Akabah, and perhaps towards Egypt, came to nothing.

Operational Difficulties in 1914; vs. British Fears of the Railway.

Apart from an unfortunate layout, that made most, though not all, of it militarily useless, the railway system of Palestine as a whole suffered in 1914 from other disadvantages. Its narrow gauge limited carrying capacity at a time when the absence of roads, and the impossibility of transporting bulky goods by sea, put additional strains on whatever railways there were operating (11). Moreover, there loomed over the lines

(10) As far as is known, the Hejaz Railway had no influence on the activities of the isolated Turkish garrison in the Yemen, that sporadically fought the British in Aden.

(11)Cp. Kress, p. 60, on the necessity of running only half-trains up steep gradients, as fully loaded trains were incapable of climbing them.
a possible fuel shortage, as reserves of coal were low, and local resources unavailable. Coal had always been brought by the Turks by sea, but the two colliers that had anchored at Haifa when war broke out were to supply the last good overseas coal that was to reach the railways in Palestine for the duration of the war (12). The outbreak of hostilities also led to the dismissal of the foreign nationals that worked the railways, French, Italians, Greeks and others, and to the eviction, and sometimes to the slaughter, of Turkey's Armenian subjects that were employed, especially on the Hejaz Railway. In their stead Arabs, ignorant of mechanical niceties, were pressed into service, and Turks were moved into positions of responsibility, where they became a by-word for graft, sloth, and inefficiency (13). These developments lowered the efficiency of the lines, as time passed, to a great degree. Finally - up to the outbreak of war, the railways in Palestine had for all practical purposes been a self-contained system that, as for rolling stock, equipment and spares, had looked to the west (Germany, and to a far lesser extent France). The closing of the sealanes had changed all that, making Palestine's lines merely the southernmost extension of the Turkish metropolitan network, with

(12) Ops., I, p. 27. The lack of fuel will be referred to again.

(13) Complaints about the Turkish management of the railways in Palestine run like a red thread through the accounts of Kress and other Germans who were to serve in the country.
which—however—it was linked only precariously on account of the different (normal) gauge of the French-built railways in central and northern Syria, and on account of the—for a long time—incomplete state of the Taurus and Amanus tunnels, linking northern Syria with Anatolia proper (14). As the war continued, the Turkish railway network itself was to become, to a considerable extent, a sort of south-easterly extension of the rail-network serving the Central Powers. Consequently, as time passed, the lines in Palestine turned into the termini of a vastly long railway link that started from the munitions and arms factories of Germany (and Austria) to end in the Near East (15). Thus, the British came to regard the Turkish railways in the Holy Land as a serious threat to the Suez Canal. Indeed, at the beginning of the war they considered reports that the Turks would soon have 100,000 troops in Palestine—concentrated and supplied by the available railways (15), a figure that was soon to rise even higher (16). The British at the time did not know how preposterous their fears were, in view of the actual state of

(14) It should be remembered that, while the Hejaz Railway, as well as the Beyrouth-Damascus-Meserib Railway, were of the 1,050 mm. narrow-gauge, the French-built lines in Central and Northern Syria, and also the Turkish railways, used the standard 1,435 mm. gauge.

(15) For a very excellent representation of Germany's, and Austria's, railway link with Palestine via Turkey and Syria, (see bibliography) cp. Gilbert, map 4.

(16) Cp. Ops. I, pp. 14, 89. The threat of Turkish concentrations in Palestine, and the expected share of the railways in moving and utilising them, will be touched upon again.
the railways facing them in 1914. Nor did they appreciate how very little - relatively speaking - even the improvements the Turks and their German allies were going to make in the Palestine network were to add to the operational importance of these lines. They, and the Turks for that matter, saw the railways in Palestine as the business end of a vital trunk line that was destined to concentrate supplies from Syria, manpower and light arms from Turkey, and heavy equipment and ammunition from the production of the Central Powers in Europe. As will be seen in due course, both the British and the Turks were wrong in their assumptions, with fateful results as the war continued. The railways of Palestine, as it turned out, could never accomplish the tasks they were expected to fulfill because their links with Anatolia and with Europe were so tenuous and disjointed that they could not extend their network sufficiently, improve their services, or even, owing to the lack of spares, maintain the level of efficiency they had reached.

In view of the, in the long run, fatal results of this state of affairs, both for the railways themselves in Palestine, and for the military operations they were meant to support as the only long-range means of communication of the Turkish armies, a digression must be made in order to describe the Turkish rail trunk line on which the network facing the British depended.
The Rear Links of the Railways in Palestine

When war broke out late in 1914, Turkey's communications, as far as warlike stores to be supplied by the Central Powers were concerned, were cut off, owing to the neutrality of Bulgaria and Rumania. At that time, as noted above, Turkey was a source of manpower, and probably produced small arms and ammunition. All more sophisticated stores, artillery ammunition, and technical items, and supplies for the German (and later - Austrian) contingents serving in the Ottoman Empire had to be brought in by rail. Maritime communications had, of course, been cut off entirely and spares for the lines in Palestine would also have had to be brought by rail.

Rail links with Central Europe were re-established only through captured Serbia, when Bulgaria entered the war on the side of the Central Powers in October 1915. From that time onward, military stores were dispatched from Germany and Austria via Belgrade and Sofia to Constantinople. Here everything had to be unloaded unto barges at Scutari, to be ferried across the Bosphoros to the terminus of the Anatolian Railway Company at Haidar Pasha on the Asiatic shore.

All stores for Palestine now had to cover a distance of some 2,000 kms. approximately on a single-track line to their destination. This was done in the following stages (17):

(17) The Via Dolorosa of stores, and railway spares - if any were sent - is graphically described in many sources, amongst them: Kress, pp. 209-210; Ops. I, pp. 26-27; Wavell, pp. 11-12; Wiegand, pp. 16-17.
From Haidar Pasha loads were sent on the standard 1,435 mm. German-built track, via Afian-Karabissar and Konia to Bosanty/Karapunar at the foot of the Taurus Range. Since the four long tunnels (some 17 kms. in length altogether) through the Taurus mountains were not to be completed until just before the end of the war (in October 1918), all shipments were now unloaded to be sent by animal-drawn wagons (only later supplemented by motor-lorries) by road across the hills to Derak, 50 kms. from Karapunar. Here they had to be loaded on the standard-gauge line (built by the former British Mevsina-Adana Railway) to be sent across the Ciliciadu Plain to Mamure, at the foot of the Amanus Range. As the Bagche tunnel across this range (5 kms. long), and several subsidiary tunnels, were not yet ready, goods had to be unloaded again to be moved some 35 kms. by road across the hills to Islahiye. From here the new Baghdad Railway, of standard gauge, continued to Muslimiyeh Junction, just north of Aleppo. Here the line branched, one extension going east to Tel Helif and Nisibin, where the proposed track to Baghdad ended. It will thus be noted that supplies, both for the Turkish forces fighting in Mesopotamia, and for the armies fighting in Palestine and in Arabia, used the same much-broken single-track line from Haidar Pasha to Muslimiyeh (18). The other branch from Muslimiyeh went south via Aleppo, and

continued on the French-built line through Hama and Homs to Rayak in the Beka'a Valley of Coele-Syria. Rayak was the terminus of the standard 1,435 mm. line, and its junction with the narrow-gauge, 1,050 mm. French railway Beyrouth-
Damascus. Here all stores were unloaded for the fifth time — the seventh if the Bosphoros crossing is counted in — onto the narrow-gauge wagons that carried them towards Damascus. From here they were carried over the tracks of the Hejaq Railway to Dera'a Junction, where the line branched again, towards Haifa on the one hand, Maan and the Hejaq on the other. Here it must be noted again that supplies for the forces both in Palestine and in Transjordania and Arabia used the same track from Muslimiyeh to Dera'a, with its gauge-break at Rayak. Turkish inefficiency and pilfering, apparently to be incurable through all the war years, and only partially remedied later on by the employment of German and probably also Austrian troops along the line, have been mentioned before (19). The eviction of all qualified non-Turkish, especially Armenian, personnel, has also already been referred to (20). Even the fatal delay in completing the Taurus and Amanus tunnels may have been due to the elimination of their Armenian workers (21). From this description of the

(19) Kress, p. 210; Wiegand, p. 17, for losses at the lines. Wagons seem to have been hired out privately by the Turks. Cp. Steuber (see bibliography), p. 109.

(20) Kress, p. 130; Wiegand, p. 17.

(21) According to Kress, Djemal Pasha (of whom more further on) even tried to go to Constantinople at a later stage, to try and alleviate the persecution of the Armenians. This was in November 1915. Cp. Kress, p. 30.
main Turkish trunk line, at the end of which the network in Palestine had to operate, and on which it depended for everything, both for its working and the supplies it had to distribute, and the troops it had to move, it will be seen that the British fears of the capacities of the railways in Palestine were grossly exaggerated(22).

(22) British apprehensions of the Turkish railways did not pall as time passed, and were to grow into something of a mania while the lines were being extended as time passed. Cp. Kress, pp. 165-166, but especially Ops. I., pp. 157-158, where it is recorded that General Sir Archibald Murray, the General-Officer-Commanding in Egypt (who will be frequently mentioned again in these pages) in an appreciation to the Chief of the Imperial General Staff in London, as late as February 15, 1916, mentioned the possibility of 250,000 Turks being moved - with the help of the railways - against Egypt. On the other hand, Wavell, writing some twelve years later, about 1928, estimated the time it took supplies to reach the Turkish front from Constantinople - after a 2,000 kms. journey and several transshipments - at 4-6 weeks, and he was probably right. Cp. Wavell, p. 130. Cp. also Wiegand, pp. 16-17, who gives the transport time from Sileh in Samaria, the then-railhead, to the Suez Canal, as 25 days. In 1917, Steuber, the chief German medical officer, estimated transport movements from Constantinople only to Aleppo (at that time 450 kms. from the front in southern Palestine) to take 6-8 days. Returning by train from Nazareth to Constantinople, he spent 13 days, though he was an important man with top priority. Cp. Steuber, p. 162. From which it will be seen that conditions on the connecting lines between Palestine and Anatolia never improved, British fears notwithstanding.
Djemal Pasha and his Military Ambitions for the Railways in Palestine.

It seems that not only the British in 1914 (and later) were overestimating the military potential of Palestine's railways. Ahmed Djemal Pasha, nominal Turkish Minister of Marine, and actual Governor-General of Cilicia, Syria, Palestine, and the Hejaz, also overrated their operational capabilities. Since November of 1914 he was also commanding general of the 4th Turkish Army, in Syria and Palestine, which in fact meant that he was the uncrowned and all-powerful ruler of the Levant area. He seems to have had an unusual appreciation— for a Turk— of the military value of railways, and he was willing to develop the lines within the sphere of his command (23).

To judge from all the many contemporary accounts, Djemal was a man of driving energy and insatiable ambition, and from the very outset of the war planned to attack the Suez Canal, Britain's lifeline from Australia and India, to the Near East and Europe. He also hoped that an attack by Turkey, an Islamic power, would lead to an uprising in Moslem Egypt, against its British masters (24). For the purpose of attacking Egypt, he considered that he needed

(23) For Djemal Pasha (1872-1922), cp. his biography in Webster (see bibliography). He also wrote an autobiography (listed in the bibliography).

adequate lines of communications, and from this, owing to the total lack of roads in the proposed area of operations, apparently grew his ambition to become known in history as the first man to have built a railway across the Sinai Desert (25). Djemal's idea was to extend Palestine's railways to the south, and then west. He wanted to build his Sinai line via Bir Hassana, at least to Bir Gafgafa (or Jifjafa; today's Rephidim), a distance of some 85 kms. as the crow flies, from the important British base at Ismailia on the Suez Canal (26). In his eagerness, he disregarded the tenuous nature of the Anatolian and Syrian back-up lines of the Palestine network - a fact that was ultimately to contribute to his own downfall, and to Turkey's losing the war. However, little could he suspect at the outbreak of war that a full four years were to pass before the first direct train from Constantinople to Aleppo was to roll through the Taurus and the Amanus tunnels, on whose speedy completion the outcome of the life-and-death struggle on the Palestine and Hejaz (and Mesopotamia) fronts was to depend (27). All that Djemal Pasha wanted at the end of 1914 was the man to build the railways in Palestine that were to supply the proposed Egyptian front. This man he found in


(26) Ruppin (cp. bibliography), p. 298; also Djemal, p. 163.

(27) The first standard gauge trains passed the Taurus tunnels in September 1918; the Amanus tunnels were completed a little earlier. Cp. Record (see bibliography; text to plate 54: Turkish Communications in 1918). Ops. I, p. 27 note; and Wavell, pp. 11-12, have September and November.
Heinrich-August Meissner Pasha, the German who in 1901–1908 had built the Hejā’ Railway whom even the British regarded with considerable respect (28). Djemal, when still a "Bey", and Vali (governor) of Baghdad in 1912, had come to know and respect Meissner, when the German had organized in Mesopotamia the building of the southernmost stretch of the Baghdad Railway (29).

Meissner Pasha: His Activities to 1914.

A great deal about Meissner has already been said in the foregoing chapter, where his building of the Hejā’ Railway was described. Only a few relevant details need repetition here. Meissner had started his career as railway-engineer in Turkey at the age of 23 in 1885. Now, in 1914, at the age of 52, he probably knew more about the Ottoman Empire, its government and its people, than any German, civilian or soldier, then alive. He spoke Turkish fluently, and to judge by his success in building the Hejā’ Railway to its completion, against very heavy odds, he had adjusted perfectly to his oriental (or levantine) surroundings, without at all losing his natural drive, or his organizing abilities.

(28) Meissner has already been very frequently referred to in Chapter III, above, as the builder of the Hejā’ Railway. His biography will be found in Penicke and Pick (see bibliography). Cp. also Kress, pp. 75, 156; and many references in Auler (see bibliography for Chapter III). As for British references to Meissner: Op. I, p. 85; Wavell, p. 13; Woods (cp. bibliography) p. 53.

(29) As for Djemal’s previous acquaintance with Meissner, cp. Penicke, p. 25, and also Pick. On July 28, 1912, Djemal turned the first sod at Baghdad, when Meissner started the building of the Baghdad Railway to the north. Incidentally, the first through-train from Constantinople to Baghdad ran only on July 17, 1940, a few months after Meissner’s death.
Holding the rank of "Pasha", he enjoyed wide recognition in the country (30). After the Hejaz Railway had been completed in 1908, Meissner had joined the German-sponsored Baghdad Railway Company, filling leading posts, first at Aleppo and then at Baghdad. He stayed with the company for almost five years. When Meissner left Palestine, two of his building plans were in abeyance. One was his 1906 project to build a branch of the Hejaz Railway from Ma'an in Transjordania, down to Akaba by the Red Sea, possibly with a view to its extension towards Egypt through Sinai. This project failed, owing to British opposition that led to the Akaba Crisis. His second plan was the extension of the Haifa branch of the Hejaz Railway from Afule, through Samaria, to the south, in the direction of Jerusalem. This second line, proposed by Meissner in 1908, was actually started by the Turks after he had left, and by 1914 had grown from Afule, by way of Jenin, to Sileth-ed-Dahr, in the mountains of Samaria, as noted at the beginning of this chapter (31).

(30) Meissner was to leave Turkey for Germany after the loss of the war in 1918. He returned to Turkey in 1924, engaged in rebuilding its war-shattered railways, and died at Constantinople, aged 78, in 1940.

(31) For Meissner's 1906 and 1908 schemes, cp. Paethnicke, pp. 14-15, 28. Also Pick. They were also discussed in chapter III. Sileth ed-Dahr was also known by its short name - Sileth.
Meissner's Abortive Railway to Akaba, 1914

On August 2nd, 1914, Turkey had ordered general mobilization (32). On September 8, some seven weeks before Turkey's actual entry into the war, the Baghdad Railways directorate in Baghdad cabled the German Embassy in Constantinople that Meissner Pasha was willing to undertake a possible "improvised continuation of the Hejaz Railway from Ma'an to Akaba-Suez. The German Foreign Office, on September 12, 1914, even wanted Meissner to bring along certain members of his staff to help in building the new line. Nothing came out of this scheme, as the Chief of the German Military Mission in the Turkish capital, the all-powerful General Otto Liman van Sanders (the future defender of the Dardanelles) considered that the proposed line would not pay (!!), and also would be too difficult to build. So, a cable by the embassy at Constantinople to Baghdad, of September 20th (33). In rejecting the plan, Liman van Sanders merely adopted the same opinion the German Auler Pasha had had eight years before, in 1906 (34). Meissner Pasha stayed in Baghdad - temporarily - and the whole intermezzo was perhaps interesting only insofar as proving that the idea of attacking Egypt by way of Sinai, with a railway to back up the attempt, was not regarded as extraordinary in Turkey even before it got

(32) Ops. I, p. 34, note.
(33) Files of the German Foreign Office, as quoted by Pfeffnicke, pp. 28-29.
(34) For Auler Pasha's rejection of the Ma'an-Akaba branch, cp. details in chapter III.
involved in the general war. This particular version of the idea, though, came to nothing, and merely showed Meissner's aggressive attitude, and his stubborn clinging to his 1906 scheme for yet another railway.

The Origins of the Sinai Railway

However, apparently sometime in September-October 1914, another version of the concept of attacking Egypt from Palestine - with a railway to back up the operation - seems to have cropped up. This was, almost without doubt, the scheme that was shortly afterwards to be adopted by Djemal Pasha as his own. Details are very scanty and obscure. All that is known is that in a meeting on October 19, 1914 - that is, ten days before Turkey actually entered the war - the Baghdad Railway Company in Frankfurt (Germany) decided to put its entire staff (including Meissner) and all its resources, at the disposal of a newly planned line, on account of its importance for the war effort (Kriegswichtig) (35). The new line must have been regarded as having very great importance, seeing that to further it the continuation of the Baghdad railways construction was interrupted, although the line to Baghdad was vital for the supply of the Turkish troops fighting the British, and at times the Russians, in Mesopotamia. There is practically no doubt (there are no other possibilities) that the proposed railway, for which even the Baghdad line was relegated to the background, was a line to run through Palestine, towards Egypt.

(35) Poernicke, p. 29, quoting German official sources.
Unfortunately, it cannot now be ascertained who, on the part of the Turks, at this early date, "pushed" the idea of building a railway of such vital importance for the prosecution of the war, which at that time Turkey had not even joined, though she was about to do so. The concept may have originated in very high circles, for the Baghdad Railway Company to decide as it did. At a guess it might be surmised that the idea originated in the Turkish cabinet, in which Djemal Pasha at the time was a most influential member until he went to Syria, in November. Possibly, though this also is speculation, the line may also have had German military backing, as Liman von Sanders - who had shortly before vetoed Meissner's Ma'an-Akaba-Suez line - cannot have been unaware of the operational advantages of a railway built through relatively passable regions towards the British enemy.

What is clear, and must have been obvious to the Turks and their German allies at the time, is that there was already a working nucleus for any line it may have been intended to build to the south. This was the Haifa branch of the Hejaz Railway, working from Dera'a Junction to the Mediterranean. This trunk line had already before the outbreak of war sprouted a branch - mentioned earlier in this chapter, and also in chapter III - from Afule via Jenin to Sileh in the mountains of Samaria. This was the line, already envisaged by Conder in the 1870s as going to Jerusalem (36). It was

(36) As described in chapter II.
also the line that French pressure, just before the war, had prevented from continuing to Jerusalem, limiting its construction to Nablus (37). However, this branch already permitted through-traffic from Damascus to Sileh, and its continuation south, at least to Maasudiye (just north of Shomron/Sebastiye) was already in an advanced stage of construction - including Ramin tunnel - the only one of its kind in Western Palestine (38). This line gave the Turks, now free of French pressure, the possibility to continue south, by way of Jerusalem. It also gave them a choice of turning west, onto the coastal plain, the Sharon, and going south. Regarding the Sharon, the Turks may have borne in mind that shortly before the outbreak of war the French had proposed a scheme to build a standard gauge line from Afule, down the Sharon, to a point on the French Jaffa-Jerusalem railway - probably Lod or Ramle (39). This proposed line would have gone north from Afuleh, past Tiberias and the Hule Marshes, up the Rift Valley, to join the standard gauge French railway to Rams and Aleppo at Rayak. Seeing that the Turks in 1914 already had a rail-link of their own - albeit of narrow gauge - from Rayak, via Damascus and Dera'a to Afule, they were not interested in the northern section of the French proposal. But the concept of building down the coastal plain to Lod/Ramle, may have given them food for thought.

(37) Cp. chapter III.
(39) Imhoff (cp. bibliography) for chapter III), p. 266; woods, p. 54.
However, speculation apart, the facts in November 1914 were the following: The railways of Palestine, as they were then, had almost no military value; Djemal, the newly-appointed military commander, wanted the railways in the country to serve his strategic concepts; he wanted a railway to support the Turkish troops on the Palestine front facing the British in Egypt, preferably a line to, and across, Sinai; Meissner was a renowned railway builder, and Djemal knew him from Baghdad; Meissner was available.

**Meissner's Appointment and his Tasks**

On November 10, 1914 Meissner was put under the command of Djemal Pasha, after having been detached from the Baghdad Railway (40). He brought with him some of his staff from Mesopotamia. His seat became Damascus, which was also the Civil and Military Headquarters of Djemal Pasha. From now on, and probably for four years, until the end of the war - there are no dates as to the termination of his appointment - he seems to have been, by reason of experience and seniority, the virtual "generalissimo" of the Turkish railways in Syria and Palestine. These lines now included also the French railways in both countries, that had been taken over as enemy property as war broke out. What Meissner accomplished in the field of railway construction in the years 1914-1918 is clear to a large extent (though some details are missing), and will be the subject of the following pages. It is less

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(40) Pœnicke, p. 29.
clear how far he was concerned in the day-to-day running of
the Turkish network, though by the very nature of his con-
struction work and its requirements he must have been involved
with routine running, and must have had an important say in it.
It is however obvious that he had to rely on the efficient
collaboration of another German railway-engineer with his
seat in Damascus. This was Eisenbahn-Direktor (railway-
manager) Paul Dieckmann, who was Betriebsdirektor (traffic-
director) of the Syrian and Palestine network, and apparently
responsible for its routine operations. Whether or not
Dieckmann was subordinate to Meissner, or acted independently,
is not known. He had been in the service of the Hejaz Railway
for several years before the war, but was clearly junior to
Meissner, nor was he as well known, and figures relatively
rarely in contemporary sources (41).

Meissner's tasks on being posted to Palestine may be
summarized as follows (42): Planning the easiest, cheapest,

(41) Eisenbahndirektor Paul Dieckmann is mentioned by
Poenicke, p. 15, as the expert who re-vitalized the Hejaz
Railway about 1909-1910, after Meissner had left. He later
wrote in the Z.D.P.V. (cp. bibliography; vol. for 1914)
on the proposed Afule-Nablus-Jerusalem railway. After the war,
about 1922, he at least once may have written an article
in the German technical journal "Eisenbahn Archiv" on the
development of railways in Palestine. This could not be verified.
In 1924 he wrote in the German publication, "Zwischen Kaukasus
und Sinai" (cp. bibliography) an interesting article on the Hejaz
Railway and the Syrian (Palestine) Railways in the World War
and after. The article is remarkable for practically ignoring
Meissner and his work. He signed himself Regierungsrat (a
high German Civil Service rank), and gave his address—curiously—as Haifa.

(42) Meissner's tasks are summarized by Poenicke, p. 29.
They are also amply documented, though not formally summarized,
in the writings of Dieckmann, (who did not refer to him by name),
Kress and Wiegand.
and most efficient layoug of the railways required by Djemal Pasha for Turkish operations; organizing and carrying out work on the envisaged tracks and providing the necessary work-force; planning and building bridges; siting and building stations, and providing for their water supplies; building and organizing workshops to fit existing equipment for use, and to repair damage to stock that was to be progressively subject by wear and tear; assembling the necessary rolling stock for carrying out construction work that (as it inevitably turned out) had to be carried out while the new line was simultaneously used for military purposes; providing fuel and lubrication material, a task that was to become more formidable as time passed; finally - his most important problem - he had to provide rails and ties (sleepers) in vast quantities. In some of these tasks he probably had the help of Dieckmann, but the final responsibility for carrying them out was his alone. Incidentally a curious fact should be mentioned again. As he did while building the Hejaz Railway, Meissner in his new work probably used his capabilities as a water-diviner in order to site stations and develop their water supply (43). All in all, Meissner's tasks

(43) For Meissner's abilities with the divining-rod, cp. Kress, p. 145. He seems to have been extremely successful, as lack of water, that was so much to plague British railway construction, is never mentioned amongst the difficulties of the Turkish railways in an arid country. It must be remembered that there were no diesels, but only steam-locomotives, in the First World War, and water for raising steam was vital.
in 1914 were similar to the ones he had to carry out while building the Hejaz Railway in 1901-1908, though with a crucial difference - he could expect no outside help, or supplies, or equipment, in his work. Owing to the incomplete state of the Taurus and Amanus tunnels, and the gauge break at Rayak - all already referred to above - his was practically an independent rail network, that for most practical purposes could not be reinforced, and was not, throughout the war, except for a few rare exceptions (44). Such were the circumstances under which Meissner resumed his activities in Palestine, and was expected to provide the rail communications which - in an almost roadless region - an offensive against the British in Egypt, or even a defensive front in Palestine, were out of the question.

One fact that worked in Meissner's favor seems to have been that he apparently maintained good relations with the all-powerful Djemal. Nothing to the contrary is mentioned anywhere, and Meissner's practical achievements under the circumstances prevailing in the country bear out this supposition.

(44) Dieckmann, in "Kaukasus," pp. 56-57, says that twenty locomotives ordered by Meissner in Germany in 1915, were supplied in 1917-18 in a disassembled state. They arrived piecemeal from 1917 and were put together (except the last ones in 1918) in Meissner's workshops, probably in Damascus. Coal, 100 wagon-loads of it, arrived from Germany in Palestine, about September 1918. If other supplies ever reached Meissner, there is no record of them, except for some fuel oil from Rumania, also delivered when he was building.
Indeed, both men's interests were complementary. Building railways was now Meissner's patriotic vocation, and the Turkish commander, whatever his many faults, seems to have been a man of wide horizons, and thus appreciated the vital importance of railways in his grand design to attack the British enemy. It was almost certainly Djemal who had made the German engineer his railway-builder-in-chief, and he had every reason to support him.

**Meissner's Opposite Number: Kress.**

Meissner, on reaching the Palestine front, was to work for three years very closely with a man who in many ways was his German military counterpart. This was Colonel, later General, Friedrich Kress von Kressenstein, the highest ranking German officer attached to the Turkish forces on the Palestine front. Biographical details about Kress are very hard to come by, but he was undoubtedly the most important, and the most efficient, soldier on the Turkish side of the Palestine front, between the end of 1914 and the end of 1917 (45). As far as can be made out, he had originally been sent from Germany to act as Chief of Staff of the 8th Turkish army corps, became commander of the Turkish forces in Sinai to 1916 under Djemal, and became Commander-in-Chief of the Turkish 8th Army. He was relieved by the German General Erich von Falkenhayn, of Verdun notoriety, after he had failed (owing to lack of means, (45) According to Wavell, p. 28 passim, Kress was "gallant, resolute, able", and always commanded the respect of his British opponents. He is mentioned equally respectfully in Ops., the British official military history.
Aerial view of Beer Sheba, taken by Germans ca. early 1918, after town's capture by British. Town, with grid-like layout, in center. Meissner's Sinai railway on left, running from west (bottom) to south-east. Photo shows shunting yard (left bottom), triangular locomotive switchback (left center), and Turkish warehouses (on branch, left center). (Nat. Libr., Phot. 258).

Meissner's railway bridge over Wadi Beer Sheba, with town in background. The line to the left led to Auja. The bridge, built 1915, still stands, less one arch. (Source: Gullett, Record). (Pick, chapter 14).
and through no fault of his) to stem the onslaught of Allenby's British Imperial Forces in the Third Battle of Gaza (46). Kress was to depend in his operations very greatly on Meissner's railways, and despite occasional differences of opinion between them - the engineer wanted to continue building at any price, while the soldier preferred to consolidate what had been built - the two seem to have gotten along well (47). In fact, since Meissner, as far as is known, left no written records or memoirs, a great deal about what he accomplished can be gleaned from Kress' writings.

The following pages will be devoted to a detailed description of what Meissner achieved in building, and running, wartime railways in Palestine, at the behest of Djemal Pasha. It should be stressed explicitly that the subject will be Turkish railways, and not Turkish wartime operations. Operations, however, will be mentioned incidentally. The next-following section, on the wartime building of British railways in Sinai and Palestine, will contain more references to actual operations, involving Turks as well as British, but also only insofar as they pertain to the subjects under discussion.

The Sinai Railway: Considerations and their Implementation

On December 8, 1914, when Djemal was about to arrive in Damascus to take over his appointment, and only a bare few weeks after the two Germans, Meissner and Kress, had started to settle

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(46) For Kress' activities in World War I, cp. his autobiography "Mit den Türken..." (see bibliography).

down in their new jobs as furtherers of the Turkish cause, both met. At their meeting they apparently came to a number of decisions that were to be of vital importance for the development of military activities on the Palestine front during the war, as well as for the long-term history of railways in the Near East as a whole (48). As far as they can be reconstructed from the sources, and their accompanying maps, these decisions were as follows:

A) Meissner Pasha was to prolong the available and working Afule-Sileh branch of the Hejaz Railway towards the south.

B) In view of the terrain difficulties presented by the hilly areas ahead, and the time factor this involved, the new line was not to be built in the direction, and through, Jerusalem. Instead it was to turn from Sileh (actually from Massudiye slightly to the south of it) towards the west, and Tul Karem. From Tul Karem it was to turn south. From the later, actual, track of the new line, it may be conjectured that, while utilizing to their advantage the easy ground formation of the level Sharon coastal plain, Meissner and Kress kept their railway distant from the coast, and as far away to the east as possible, to run parallel to the foothills of the Judaean mountains. This in order to protect it from sudden enemy naval descents, and out of gun-range from the Allied navies.

(48) For the meeting, and the developments following it, cp., inter alia, Kress, pp. 75, 124, 133, 151, 156, 168; Poenicke, pp. 29-30; Ope, I, pp. 76-77, 85-86; Kuppin, pp. 298-299; Wavell, p. 12; Wiegand, p. 30. Developments are also amply documented by the maps attached to most of these sources.
C) The new line was to run south from Tul Karem through Lod and Ramle to Beer Sheba. At a later stage it was apparently to continue south, via Asluj (Revivim), Auja Hafir (Nitsana), and west to Bir Hassana, and in the general direction of Ismailia and the Suez Canal. It was to terminate, at least temporarily, at Bir Gafgafa. The line was obviously to be aligned with a view to its water supply (the wells at Asluj, Auja, Hassana and Gafgafa).

D) In order to utilize the rolling stock and rails available in the country belonging to the Hejaz Railway and the French lines of the same, narrow gauges that had been taken over, the line was to have the gauge of the Hejaz Railway, 1,050 mm. (49).

(49) The decision to build the Turkish wartime railways on the 1,050 mm. gauge was a fateful one, with repercussions to the present day (1975). But it was unavoidable, as there was not enough standard stock in Syria, no new stock obtainable, and building the new line on the standard gauge would have forced the building of a long connecting line between the standard terminus at Rayak in Syria, and Sileh, which was quite impossible, on account of the lack of time and equipment.

As for the rolling stock of 1,050 mm. gauge available: details of the Hejaz Railway and Jaffa-Jerusalem effectives will be found at the end of this chapter. No details seem ever to have been published of French narrow-gauge stock. According to "World Railways," 1952-53, (cp. bibliography) p. 511, stock on the narrow French Beyrouth-Damascus line in the early 1950s comprised 40 locomotives, 83 passenger, and 339 goods carriages. As in French mandatory times, practically no money had been invested in this moribund line, these figures might at least give a pointer as to what stock Meissner had available, though several decades earlier.
E) In order to have as large a supply of rails and ties (sleepers) as possible, the equipment in the country, i.e. Hejaz Railway reserves, especially for the Medina-Mecca line discontinued in 1908, was to be augmented by rails and ties taken from other lines in Palestine and Syria, that were not important to the war effort, and were to be dismantled.

Meissner expected to finish his new project, presumably as far as Beer Sheba, in 16 months (50). In the event, he was to do much better. Two things should be noted in connection with the meeting between Meissner and Kress. First, the possibility of building south from the existing and well-equipped terminus of the Hejaz Railway at Haifa, was apparently never discussed. This on account of Haifa's exposed position on the coast (it was indeed shelled from the sea as the war continued (51)), and the fear that a line leading to the south along the narrow Carmel coastal strip, though easy to build, could be cut from the sea. Moreover, as the inland line was already operating as far south as Silo, a parallel coastal line, though straight and easy to work, would have required some 50 kms. of additional rails. The second point to be noted is that the proposed new railway from Tul Kareem to a point north-west of Beer Sheba followed more or less exactly the eastern alignment of the ancient Via Maris. The proposed new track from Beer Sheba, to the south, and then west, followed first the southern continuation of the

(50) Kress, p. 75.
(51) Carmel (Hebrew; cp. bibliography) pp. 194-195.
ancient "Ridge Road" along the mountain backbone of Palestine. From about Auja to Bir Hassana and Bir Gafgafa, the new railway was to follow the presumed track of the Patriarchs, i.e. the age-old Central Highway across Sinai. Thus Meissner planned his line along the tracks outlined for him by history (52).

The exact documented dates regarding Meissner's line to the south will be listed further on in this chapter. Meanwhile, it will suffice to say that actual building operations started in about April 1915, i.e. some 4½ months after Meissner's and Kress' crucial meeting. The intervening time was apparently spent by the German engineer in planning the new track in detail, probably dismantling condemned lines - also to be listed later - and assembling material. Labor was provided by hiring local workers, and, as the project was Djemal Pasha's own, by soldiers of the Turkish army, rather as had been done while the Hejaz Railway was being built. As for rolling stock to transport stores, Meissner probably at that time had at his disposal most of the many goods wagons of the Hejaz Railway as well as wagons of the French Beyrouth-Damascus-Meserib line, that were idle owing to the closure of Beyrouth port by the war. Later, when the line to Beer Sheba had reached Lod, Meissner could also utilize the, in wartime, practically unused, rolling stock of the 1,000 mm. gauge French Jaffa-Lod-Jerusalem line, which needed only

(52) The historical highways of Palestine were discussed in chapter I.
a little adaptation to run on the 1,050 gauge of the new railway (53). Even after the wagons used for military purposes, both in Palestine and on the main Hejaz Railway trunk line to Medina, and wagons for civilian supplies, are deducted, it is a fair guess that at the beginning of the war, when normal wear and tear, accidents, the weather, and enemy action, had not yet taken their toll, the availability of rolling stock for construction purposes was satisfactory. As work progressed, Meissner and Kress were to have another meeting for coordinating purposes in Jerusalem, on June 20, 1915.

When he started building, Meissner had some 350 kms. of rails available that had originally been destined for the never-begun railway from Medina to Mecca (54). To these he could add some additional 150 kms. of rail from lines taken up. Consequently, there was no dearth of rails. However, there were only 30 kms. of cross-ties ("sleepers" in British usage) on which to fasten the rails. Therefore local resources had to be tapped at an early stage, and woods of eucalyptus, pine, and other trees, were cut down in various places (the Sharon plain, the Lebanon, and in the high hills of

(53) For the adaptation of stock and gauges, cp. Woods, p. 54; also Wavell, p. 12. A rather poignant footnote to the adaptation of the Jerusalem line stock will be found in the report of Sir Felix Pole (cp. bibliography to chapter V) on the state of the railways in Palestine, dated 1935. In a modest footnote it is stated that in the early 1930s one of the last original locomotives of the French-build Jaffa-Jerusalem line had been sold for scrap. This was almost undoubtedly one of the engines adapted by Meissner from 1,000 mm. to 1,050 mm. gauge.

(54) Kress, p. 75; Ops. I, p. 85; Poenicke, p. 30; Wiegand, p. 30.
Transjordania, to produce ties. To further the process, some short lines were laid down, apparently including a cableway in the Lebanese mountains. These will be detailed further on, in connection with the fuel supply. Some redundant ties were apparently brought down from the unused stocks of the Baghdad Railway, to be re-holed for narrow gauge use in the workshops at Damascus (55).

Meissner apparently started with a small supply of lubricants, that soon gave out. Since lubricants were vital for working the locomotives and wagons, and overheated-wheel-bearings in a hot climate could cause considerable damage and hold-ups in the construction work, experiments were made with wood-tars produced in the Taurus mountains. These failed, and the rail administration - Dieckmann in Damascus was the man most involved - ultimately had to fall back on substitutes made locally, from olive oil, sesame oil, and castor oil (56).

But, from the start, far and wide Meissner's worst trouble, when building and running his new line, was the lack of fuel. As already mentioned, before the outbreak of war, two last colliers had discharged their coal at Haifa, but most of the available stock had been used up, even before Meissner started building, in transporting troops from Syria 


(56) For the problem of lubricants; Dieckmann, p. 57; Kress, pp. 124, 130; Ops. I, p. 86; Wiegand, p. 30.
to the railhead at Sileh, in preparation for the abortive Turkish attack on the Suez Canal of early February 1915 (57). When in due course coal stocks at Damascus had also been used up, the locomotives in Palestine were run in a surprising variety of ways. At one time the supply of coal from the mines of Ereğli in Anatolia was tried, but while the Taurus and Amanus tunnels were incomplete this involved transport of great quantities by road, which was impracticable. At the very end of the war, coal from Germany and fuel oil from Rumania were to arrive in limited quantities, but by that time it was too late in any case. In the meantime other fuels were tried. Lebanese coal proved to contain brimstone that ruined the locomotives. There were other, possibly quite successful, experiments with bituminous shales from Makkarin, in the upper reaches of the Yarmuk gorge. Presumably technical difficulties prevented their large-scale exploitation. In the end, Meissner (and Dieckmann) had to settle on running trains by wood-firing. This process decreased the tractive power of engines by one third and consequently the speed of trains went down, and on steep stretches sometimes only half-trains could be hauled. Sparks from the wood firing frequently set fire to fields, this in a country that had been ravaged by a catastrophic locust invasion in 1915, and whose

(57) According to Dieckmann, p. 53 (as also confirmed by others) prior to the Canal operation, 9 trains of 13 wagons each were run daily for 14 days to Sileh. This figure gives an idea of the importance of rail movements for the Turkish army in Palestine, even before Meissner started his extension work to the south.
population more and more teetered on the brink of starvation as the war lasted. However, there was no choice, and the same branch lines that Meissner built to gather ties were also used to supply wood fuel. Requirements for the Hejaz Railway at its peak extension, including the Sinai line, seem to have run to 150,000 tons yearly. Whenever wood ran out, train crews got accustomed to stop their trains near any convenient copse - memories of this habit lingered on for decades - and cut wood, mostly olive trees vital for the livelihood of the villagers. In semi-desert areas thorn-bushes served as very efficient fuel. A by-product of this state of affairs was that, lacking power, trains were perpetually late (58).

Minor, though annoying, trouble was suffered by Meissner's lines on their older stretches, but especially along newly-built sections, by wintery floods and washouts. The Yarmuk track always suffered from floods, some disastrous in the narrow gorge with its many bridges. But when Meissner started building his still-shaky embankments in the Sharon, the Shephela and the Negev were frequently to be undercut by rains (59).

(58) As for the lack of coal, and the substitution of wood, and all its attendant evils, the sources are only too explicit. They include: Dieckmann, pp. 55-57; Kress, pp. 124, 130, 170; Ops. I, pp. 27, 85-86; Hoenicke, p. 30; Steuber, 74, 79; Wavell, p. 13; Wiegand, p. 30.

(59) According to Kress, washouts were yearly occurrences. Flood damages were recorded in November 1914 (Kress, p. 68), during the winter 1915-16 (Kress p. 148), and in 1916-17 (Kress, pp. 208, 209-212).
When, in the early building stages, bridge-building could not keep up with track-laying— as had happened before on the Hejaz Railway proper— rails were temporarily laid across the bottom wadis, occasionally with dire results when the rains came (60).

As his work progressed, Meissner was to be permanently torn between two conflicting alternatives. One consisted in the policy of building hell-for-leather, as fast as possible, and as far as possible, at the price of interfering through his work-trains on the single-track line, with the urgent military traffic for the uses of which the line had been planned in the first place. The other one stressed the prior consolidation of what had been built, giving for a while priority to troop trains and supplies. These conflicting possibilities lead several times to some friction with Kress, who preferred a shorter but better working line, as far (temporarily) as Beer Sheba (61). Meissner preferred to push his line forward, as it turned out, and as a result his lines became seriously overburdened (62). The previously mentioned

(60) Kress, p. 133. Laying tracks through wadis, instead of over them, was not Meissner's patent. At a later stage of the war the British were to lead their own standard gauge main line across the Wadi el Arish on sandbags. It, and they, were promptly swept away when the rains came.


(62) There are many references in the sources, both German and British, to all Turkish lines being overburdened, a fact that, however, in particular handicapped the line to the south that was needed for operational purposes. The overloading of the Turkish network lasted throughout the war. Cp.: Kress, pp. 153, 173, 180, 218, 251; Massey (see bibliography) "Desert," p. 11; Ops. II, part 2, p. 454 passim; Steuber, pp. 22, 23, 25, 27, 31, 32, ec.; Wavell, pp. 108-109.
locust plague of May 1915 probably also added to the congestion of the line, as some supplies - there are no details - must have been also carried for the civilian population (63).

The civilian population probably continued to be a burden on the trains. In this connection it must be noted that about 1915 Meissner refused to dismantle the section Lod-Jerusalem of the French railway, in order not to rob the people of the Holy City of an assured means of supply - of which more later.

It should not be forgotten that while Meissner was doing his utmost, from 1915 onward, to build his lines west of the Jordan (other lines were to follow the track Sileh-Beer Sheba), the Hejaz Railway trunk line kept "milking" the western network of rolling stock, in order to send supplies to the Turkish garrison in southern Transjordania, and in northern Arabia. Kress, at one later stage, even pressed for the total abandonment of the line to Medina (64). In this he was unsuccessful, of course, as a retreat from Medina, following the earlier loss of Mecca, would have had serious moral and political repercussions. At one time Djemal even insisted on sending, for political as well as for military reasons, 50 wagons with supplies daily to the area south of Ma'an (65). Decisions like that must have

(63) Kress, p. 119.
(64) Kress, p. 218.
(65) Kress, p. 180, also p. 173.
impinged on building, and warlike supplies for Palestine proper (66).

All these problems should be seen against the background of the perennial difficulties Weissner, and probably also Dieckmann, had, because they lacked reliable and intelligent staff to run the lines, both on the organizational and the technical levels. These troubles have already been referred to above (67). The venality, thievery, ignorance, and just plain Oriental obstructiveness and sloth of his Turkish and Arab subordinates Weissner had to fight continuously for years. As late as 1917, Kress, who was the military "customer" of the Palestine network, suggested putting all the Turkish railways south of Rayak, i.e. all the narrow gauge system, under German military management, but nothing came of his suggestion (68), though the impression is that individual Germans and Austrians did serve in various capacities along the line. Only in the winter of 1917-18, when half of Palestine had already been lost to the British, two German railway-working companies were detached to the Hejaz Railway, but then any initiative was too late (69). As the war lasted, and wear and tear increased, conditions on the Palestine railways became worse even than should have been expected from a relative makeshift war-time system.


(67) Cp. notes 19, 20, 21 and the appropriate text.

(68) Kress, p. 261.

(69) Dieckmann, p. 61.
Endless complaints crop up practically in all descriptions of rail travel in Palestine, especially towards the end of the war. Observers were practically unanimous in the describing the more obvious reasons that led to progressive chaos on the line. Owing to lack of fuel, trains were late, and there were no time-tables, as travel took days and weeks, and not hours. Mechanical breakdows were permanent, and repairs were haphazard (70).

All the same, it must be stressed, and cannot be stressed too emphatically, that whatever the almost fatal difficulties caused in the running of the Palestine system by factors beyond its control (such as its isolation owing to the non-completion of the Anatolian tunnels), and by shortcomings within its own framework (such as the utter inefficiency of the local staff), the network continued to function, and carry out its tasks, however creakily, practically to the end of the war. This was undoubtedly due to the perseverance of Meissner, and his associate Dieckmann.

Summary of the Turkish Wartime Lines in Palestine

The foregoing pages have dealt with the state of Palestine in 1914, with due regards to its suitability as a military base,

(70) On the progressive dissolution of the Palestine network, cp. Kress, pp. 130, 184; Massey, p. 11; Ops. II, part 2, p. 454; Steuber, pp. 64-65, 84, 132-133; Wavell, pp. 13, 99, 109; Wiegand, p. 30. Many more references to the subject might be found.
and to its railway network. They have further dealt with the circumstances of Meissner's return to Palestine, his tasks, and the difficulties he, and the railways in the country as a whole, faced as the war continued. Some space has also been devoted to his associates, and to his main project, the railway from Sileh to Beer Sheba and the south, that come to be widely known as the "Sinai Railway." However, Meissner, during the war, was to build other railways in Palestine, shorter than the Sinai line, but also important - and interesting in their way. These lines, as was the Sinai line, were grafted onto the lines that had existed before the war, and kept operating while it was in progress. Other lines were lopped off the pre-war network, in order to enable the wartime lines to be built. Without a thorough description of all these lines (including further particulars about the Sinai railway), and their operations, the picture of the Turkish railway network in Palestine during the First World War would be thoroughly incomplete.

The following columns will therefore be devoted to a detailed description of: A- pre-war lines that kept operating; B - pre-war lines that were dismantled; and C - newly constructed lines, exclusively military, that together make up the history of railways in 1914-1918, on the Turkish side of the front (71).

(71) The following description of the Turkish railways in Palestine, working, added, or dismantled, during 1914-18, is based not only on written sources, but also on many, often indispensable, maps. These will be found attached to Ops., Kress, Record, Wavell and other sources. Cp. the "Note on Maps" attached at the end of this chapter.
A) Pre-1914 Railways Operating in Palestine During the War.

1) The Lod-Jerusalem Line - This was the eastern continuation of the Jaffa-Lod line, whose dismantling at Meissner's orders will be described further on. Both sections together had formed the French-build Jaffa-Jerusalem line of 1892, the oldest in the country. Most of the Jerusalem section was of no military value to the Turks. Meissner, for humanitarian reasons, refused to take it up, so as not to cut off the Holy City (72). However, the part-section Lod-Wadi Samar was to become important when Meissner's new trunk line to Sinai was to reach Lod in the summer of 1915. This section was widened from its original 1,000 mm. gauge to 1,050 mm., the gauge of all the other (Turkish and French) tracks in the country (73). It thus, for a length of some 20 kms., became part of the Sinai line, which afterwards branched off to the south at Wadi Samar. The stretch Wadi Samar-Jerusalem, may, or may not, have also been re-nailed to the 1,050 mm. gauge along its 45 kms. length. It dropped out of sight until captured by the British late in 1917, when it gained prominence.

(72) Poenicke, p. 30. Meissner could not foresee that he was preserving the line for the use of the British, when they assembled supplies for their two raids from occupied Jerusalem on Transjordan, early in 1918.

(73) Ops. I, p. 77; Ruppin, p. 298.
2) The Hejaz Railway

The Dera'a-Haifa branch of the Hejaz Railway, with its extension to Sileh, kept operating throughout the war, without being affected by military operations, until the very end of hostilities, when Arab raiders blew up its bridges near Dera'a, which were promptly repaired by the Germans (74). The section Afule-Haifa, being a dead end, was practically unused. The short stretch Afule-Sileh was to become the nucleus of Meissner's Sinai Railway, which will be further discussed separately.

The role of the Hejaz Railway trunk line from Damascus to Medina has already been noted as the life-line of the Turks in southern Transjordania and the Hejaz. As such it will be referred to again. Only some 450 kms. of the 1,300 kms. long line, i.e. the section Damascus-Dera'a-Amman-Ma'an-Mudawara, actually fit into the framework of this survey. To this stretch belonged the branch Nassib-Bosra eski-Sham, that was dismantled during the war, and the branch Aneizeh-Hisbeh Wood that was added. Both will be mentioned further on.

The Hejaz Railway trunk line kept operating undisturbed for long periods after the outbreak of the war, and it was never thoroughly put out of action by Lawrence, his British subordinates, and his Bedouin allies, during the whole period between June 1916 (when the Arab Rebellion started) and April 1918.

(74) Ops. II, part 2, p. 566.
Despite the Lawrence myth, it cost the British a full 22 months to finally destroy and block the section Ma'an-Mudawara, despite the fact that since July 1917 they had had a base flanking the line from Akaba (75). The more northerly section of the Hejaz Railway main line, Ma'an-Dera'a, was finally blocked around Dera'a only in the last weeks of the war, and even then important stretches of the line remained in working order (76).

The, never generally appreciated, fact is that most of the celebrated British and Arab raids on the Hejaz Railway did not permanently achieve their purpose, because until the Turkish forces were on their death throes, they were always strong enough to patrol the line with sufficient frequency to allow Lawrence and his men nothing more than occasional chances to blow up a few dry culverts, short stretches of rail, and a relatively few wagons and engines. Defended stations, significantly, were rarely attacked. Until April 1918 never more than insignificant damage was done to the Hejaz Railway, and it was never decisive (77). There were also other reasons why the line continued to operate and supply


(76) For the final attack on the Hejaz Railway, around Dera'a, in late September 1918, cp. Ops. II, part 2, pp. 563-566.

(77) Ops. I, p. 225: "The threat to Medina was never serious, and the interruption of railway communication with Damascus but momentary." These lines refer to the opening of the Arab campaign, but anybody who follows details of the future attacks on the Hejaz Railway in Ops., will see that the above comments were to hold good for a long time.
the considerable Turkish forces in the Medina and in the Ma'an areas, who had no other communications with the rear:
a) The Turks, for once, seem to have organized a fairly efficient mobile repair force, no doubt already trained in peace-time, to make good damage to the track by floods and Bedouins, etc. (78); b) there seems to have been a fairly adequate reserve of rails that lasted to early 1918; c) there was an adequate capability of repairing blown bridges and culverts, either through local resources (79), or by laying rails through the bottom of wadis, a procedure that had been amply tried out when the line had originally been built and when bridges were not ready; d) it was actually impossible in most cases to really destroy a railway, at least in a level desert, since in emergencies by-passes could be constructed by laying rails practically on the bare earth, a procedure that did not hinder very slow-speed trains from passing.

The systematic repair work on the Hejaz Railway undoubtedly had the expert advice of its builder, Meissner Pasha.

(78) Ops. I, p. 231, note. This is a most important note, as it quite incidentally explains, from a British source, why the Hejaz Railway was never permanently cut. The note says flatly that the Turks were equipped with material and breakdown trains!

(79) As late as the very last stages of the war, in September 1918, the railway bridge at Jabir (south-east of Dera'a) was blown up by Arab irregulars. It was immediately rebuilt in wood (!), and again had to be destroyed, by burning, exactly a week later: Ops. II, part 2, pp. 565-566.
The definite fact is that the only two really vital railway structures (that could not be bypassed) on the whole line between Amman and Mudawara - the double-tiered railway bridge, and the adjoining tunnel at Kasr (south of Amman), that served as the targets of Allenby's abortive Trans-Jordan raid of early 1918 - were never put out of action (80).

It was only when the many bridge structures round the vital Dera'a Junction were almost simultaneously blown after the Turks had been broken in Palestine in September 1918, it was only then that both the Hejaz Railway main line, as well as the Haifa branch, were no longer operable, though futile attempts at repair were still made (81).

B) Pre-1914 Railways in Palestine and Adjoining Areas Dismantled During the War.

1) The Jaffa-Lod Line

This section of the Jaffa-Jerusalem line became redundant after the closure of the Jaffa port, owing to the war. It was some 21 kms. long and of meter gauge. As it was seized enemy (French) property, Meissner ordered it dismantled, early in 1915, to utilize its rails for the line to Beer Sheba (82).

(80) For the viaduct and the tunnel near Amman, and other targets, cp. Ops. II, part 1, pp. 331, 338, 339, 347. There are instructive photos of the two structures in Gulettel's "Photographic Record" (cp. bibliography), and in Auler (cp. bibliography for chapter III).

(81) Ops. II, part 2, p. 566. In this case it was the Germans who tried repairs, in order to keep the line open for their retreating units.

(82) Ops. I, p. 85, note; Ruppin, p. 298; Wavell, p. 12.
This line was to be resurrected by the British early in 1918 as a 600 mm. field-railway, and during the mandatory regime it was converted to standard gauge, re-linking it with Jerusalem (83).

2) The Damascus-Meserib (Hauran) Line

This French-built line was the southern extension of the Beyrouth-Damascus Railway, and it was this line that had given so much stubborn trouble to Meissner when he was beginning to build the Hejaz Railway. It was just over 100 kms. long, and of 1,050 mm. gauge, with rails eminently suitable for relaying. For a decade it had competed with the parallel Hejaz Railway to Dera'a, and taking it up, early in 1915, must have given particular satisfaction to Meissner, and a feeling of poetic justice. Its abandoned embankment was used by Lawrence's armoured cars, in their forward dash to Damascus, in the last days of September 1918, in order to steal a march on his Arab allies (84). Its rails were used for the Beer Sheba line.

3) The (Haifa-) Beled esh-Sheikh-Acre Line

This 17 kms. long line, branching off the main Haifa-Afule track, was completed on the 1,050 mm. gauge, only

(83) Davies (cp. bibliography), p. 118.

(84) The taking up of this line, amply discussed in chapter III, is noted in Ops. I, p. 85, note; Rennie, p. 30; Ruppin, p. 298; Wavell, p. 12; Woods, p. 53. As for Lawrence's ride on the railless track into Damascus, cp. his "Aufstand in der Wüste" (German), List, Leipzig, 1935, p. 377. The Meserib line is shown on most contemporary maps as active or dismantled. Its track was still shown on an Israeli Air Force map as late as 1973, as were the tracks of other lines mentioned later in this chapter. Incidentally, it might be noted that old railway tracks are obvious landmarks when seen from the air.
shortly before the war, as noted in the previous chapter. Since it served no useful purpose, it was taken up in 1915, the rails to be used elsewhere. It was relaid, and partly re-aligned to Haifa, on the narrow gauge, to utilize existing rolling stock, in mandatory times. In World War II it became dual-gauge (triple-railed) as part of the Haifa-Beyrouth line (85).

4) The Nassib-Basra eski-Sham Line

This 33 kms. long, 1,050 mm. branch, was completed a few years before the war, as set out in the previous chapter, to further grain exports. It is often erroneously called in sources the Dera'a-Basra line. Actually it branched off the Hejaz Railway trunk line some kms. south of Dera'a. It was taken up early in 1915, and was relaid sometime during the French mandate, after 1920 (86).

Outside Palestine, the 19 kms. long light railway ("tram") 1,050 mm. line Beyrouth-Ma'amilit was also taken up, probably to be used in the south (87). In 1917 the Turks also took up the standard gauge French main line Tripoli-Homs, which was dismantled.

(85) Apparently, because of its insignificance, this line is not mentioned in any source as having been dismantled. But it is shown as such on many maps, for instance on the map ("The Capture of Haifa") opposite p. 533, in Ops. II, part 2; and on the Railway Map of the Near East, no. 23, in the map-case attached to Ops.; also on "The Maps in Record" (cp. bibliography), and elsewhere.

(86) This line is shown as dismantled on the map "Arab Raids against the Railway," facing p.563, in Ops., II, part 2. It is also shown thus on map 23, in the map-case attached to Ops..

(87) Ruppin, p. 298.
rebuilt after the war. However, the heavy rails of this line were probably not used in Palestine, but to equip the Baghdad Railway through the Amanus tunnels (88).

C) New Lines Built in Palestine and Sinai During the First World War

1) The Sileh-Beer Sheba-Sinai Railway

The military railway built by Meissner Pasha for the Turks between Sileh, the railhead of the Damascus-Dera'a-Afule line in the mountains of Samaria, and Beer Sheba, was the most important technical and organizational undertaking carried out in wartime Palestine. This railway has already been surveyed in general terms at the beginning of this chapter. It will now be discussed in detail.

The new line was roughly 275 kms. long, and its construction - without taking into account the period of planning, and assembling materials and man-power - lasted some 13-14 months. This was an achievement that compared favorably with the very high building rate of the Hejaz Railway in peacetime.

The following are the chief dates regarding the Turkish Sinai railway, with sources indicated. The sources have been complemented with intelligence from maps, many of which are available today (89). Some of the sources are overlapping, in which case several are listed.

(88) Woods, p. 52, and also map 23 in the map-case of Ops.

(89) Cp., "Notes on Maps" at the end of this chapter.
### The Sinai Railway: Relevant Details

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As already noted before, the decision to build the Sinai railway, single track, and of 1,050 mm. gauge, was taken by Meissner and Kress in their meeting on December 8, 1914 (90). While planning, they had the choice between two ancient highways, both proceeding down Palestine from north to south. One led along the main mountain ridge, from about Nablus, to Jerusalem, Hebron and Beer Sheba. The other was the more easterly of the two parallel routes of the Via Maris, running down the coastal plain, parallel to, and near the foothills of the mountain ridge. The two men chose the second alternative, on account of its easy topographical layout, and its distance from the coast, and hostile naval descents. Thus, turning west after coming from Sileh to Massudiye, the line reached Tul Karem. From here, via Aphek/Antipatris, the line ran on top of the eastern subsidiary branch of the Via Maris to Lod. From Lod to the south the line continued to parallel the Via Maris (whose exact alignment is conjectural anyway) to Tel Sheria—perhaps biblical Tsiklag. Here the ancient highway turned south-west to the coast, while Meissner's line turned south-east in a wide semi-circle, to enter Beer Sheba from the west. After the railway reached it, Beer Sheba was to change from a sleepy administrative center, and a post to hold down the Bedouins, into what was to become

(90) Kress, p. 75.
one of the biggest, if not the biggest, Turkish military base in Palestine, and the de facto headquarters of the front against the British. The total length of the line Sileh-Beer Sheba, including the renailed Lod-Wadi Samar section, was about 185 kms. (91), or slightly more.

From Beer Sheba Meissner's railway continued south via Asluj to Auja Hafir, another 70 kms. or so. The track was laid out in great curves, in order to adjust to the contours of the country (a planning feat in itself), roughly along the ancient highway, along which the arch-fathers presumably travelled to Egypt. From Auja Meissner built south-east to the wells at Kusseima. By the time he had to stop building the Sinai line in 1916, on account of British pressure, but apparently chiefly owing to the lack of rails, his railway was ready from Birein, 9 kms. approx. from Auja, and the embankment was ready to Kusseima and slightly beyond - 29 kms. long (92). As already noted above, Djemal Pasha's wish to continue the line to Bir Hassana and Bir Gafgafa came to naught. Had Meissner been able to continue his work, he would have laid his railway along the ancient highway to

(91) The National Library in Jerusalem has an excellent collection of aerial photographs, made during the war by the Royal Bavarian Flight Company No. 304. These photos belong to collection Phot. 258, in the Rare Books Section. The photos contain very clear pictures showing the Wadi Samar-Beer Sheba railway, and also Beer Sheba as a big military base, with all its installations.

For the length of the line from Wadi Samar, cp. Ruppin, pp. 297-298. The line had taken some six months to build to Beer Sheba, and had cost approx. 130,000 Turkish Pounds.

Egypt through Central Sinai. The British at that time (1916) were already building their own railway, from Egypt, in the opposite direction, along the historical high road by the coast, across northern Sinai.

Although Meissner proceeded with almost incredible speed, his line was, in the main, solidly built. Frequent flood damage was repaired promptly, at least while the line was new (93). He built several sizeable bridges, at Antipatris, Irqaiq, Beer Sheba, Asluj and Auja. It is not known how many stations there were on the line Silh-Hafir, and it might be assumed that most of them were temporary huts or tents. However, he had time to erect, also, a few handsome station buildings that are even today still recognizable by their resemblance to those on the Hejaz Railway. These were the stations at Massudiye, Tul Karem (Lod had the original French-built station), Wadi Samra, Tel Sheria, Beer Sheba, and possibly - Auja. There were also laid out some big rail-shunting yards, as can be seen by surviving aerial photos (Massudiye, Lod, Wadi Samra, Tel Sheria, Beer Sheba, Auja), apart from smaller crossing places. There may also have been double-tracking in two instances (near Tel Sheria and near Asluj), where there were two parallel tracks, though at considerable distance one from the other. They may have been crossing places, but they may also mean that one track was abandoned, through damage or for other reasons (94).

(93) On the solidity of Meissner's line, cp. Ops. I., p. 85, note.
(94) Cp. Survey of Israel maps, 1:100.000, sheet 14 (Beer Sheba) and sheet 18 (Re vivim/Asluj).
Meissner accomplished all this building work with the help of the local contractors and their labor that he had mobilized, as on the Hejaz Railway, and with the assistance of some 2,000 Turkish "askars" (soldiers) that Djemal could spare for him (95).

It may be assumed that, as on the Hejaz Railway, there were no signalling installations, simple telegraph or telephone lines being sufficient to run the slow, and-relatively-infrequent, trains. There were no fixed timetables - a fact that has already been noted before (96). Rolling stock, as also mentioned before, belonged to the Hejaz Railway, and to the French lines Meissner requisitioned. There exist, apparently, only a few surviving photos of trains on this line. One shows a mixed troop-and-goods train in Beer Sheba station, headed by a tender-locomotive. The stock obviously belonged to the one working the Haifa-Dera'a line (97).

There are no surviving data of the Sinai lines capacity, except one reference in which it was rated at a maximum of 300 tons daily (98). Unfortunately, it was not stated whether the figure referred to military loads only, or also included building materials. Since 300 tons were equal to some 30 goods wagons, or approximately three trains daily, it might be

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(95) Pænicke, p. 30; also Wiegand.
(96) Kress, p. 130; Steuber, p. 74.
(97) For surviving relics of the Sinai line, including photos, cp. note 102, below.
assumed that the 300 tons were military supplies only. It is however quite clear that, in view of the fact that the line had to supply simultaneously both construction work and military requirements, it never reached its full capacity, as far as either task was concerned. Wear and tear, weather damage, and lack of spares and rolling stock, further impaired its efficiency as time passed. Though the line was at the time of its construction credited by the British with an incredible carrying effectiveness (99), a fear that led them to start their own "counter-railway" in 1916, Kress, was frequently complaining about its insufficiency (100). He may have been right, but Meissner's innate stubbornness (already demonstrated before, on the Hejaz Railway), made him give work trains equal priority with military trains (101), and Kress, for all his high rank, lost. When the British finally started their big push across Sinai into Palestine, Kress' worries proved to be academic. After Sinai had been given up and the section Beer Sheba-Asluj-Auja had been partly destroyed by the British or taken up by the Turks, the line Wadi Samar-Beer Sheba continued to carry supplies to the eastern section of the Turkish front Gaza-Beer Sheba. In 1918 it was used by the British, who converted it to standard gauge.

(99) As already noted, the British thought Meissner's line could supply and transport from 100,000 to 250,000 Turks, and even 300,000 were mentioned. Cp. Ops. I, pp. 158, 171.
(100) Wiegand, p. 17; Kress, pp. 130, 212, 251, 261.
(101) Kress, p. 156.
Meissner's Sinai Railway: Tel Sheria Station (N.W. of Beer Sheba) in 1918, after capture by the British. Abandoned previous German track with broken (bombed?) track on the left. (Source: Nat. Libr. Phot. 258)

Hejaz Railway: Kala't Aneizeh Station. Main line in foreground. Wood-carrying, war-built line to Hisheh Wood branching off, bottom-center. Black rectangle is medieval pool reconditioned for supplying water for locomotives. (Nat. Libr., Phot. 258).

(Pick, chapter IV)
Meissner's achievement in building the Sinai Railway is attested to by many of his installations that still survive, despite the ravages of man, time, and weather, after more than 60 years (102).

(102) The traces of the Turkish Sinai Railway, built by Meissner, can be easily followed in the field even today. From Sileh to Tul Karem the track is still in situ, though without rails. The stations at Sileh, Massudiye and Tul Karem, still stand. From Tul Karem to Jindas Bridge, Meissner's old track is now overlaid by the track of the standard gauge Israel Railway. From Jindas Bridge unto Lod the track, judging from contemporary British military maps, and from German Aerial reconnaissance photos taken at the time, continued partly west, and partly on top, of old Lod's present main road. One of Lod's streets is built right on top of the line, which can be verified by the fact that it branches off the main road at the unusual angle of some 25°. Meissner's station at Lod (originally built about 1892 by the French Jerusalem railway) still stands, including its platform, and today serves as the town's First Aid (Kagen David Adom) Headquarters. South of Lod the line swung onto the old (to 1918) track of the French Jerusalem line, which today is a trail and can be followed, with some breaks, past the British military cemetery (and east of the present, British built—{}in 1918—{}railway track), to Ramle. From Ramle to Wadi Sarrar (the British "Junction Station," the present Nahal Sorek) the Sinai railway was identical with the present track, which itself follows the old French line. Meissner's old Wadi Sarrar station still serves today. From Wadi Sarrar—Nahal Sorek, the line turned south, through the present army camp, to join the new, Israeli, Lod—Beer Sheba railway south of the camps. From there to about Ahuz'am (south of Kinath Gath) the new Israeli line to Beer Sheba lies right on top of Meissner's old line. South of Ahuz'am the Sinai line turned south-west, through a very deep, and still existing, cutting, (leaving the present track in the east) to continue south past Tel Sheria (Tel Shar; ancient Tsiklak). It then turned south-east, and its continuation is no longer extant. However, the embankment at the western approach to Beer Sheba, next to the airstrip, is still much in evidence. The line then crossed present—day Beer Sheba, whose main thoroughfare lies right on top of it. There, Meissner's Beer Sheba station still stands. The handsome many-arched bridge across the Wadi Beer Sheba, which Meissner built, still stands, minus one arch, carried away by floods. In the 1950s this, the "Turkish Bridge" carried road traffic in winter when the "Irish" bridge across the wadi was swamped. Between Beer Sheba, Asluj (Revimim) and Auja (Nitsana), most of the track, less rails, is still there, and long stretches of it can be seen from the main road, at Shivta, Sheizaf, and Birein (Be'er She'hayim). Mandatory, and Israeli, 1:100,000 maps still show most of Meissner's track, in the Shephela.
and in the Negev. The line, as it was in the First World War, is shown, sometimes in great detail, on the maps attached to most of the sources quoted in the text, and listed in the bibliography.

There are some few ground-level photos of Meissner's line, and trains on it. Some, including a photo of a Turkish troop train in Beer Sheba station, a bridge, and what may be the terminal at Auja, are in the possession of Mr. Horace Spafford-Vester, of the American Colony in Jerusalem. Others, including aerial views of Beer Sheba station, the line in the Negev, Tel Sheria, and Lod, belong, as noted, to the collection of aerial photos made by the Germans during the War, in the possession of the Hebrew National Library.
2) The Massudiye-Nablus Branch

This, about 15 kms. long, branch of the Damascus-Sileh-Beer Sheba-Sinai railway, was the last vestige of the often-proposed Haifa-Afula-Nablus-Jerusalem line, mentioned in previous chapters. Thanks to a French veto of immediately before the outbreak of war, noted in chapter III, this was destined to remain a deadend, terminating at Nablus. It was built by Meissner, apparently in early 1915. Why it was built is not clear, as it had meanwhile been decided to build the Sinai railway, not through Jerusalem, but down the coastal belt. This branch had no military importance until the fall of Jerusalem, in December 1917. Then it became suddenly the main supply line of the Turkish (7th) Army, that held the front across the hills of Ephraim, with headquarters at Nablus. As such it was the mainstay of Mustapha Kemal Pasha, until the Turks broke in the autumn of 1918 (103). The line operated to about 1938, when it was closed.

3) The Kala'at Anei'eh-Hisheh Wood Branch

This line, probably some 30 kms. long, was peculiar in two respects. It apparently was the only Turkish war-built line in Transjordania, and, probably because of its remoteness, in the southern fastnesses of the country, it was never noted on World War I maps, even the ones that normally included small details. It was however shown as derelict on some later

(103) The Nablus line, whose track, together with its proposed continuation to Jerusalem, was shown on plate L III attached to the T.D.P.V. of 1914, is mentioned by Wavell, p. 196, as having remained incomplete. In fact, it was completed, and Ruppin, p. 299, who lived in Palestine, says it was opened in 1915. It is shown on all contemporary maps.
mandatory maps, and is shown in outline on maps as late as 1972. It swept in a wide semi-circle from Aneize, on the Hejaz Railway trunk line Amman-Ma'an, to the west, past Shaubek Castle, and then turned south into the high mountains (some 1,650 meters or more), to end in the local woods. Its purpose was quite obviously to provide wood fuel for the Turkish trains to Medina. It must have been built early in the war, when the Turks anticipated a protracted struggle, as otherwise they would not have invested in such a long track (104).

4) The Tul Karem-Qannir/Kafr Kara Branch

This line was apparently some 25 kms. long. Its exact terminus is not known. It was built north-west from Tul Karem station, past Kakun, and then went north to end in the wooded hills of the south-eastern Carmel range, in the general area of the Arab villages of Qannir and Kafr Kara, near today's Givat Ada and Regavim. Its sole purpose was to carry fuel wood, and perhaps also ties (sleepers) for the Sinai railway.

(104) The details that follow are probably the only ones ever collected about this remote line. Cp. Ops. II, part 2, p. 328, where Hisheh Wood is mentioned as a source of wood for the Hejaz Railway (and also of grain (?)); also cp. Ops. II, part 2, p. 401, where the line is mentioned explicitly. Also cp. Dieckmann, p. 65. Cp. also Luke's "Handbook," (see bibliography) of 1924, pp. 269-270, which may have been the only guidebook ever to mention this line. This line is also clearly shown on the Survey of Palestine's 1:250,000 map sheet 3, of 1946. There is also a photo of Aneize Junction in the German aerial collection in the Jerusalem Library.
The dates of its construction and dismantling are not known. Its track was to serve later as the base for local roads (105).

5) The Jalameh-Liktera Branch

This line was less than 10 kms. long; its exact terminus is not known, nor the date of its construction. It branched off the Tul Karem-Qannir line at Jalameh, and ended near Liktera, i.e. Hadera. It may originally have been built to carry eucalyptus wood from around Haders for ties and fuel. More probably it was laid down in 1918 to serve the base depots of the Turkish 8th Army that were located at Liktera, after the loss of southern Palestine. This branch, as well as part of the Qannir branch from Jalameh to Tul Karem, was used by the British, late in 1918, to carry their standard gauge line Tul Karem-Hadera-Haifa, which is still in existence (106).

(105) This line is mentioned by Massey, "Triumph" (cp. bibliography), p. 151, who speaks about a "goods line" at Beidus, south-east of today's Ein Shemer. There is also a short reference to it in Ops. II, part 2, p. 515. Also in Dieckmann, p. 65. The line is shown on three maps in the map-case of Ops., no. 19 ("Megiddo"), no. 20 ("Sharon and Nablus"), and no. 21 ("Envelopment of the Turks"). Its derelict track is shown on the 1:100,000 map of the Survey of Palestine. The present road from Kfar Ha'roeh to Sha'ar Menashe runs on top of the old track, part of the way, as do some paths.

(106) This line will be found on the three maps mentioned in the foregoing note. It is also mentioned by Dieckmann, p. 65.
Probably the first Turkish train to reach Beer Sheba on the war-time Sinai line. Fourth figure from the left in the front row (civilian, with fez and white beard) is Meissner Pasha. Others unidentifiable. (Nat. Libr., V. 1717).

Turkish mule-worked 600 mm field-railway Auja-Maghdaba. Photo, about 1916, with wounded on stretchers, probably taken outside Auja advanced hospital. (Nat. Libr., V. 1717).

(Pick, chapter IV).
6) The Auja Hafir-Maghdaba "Tramway"

This line was not a railway in the normal sense. Rails were used, but the motive power was supplied by horses or mules. It was built by the German Major von Leysser, no doubt with the help of Meissner, sometime in 1916 when Sinai was still in Turkish hands. Its gauge was presumably 60 cms. Its length was probably, there are no details, about 30 kms. This light tram line was intended to link the railhead of the main Sinai line at Auja Hafir with El Arish (an important German air base) on the coast of the Mediterranean. In order to minimize British interference from the sea, it was built along the Wadi el Arish, coming in from the south-east. However, not enough light rails were available in Palestine, and the line terminated at the Turkish base of Maghdaba (to be the scene of a stiff action in December 1916), about half-way to El Arish. Kress in his memoirs says that the lack of rails for this line had been due to the absence of through communications with Constantinople. This line had a capacity of 80-100 tons daily - locomotion notwithstanding - carried supplies, and evacuated wounded. Before Sinai was given up, the line was dismantled for use elsewhere (107).

7) The Tineh-Deir SHeid/Beit Hanun Branch

This was one of the most important Turkish military railways on the Palestine front, though built late in the war. Its construction was first reported to the British by aerial reconnaissance on April 7, 1917, i.e. between the First and Second Battles of Gaza (108). The rails for it were

(108) As for the approximate date when the construction of this line was first noticed by the British, Cp. Op. 1, p. 292; also Wavell p. 88.
taken by the Turks, probably through Meissner's initiative, from the Beer Sheba-Auja section of the Sinai railsway, that was no longer needed, after they gave up Sinai. The British carried out a cavalry raid in considerable force in order to prevent re-use of the redundant rails - well knowing the Turks at that time had no spare rails (109). The total length of the line was some 54 kms. (110). It branched off the Wadi Saway-Beer Sheba trunk line at Tineh (just west of today's Kfar Menahem) and ran first west, and then south-west, approaching the sea ever closer, through Deir Smeid to Beit Hanun, a few kms. north of Gaza. The terminus was chosen to be out of reach of the British guns shelling Gaza. A branch from Deir Smeid was built towards the south-east, to the Arab village of Huj, headquarters of a Turkish Army Corps (the 20th). It was some 6,5 kms. long and ran parallel to, and behind, the Turkish front. The purpose of the Tineh-Beit Hanun-Huj line was quite clear, and affords a striking example how military operations depended on railways in a roadless country. The line, with its two branches, was intended to supply the right (western), and most important, flank of the Turkish Gaza-Beer Sheba front. It was thus the counterpart of the Beer Sheba main line that, together with its branches (detailed further on), supplied the eastern part of the front. Supplies brought forward on the Tineh branch, and the neighboring main line, enabled Kress and his

(110) Dieckmann, p. 64.
Turks to hold the front for six months, April-October 1917, until the decisive British breakthrough in the Third Battle of Gaza (111).

8) The Tel Sheria-Shellal Branch

This line was built, possibly about January 1917, by utilizing the taken-up rails of the Auja-Maghdaba "tram" line, in which case it must have been of 60 cms. gauge. It started at the big station of Tel Sheria, on the trunk line to Beer Sheba, and went south-west for some 20 kms., to supply the important Turkish redoubts overlooking Shellal (today's area of Tel Shama'an, the Nahal Besser Bridge and Magen). The Shellal positions, using the steep banks of Wadi Beer Sheba (Nahal Besser), blocked the threat of a British advance from Rafah to Beer Sheba, and also presented a threat to the flank of the British advance north, along the coast to Gaza. No trace whatever of this line remains today, probably because its narrow gauge necessitated few works, and these were wiped out in the course of time. Its only mention is preserved in the pages of Kress (112). The Sheria-Shellal line had only a short existence, as by the beginning

(111) The layout of the Tineh branch can be seen in some places, in today's Ashkalon area, though most of the embankment has been ploughed under. However, the 1:100,000 map of the Survey of Palestine shows most of the line, and the equivalent map of the Survey of Israel—in part. Most maps attached to the various sources (Kress, Ops., Record, Wavell), show the line in one guise or another, some as going to Beit Hanun or Deir Smeid, some as ending at Huj. The best maps are in Ops., II, part 1, charts 1-6. Here, p. 26 states that it ended at Beit Hanun, 7 kms. north of beleaguered Gaza. Cp. also Dieckmann, p. 64 and Kress, p. 220. The junction at Deir Smeid is shown on a German aerial photo. Of the track to Huj nothing is left. The line Beit Hanun-Tineh was used by the British in 1918 after they had captured it. Cp. Wavell, p. 165, who says its capacity was small, as its track was liable to be washed away.

(112) Kress, pp. 213, 216.
of March 1917, following the British build-up for the First Battle of Gaza, the Shellal positions were voluntarily evacuated by the Turks, a task in which the line was of great help for transporting materiel to the rear. At least some of the rails were taken up again, to be re-used a third time.

9) The Tel Sheria-16th Division Branch

About the middle of March 1917, some 7-10 kms. of rail from the dismantled Shellal line were relaid again, again from Tel Sheria station, this time however almost due west, unto the area held by the 16th Turkish division, about Abu Hareira Redoubt (today Tel Haror). Abu Hareira, about halfway between Gaza and Beer Sheba (and on today's main road between the two towns) was one of the key-points of the Turkish front in southern Palestine. The new branch, presumably of 60 cms. gauge, and worked by animals, carried ammunition and supplies, until the whole front was rolled up by Allenby late in 1917. No trace whatever remains of this line, whose rails had by then served three Turkish railway branches (Maghdaba, Shellal and 16th division). This line was the last built by the Turks, i.e. presumably (the fact can only be surmised) by Meissner Pasha, or under his supervision, during the First World War in Palestine (113). It was also the fourth and last of the Turkish railways that helped to hold the Gaza-Beer Sheba front against British pressure. These four vital lines were the ones that led to

(113) Kress, p. 220. The 16th division line is not shown on any map, Turkish (German), or British. However, the area held by the 16th division, and Abu Hareira redoubt, are shown by practically all relevant maps.
Beit Hanun and Huj (in the west), the 16th division, and Beer Sheba itself (in the east).

A correlation between the Turkish operations in Palestine (amply described in many sources but not specifically detailed above) and the Turkish military railways built and operated in Palestine, will show the following facts. In 1915 the railways supported to some extent Djemal Pasha's attack on the Suez Canal, and permitted the build-up of Palestine as a base; in 1916 the same railways helped the Turks in holding Sinai; in 1917 the railways enabled the Turks in southern Palestine to hold their front against the British (advancing with the support of their own railway); in 1918 the remainder of the Turkish railways in western Palestine helped to stabilize the Sharon front against the British until Allenby's final breakthrough, while the Hejaz Railway to the east of the Jordan enabled the Turks in Transjordania (and in the Hejaz) to hold out to the very last months of the war.
# Turkish Wartime Railways

**Built by Meissner Pasha**

<table>
<thead>
<tr>
<th>Section</th>
<th>Approx. Length (Kms.)</th>
<th>Working (Dates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sileh-Massudiye</td>
<td>10</td>
<td>Early 1915</td>
</tr>
<tr>
<td>Massudiye-Nablus</td>
<td>15</td>
<td>Spring 1915</td>
</tr>
<tr>
<td>Massudiye-Tul Karem-Lod</td>
<td>85</td>
<td>Summer 1915</td>
</tr>
<tr>
<td>Lod-Wadi Sarrar</td>
<td>20</td>
<td>Built about 1890, originally widened 1,000-1,050 mm.</td>
</tr>
<tr>
<td>Sarrar-Beer Sheba</td>
<td>80</td>
<td>October 1915</td>
</tr>
<tr>
<td>Tul Karem-Qannir</td>
<td>25</td>
<td>1915</td>
</tr>
<tr>
<td>Jalameh-Liktera (Hadera)</td>
<td>10</td>
<td>1915</td>
</tr>
<tr>
<td>Aneize-Hisheh Wood</td>
<td>30</td>
<td>1915</td>
</tr>
<tr>
<td>Beer Sheba-Asluj</td>
<td>71</td>
<td>1.3.1916</td>
</tr>
<tr>
<td>Asluj-Auja Hafir</td>
<td></td>
<td>May 1916</td>
</tr>
<tr>
<td>Auja Hafir-Maghdaba (Animal-powered)</td>
<td>30</td>
<td>Summer 1916</td>
</tr>
<tr>
<td>Auja Hafir-Kusseime</td>
<td>29</td>
<td>Not completed, 1916</td>
</tr>
<tr>
<td>Tineh-Beit Hanun</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tel esh-Sheria-Shellal</td>
<td>20?</td>
<td>January 1917 ?</td>
</tr>
<tr>
<td>Tineh-Beit Hanun</td>
<td>54</td>
<td>Spring 1917</td>
</tr>
<tr>
<td>Deir Smeid-Huj</td>
<td>6.5</td>
<td>Spring 1917</td>
</tr>
<tr>
<td>Tel esh-Sheria-16th Division</td>
<td>??</td>
<td>Spring 1917</td>
</tr>
</tbody>
</table>

**Total:** 492.5 approx.
RAILWAYS
BUILT OR TAKEN OVER
BY THE BRITISH
1915-1918
The British Railways: Their Task in Capturing Palestine

On February 3-4, 1915, Djemal Pasha, who has already been frequently mentioned in these columns, made his abortive attempt to attack the Suez Canal, and British-occupied Egypt, by way of the Sinai Peninsula. The British easily beat off the Turkish attack, using the Suez Canal itself as their main line of defence. However, the canal was blocked by the attack for a short time. The British had to contemplate the possibility that further Turkish-attempted attacks would lead to more stoppages of traffic through the canal, which served as a vital British line-of-communications, through which were passed forces from India, Australia, and New Zealand, to the various theatres of operations.

However, on February 19th, the British and Allied naval attack on the Dardanelles began, and, following an abortive attempt of warships to break through the Narrows, the British and their allies began their landings on Gallipoli in April 1915. At the beginning of 1915 the Turks had also been attacked on their eastern front by the Russians, who advanced in Armenia. In the south-east the Turks also faced an onslaught by the British in Mesopotamia, directed towards Baghdad. All in all, the Turks were kept busy, and the British garrison in Egypt and on the Suez Canal had reason to believe that another Turkish attack across Sinai, and on the canal, like the one of February 1915, would not soon be repeated (1). However, the supposed British immunity in

(1) General wartime developments in 1915 are handily summarized in Dupuy's "Encyclopaedia of Military History" (cp. bibliography). As for events in Egypt, cp. Ops. I, pp. 53-86; Wavell, p. 23, passim.
Egypt began to fray, as military developments began to favour the Turks, when the year progressed. Towards the end of 1915, the British advance in Mesopotamia had been successfully halted, the Russians had been stopped in Armenia, and eastern Anatolia, and Bulgaria had entered the war at the side of the Central Powers (2). Also, the Allies had seen fit to open a new front at Salonika, which proved a running sore in their side; fighting had started against the Senussi, who began to threaten (though not seriously) Egypt from the west. Trouble was also brewing for the British in the Sudan and Darfur. Worst of all, the, mainly British, attack on the Straits had bogged down bloodily, to come to its inevitable end as 1916 began, with 252,000 Allied casualties (3).

The practical result of this event was - quite apart from prestige considerations - that the Turks would, quite conceivably, have considerable forces freed for yet another attack via Sinai, on the Empire's lifeline, the Suez Canal. The implications of the Dardanelles debacle were not lost on the British, and it was then that the influence of railways on the Imperial campaigns in Sinai and in Palestine was first to be felt.

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(2) Bulgaria's entry into the war on their side enabled the Germans and Austrians from then on to send military supplies directly by rail to their ally Turkey. Until then, Bulgarian neutrality had barred the overland despatch of logistic stores to Constantinople. The sea, of course, remained closed.

(3) Dupuy, p. 955.
While trying to assess the influence of their military reverses on their position in Egypt, the British had not failed to take note of the fact that all through 1915 the Turks - as personified by Meissner Pasha - had at the behest of Djemal Pasha, speedily, and inexorably, been pushing a new railway towards Sinai. Linking, for the first time northern and southern Palestine, it had reached Beer Sheba in the autumn of 1915, and was in the process of being continued south, to Auja Hafir, with an obvious possibility of it being further extended into Central Sinai, and possibly towards Ismailia (4). While the British were generally informed about the progress of the Turkish railway opposing them, they seem to have had absolutely no idea of its technical limitations. As a result, its military capabilities - though real enough - were vastly overrated, quite apart from the fact the Turkish military manpower under Djemal Pasha was never nearly as large as the staffs, both in London and in Cairo, feared.

As already previously mentioned in passing, the G.O.C. (General Officer Commanding) Egypt credited the Turks in Palestine and Syria with 250,000 men (5). That was in about November-December 1915. At about the same time, the Imperial General Staff in London calculated that by January 1916 the Turks might bring to bear against the Delta some 200,000 men, whose

(4) The Turkish Sinai Railway has been amply described and discussed in the first part of this chapter. For how it appeared to the British, cp. Ops. I, pp. 76-77.

(5) Wavell, p. 41. On this subject also cp. first section of this chapter.
number could be augmented to 300,000 only a month later - obviously by using rail-transportation. Even the more conservative Chief of the I.G.S., General Sir William Robertson, expected an onslaught of 100,000 Turks, as late as February 1916 (6). Actually, by the beginning of 1916, the Turks at the most had 150,000 troops between Jerusalem and Sinai, fighting units and logistic tail, and these could be fed and supplied only precariously by the one and only single-track Turkish railway, that was, moreover, of narrow gauge, and whose capacity could scarcely be improved by reason of its other chores - building work and the supply of the civilian population (7). Anyhow, fear of the Turks, and the threat of their lengthening railway, weighed ever more heavily on the British in Egypt as the year 1915 drew to its close, and some improved measures for the defence of Egypt were called for.

During most of 1915, notwithstanding the Turkish attack of early February, the defences of Egypt, and of the Suez waterway itself, were strung out along the banks of the canal, from Port Said, through Ismailia, to Suez, with the width of the canal itself constituting the main obstacle between the defenders and the enemy. Only a few fortified outposts were located at various places on the canal's east bank (8).

(6) For the various British calculations, or rather miscalculations, of Turkish strength, cp. Ops., I, pp. 89, 157-158. Also Kress, p. 165-166. Haycox mentioned 250,000 Turks as late as mid-February 1916.

(7) Ops. I, p. 158.

(8) For the canal defences, Ops., I., p. 22 passim; Wavell, p. 27.
This state of affairs is supposed to have made Lord Kitchener ask the command in Egypt: "Are you defending the canal, or is the canal defending you?" (9). When Kitchener, the Secretary of State for War, came to the Middle East late in 1915 in order to decide on the abandonment of the Dardanelles venture, he also had to take a decision on how to save Egypt from the repercussions of the Straits debacle. In consultation with the men on the spot, especially Lt.-General Sir John Maxwell, then commanding the forces in Egypt, it was decided to abandon the policy of defending the canal on its own banks. Instead, it was decided to build a fortified defence line, parallel to the canal, and some 11-12,000 yards to the east of it. This line was to keep away attackers coming in across the desert, and was to hold them far enough away to prevent the shelling of passing ships (10). There was to be also an intermediate line of defence, 6,500 yards from the canal, to back up the main defence line. This deep defence system, leading from Ayun Musa (south-east of Suez) to the Mediterranean some 30 kms. east of Fort Said, and covering a trackless and waterless desert (and in the north also an inundated swamp created by breaching the canal banks north of Kantara), needed a logistic rail system to back it up. Thus the first railways in Sinai were built.

(9) Quoted by Schonfield (cp. bibliography), p. 70; see also Kress, p. 166.

The man who built the Canal Defence Railways, and later the British army trunk line across Sinai to Palestine, was Sir George Macauley, a retired officer of the Royal Engineers, who subsequently became General Manager of the Egyptian State Railways (11). Owing to his familiarity with Egypt, he was now appointed Director of Railway Services. He thus became, in some ways, Meissner Pasha's opposite number on the British side. He was to be happier in his results than his German opponent, insofar as he was ultimately to see his own side victorious, owing to its infinitely greater resources. He, like Meissner, played a role of incalculable importance in military operations, by means of the railways he was to build. In another way, the fate of the two men was to be similar. Both men were in the course of time relegated to oblivion, and today their names are practically unknown.

While the Suez Canal defences were being planned and built, it was decided to lay a number of narrow-gauge trunk lines from the eastern bank of the canal, through the secondary defence line, to the main fortifications (12). Material was provided from the reserve stocks of the Egyptian State Railways

(11) Owing to the unavailability of early editions of the British "Who's Who?" no more pertinent details about Macauley could be ascertained. For what is known of him, cp. Ops. I, p. 91.

(12) Cp. Wavell, p. 40. A detailed description of the lines will be furnished later, based on the despatches of General Sir Archibald Murray. It might be noted that the Suez Canal defences of 1915, rather like the Bar-Lev Line of some 55 years later, was not an unbroken defence line, but rather a series of fortified strong points.
(E.S.R.), and also taken from light railways in the Nile Delta, of which there were many. The delta lines, privately owned, were taken up for use east of the canal, probably on the understanding that they would be returned when no longer needed, as was apparently done. Some rails and their ties were also provided by the War Office from light lines earmarked for Gallipoli and not used there (13). In order to transport the vast loads of equipment needed for the new defences, and their rail links, the E.S.R. main line, 79 kms. long, from Zagazig to Ismailia, was doubled-tracked within six weeks, at the end of 1915, and later a by-pass main line was directly built from Zagazig, via Salhiye to Kantara (cutting off Ismailia). This energetic British activity contrasted strangely with the Turkish inability, on the other side, to push their own Anatolian main lines forward. When the speedy delivery of railway materiel to the Canal area had been assured, spurs were laid down directly to the canal banks (14), and railway equipment was ferried across. Thus the first Sinai railways began their career by being swum across the canal. Work on some of them was started even before improvements to the main line had been fully carried out.

(13) Regarding the stocks of the E.S.R., etc., cp. Murray's "Despatches" (see bibliography), pp. 193-197; for the Delta lines being taken up, cp. Ops. I., p. 95. For other details, gauges and locomotives, etc., cp. Davies (see bibliography), pp. 116-117; where there is also photo of rolling stock (plate 42).

Between December 1915 and about August 1916, the British built at least 10 separate narrow gauge military railway lines into Sinai to back up their Suez Canal defences. Nine of these lines were of 2 feet 6 inches (762 mm.) gauge, one of meter gauge (1,000 mm.). Decauville tracks (field-railways of 2 feet gauge, about 610 mm.), led from the railhead depots to various outposts (15).

The following lines were built:

1) **Port Said - Mehmedia**

This line led east along the Mediterranean coast, and was built on a very narrow spit of land between the sea and the Plain of Tine, that had been flooded by the British, when they breached the eastern bank of the Canal (16). Mehmedia was a group of hovels near the eastern end of the Bardawil Lagoon. The line was about 41 kms. long. Despite its narrow gauge, trains carried up to 90 tons each. When the standard gauge line Kantara-El Arish was later built, Mehmediya was linked by a 5,5 kms. long standard gauge branch with Romad station. This line was the only one amongst the canal railways that worked for a considerable time, as it eased the load on the wharves at Kantara when the Palestine campaign was later in full swing, by enabling military stores to be discharged at Port Said, for despatch to Palestine.

(15) Murray, pp. 194-195; Davies, pp. 116-117, who also has a photo, app. p. 144.

2) **Kantara-Romani**

This was the only meter gauge line of the system. It was some 40 kms. long, and went north-east from Kantara to Romani. It had a 5.5 kms. long branch to Doueidar Oasis. This line was taken up after it had helped in the building of the standard gauge line Kantara-Romani and beyond. Its equipment had been leased and was returned to its owners.

3) **Ballah**—**Ballybunion Station**, a humorously named terminal in the desert, 8.8 kms. from the canal.

4) **Firdan-desert**, 9.8 kms. long.

5) **Ismailia-desert**, 11.3 kms. long.

6) **Serapeum-desert**, 9.4 kms. long.

7) **Shallufa-desert**, 15.1 kms. long.

8) **El Kubri-desert**, 7.4 kms. long.

9) **El Shatt (Suez) — Jebel Musa**, 7.3 kms. east of the canal.

10) **El Shatt (Suez) — Ayun Musa**, 11.4 kms. to the south-east.

There may have been an 11th line leading east from the Great Bitter Lake. All these lines had a total length of over 160 kms., exclusive of spurs, sidings, and field-track extensions. They were never interconnected (17). The lines

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(17) Details from Murray, especially p. 197. A map showing all the canal defence lines, including an unidentified line from the Great Bitter Lake to the east will be found on a map in Wavell, p. 24. The northern tracks are shown in Wavell, p. 44, and also in Ops. I, sketch 10.
One of the British Suez Canal Defence light (2 ft. 6 in.) trains headed by a petrol locomotive, ca. 1916.
(Source: Imperial War Museum).


(Pick, chapter IV).
(except no. 2) were worked by altogether 33 petrol engines and 341 5-ton wagons. The stock was never put to the test, as the Turks never again attacked — perhaps because the canal defences were too well supplied. Lines 3-10 were shut down in due course, as the Turks were pushed back, but some of their rails and stock may have been relaid to back up the Gaza front in 1917, as will be noted later on (18). It will be seen that Meissner Pasha, on the other side, was not the only one to re-use his lines — proof of the importance of railways while campaigning in areas lacking roads. Some relics of the lines built by Sir George Macauley were still evident in the 1970's, in the form of deserted embankments and desert tracks (19).

While the defences of the Suez Canal against a Turkish attack from the east were being augmented by the G.O.C. Forces in Egypt, Sir John Maxwell, and the building of railways into Sinai was set in motion after December 1915, the troops of the Mediterranean Expeditionary Forces evacuated from Gallipoli were being sent to Alexandria, to be rested, re-equipped,

(18) Cp. Davies, pp. 116-117; and also Murray, p. 198.

(19) Leftovers of the canal railways' traces, though marked only as tracks, can be found in most good maps of Sinai, for instance on the Israel Army 1:250,000 map (restricted), no. 449 of October 1973. A (restricted) 1:50,000 Israeli army map of 1973 expressly notes an "old railway track" leading east from Serapeum (near Ismailia), on the bloody battleground of the "Chinese Farm," notorious in the October 1973 war.
re-trained and concentrated in the Canal area (20). On January 6, 1916, the former Chief of the Imperial General Staff, General Sir Archibald Murray, arrived in Egypt in order to take over the new concentration of forces in that country (21). There was now an overlapping of responsibilities between him and Maxwell. On March 10, 1916 Murray took over command of all the troops in Egypt, as C. in C. Egyptian Expeditionary Force (E.E.F.), and Maxwell returned to England (22). From now on it was Murray who had to solve the problem of how to keep away the Turks from the Canal and the Nile Delta. Meanwhile, the Turkish Sinai railway was being extended from Beer-Sheba to Auja, an indication that the Turks were planning to extend it to Central Sinai (23).

Murray was no stranger to the subject of the Turkish railway threat, which had already cropped up towards the end of 1915 when he had been C.I.G.S. At that time Kitchener and Maxwell had decided on the fortified zone, parallel to, and east of, the canal (24). They had taken into account three possible Turkish avenues of approach: 1) In the south,

(20) The relevant details will be found in Ops. I, chapters V and VI; also in Wavell and other publications dealing with the subject.

(21) Murray had been Chief of the Imperial General Staff only from September to December 1915. His sudden transfer to the Middle East indicated the anxiety with which the requirements of the defence of Egypt were viewed in Britain. Cp. his biography in Webster and the Dictionary of National Biography.

(22) Ops., I, pp. 95-96.

(23) Ops., I, p. 90, note 2.

(24) Ops., I, p. 84.
along the Derb el-Haj ("Pilgrims' Road") from Akaba to Suez. This was almost impracticable, owing to the lack of water for large military bodies; 2) Through Central Sinai, approximately along the axis Auja-Bir Gafgafa-Ismailia, over which the Turks had indeed carried out their futile attack of February 1915. This was the passage towards which the new Turkish railway headed. However, prior to the completion of a railway, this way of approach was only feasible for a limited number of troops in winter, when there were adequate water supplies. In the winter of 1915/16 the Turks were recuperating from their efforts at Gallipoli, and in no shape to attack. However, the British were worried about future possibilities. At the risk of anticipating events somewhat, it should be noted that this route was, at least temporarily, blocked in some of Murray's first offensive actions after he came to Egypt. These were the destruction of the limited water resources at Bir Gafgafa (11-15.4.1916), and at Moyia Harab, and in the Wadi Mukhseib, east of the Little Bitter Lake (9-12.6.1916). This put, at least, a temporary end to the Turkish threat by way of the Central Sinai route (25); 3) In the north, down the ancient trade and military highway, along the Mediterranean coast. This route had already worried Maxwell, as well as the Imperial General Staff, in November 1915, as it was provided fairly

well with water resources, and permitted the concentration of large hostile forces at El Arish and further west (26).

In the context of the northern, coastal, route, the name of the oasis of Katia had already cropped up in the considerations of the British General Staff in the autumn of 1915 (27). Katia, and the neighbouring oasis of Oghratina, had already been used by Napoleon in 1799 as staging-points for his forces on their way to Palestine. If not held by the British, Katia had obvious capabilities of being used by a considerable Turkish concentration destined for another large-scale operation against the canal, and the delta (28). 80,000 troops were mentioned. With Katia garrisoned by the British, and adequate communications to back them up, it was assumed that far fewer Turkish troops, some 50,000, could operate in the area. It was therefore suggested, as early as November 1915, that a light railway should be built to Katia (29).

(26) For an extensive discussion of the military threats presented by the three main routes across Sinai, cp. Murray's appreciation of 15.2.1916, in Ops., I, pp. 170-174.

(27) Ops., I, pp. 83, 90.

(28) Murray estimated that some 80,000 Turks could subsist on the water resources of Katia, even in hot summer weather. Cp. Ops. I, p. 179. That was in February 1916. Earlier it had been estimated that with Katia in British hands, only 50,000 Turks could operate in the area. Cp. Ops., I, p. 90.

(29) Ops., I, p. 83.
However, Murray, when he was still C.I.G.S., was not in favour of the occupation of Katia, because he considered that even if it was carried out, the Turks could still concentrate in the well-watered oasis of Bir-el-Abd, further east along the coast. Above all, he first wanted Maxwell at that time to concentrate on finishing (including railways) and strengthening his main line of defence along the Suez Canal (30). This stance he apparently took because he was greatly worried at the time by the offensive implications of the railway which he knew was building with great speed from Beer Sheba into Sinai (31). He probably feared that the new Turkish railway would enable Djemal Pasha to attack not only along the Central Sinai route (which Murray took care to block — as noted above), but that the Turks would work their way, i.e. move their forces, north from their railhead at Auja Hafir, via Maghdaba, to El Arish, to attack from there towards the canal. In this fear he was right, as shown in April and August 1916, in the battles of Katia and Romani, when the Turks were to attack with forces supplied by the railway from Beer Sheba. They were also to try and bridge the 100 kms. or so between Auja and El Arish by their light railway (described already in the section devoted to the Turkish lines), that was built as far as Maghdaba. This was to be in the future, but, in the meantime, early in 1916 the Katia line was to remain in abeyance, at least in theory, though not in fact.

(30) Ops., I, p. 90.

(31) For Murray's worry about Meissner's railway, Ops., I, pp. 84, 90; and for Kitchener's — Ops. I, p. 77.
The actual fact was that amongst the almost a dozen railway lines (already described above) initiated by Maxwell to provide the backbone of his Suez Canal defence system, there was the meter gauge railway from Kantara to Romani. Since this place, in the northernmost sector of the canal defence belt, was only a few kms. west of Katia, Katia's occupation could have been carried out any time by moving troops to Romani on the meter gauge railway from Kantara. Troops to seize Katia could have also been concentrated by means of another of Maxwell's light railways, the line from Port Said to Mehmedia, which ended only a few kms. north of Romani. As it turned out, Murray, when he went to Egypt, within a few weeks was to propose to the authorities in London his own scheme for a railway line, much more substantial than a light line to Katia, and of far greater implications.

With the arrival of Sir Archibald Murray in Egypt, and his taking over command of all the forces in the country, in March 1916, entirely new concepts, radically opposed to Sir John Maxwell's ideas of relying on a static defence belt along the canal, came to the fore. The instructions issued to the new G.O.C. by the Secretary of State for War, Lord Kitchener, and by the new C.I.G.S., Murray's successor, **Sir William Robertson**, stressed defence as his main task (32), and he did carry out his orders as far as the completion of the

(32) For the terms of the instructions, Ops., I, pp. 98-100.
Suez Canal defences (including the non-seizure of Katia) was concerned. But Murray was in favour of an active, not a passive-static, defence of Egypt, and he made his different views abundantly clear in his appreciation of February 15th, 1916, sent to the Imperial General Staff one month before the recall of Maxwell. The appreciation began as follows: "It is clear that the security of Egypt against an attack from the east is not best assured by the construction of a great defensive position in proximity to the Suez Canal... among other reasons because such a position is wasteful in men and materiel. In order to effect the object aimed at, it would be far preferable to push out across the Sinai Peninsula, towards the Egyptian frontier (33), making disposition for an active defence. Less troops will actually be required for an active defence than for a passive, or semi-passive, defence of the Canal Zone." The appreciation then went on to say, after some elaboration, that the true base of the defensive zone of Egypt against an invasion from the east was not the 80-90 miles long canal, but the 45 miles stretch between El Arish and Kusseima (34). These points were made in section I of the appreciation. In section II Murray contended that in the spring (1916) the Turks would be able to get to Sinai (and across it - depending on water

(33) The reference is to the Egyptian-Turkish frontier, from Rafa to Taba on the Gulf of Akaba, fixed after the 1906 Akaba Crisis. This crisis erupted, as described in Chapter III, as a result of Meissner Pasha's plan to build a railway from Ma'an to Akaba, that the British regarded as a threat to their hold on Sinai, and to Suez.

(34) Murray's appreciation is printed in full, in Ops., I, pp. 170-174. The area he mentioned was roughly the same area where warlike operations did take place in 1956 and 1967.
resources) by means of their railway some 250,000 men.

In section III he went on to stress that, in these circumstances it appears certain that it will be necessary to build a railway for the maintenance of any considerable force pushed out across the northern part of the Sinai Peninsula. "Our reliance on the railway, yet to be constructed, necessarily limits the possibilities (available) to a gradual forward movement." Thus Murray's appreciation inexorably linked the execution of his new defensive-offensive strategic concepts with the building of a railway, and it was to become the genesis of the line between Egypt and Palestine, between Africa and Asia.

With Murray's idea of building a railway, there came to an end a period of many decades during which Britain had succeeded by design, or by accidental benign neglect, in keeping Sinai as some sort of a "curtain of sand," passable, but by camels, between Turkey's possessions and Egypt. The end of this period had been forced by the Turkish effort to build a railway with palpably aggressive connotations into Sinai. The Turkish line had been built, roughly, from the north to the west. The British then were forced by their opponents to build their own "counter-railway" from the west. It was to end up far in the north of Palestine.


(36) In Stein's book on the Balfour Declaration (cp. bibliography), pp. 51-52, Sir Edward Grey's, the British Foreign Secretary's, objection, as late as 1913-14, to any link between Egypt and Palestine is noted. Cp. also Friedman (see bibliography), pp. 1-2, on the cordon sanitaire for the Suez Canal, and for the opinion of the Committee of Imperial Defence in 1906 on the need for the preservation of a 130 miles wide desert between the canal and the Turks.
Murray, in proposing the construction of the new railway, had, of course, no choice. The new line was needed to give him mobility, supplies, and offensive capabilities. Except by means of rails, there was no other way at all to move large bodies of men, and their supplies, through a desert of shifting sands. It was also to remain the only way, as Sinai was left roadless (except for temporary tracks created by laying mats netting across the sands) until some years after the end of World War I (37). Few, if any, railways in history had, or were, to have the military importance of Murray's line, after it was built (38). It was to be the one and only means that enabled the British Imperial Forces to cross Sinai into Palestine and beyond, a process that ended with the dissolution of the Ottoman Empire, with all its consequences.

Sir Archibald Murray's memo of the middle of February 1916, about the necessity for a defensive-offensive, and a railway,

(37) Apparently sometime in the 1920's (there is no exact date) the little-used and difficult road from Ismailia via Auja was built, to link up with the Palestine road-net at Beer Sheba. This road remained the only link between Egypt and Palestine, apart from the railway, until World War II. Only then was the track Akaba-Suez improved, and a road built from Rafa, via El Arish, to link up with the main highway at Bir Hassana in Central Sinai. This is evident from maps in the Official British History of the Second World War in the Middle East (ep. bibliography), and from a restricted Army Road Map of Cairo H.Q. of 1944. Today's road along Murray's railway, Kantara-Rafa, was, as far as could be ascertained, built after 1945 by the British, or even after 1948, by the Egyptians. Details are lacking.

(38) It was to reach Haifa in 1919, Beyrouth and Tripoli in 1942, during the Second World War.
seems to have convinced both Kitchener and Robertson in London. Even before his overall command was gazetted, i.e. already at the end of February, he started preparations to occupy in force not only Romani, which lay within Maxwell’s original defence belt, but also Katia, which Maxwell had not been permitted to do (39). For this purpose he - more correctly, it was Sir George Macauley - also took the first steps towards pushing out a standard gauge (1,435 mm.) railway from Kantara towards Romani and Katia. This was laid parallel to the original meter gauge line (one of the ten Canal Defence Railways) Kantara-Romani/Doueidar, which helped in hauling material, and was, at a later date, taken up after serving its purpose. Actual work began on March 10th, 1916, when the first shipload of rails and ties had been unloaded at Kantara (40).

Before describing Murray’s Sinai Railway in detail, it might be useful to list some relevant dates, distances, and remarks regarding the line, from its inception in March 1916 to June 28, 1917, when Sir Apchibald’s appointment as G.O.C. terminated (41). The list of stations may not be complete, as there might have been crossing-places not listed in the sources. Some of the stations may have been of a later date than the original line.

(40) Ops., I, p. 160.
(41) The following list was compiled from the two volumes (3 parts) of Ops., and from the map case attached to them, especially map no. 23. Many particulars were taken from Wavell, and some also from Gullett, and Kress. Maps also used included the Survey of Israel 1:250,000 map of Sinai (El Arish sheet), and the Israel Army Map no. 449 (restricted), El Arish, of October 1973.
<table>
<thead>
<tr>
<th>Stations</th>
<th>Dates (if available)</th>
<th>Distances (from Kantara)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kantara</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Tel el Ahmed</td>
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<td></td>
<td></td>
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<tr>
<td>Station (unnamed)</td>
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<tr>
<td>Gilbane</td>
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<td></td>
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<tr>
<td>Baluza (Pelusium)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Romani</td>
<td>Reached about 15.5.16</td>
<td>40.5 kms.</td>
<td>Work started 10.3.16.</td>
</tr>
<tr>
<td>Mehmedia</td>
<td>Reached ca. 20.6.16</td>
<td>46 kms.</td>
<td>Terminus of standard gauge branch from Romani, to terminus of narrow gauge line from Port Said.</td>
</tr>
<tr>
<td>Km. 47</td>
<td>18.7.16</td>
<td>47 kms.</td>
<td></td>
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<tr>
<td>Rabbâ</td>
<td>15.10.16</td>
<td>76 kms.</td>
<td></td>
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<tr>
<td>Ingila</td>
<td>17.11.16</td>
<td>113.5 kms.</td>
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<tr>
<td>El Kreibeh</td>
<td></td>
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<tr>
<td>Bir-el Abd</td>
<td>17.11.16</td>
<td>113.5 kms.</td>
<td></td>
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<tr>
<td>Bir Salmana</td>
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<tr>
<td>Mazpak (Bir Mosefig?)</td>
<td></td>
<td></td>
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<tr>
<td>Bir Mazar</td>
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<tr>
<td>El Subeiba</td>
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<td></td>
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<tr>
<td>Ma'adan</td>
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<td>137 kms.</td>
<td></td>
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<tr>
<td>El Bardawil</td>
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<td></td>
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<tr>
<td>El Arish</td>
<td></td>
<td>155 kms.</td>
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<tr>
<td>El Arish East</td>
<td></td>
<td>170 kms.</td>
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<tr>
<td>Km. 170 (El Kuteifa)</td>
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<tr>
<td>El Burj (?)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sheikh Zuweid</td>
<td>1.3.17</td>
<td>200 kms.</td>
<td></td>
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<tr>
<td>Rafa</td>
<td>21.3.17</td>
<td>200 kms.</td>
<td></td>
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<tr>
<td>Khan Yunis</td>
<td>28.3.17</td>
<td>226 kms.</td>
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<tr>
<td>Km. 215</td>
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<td></td>
</tr>
<tr>
<td>Deir-el-Balah</td>
<td>4/5.4.17</td>
<td>226 kms.</td>
<td>4 kms. long, 2 foot 6 in. branch west of main line.</td>
</tr>
<tr>
<td>Balah-Beach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stations</td>
<td>Dates (if available)</td>
<td>Distances (from Kantara)</td>
<td>Remarks</td>
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<tr>
<td>Wadi Gharib</td>
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<td></td>
<td>19 kms. long, 2 foot 6 in. system east of main line,</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Sheikh Nuran</td>
<td>18.5.17</td>
<td></td>
<td>22 kms. branch line eastward from Rafa.</td>
</tr>
<tr>
<td>Gamli</td>
<td>13.6.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shellal</td>
<td>15.6.17</td>
<td></td>
<td>Extension from Nuran towards Beer Sheba, 26 kms. from Rafa.</td>
</tr>
</tbody>
</table>

Note: Some dates and distances may be approximate.
One of the most interesting features of Murray's new railway was its alignment, which followed, more or less exactly, the ancient caravan route from Egypt to Palestine/Syria, the Via Maris, the biblical "Way of the Land of the Philistines" (42). This was the highway, well-nigh deserted and practically obliterated in 1916, that countless hosts had trod long before the advent of the British, on their way from the fortress of Pelusium past the strongholds and battlefields of El Arish, Rhinocelura/Rafa, Daram/Deir el-Balah, Gaza, Hirbiya, Ashkelon, and beyond, unto the Holy Land.

Though Port Said had been suggested several times, from 1848 onward, as the starting point of a railway to Palestine (43), the new British railway set out from a far more historical point of departure, Kantara. Port Said was too isolated by its encompassing lagoons from the main bulk of Egypt, and too cramped by its watery surroundings, to serve as an extensive base for a large-scale military expedition. Though, as previously noted, a narrow-gauge railway had indeed been built to the east from Port Said to Medmedia, it had to be laid on top of a very narrow spit of land, at places only some dozens of meters wide, between the Mediterranean, on the one hand, and the plain of Tine/Pelusium, flooded by the British on the other (44). This trace was too precarious, and too liable to be cut off both

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(42) Exodus, chapter 13, verse 17.
(43) From the suggestion of Assad Khayat, in 1848, onward; cp. chapter II.
(44) Ops., I, p. 25.
by the sea and by enemy action, to be suitable for a standard
gage line. Thus Kantara - "the Bridge" - was chosen as a
starting point, situated at a point where the ancient track
from Egypt to Palestine passed (from south-west to north-east),
a natural defile between the ridge of El Jāsr, in the south, and
Lake Menzaleh and the swamps of Tine/Pelusium, in the north.
Kantara had ample space for a base, it was situated on the
Suez Canal (and indeed was to sprout wharves and turn into
a port in due course), and it was close to the Sweet Water
Canal that ran parallel to the big shipping way, and thus
had ample supplies of water. Its communications with the
interior of Egypt and with Murray's H.Q. at Ismailia - it
was later transferred to Cairo - were excellent. Two standard
railway lines ran from Kantara into Egypt proper, one through
Ismailia and the other through Salhiya.

As already noted, the British started building their
standard gauge railway from Kantara on March 10th, 1916.
Actually they began their work from a point across from
Kantara, which itself lay on the western bank of the canal.
This terminus formed the beginnings of Kantara-East, which
was to develop into a huge base, with wharves for ocean going-
ships along the canal banks (45). It was to wither entirely
after 1918, to be resurrected again in World War II, after
which it grew into a sizeable town, until occupied by Israel

(45) The Kantara base will be described more fully later
on. There is an interesting aerial view of it in Gullett.
in 1967. Rails and ties were unloaded from ships directly onto the base, great marshalling yards grew up, and rolling stock of the E.S.R. was ferried across the canal, and at a later stage moved across by floating swing-bridges. These also served vehicular and pedestrian traffic.

As noted before, the new line was laid parallel to the tracks of Maxwell's meter line to Romana, which played a leading role in bringing up equipment. The track was laid in a north-easterly direction in order to bypass, as did the ancient caravan highway, the area of sand dunes (some very high) that lay due east. A 6-inch pipeline was laid parallel to the new railway, a water-supply system that was to grow to huge proportions — with the help of the railway — and finally to extend as far as the borders of Palestine (46).

These first British steps towards building a railway came to the ears of Kress von Kressenstein through Bedouin agents, and made him decide on a reconnaissance-force, which led on April 23, 1916, to what the British-playing it down — called "Affair" at Katia, while the Germans regarded it as a fully-fledged "Action" (47). The object of the Turkish attack was to interfere with the new railway. It resulted in quite a number of British casualties, both at Katia, and especially at neighbouring Oghratina. However, the Turks retired, lost territory was recaptured, and the construction of the line

(46) Ops., I, p. 175.
continued. It reached Ramani on May 15th, 1916, and regular traffic started four days later. At the same time it was decided to build a 5.5 kms. standard gauge branch from Ramani to Mehmedia in the north. When this was finished, about the middle of June, Ramani became a forward base, with two railways to serve it, one from Kantara (standard) and one from Port Said (narrow) (48). Thus, the whole Ramani-Katia-Oghratina area had more than adequate supply lines to back it up. This was to cost Kress dear a few weeks later.

Meanwhile, the British government had come to a momentous decision regarding the continuation of the war in Sinai, and the share of the railways in it. On July 6, 1916, the British War Committee recommended that: 1) The C.I.G.S. should direct the G.O.C. Egypt to prepare to occupy El Arish - and Akaba, as well - since a force established at these places would directly threaten the Turkish communications between Syria and the Hejaz and encourage Syrian Arabs; 2) The C.I.G.S.

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(48) Ops., I, pp. 169 and 170, note. During the first week of its operations the Kantara-Ramani standard line carried 1,125 tons of supplies, 420 tons of engineering supplies, 960 tons of drinking water (= 215,000 gallons), 150 tons of railway equipment, and 150 tons of miscellaneous stores - and 700 troops, a total of 2,800 tons. Considering that a camel could carry some 300 kgs. of load under favourable circumstances, the advantages of having a railway to back up a campaign became apparent. Cp. also Murray, p. 198; Wavell, p. 46.

A good aerial photo of Ramani Junction, the main line, and the spur to Mehmedia, will be found in photo 611, of the German photo collection (op. Note on Photos) in the Jewish National Library (Phot. 258).
should direct the G.O.C. Egypt to push on at once with the Qatiya (Katia) railway, making preparation for its extension to El Arish (49). Thus the railway to El Arish, which Murray had envisaged in his appreciation of February 15th, had been given an official "green light" some five months later. Building the line from Ramani had been resumed on July 7th, but was stopped on July 13, at km. 47, as another storm - caused by operations in the area - was about to break about it (50).

By July 1916 Kress had decided on another move against the British. He had received reinforcements from Germany, and planned another attack on the Canal and the growing railway installations at Kantara, by means of bombarding them with his newly-acquired long-range 210 mm. guns. He also wanted to cut the new railway west of Ramani, and to inflict on it as much damage as possible. The Turks attacked on August 4th, 1916, and in a struggle that lasted altogether some 10 days, were heavily defeated in what became known as the Battle of Ramani. This time the British were well prepared, and used their newly-built railway efficiently for bringing up reinforcements and evacuating wounded. They even had an armoured train in readiness at Kantara (51).

(49) Ops., I, p. 231.
(50) For the dates, cp. Murray, p. 198.
(51) For the British use of the railway, Ops., I, 189. For the Turkish intention to cut the railway, cp. Wavell, p. 47, and also the instructive sketch no. 10, in Ops. I. For the armoured train, cp. Ops., I, p. 184. For the evacuation of the wounded, cp. Ops., I, p. 204, note.
This was the last time the railway was threatened, and a few days after the battle on August 10th, 1916, building the line was resumed, never to be threatened again (52). From now on the Turks, who of course had no railway of their own in northern Sinai to back them up, were to be inexorably pushed back. They had to retreat before the growing forces of the British could concentrate against them with the help of their own railway.

After the Battle of Ramani, construction of the British railway continued towards the east, through the slot between the Bardawil Lagoon by the sea in the north, and the trackless, waterless, and empty desert in the south. During the very hot months, no work could be done after 10 o'clock in the morning (53), so progress was relatively slow—it was speeded up later—and amounted to about 25 kms. (15 miles) a month. Construction was carried out by railway companies of the Royal Engineers and by native labour recruited in Egypt (54), of whom more later. Thus the line catered to thousands of troops and workers, apart from bringing up supplies. Hosts of camels were employed in building the line, which in turn supplied their needs in fodder. In the meantime, the water pipe-line, carrying Nile water from the sweet-water canal of Kantara, also kept growing into Sinai, alongside the railway that carried its pipes (55). Though

(52) Murray, p. 198.
(53) Ops., I, p. 176.
(54) Wavell, p. 61; also Davies, p. 117.
(55) Ops., I, pp. 175, 242-243; Wavell, pp. 61-62; cp. also diagram 1, opp. p. 271, in Ops., I. Also, Murray's despatches.
in the beginning it lagged usually - and later, occasionally - behind rail construction, the importance of the pipe-line was enormous, because it supplied sweet water to the locomotives that could not use the local brackish saline wells, and made the despatch of huge quantities of water by tank-trains, to supply men and beasts, unnecessary. There was a curious interdependence between rail-line and pipe-line because, on account of the total absence of even hardened tracks through the sands, the individual water pipes, 6 in., 10 in., and ultimately mostly 12 in. (305 mm.), could only be brought forward by rail (56). Thus the railway helped in building the pipe-line, while the pipe-line helped in running the railway.

Bir el-Abd, 76 kms. from the Suez Canal, was reached on 5.10.1916 and the line continued through Bir Salmanal and through Mazpak (also called Bir Mosefig in one source) to Bir Mazar, 45 kms. from the Canal. This place was reached on 17.11.1916 (57). It will be noted some of the places the British railway had passed were called "Bir," i.e. "well." These were the wells that had used to supply water to the travellers on the ancient Egypt-to-Palestine caravan route. But these wells had water of indifferent quality and their capacity was far below the one needed to supply an army on the march, like the British Imperial Forces which

(56) Sometimes the pipes were rolled out of slowly-moving trains. In case of need they were dragged further by tracked tractors. Sp. Ops., I, p. 243.

(57) Dates are taken mostly from Murray's despatches, which probably have the most reliable figures. According, however, to the maps in Ops. and in Wavell, Bir Mazar was reached about 1.12.1916.
at that time numbered well over 150,000 men all told, and many thousands of beasts (58). Thus the new line provided a prime example of the military importance of railways. While it carried the materials for its own continuing construction, it also provided the supplies on which exclusively the progress of the E.E.F. depended. In this way, it acted as the ram that pushed the British forces forward. The further the rails progressed, the harder the troops depending on them kept pressing the Turks back. The story of the British advance in Sinai illustrates this fact very explicitly. In the words of the official history of the campaign, "The speed of the British advance had been, and was to remain, dependent on that of the railway." The importance of the vital railways for operations was even more vital than might have appeared superficially, because the forces advancing along the coast could get no logistic support whatever from the sea, on account of very shallow waters that did not permit approach. Thus supplies could only be brought up by rail. The fact that the railway did its job very well is confirmed by a statement of Kress, who noted sadly, "Step by step, in conformity with the advance of their (i.e. the British) railway construction, we (i.e. the Turks) had to retreat" (59).

(58) The ration strength, i.e. the total effectiveness, including auxiliary and service troops, of the Egyptian Expeditionary Force at that time, was 150,000 British and 6,000 Indian troops, and 13,000 men of the Egyptian Labour Corps. Op. I, p. 247. Figures were to grow much larger as time passed.

The occupation of Bir Mazar, and especially the British railhead there, had decisive strategic results. Not only were the British now within striking-distance of the very important Turkish base of El Arish in the east (60), they were also about to bypass a number of Turkish outposts strung out further south along the Central Sinai route. These were posts in the Maghara Hills (at Bir Hanun), at Bir Hassane and at Jebel Libni. All these places, consequently, had to be evacuated by the Turks towards the end of 1916. The British railhead at Bir Mazar also threatened the Turkish base at Maghdaba, south-east of El Arish, and halfway along the track between the latter place and Auja Hafir, on the one hand, and Kusseime, on the other. Maghdaba was the terminus of the Turkish mule-worked field-railway from Auja, previously mentioned. The British at Bir Mazar also threatened the Turkish camp at the Abu Auweigila track-junction, protecting Kusseime (61). From Murray's railhead at Bir Mazar to Meissner Pasha's railhead between Auja and Kusseime (the ultimate spot the Turkish Sinai railway was to reach), the distance was only about 100 kms. (62). A short additional advance of the British along the coast would have outflanked

(60) El Arish was well fortified and held by about 1,600 Turks as a permanent garrison. It had many installations, including a large field-hospital. It also had a very important airfield that had allowed German planes to dispute the air over Sinai with the British for many months. It also had the best and most plentiful water resources in Sinai. Op. Kress, pp. 159, 171; Ops., I, p. 251.

(61) All these places, except Maghdaba, were to feature largely in two other struggles, between other protagonists, in 1956 and 1967.

(62) Ops., I, p. 246.
Egyptian Labour Corps men laying the standard gauge line Kantara-Rafa in the Sinai Desert under British supervision. Photo 1916. Note heavy rails and sturdy ties. This line was taken up by Israel after 1969. (Gullett: Record).


(Pick, chapter IV).
most of the Turkish forces in Sinai. Kress, mindful of his growing inferiority in the face of unceasing pressure, decided to evacuate all of Sinai. The Turks relinquished El Arish, which the British forces entered on December 21, 1916, with the railway following closely behind them. There is thus little doubt that the progress of the British railway contributed to the loss of Sinai to the Turks.

The railway from Kantara reached El Arish on January 4th, 1917. Steps were now taken to carry it, by means of a bridge, over the one big water course in Sinai, the Wadi el-Arish (probably the biblical Nahal Mitsraim). This was a normally dry river bed, liable to be swamped by violent floods in the rainy season (63).

Immediately after the British capture of El Arish, and even before their tracks had reached this place, another engagement had taken place that had some bearing on a railway—in this case, the Turkish one. After the Turks had evacuated El Arish, there was at first some doubt as to in which direction they had retreated, either along the coast to Rafa, or southeast to Maghdaba or Kusseime (64). A retreat along the coast to

(63) The collection of German aerial photos (Phot. 258) in the Jewish National Library, Jerusalem, contains several instructive shots of early British railway building activities at El Arish.

There is reason to believe that the British line was first carried across the wadi on top of sandbags, for which a steel bridge was substituted later, cp. Murray, p. 200.

One of the earliest childhood recollections of the writer is watching, from the windows of a stationary train, the whole steel bridge (probably the one built during the war) over the Wadi el-Arish being swept away into the nearby sea, by a sudden winter flash-flood. This was in the 1920's.

(64) Ops., I, pp. 252-253.
Rafa would have been logical, it being both shorter and easier, on account of the configuration of the terrain. Nevertheless, aerial reconnaissance established that the biggest Turkish concentration was at Maghdaba. The grounds for the Turkish withdrawal there can only be surmised, but it might be assumed that they had gone there with the intent to protect their railhead at Auja against a British attack from El Arish. The base at Maghdaba blocked any British advance directed against the Turkish Sinai railway coming down from Beer Sheba. Moreover, Maghdaba, which was well fortified, had relatively good rear communications by means of the field-railway, with mules as motive power, that linked it with the Turkish main line at Auja (65). This light railway might have been expected to supply the garrison in its blocking task. It also could have served to move any men and material saved from El Arish. However, on December 23, one day after Kress had inspected its defences (66) and only two days after the capture of El Arish itself, the Turkish base at Maghdaba was wiped out, lock, stock, and barrel, by the railway-based British Imperial Desert Column. This was the definite end of Turkish warfare under Kress in Sinai.

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(65) Kress, p. 147; Wiegand, p. 30. The field railway had a capacity of 80-100 tons daily.

(66) Kress, pp. 206-207.
Five days after Murray's railway had reached El Arish, and while the line continued to be pushed forward - now through partially cultivated country - another crucial engagement was fought over a Turkish position that would have blocked the progress of the line, unless neutralized. In fact, the railway track was to pass within a few hundred meters of it, a short while later. The reference is to the bloody action of Magruntein - also called the Battle of Rafa. This place was situated on a classical battlefield over which ancient armies had fought. Magruntein itself was a low fortified hill that sat astride the old high road from Egypt to Palestine, and barred the approaches to Rafa. The action was fought on January 9th, 1917, involved several mounted attacks, and ended with a resounding British victory (67). The Turks now had to evacuate Rafa, the military key to Palestine. British casualties in the battle were evacuated from El Arish by newly-introduced hospital-trains that now plied the railway (68).

On 1.3.1917 the track from Kantara and El Arish reached Sheikh Buweid, some 16 kms. from Rafa, and on 21.3 reached Rafa itself, just across the Turco-Egyptian border of 1906 (69). Thus Murray's railway had attained its goal, in bringing the British Imperial Forces - a huge army - out of Egypt, across the desert, and into the Holy Land. In the process it had

(67) Ops., I, p. 270.
(68) Ops., I, p. 274.
(69) The share, indirect, of Meissner Pasha in the laying down of this border was mentioned in chapter III. As for the railway crossing the border into Palestine, cp. Ops., I, p. 279.
pushed the Turks back by some 200 kms., counting from the banks of the Suez Canal.

The original 1917 track of the line past Rafa was slightly different from what it was later, the rails passing much nearer and north of the town, instead of south-east of it, as they were realigned at some time later (70). From Rafa the line continued north, parallel to the coast of the Mediterranean, but slightly inland, so as not to be blocked by dunes. At El Arish, the line had left the total desert behind, and passed through sporadically cultivated land. From Rafa onward it entered the fruitful, relatively well-watered, and inhabited, southern coastal plain of Palestine, the ancient Shephela, the Land of the Philistines. The implications, especially psychological, of the British army's crossing the desert with the help of the railway must have been great. The practical importance of the line for the army's operational capabilities remained undiminished after its arrival in greener fields. There were no roads in southern Palestine, and the British expeditionary force continued to depend on the services of its railway, just as it had in Sinai (71).

(70) The original track of Murray's line past Rafa is shown on sheet 14 of the 1:100,000 survey of Palestine map. German reconnaissance photos seem to show why the line was realigned. The original track ran very close to high dunes, which probably threatened to engulf it. The later, and present, track lay through solid earth area. The old and new tracks are both shown on map 6, in Kress.

(71) As for the state of total roadlessness of southern Palestine: Ops., I, p. 280; Wavell, p. 67.
On 28.3.1917 construction of Murray's railway stopped at Km. 215, on account of the first Battle of Gaza that had developed just ahead of the line on March 26-27 (72). This, rather hastily conceived, and sloppily executed, battle was a failure owing to bad staff work. However, Sir Archibald Murray, from his advanced headquarters aboard a train standing in El Arish station (73), reported a victory to London, and as a natural corollary was urged to continue his attack and try to take Jerusalem. Thereupon Sir Archibald, on 31.3.1917, toned down expectations in England by stating that "his progress would be measured by the progress of his railway, and the best he could hope for was 20 miles a month." This was probably as convincing a statement as was ever made stressing the importance of railways in the Sinai and Palestine campaigns (74). Murray concluded by letting London know that he might have to ask for material to double-track his line from Kantara to Rafa. This was quite a new idea, and it was to be raised again. It might be mentioned just as a possibility, that the hasty attempt to capture Gaza originated perhaps in a certain decision of Murray's, of about two weeks earlier, on 9.3.1917. At that date he had decided to continue his railway from Kantara up the coast of Palestine, through Gaza, instead of turning inland (another possibility) to reach the Turkish Beer Sheba railway, and then go into the hills to Jerusalem (75).

(72) The First Battle of Gaza, and also the Second, that followed soon after, have been amply described elsewhere, and will be noted here only perfunctorily.
(73) Ops., I, p. 289.
(74) Ops., I, p. 318.
(75) Murray, p. 200; Ops., I, 319, 325.
The results of the First Battle of Gaza obviously demanded another attempt to reach a decision. This, perhaps, the more so as, at the other extremity of the Middle East, Baghdad had been captured from the Turks on 11.3.1917. However, the Turks, and especially their commander, Kress von Kressenstein, were now forewarned, and quite aware of the threat. While during the first battle their slender forces had hung onto Gaza by their eyelids, they now turned the place into a well-defended and entrenched fortress. They even started building a new railway from Tineh on their main Beer Sheba line, to Beit Hanun, near Gaza, with a branch to Huj, all this to bolster up and supply their Gaza entrenchments (76). This line was not complete when the Second Battle of Gaza started, but it was to support Gaza up to Allenby's overwhelming breakthrough late in 1917. It is reasonable to assume that the operation of this line (and of other Turkish lines backing up the Beer Sheba end of the front) contributed to the subsequent British decision to construct a supporting network of lines on their side of the front too.

The British, on their part, were eager to try another assault. In order to facilitate the bringing up and employment of their effectives and supplies, they at once started again to push forward their railway at great speed. With a few days, on April 4/5 1917, their line had reached Deir el-Balah (77).

(76) This line has already been dealt with in the sections describing the Turkish railway building effort.

(77) Murray, p. 199, gives the date of reaching Deir el-Balah as 4.4.1917; Ops., I., p. 327, says 5.4; Wavell, p. 84, just says "early April 1917."
North of this townlet, at km. 226,2 from Kantara, the railhead was to stay for some seven months. The temporary terminus of the line lay just a few kilometers south of the Wadi Gaza, along whose northern banks the front now ran, from west to east. The railhead was extremely close to the forward troops which had been the intention - and was even under enemy observation, and occasionally - fire. Its distance from Gaza itself was about 15 kms. (78). While the forward momentum of the standard gauge British trunk line was now blocked, it began to sprout (just like the Turkish main line on the other side) at least two lateral branches. These were of 2 ft. 6 in. (762 mm) gauge. First a 4 kms. long branch was built from the main line to Mediterranean beach, where supplies were unloaded from ships anchoring in the road-stead of Deir el-Balah. This seems to have been done immediately. In due course, when the Gaza front froze into stalemate, another branch, or rather a complete network, some 19 kms. long, was built towards the east, from the mainline, to back up the British positions along the Wadi Gaza. All told, 23 kms. of tracks were built, and material came apparently from Maxwell's redundant lines in the Suez Canal defence zone, now far away from the front (79). These light lines rendered invaluable services, in permitting stockpiling of ammunitions and supplies for the big British push of late 1917, that captured Gaza (80).

(78) Wavell, p. 84: 8-9 miles.

(79) Davies, p. 117; Murray, p. 199; Record, p. 91. The beach branch is shown on various maps in Record, and also by Kress, map 6. The branches to the east - ignored by other maps - are shown in Davies' map on p. 115.

(80) Davies, p. 117.
On April 17-20, about a fortnight after the railhead had been consolidated at Deir el-Balah, the Second Battle of Gaza ran its course. The advantage of surprise had been lost to the British and despite the use of tanks - the first instance of their use in the Middle East - the battle was a costly failure. The tanks, of course, could only have been brought up from Egypt on the railway (81). The British were now stuck in front of a Turkish defence system that extended from the coast, through Gaza, all the way (with a few gaps) to Beer Sheba. Along this extensive front there now occurred a development that was the parallel of the growth of branch lines about Gaza itself after the fighting there. Only it was on a much larger scale, in conformity with the length of the front. Three days after the end of the Second Battle of Gaza, on April 23, 1917, orders were issued to build a new railway, to branch off the main line at Rafa. It was, unlike the light lines around Gaza, to be of standard gauge. The intention was to route it almost due east, to Sheikh Nuran (Magen of today). From there it was to run to the banks of the Wadi Gaza at Shellal - the short-lived terminus of a light Turkish line that had soon been taken up by Kress, after the British arrived in the area (82). From Shellal

(81) Ops., I, p. 328; Wavell, p. 88. Only 8 tanks had been sent. Kress, p. 241, counted only 7. But for the railway there would have been no way to move them, whatever their exact number.

(82) The Turkish Tel Sheria-Shellal line has been previously mentioned in connection with the Turkish railway effort. This 60 cm. line probably only lasted for two months before being taken up.
Shellal railway bridge on the line Rafa-Sheikh Nuran-Beer Sheba. End of trestle is not showing as it was built as a curve. This was one of the biggest railway edifices built by the British, and necessitated a steep embankment into the wadi and out of it. 1917/18. (Source: Imp. War Museum).

The double-tiered Hejaz Railway trunk line bridge south of Amman. Photo taken after its capture by ANZAC mounted forces, late 1918. This bridge was the target of Allenby's abortive attack, early 1918. The bridge still operates to-day. (Gullett: Record).

(Pick, chapter IV).
the new line was to turn south and run along the southern
bank of the wadi, here called Wadi Shellal, to Gamli (83).
The initiation of this line by Murray, was in obvious contra-
diction to his previously mentioned resolve to build along
the coast towards the north, and not east. It was, however,
obvious that by building a large-capacity standard- and not
narrow-gauge-branch line to the east, he intended operations
against the Turkish front to be widened and intensified.
It is significant that the decision to widen the front to the
east came immediately after the advance past Gaza had proved
to be blocked. To this Murray reacted by envisaging a new
railway without which any extension of the front would not
have been feasible.

Work on the new line started about the end of April,
but many details are lacking. Sheikh Nuran was reached on
18.5.1917, and a station was built there. The terminus at
Gamli, very approximately 29 kms. from Rafa, was reached on
13.6.1917 (84). At some unspecified date, at km. 22.75,
about where the line started turning south, another branch
was begun (later to be a main line), pointing due east,
in the direction of the yet distant Beer Sheba. This branch
had grown to 5 kms. length when it reached, on 15.6.1917,
the banks of the Wadi Gaza, here called Wadi Shellal.

(83) Murray, p. 199; Ops., I, p. 356; Wavell, p. 91.
The upper reaches of the Wadi Gaza, alongside which the line
was to run, were at the time called Wadi Shellal. Today
it is Nahal Bessor.

(84) Kilometer lengths are only approximate and there
are contradictions in the sources. Owing to uncertainties
in the alignment of the Gamli line, measuring on maps is
useless.
Gamli (or Bir Kamleh) is today's Be'er Sharuhen, about
1 km. south-east of the then- Tel Fara, today's, and ancient,
Sharuhen.
This wadi here had a very wide bed, running, owing to the semi-arid nature of the land, between very high and precipitous banks. As there was no time to build the long, and high, bridge needed, and in view of the fact that the wadi's bed was dry most of the year, the track was laid in a wide curve, on sloping earth embankments, down into the wadi on the one side, and out of it on the other side. This was one of the most difficult constructional tasks yet encountered on the whole line from Kantara (85).

While work on the new line had barely begun, Sir Archibald Murray wrote at length to the C.I.G.S. in London about his railway problems (86). He pointed out that the single-track railway at his disposal, with its capacity of 13 trains a day - of which 6 trains alone were required to maintain services and construction work - was barely sufficient to maintain 5 infantry divisions. In addition, it might be noted, he also had the equivalent of 3 mounted divisions (87). He therefore outlined two possible solutions to the railway problems: 1) He proposed to construct larger stations and

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(85) For the various dates and details, cp. Murray, p. 199; Ops., I, p. 356; Record, p. 90; Wavell, p. 91. The, mostly approximate, layout of the Rafa-Gamli-Shellal line is shown on various maps in Kress, Ops., Record, and Wavell, and also on the 1:100,000 map of the Survey of Palestine, and early editions of the Survey of Israel 1:100,000 map.

(86) Ops., I, pp. 359-360. The date of Murray's letter was 7.5.1917.

(87) Details about the strength of the forces the Sinai railway had to supply, and the means it had to do so, will be given later on. At this point a reference to Wavell, p. 91, will suffice.
crossing-places, and also wanted to work more locomotives and wagons; 2) He suggested double-tracking the line. The first solution would have enabled him to raise the number of daily trains from Egypt to 16, thus permitting to maintain at least 6 infantry divisions and 3 cavalry divisions, with all ancillary services. The second solution would, of course, have solved all his immediate problems, and also provided for the future. In any case, he stressed the vital necessity for improving communications during the three, or so, summer months of 1917 during which no large-scale operations were envisaged. But, since he wanted to be adequately prepared for future offensive action, in the autumn, he himself advised to double-track the line - which would have taken 8 months. To double-track the line he needed a decision from London (88); his minor solution he wanted to implement at once. He also pointed out that his larger scheme required considerable amounts of material from England and elsewhere, as the E.S.R. had already given all it could, without paralyzing the vital railway services within Egypt itself (89).

Incidentally, Murray also mentioned his Nile-Water pipeline, whose interdependence with the railway has been mentioned previously. He wanted the pipeline capacity also to be doubled. The 12 inc. (305 mm.) pipes had indeed reached El Arish, but further on, up to the pipe-head of the Wadi Gaza,
only lines of 6,5 and 4 in. diameter had been used, Murray pointed out, and added that out of the 600,000 gallons of water pumped daily from Kantara towards Palestine, only 36,500 gallons daily were reaching the frontline. The remainder had been tapped on the way by the railway, by the various bases, and by service - not fighting - troops. Trains, he noted, had to carry 100,000 gallons a day from the wells at Rafa, to the forward positions around Deir el-Balah. What he meant was, by implications, that without the water supplied by tank-trains, there could be no front-line. He feared that a breakdown in supplies from any cause whatever, i.e. enemy action, the weather, or accidents, would not only affect the troops, but might also completely disorganize railway services as well, whose locomotives needed large quantities of water when working both the main line and the spurs backing up the front (90).

General Murray was not to receive a binding reply to his queries. On June 11th, 1917, he was recalled to England. General Sir Edmund Allenby was sent out from France to Palestine to take over as G.O.C. (91). Allenby took over command on June 28. Later, in 1919, he was to pay tribute

(90) Cp. Ops., I, p. 361, for a description of Murray's water troubles. On p. 367 there is a breakdown of water requirements, in which the large quantities required by the locomotives for raising steam are very obvious.

(91) Ops., I, p. 368; Wavell, p. 91.
to his predecessor who "had carried a standard gauge railway to the gates of Gaza," and who had made possible the successful conclusion of the campaigns by "his bridging the desert between Egypt and Palestine" (92). Indeed, while he did not gain resounding victories, Murray, by his far-seeing appreciation of the vital role of railways in a trackless desert, laid the foundation for the conquest of Palestine. A correct idea of the importance of the British military railways can be gained by speculating on what the campaigns of 1916-17 would have looked like without railways. Most probably they would not have started at all.

Between Allenby's assumption of command, and the renewed Palestine offensive, about four months elapsed. The Third Battle of Gaza - though Wavell with very good reason called it the Battle of Beer Sheba - started on October 31st, 1917. As already noted above, the Turks, under their German commander Kress, had used their period of grace to back up their frontline by various new railway spurs, that branched off their Beer Sheba trunk line. But the British had not been idle either, on their part. While there is no certainty on the point, the palliatives suggested by Murray prior to his recall, namely, the building of more crossing-points, extension of stations, and the augmentation in the numbers of rolling stock, seem to have been at least partially carried out during the summer. Anyway, the capacity of the railway from Kantara was stated, after Allenby took over, to have grown to supporting

(92) As quoted from Wavell, p. 92.
seven infantry division, 3 cavalry divisions, and ancillary troops (93). The total strength of the forces the British railway had to furnish with all their needs in the summer of 1917 had reached 260,000 men, including 60,000 Egyptian labourers. To this had to be added forage for the tens of thousands of beasts, horses and camels. These effectives may have been the equivalent of 33% or more (data are lacking) of Palestine's total population at that time (94).

By the time Allenby had taken over in the Middle East, Czarist Russia had collapsed. Palestine had become the most important fighting front of the Allies outside Europe, as Salonika, the Caucasus, Persia, and even Mesopotamia were only minor theaters of war. The Prime Minister, Lloyd George, badly wanted Jerusalem as a "Christmas present" to bolster up morale (95). Therefore Allenby received the important news that the double-tracking of the railway from Kantara to Rafa had been authorized in London on July 21, some three weeks after his taking over (96). This work, which Allenby estimated would take six months, was now begun, and progressed at an extraordinary speed, due to the unflagging energy of Brigadier-General Sir George Macauley, Director of Railway Transport. He was the same man, previously mentioned, who had already built railways for Maxwell and Murray from the very beginning of the war. Seeing that he

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(93) Ops., II, part 1, p. 13. Henceforth the shortened version Ops., II/1, or Ops. II/2, will be used to denote Ops. II, part 1 and Ops. II, part 2.

(94) Ops. II/1, p. 14. According to a Foreign Office Handbook (cp. Bibliography) Palestine's population about 1919 was approx. 718,000, but there were no exact figures.

(95) Wavell, pp. 95-96.

(96) Ops. II/1, p. 15.
had succeeded so well, he had been kapt at this task. Now his work had become materially easier, owing to the fact that rails and ties could be delivered on the original railway track, that ran parallel to the new one. Incidentally, he also greatly enlarged the Kantara railway yard, and its technical facilities. Construction speed for two months, owing to the pressure of impending operations, reached the unprecedented average rate of one mile (1.6 kms.) daily. Thus by the end of October 1917, some three months after work had been initiated, double-tracking had been completed to Bir Mazar, 113.5 kms. from Kantara (97). The savings in the operational time of locomotives and wagons, and the enhanced efficiency of rail transportation just on the eve of Allenby's first offensive, were very great. Up trains no longer had to wait at crossing-points for down trains to pass, and the number of trains working kept growing. According to a reliable source, the double-track, before Allenby's attack, had even passed Bir Mazar, and had reached Ma'adan station, at Km. 137 (98). Double-tracking was resumed, after a short pause owing to the Third Battle of Gaza, on 1.11.1917, though with only a small work-force. The second track reached El Arish in January 1918, and double-tracking was completed to Rafa on April 17th, 1918 (99).

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(97) Ops. II/1, p. 20. Also Wavell, p. 104.
(98) Record, p. 91.
(99) Ops. II/1, pp. 185, 293; Record, p. 92; Wavell, p. 104. The resumption of work was undertaken with only limited labour, owing to more immediate operational requirements further forward. This was the reason for the relatively slow progress of double-tracking to Rafa.
Meanwhile, considerable work had been done to extend and improve the railways right behind the British front line, where, owing to the continued total absence of viable roads, they were still the only means of moving supplies and water (100). Henceforth it will be instructive to note how far the railways backing up the front kept blending into Allenby's operational plans (as they had into Murray's), and influencing them.

Some idea of their importance can be gained—at the risk of some anticipation—from Allenby's words regarding them, or rather their chief operator, in his despatch to London after the Third Battle of Gaza. There Allenby paid tribute to the "invaluable services in the organization of his railways rendered by the Director of Railway Transport, Brig.-Gen. Sir George Macauley" (101). In the despatch Macauley is mentioned after the High Commissioner in Egypt, Sir Francis Wingate, and the representative of the Royal Navy, but before all other officers on Allenby's staff.

(100) The lack of roads of any kind keep being mentioned in sources, such as Ops. II/1, p. 8, and Wavell, p. 102, and others. It was also mentioned in Allenby's despatch to the Secretary of State for War, of December 16th, 1917, quoted in Record, p. 2. It is also proved by maps, as, for instance, sketches 1 and 2 in Ops. II/1.

Even the appearance of 134 tractors, some with trailers, could not make up for the lack of roads, and the railways remained the mainstay of supplies and water over more than short distances.

(101) Record, p. 10.
Allenby's plans for his first major operation in Palestine did not include another frontal assault on the, by now, very strong fortifications of the alert Turks round Gaza. Instead it foresaw an offensive against the left Turkish flank (from the right British flank), around Beer Sheba which, though extensively protected also, was nothing as strongly held as the Gaza defences. In this offensive the railways were to play a vital role.

It was during the preparatory period for this offensive that Allenby indulged for the first, but by no means for the last, time in his propensity for misleading the enemy. The story of how Colonel Meinertzhagen managed to "lose" to the Turks a fake plan for yet another British frontal assault on Gaza is by now a well-known and classic instance of deliberate dis-information (102). But it is not at all known that his railways also served Allenby to mislead the enemy. The fact that 23 kms. of light railways were built behind the cramped frontline along the Wadi Gaza, and near the sea, has already been mentioned (103). But apart from their practical value, these lines were now apparently used, by means of heavy and ostentatious working, to mislead the enemy into believing that great concentrations of troops were being assembled once again facing Gaza. But Allenby did more. He deliberately pushed forward his standard gauge Ops. II/1, pp. 30-31.

(102) These light lines were originally initiated by Murray for entirely practical reasons, with no thought of misleading the Turks.
Third Battle of GAZA.

Situation at 6 p.m. 28th Oct. 1917.

Scale of miles.

Compiled in Historical Section (Military Branch). Ordinance Survey. 1917

TO PAGE 116. SOURCE: OPG.
main line from Kantara past Deir el-Balah, on top of a newly-built bridge across the Wadi Gaza, practically into his very first trenches facing the town. There he built a dummy station, that could not at all be used, because it was located practically under the very barrels of the enemy's artillery (104). However, it was assumed, probably correctly, that the dummy station would serve as yet another proof to the enemy that the next offensive would again be directed against Gaza.

In fact, as already noted, Allenby wanted to launch his offensive on his right flank, against Beer Sheba, where he expected to have the advantage of surprise. However, the trouble was that between his points of departure, along the line from Shellal to Khalsa (today's Halutsa), and the objective, Beer Sheba, some 35 k.ms. distant (where ample water resources were expected - unless destroyed), there was practically no water, and few possibilities of bringing up supplies and ammunition (105). Yet the total force directly involved in the offensive against Beer Sheba, and requiring logistical back-up, included no less than 47,500 infantry and 11,000 cavalry (men and beasts that needed water) apart from 242 guns that wanted shells (106). The daily water requirements alone for this force reached 400,000 gallons,

(104) Ops. II/1, p. 21; also Record, p. 9. The line across the wadi was, in fact, to be of great use after Gaza had fallen, and did serve as the continuation of the main line towards the north.

(105) Only the barest details of Allenby's operations will be given in the following text. These are described in full in Ops., Record, and Wavell. And also elsewhere.

(106) Wavell, p. 112.
Therefore steps had to be taken to extend the railway (and an accompanying pipe-line) as far as possible towards Beer Sheba. Some 30,000 camels were expected to take over where the railway stopped (108).

Work seems to have been done, at least partially, at night, in order to give the enemy no inkling where the attack was to come from, and brown camouflage was used to cover the track built (109). This was another of Allenby's ruses. The camouflage was taken away when the attack was launched.

The lines extended by Allenby had, most of them, been initiated by Murray.

Railway construction had been resumed, from where Murray had stopped, already in August 1917, a few weeks after Allenby had assumed command. A light line, perhaps of 762 mm., more probably of 600 mm., was laid eastward for some kms., perhaps 5-8, from the standard terminus at Gamli, across the Wadi Shellal, to El Buggar (or El Bakkar), in the direction of Beer Sheba (110). The standard gauge line Rafa-Shellal, that had to be carried laboriously, across the Wadi Shellal, was extended eastward, first to Imara, and then to Karm, both on the camel track to Beer Sheba.

(107) Wavell, p. 102.
(108) Record, p. 2.
(109) Ops. II/1, pp. 21, 40. Kress, p. 274, also noted that work on the railway was done at night, but claimed that the Turks were aware of it.

(110) Ops. II/1, p. 21; Record, p. 2; Wavell, p. 111. El Buggar (not shown at all on modern maps), will be found on map VIII in Wavell. The line itself is shown on map IX, p. 114, in Wavell, which also shows British movements during the battle, and, for comparison, also the Turkish railway.
The station at Karm was 36.8 kms. distant from Rafa. It was operating on October 23, three days before the battle started. Simultaneously with the construction of the standard line to Karm, a light railway had been laid from that place even further towards the east, to get as near as possible to the Turkish positions. The rate of construction of the standard track was unprecedented, even disregarding the hot season. After the track had been prepared, rails were laid down at the rate of 3.6 kms. a day. While the battle was actually being fought, the rails had reached 39 kms. from Rafa, which was more than half the distance from Shellal to Beer Sheba (111). Turkish cavalry attacks at el Buggar, just before the battle, were driven off, and in any case were not persistent, as the Turks had failed to realize what was being done in the area regarding railway construction (112).

Thus the railways built on the British side of the front were to enable Allenby to concentrate an overwhelming attacking force on his right wing, that was to strike the main blow (113). What forces the Turks, supported by their

(111) Ops. II/1, p. 21, and also sketches 1 and 2. Also Wavell, p. 111, and Record, pp. 2, 91.

(112) Ops. II/1, p. 37; Kress, pp. 274-275. The state of the railways west of Beer Sheba on the eve of the battle is shown in sketch map no. 6 in the memoirs of Kress.

(113) Allenby's force was summarized by Wavell, p. 112.
own railway, had around Beer Sheba, is not precisely known. However, the grand totals of both forces facing each other between Gaza and Beersheba have been recorded. The British, operating some 240 kms. from their base in Egypt, had succeeded, thanks to their standard railway, in assembling altogether some 75,000 infantry, about 17,000 cavalry, and 475 guns. The Turks, badly handicapped by having only a narrow railway, had been able to concentrate some 40-45,000 infantry, 1,500 cavalry, and about 300 guns. These figures did not include service troops (114). The bulk of the Turks was concentrated round Gaza, while most of the British faced Beer Sheba.

The Third Battle of Gaza, or, more correctly, the Battle of Beer Sheba, opened early in the morning of October 31st, 1917. By nightfall, Beer Sheba, with its water resources and its great railway station, had been captured. Thereupon, while the Beer Sheba area was being consolidated, Allenby switched his attack to Gaza, which, outflanked from the east, was evacuated by the Turks and entered by the British on November 7. These decisive British successes had to an extent been made possible by General Macauley's railways.

Following the capture of Beer Sheba, construction of the Rafa-Sheikh Nuran-Shellal-Karm standard line was temporarily

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(114) Wavell, pp. 112-115. Ops. II/1, p. 35, puts the number of Turks at 33,000 + 1,400 cavalry, and 260 guns.
suspended. However, even in its incomplete state it was to exert its influence on the capture of Jerusalem. On 1.12.1917, Allenby had formed "Mott's Detachment" (one division and supporting troops, named after its commander Maj.-Gen. S.F. Mott). Mott's force was to advance - and did - from Beer Sheba along the Judæan mountain ridge, through Hebron and Bethlehem towards Jerusalem from the south, while the bulk of the British forces was to move up the coastal plain, parallel to the Turkish railway, finally to swing round towards Jerusalem from the south-west. Mott's detachment was to play an important part in the capture of Jerusalem on December 9. The way its supplies reached it is not generally known. Mott's supplies were sent up from Egypt, via Rafa, to the railhead beyond Karm. From here they were hauled some 13 kms. cross-country by tractors to Abu Irgeig (Irgeig) on the now-severed Turkish railway from the north to Beer Sheba. At Irgeig station supplies were loaded onto captured Turkish flatcars and, in the absence of locomotives, were dragged by mules another 10 kms. into Beer Sheba. From here they were transported by a combination of motorlorries and camelbacks along the (war-built) Turkish road to the front outside Jerusalem (115). Some time later, the date is not available, but probably early in 1918, the continuation of the standard line from Karm to the east was re-started, and the track linked with the Turkish

railway to Beer Sheba at Abu Irgeig. From here the British standard line was laid on top of the Turkish narrow line into Beer Sheba. Beginning May 3rd 1918, Beer Sheba had a standard gauge link, via Rafa, with Kantara. Supplies from Egypt for the front north and east of Jerusalem could now be sent up the Beer Sheba-Jerusalem road (116). But that was to be in the future.

Returning to the coastal plain, and events there in November 1917: there, extensive railway development took place, closely linked and coordinated with Allenby's offensive towards Jerusalem and the Sharon Plain. As will be shown, the interaction between military operations and railway construction and utilization was to be striking. Allenby's advance was to come to a stop from late in December 1917, along the line from the Auja (Yarkon) River in the west, through points north of Jerusalem, to the Eastern Auja River, a tributary of the Jordan in the Rift Valley (117). However, railway consolidation and extension went on even after the frontline had stabilized.

On November 10, only three days after the capture of Gaza, the construction of the main line Kantara-El Arish-Rafa was resumed by the British, from the railhead (the dummy station) just north of the Wadi Gaza, and the track was

(116) Ops. II/2, p. 439; Record, pp. 91-92.

(117) Allenby's campaign has been amply documented elsewhere, for instance in Record, and will be mentioned here only insofar as is needed to explain railway developments.
British 600 mm. field railway train, Jaffa–Lod, carrying Jewish volunteers for Allenby's army, being welcomed while passing Tel Aviv. Summer 1918. (Source: Zionist Archives).

Captured Turkish 1,050 mm. rolling stock, carrying Turkish prisoners, and worked by British crew, in Wadi Sarrar (Junction Station) on Lod–Jerusalem line, about November 1917. (Imperial War Museum).

(Pick, chapter IV).
continued through, and past, the town, into captured territory. Within days the construction detachments were to reach Beit Hanun, just north of Gaza, the terminus of the Turkish 1,050 mm. military line from Tineh, on the trunk line from Wadi Sarrar—called Junction Station by the British—to Beer Sheba (118). On November 17th, Allenby's forces captured Wadi Sarrar/Junction Station, and also Tineh Junction to the south of it, both on the Turkish trunk line. Some locomotives and 60 narrow-gauge Turkish wagons were captured intact (119). Practically the whole of the southern section of the Turkish rail network was now in British hands, as Ramle and Lod stations were to be occupied a few days later. The British lost no time in putting the captured lines to use for backing up their advance. By 20.11.1917 the narrow-gauge line Beit Hanun-Tineh-Junction Station was operating, the gap between the forward-creeping British standard line and the Turkish narrow line being temporarily bridged by motor-transport. This became unnecessary when the British standard line, having been laid parallel to the Turkish track from Beit Hanun, reached Deir Suleid on 27.11. There, extensive transshipment platforms for stores were constructed from one gauge to the other. Also four narrow-gauge locomotives had been sent by rail from Egypt, and were put to work —

(118) A most useful map of the Beit Hanun-Tineh line, in its relation to the Wadi Sarrar-Beer Sheba trunk line, will be found in sketch no. 10 (opp. p. 155) of Ops. II/1.

(119) Ops. II/1, pp. 162-164; 174; 213.
probably after adaptation - on the captured Turkish line. By December 1st, seven trains a day, each carrying 100 tons, were run from Deir S~eid to Junction Station. On 5.12 narrow-guage traffic was extended from Junction Station to Ramle and Lod, and even earlier the narrow line had been reopened to the east, as far as Artuf (Deir Aban, today's HartuV). The continuation from there to Jerusalem was still closed because of blown bridges (120). From Junction Station, Ramle, and Lod, supplies were now being sent by road and tracks to the frontline in the hills. Here was a use of the Turkish railways that their German builder Meissner Pasha could not have foreseen - the utilization of his work for the drive to capture Jerusalem.

On the Turkish line into the hills, that Meissner in 1915 had refused to take up for humanitarian reasons, four bridges had been destroyed. Repair work was started immediately, and on January 27, 1918 the narrow-gauge line to Jerusalem was reopened, with all that the event implied for the front that had stabilized just north and east since its capture on December 9. The working narrow railway Deir S~eid-Jerusalem was now about 85 kms. long (121). Savings in road and track

(120) Ops. II/1, pp. 185, 237; Wavell, pp. 157, 165.
(121) Ops. II/1, p. 237. Page 293 in the same volume gives the date as 28.1.1918. Also cp. Record, p. 91. Two of the blown bridges had a span of 30 metres, one of 16 and one of 10 metres. Owing to the lack of access, they could not be repaired simultaneously, but only one after the other, material being brought by rail over the spans already repaired. These bridges are still in use, two some kms. east of HartuV, and two on either side of Bittir.
transport - the frontline troops had up to then to rely mainly on the one available metalled road to the Holy City - must have been very considerable.

Jaffa had been captured on the 16th.11.1917, and since stores had up to then been unloaded on open beaches at the mouths of the Wadi Sukhweir (Nahal Shikma) and the Wadi Rubin (Nahal Rubin) down the coast, the capture of the ancient port and what installations it had (and its skilled manpower) at once opened up the possibility of unloading supplies there. However, there were two difficulties: a) The track of the original Jaffa-Jerusalem line had been taken up at the behest of Meissner between Jaffa and Lod in 1915, to supply rails and ties for his Sinai railways. Consequently, movement of supplies by rail out of Jaffa port was impossible; b) Owing to the initial stabilization of the Sharon front along the Auja (Yarkon) River, the port itself, and any proposed railway to Lod, were exposed to Turkish artillery shelling (122). The British set out at once to rectify the problems. They built, probably in the beginning of December 1917, a 600 mm. light railway, from Jaffa port through the town itself to Lod, to link with the 1,050 mm. line from there to Jerusalem (123). Except in its first section, from

(122) Ops. II/1, pp. 268, 277, but especially p. 275; also Wavell, p. 169, where the subject is summed up unequivocally.

(123) Davies, p. 118, and map, p. 115, also photo facing p. 144. Also Record, p. 91, and Massey, "Triumph," p. 176. One sheet of a British army map 1:40,000 (of ca. 1919), preserved at the National Library in Jerusalem, shows the exact track of the 600 mm. line through Jaffa and beyond. The line is also shown on map 19, in the map case attached to Ops.
the port to Jaffa station, this line was just relaid on top of the track of the old French railway, of 1888-92. In order to free Jaffa and its port, and the light railway from any Turkish threat, the British initiated what was later called, with some exaggeration, the Battle of Jaffa, that consisted mainly of the forcing and crossing the line of the River Auja on December 20-21, 1917. As a result, the Turks were pushed out of range, north of the river, as far as Arsuf (Rishpon), and thus the threat to the port and the railway ceased to exist (124).

The beginning of 1918, only a few weeks after the start of their successful offensive, saw the British in possession of a complete railway network in southern Palestine, which, though not all had been captured from the Turks. This network comprised the following lines: 1) Beer Sheba-Tineh; 2) Deir Sneid-Tineh; 3) Tineh-Junction Station; 4) Junction Station-Artuf-Jerusalem; 5) Junction Station-Ramle-Lod (1,050 mm.), with its British-built 600 mm. extension Lod-Jaffa. This network provided an indispensable logistic backup for Allenby's frontline, by distributing supplies brought from Egypt via Gaza, and Beer Sheba, and from various ports directly, and from Egypt via Jaffa port. At the same time the lateral track Jaffa-Jerusalem helped distribution all along the front line from the coast into the hills, a front that stretched parallel to the railway track. It was this narrow system that was to provide Allenby

(124) Cp. note 122, above, for details.
with the means to capture Jericho in February 1918, push the Turks from the commanding height of Tel Assur, north of Jerusalem, in early March 1918, and carry out his two big raids into Transjordania (March-April and April-May, 1918). It might be noted that the first of these raids was directed, unsuccessfully, against the Hejaz Railway’s important bridge near Amman. The second, equally abortive, may have been aimed at the Hejaz Railway’s vital junction at Dera’a (125).

However, it seems to have become apparent that a local narrow-gauge system, even fairly extensive, fed by labourious transshipments from the standard-gauge line from Egypt, did not suffice to feed and supply an army the size over which Allenby held command, which was charged with the large-scale operations intended to force Turkey out of the war. Also, the more the Turks were pushed back, and distances from Egypt lengthened, the more dependent the British became on the smooth functioning - with transshipments - of their railway. Perhaps the British were also aware of the infinite trouble the Turks, on their part, had with their unfinished railway backup, owing to the breaks in the Taurus and Amanus mountains - where however the incomplete tunnels were bound to be ready one day. Thus in their endeavour to win the "railway race" in the Near East, the British, even after the Turkish débâcle in the autumn of 1917, and perhaps because of it, continued the development of the standard gauge trunk line

(125) Wavell, pp. 180, 182, 184. Also cp. Ops.
from Egypt into Palestine. The standard gauge line was to
grow into another network that was to eclipse Allenby's narrow
gauge lines, and was to grow into Palestine's permanent
rail system destined to last for many years after World War I.

It has already been noted that only three days after
the capture of Gaza, 7.11.1917, building the trunk line from
Kantara, via El Arish, Rafa, and Deir el-Balah, was resumed
towards the north. It followed the coast as before, but
getting towards Yibna (Yavneh), was forced slightly inland,
north-north-east, by the necessity of bypassing the wide
area of sand dunes south of Jaffa. It was then directed
towards the hub of the country's narrow-gauge lines, the
area of Ramle-Lod. Progress of the standard line towards
the north was as follows: Deir Sneid, north of Gaza, was
reached on 27 or 28.11.1917 (126); Mejdel (today's Ashkalon)
on 8.12.1917 (127); Isdud (Ashdod) on Christmas day, 25.12, (128);
Deiran (Rehovoth) on 8.1.1918 (129); and Lod, finally, on
4.2.1918 (130). Here a very extensive station grew up, with
transshipment facilities to the narrow-gauge line from
Jaffa to Jerusalem (131). As the British standard-gauge
line came into Lod from the south-west, and quickly sprouted

(126) Ops. II/1, p. 185; Wavell, p. 150.
(127) Wavell, p. 165.
(128) Ops. II/1, p. 292.
(129) Record, p. 91.
(130) Ibid.
(131) A number of very clear aerial reconnaissance
photos made by the Germans, and included in the collection
Phot. 258, in the National Library, Jerusalem, provide
graphic proof of the rapid growth of Lod station early in
1918.
into a large- and still operating marshalling-yard, there existed for a time two Lod stations. One was the British station, and the other, to the east of it, the old narrow-gauge station built for the original French line from Jaffa to Jerusalem (132). This station, after 1915, also had served the Turkish Sinai railway, built by Meissner, that had come in from Tul Karem in the north, continued on the original French track from Lod via Ramle to Wadi Sallit (Junction Station), and there diverged south to Beer Sheba. As proved by aerial photos, the narrow 1,050 mm. track at Lod passed across the end of the standard 1,435 mm. track at right angles. However, when in due course the Jaffa-Jerusalem track itself was converted to standard width (as will be noted later), it was relaid. It then came in a wide arc from the west (Jaffa) into the British station, and left it, at its southern end, in a wide arc to the south-east towards Ramle. The old French-Turkish track from Lod (old) station to Ramle was abandoned (133). The Turkish track (Meissner’s) from Tul Karem to Lod (old) station was also taken up ultimately by the British, but when,

(132) The French line, and its stations, including Lod, were extensively dealt with in chapter III.

(133) Most of it still exists today, including culverts, and partially serves as a foot path. It was photographed by the writer. The old station at Lod still stands today, unrecognized but well kept, and its platform is intact. It survived the British mandate as an Arab boys' school and today serves as the Lod First Aid Headquarters.
in due course, the British continued their standard line from Lod to the north, they laid it parallel to the defunct Turkish narrow track. In fact, soon after reaching Lod, the British continued their standard line due north, to Km. 315 (from Kantara), just beyond Rantiye village, some 6.5 kms. from the front line (134).

The new line, into Lod, was by no means to remain Allenby's standard gauge mainstay. After the standard gauge branch from Rafa had reached Beer Sheba, as mentioned above, on 3.5.1918, the British set to work to convert the Beer Sheba-Junction Station track - actually the late Turkish Sinai railway - to standard gauge. The section from Abu Irgeig - from there the section to Beer Sheba had already been standardized - was converted very rapidly between May 14 and July 8th 1918, when Junction Station was attained. Allenby now had two alternative standard - though single track - main lines from Rafa to the north. One led by way of Shellal - Abu Irgeig (Beer Sheba), and the other (the present main line) passed through Gaza and Rehoboth (135). This, in addition to the originally used narrow line Deir Smeid-Tineh. Sometime in the spring or early summer of 1918, the light railway

(134) Ops. II/2, p. 439; Record p. 92. The railhead of Rantiye, and the line itself, are shown on map 19 in the case attached to Ops.

(135) Ops. II/2, p. 439; Record, p. 92.
from Jaffa to Lod have also been converted to standard gauge (136), greatly facilitating the transport of heavy supplies arriving by sea. Even more important was the standardizing of the vital lateral link between Lod (standard railhead from Gaza) to Junction Station (standard railhead from Beer Sheba). Between 27.2 and 31.3.1918, the whole lateral line Lod-Junction Station-Artuf was widened to standard gauge. Thereafter, 1,050 mm. rolling stock was exclusively concentrated at Artuf to serve the section from there to Jerusalem (137). However, even this was not sufficient for operational needs, and on April 22 it was decided to extend the standard gauge to Jerusalem. The line up the Judaean hills was converted in less than two months and the station in Jerusalem was reached on June 9th, and open to standard traffic on 15.6.1918 (138).

With this, Allenby's main line system had been totally converted for all practical purposes, and now he had — on the eve of his next, and as it turned out, last, push against the Turks — a fully fledged railway network linking both his frontline and his rear areas with his main base in Egypt.

In Kantara too a momentous — by military and railway standards — even had taken place. The huge base that had grown up on the eastern bank of the Suez Canal, and the main line that

(136) Ops. II/2, pp. 439, 442. In the archives of the Israel Information Office, Tel Aviv, there exists a photo of the then High Commissioner for Palestine, Sir Herbert Samuel, in the early 1920's riding on the footplate of the first standard gauge train from Lod to Jaffa. This probably is a mistake, though Ops. too may have erred in the date 1918.

(137) Ops. II/2, p. 439; Record, p. 92.

(138) Ibid.
extended from there to Palestine, had both been linked in July 1918 to the western bank and to the E.S.R. main system by a railway-bridge across the canal. The first standard-gauge through-train on the Cairo-Jerusalem run, operated on 15.7.1918 (139). This bridge was supplemented by the train ferries - already mentioned - that had been crossing the canal since early 1916 (140).

One curious, and probably unprecedented, feature of Allenby's, or rather Macauley's, railway conversion work in 1918 must be mentioned. While tracks were being widened from narrow to standard gauge over lines that extended for long distances, supply traffic could not be interrupted, and all available wagons, whatever their gauge, had to be used to the full. This rule applied to the Jaffa-Jerusalem line and probably to the Beer Sheba-Junction Station line as well. As a result, while work was in progress, and possibly for some time after, the narrow-gauge track was not taken up, and the lines could boast of three rails, and were of mixed, narrow-standard, width. Thus for a time trains made up of two different gauge stock were worked, drawn by one locomotive, and run as one unit on the same track. The sight of narrow and standard gauge stock composite trains must have been unique in railway history (141).

This completes the tale of British standard gauge construction in southern and central Palestine, prior to Allenby's final offensive of September 1918. But something

(139) Ops. II/2, p. 440; Record, p. 102.
(141) Ops. II/2, p. 439. A photo of the triple-rail, dual gauge, track from Artuf to Jerusalem, will be found in the "Sefer Ha'hagana" (cp. bibliography), vol. 1, part 2, opp.p.642.
remains to be said about the local narrow-gauge lines built, in the absence of useable roads, in order to move supplies and ammunition in the immediate near areas of the British front. Very little indeed is known about these lines from written sources and these are very few. There are few definite details about their gauge, and their dates of being laid down or taken up. A great deal of the scanty particulars available had to be assembled from maps, by field trips, or from aerial photos. These lines were listed in one comprehensive source as "light railways," apparently in order to distinguish them from the much heavier 1,050 mm. lines. One other reliable source describes all of them as having been of 600 mm., which, to judge from surviving photos, and the stock shown in them, seems to be substantially correct. But some may have been 2 ft. 6 in. (762 mm.) relics of the Canal defence railways (142), and one, possibly, a 1,050 mm. Turkish relic.

The following narrow-gauge light lines were built in central Palestine after November-December 1917: (143)

1) Jaffa Port-Jaffa Station-Lod. This line, of 600 mm., until, unlike the others, it was converted to 1,435 mm. standard gauge, was the first light line built after the Third Battle of Gaza. It has already been discussed above.

(142) Davies, p. 118, and map on p. 115; Record, p. 92.

(143) The light railways built around Gaza, and west of Beer Sheba, in 1917, will not be included in the following list.
2) **Sheikh Munnis-Carrick Hill.** The latter hill, whose name was bestowed on it for identification purposes by the British, was a low hill, north of Auja (Yarkon) River, near today's Neveh-Magen. This line, mentioned only once, and not shown on any map, may possibly have been a branch, separately listed, of line 3 (144).

3) **Jaffa-Saratana (today Hakirya, part of Tel Aviv) - Jellil (Geliloth-Yam).** This line, together with its spurs, must have been altogether some 20 kms. long, or more. It branched off from the Jaffa-Lod line where this crossed the Jaffa-Kalkiliya track, i.e. where some 35 years later Tel Aviv (Beth Hadar) station was located. It followed the Kalkiliya track past Saratana, crossed the Wadi Musrara (Nahal Ayalon), and then paralleled the Auja river for several kms. to Tel Abu Zeitun, (today near Bnei-Berak station). On top of this line lies today's main road from Elite Square to the Ramath-Gan Stadium. A very short spur about here turned south-east to "Bulfin's Hill" (today one of the prominent hills of Bnei-Berak), headquarters of the British XXI Corps, under Lt.-Gen. Sir Edward Bulfin. Near Tel Abu Zeitun the line turned sharply north (as still does today's main road that lies on top of it), to cross the Auja river at Hadra Bridge (today's Yarkon bridge at Yad Hama'ali). Once across the river the line split into several branches. One turned west to split again into one short and one long spur, both

(144) The only mention of this line is in Record, p. 92.
ending near Sheikh Muannis. The main branch continued north, to throw off a very short branch to "Carrick Hill" - perhaps the line mentioned under no. 2, above. The main branch continued north, to end in two short spurs at "Jenkin's Hill," north-north-east of Jellil, practically in what are today the western outskirts of Hertsliya. This line supplied the western sector of the front line, occupied by the XXI British corps. (145).

4) **Lod-Ras el-Ain (Rosh Ha'ayin).** This line may have been of 600 mm. gauge, and British built. But there is a fair possibility that it was a section to the north of Lod, of Weissner's Beer Sheba line, taken over by the British, who had adequate rolling stock for it. It certainly lay on the Turkish track, to judge from contemporary maps, and led from Lod junction to the much-shelled spot where it was broken by the front line, between Ras el-Ain (Antipatris) Castle and Mirabel (Mejdel Jaba) Castle (146). This line was apparently not identical with the standard-guage line - previously mentioned - that had been laid alongside it as far as Km. 315, the advanced depot at Rantiye (Rinath-Yah) (147). The lighter line served only the front line troops to September 1918, when Allenby's final offensive started.

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(145) **Ops. II/2, pp. 439, 442; Record, p. 92.** Also cp. especially map 19 in the Ops. map-case, and plate (map) 49 in Record, though it is not exact. There are many aerial photos of the light lines around Jellil in the collection, Phot. 258, of the National Library, Jerusalem.

(146) **Massey "Triumph," p. 120; Record, p. 92; and especially Map. 19 in Ops.**

(147) **Ops. II/2, p. 457; Record, p. 92.**
5) "London Bridge" - Tirsah. This short spur branched off line no. 4, to the east, from a railway bridge designated on army maps as "London Bridge," near Wilhelma (Bnei Atharoth), south of Rantije. The purpose of this short line has remained totally obscure, unless one takes into account the fact that some 45 years later Israel Railways built another spur practically from the same spot, again to the location of Tirsah. This was done to haul stone for the construction of Ashdod harbour from the big quarries at Tirsah. Allenby's, otherwise unexplained, spur line may have hauled railway ballast, and material for fortifications (148), but this remains a guess.

6) Kafr-Jinnis - Lubban. This line, some 20 kms. or more long, including spurs and sidings, corresponded in importance in the eastern sector of the Sharon, to the Jellil line in the western sector. It branched off the main line towards the east at Kafr Jinnis (just east of today’s Ben-Gurion/Lod airport). It then continued deep into the hills of Ephraim, following a succession of wadis, past Beit Nabala (Nevalath), to end at the village of Lubban, approx. one-third of the distance from the Plain of Sharon to the watershed, and the road Jerusalem-Nablus, on top of the north-to-south main mountain ridge. This line supplied the entire eastern, hilly, sector of the XXI corps., and, conceivably, also some units of the neighbouring XX corps, that held the front in the hills. Supply and ammunition

(148) This line is shown only on maps 19 and 20 in the map-case of Ops.
dumps were established alongside it, as evidenced by the sidings shown on the maps of this line, and these were to play a considerable role in Allenby's final advance (149).

7) Jerusalem - El Bireh  This narrow railway, probably of 600 mm. gauge (150), was about 25-30 kms. long, on account of its serpentine tracks through the Judaean hills. It was perhaps the most interesting amongst the British military railways and has been dubbed "the most important" amongst them (151). Its very existence, as well as its layout, have been forgotten. It led through a, today, densely populated area, and few traces of it remain, though its construction in its time was quite an engineering feat. It probably operated for less than a year, from early 1918, just after the capture of Jerusalem, to the autumn of 1918, when the front-line moved away. Its military importance was very considerable, as it backed-up the whole British front north

(149) The Lubban branch is mentioned in Record, p. 92. It is shown on maps 19 and 20 in Ops. In British mandatory times it was kept operating only as far as the army camp at Beit Nabala, where there developed large sidings, especially in World War II. Its railless track, further east, was still shown on the 1:100,000 Survey of Palestine map, and is still partly shown on the Survey of Israel 1:100,000 map. Allenby's 1918 supply and ammunition dumps in the Wadi Ballut, through which the line passed, are mentioned in Ops. II/2, p. 492.

(150) Davies, p. 118.

(151) Ops., II/2, p. 439.
of Jerusalem, from Tel Assur, on the watershed of the mountain ridge, and the main road Jerusalem-Nablus, to both flanks of the front, towards the Sharon in the west, and the Jordan Valley in the east (152).

This line, which on account of its different gauge, had no direct connection with the main line from Jaffa/Lod, started at a transshipment point in the "German Colony" quarter in Jerusalem, next to the (then, and today's) St. Carlo Borromeo Hospice. It then climbed the hillside south of Talbieh to a hilltop very near St. Simon, and then in a practically 180° curve (153) turned, very sharply, and went downhill, crossing today's Gaza Street, to the Monastery of the Cross, whose sole gate it practically brushed. It then continued north, past Sha'arei Hessed quarter, and in a wide loop passed to the western side of the Valley of the Cross. It then turned west, passed underneath today's Knesseth building, and from there followed the contours of the hills round the western, and then northern, outskirts of Jerusalem. It continued

(152) Ops. II/2, p. 439; Record, p. 92. The track of the El Bireh line is shown on a number of aerial photos in the Phot. 258 collection of the Jerusalem National Library. It can also be found on quite a number of maps amongst them the one in Vilnay "Yerushalayim" (The New City), p. 165. Also in Dalman (map at the end of his volume) who has a very good and complete layout of the track; also in Record, map 39 (inset) and map 44. It is a curious fact that, though the line is mentioned in Ops., it is shown on none of its numerous maps. The line is also shown, partially, on the mandatory map of Jerusalem, 1:1,000 (ca. 1924). Cp. also Massey, "Triumph," p. 176.

(153) This extraordinary curve, on top of which lies today's Palmah Street (approx.) is shown very clearly on a German aerial photo of 1918, in possession of the Jerusalem National Library (Phot. 258).
practically on top of the Tombs of the Sanhedrin, and proceeded round the western slopes of Mount Scopus (today's Givat Hamivthar, which is the historic Scopus), to join the main road north, to Nablus, just west of the "French Hill." From there the line paralleled the road, and the main watershed of the Judaean ridge, to end at some unidentified spot on the outskirts of El Bire-Ramallah. A good many streets in Jerusalem now lie on top of this line.

So much for the history of the British-built or British-adapted railways in Palestine. While some details are known about the standard lines, the British narrow-gauge railways are all but unknown (154), and the above details may be the first ever published.

Allenby's first great offensive, of late 1917, had ended when he had outrun his communications, i.e. his railways. The greater part of 1918 was spent by preparing adequate communications for the next big push of the British army. While this was done, the Turks were kept busy by harassments of the communications on their side of the front, i.e. the Hejaz Railway, until the heat of summer practically put an end to operations. By the autumn, Allenby and his forces had at their disposal a railway network that, though not sophisticated from the point-of-view of signals and of comfort, was excellent, and as efficient as any in Europe (155).

(154) The best summary of British railway building in Palestine in 1917-1918, though not detailed, will be found in Record. All the details not mentioned here specifically regarding the British lines will be found in that Volume.

(155) Ops. II/2, pp. 439, 442.
It might be added in this connection that while railways thrived, there are only a few and very perfunctory references in all the contemporary literature to road building by the British. They apparently built only short feeder-tracks, and made do with what - if anything - the Turks had left. While he kept pushing the railways in southern Palestine, Allenby also indulged in some weighty speculations about the more distant future. He insisted that he could not undertake large-scale operations against the north - meaning Syria in the main - without railways to back him up. As early as February 1918 the G.O.C. was already considering the extension of his main line from Egypt, possibly as a double-track railway from Rafa to Haifa. From there he envisaged a single-track line via Tyre and Sidon to Beyrouth - all this while these places were still being held by the Turks. In this connection he did stress the vast amounts of equipment that were going to be needed, including an increase in the delivery of coal, which at that time already had reached 6,000 tons a month (156).

Allenby's final offensive started in the early morning hours of the 19th of September, 1918, and railways were to play a prominent part in it, as will be elaborated in the following section. However, the railways that were to influence his victory were, in the main, Turkish. The

(156) Ops. II/1, p. 298, 299; Wavell, pp. 176-177.
British-built rail network had largely terminated its role when the offensive began. As for the British lines, there only remains to note that scarcely a day after fighting resumed, railway construction was restarted. The standard gauge main line was rapidly continued north from its railhead at Ranti on top of a new track that had been prepared beforehand. On 28.9.1918, the British switched to laying their standard rails on top of Meissner's narrow track, from which the rails had been removed. Using the Turkish ready-made embankment, the British now progressed at an average rate of some 2 kms. a day. On 15.10 Tul Karem station was reached. Here transshipment facilities were built towards using the Turkish 1,050 mm. line past Massudiye, through the (luckily undamaged) Ramin tunnel, to Afule. From there the line could be utilized to Haifa, on the one hand, and to Beisan and Samakh, on the other. Allenby's advance had been so swift that the Turks had had no time to destroy their railway (157). From Tul Karem the British standard line was laid on top of the Turkish branch railway to Liktera/Hadera. From there the line was continued along the coast - the British had no fear of naval bombardments - through Tantura (Do'r) and Athlōth, round Cape Carmel, into Haifa. Haifa station was reached by the standard gauge line from Kantara early in January 1919, two months after the

(157) Record, p. 92.
The First World War had ended. Here the new 1,435 mm. line that came in from the south linked up with the ex-Turkish 1,050 mm. Hejaz Railway branch that came in from the east, and has been put back into service by the British more than three months previously (158). The standard line into Haifa was, unfortunately, to prove in later years a prime example of a railway that had been built for purely military reasons, with no economic considerations at all, or regard to urban concentrations. That was partly the fault of the British builders, but it was also to a great extent due to the alignment of the original Turkish railway, whose tracks the British had used because it was there and ready.

Railways in Palestine During the Final Phase of the War, 1918, With Special Reference to the Hejaz Railway and its Haifa Branch

It had been fleetingly pointed out in the previous section that it was the Turkish railway system, built by Meissner Pasha before, and during, the war with the intent to further his own side and not a wartime enemy, that played a prominent, though mainly passive, role in Allenby's victory. The British G.O.C., mindful of what his own railways had done for him, also had had ample time to reflect on the importance of rails for his opponents. It was on the Turkish railway junctions, and their envisaged capture, that he based his

(158) Massey, p. 285; Ops. II/2, p. 562; Record, p. 92; Wavell, p. 215.
plans to smash the Turkish forces in Palestine — and beyond (159).

Allenby's first draft for his autumn 1918 offensive foresaw a break through the Turkish front to capture the rail junction of Massudiye (Sebastiye) in the Turkish rear. By this means he would have cut the rail communications of both Turkish armies operating on the front in western Palestine. These were the 8th Turkish army in the Sharon plain, supplied by the line from Massudiye to Tul Karem, and the 7th Army (under Mustapha Kemal) astride the hills of Ephraim, and supplied by the line Massudiye-Nablus. Nor was Allenby unmindful of the fact that the Turkish 4th Army, in the east across the Jordan, was being kept supplied by the trunk line of the Hejaz Railway coming down from Damascus. Most important of all within the framework of his planning was the railway junction of Dera'a in the Hauran (160), where the railway for Samakh (Tsemah), Beisan, Afule and Massudiye, which kept the two Turkish armies in Palestine supplied, branched off from the Damascus-Ma'an line, that kept the army in Transjordania supplied — and the Hejaz garrison, and Medina, as well.

(159) Details of Allenby's offensive plans, and their execution, will be discussed here only insofar as they involved railways. They will be found on a day-to-day basis in the pages of Record. Allenby's overall plans have been amply outlined in Ops. II/2, chapter XX, especially on pp. 448-449, and in Wavell, chapter VII, especially p. 197 passim. In this connection cp. also Kress, p. 307, on the fatal military results of the Turkish failure to develop their rail communications with the Middle Eastern front.

(160) Ops. II/2, p. 448; Wavell, p. 196.
Capture of Dera'a would have cut off entirely all three Turkish armies and the Hejaz, in addition. However, he considered that Dera'a was too far away from the starting line in central Palestine, in the autumn of 1918. He therefore left the capture of this vital railway junction and the harassing of the railway in Transjordania to his Arab allies under the command of Feisal and Lawrence. It might be pointed out, anticipating events, that the Arabs, having failed before to capture Medina, and having failed more lately to evict the Turks from Ma'an (which posed a heavy and continuous threat to the British base at Akaba), did not succeed in capturing the vital Dera'a junction either. This place was to be reinforced by German troops brought by train from Damascus and Afuleh - a prominent example of shifting troops by rail behind the Palestine fronts - and did not fall until September 27th, owing to the total collapse of the Turks, and the cutting of the lines leading into it (161).

However, all this was to be in the not too distant future. Meanwhile, Allenby, who considered that he could not attack Dera'a directly himself, decided, at least, on a wider envelopment than he had envisaged in his original draft. In his final plan of attack, he decided to make, instead of Massudiye, the railway junction of Afuleh, in the centre of the Jezre'el Valley, the target of his offensive. This plan, whose execution was to be recorded in history as the Battle of Megiddo, and which decided the war in the Near East, was

(161) Ops. II/2, pp. 467, 565-566.
intended to give the British all the advantages expected from the capture of Massudiye - and more. Incidentally, it might be pointed out that Allenby’s plan, far from stressing the capture of towns or salient geographic features - as was the rule in Europe and elsewhere - concentrated on the capture of focal rail junctions, and there can be few better proofs than this, of the great importance of railways in the Palestine campaign.

The capture of Afule and its junction was intended to give the British two choices of further advances, and relatively easy going in both of them. From Afule the British - on the one hand - could move alongside, or with the help, of the Turkish railway, to Haifa. They could use the town’s sheltered anchorage, and from it they could advance north, to Acre, and from there, along the coast (possibly building a railway as Allenby had considered) to Tyre, Sidon, Beyrouth and beyond - along the ancient coastal highway. The other choice of the British might have been to turn south-east from Afule, going to Beisan also along, or with the help, of the Turkish railway. At Beisan they had the choice of turning south, down the Jordan Valley to Damie bridge, thus cutting off the last venue of retreat to Transjordania for the Turks trapped in the Sharon plain, and in the hill country. Alternately they could turn north from Beisan, and go up the Turkish railway to Samakh, and continue to Tiberias, and perhaps Rayak or Damascus. Allenby’s first draft would have given him control of another stretch,
perhaps 60 kms. in all, of the Turkish railways. His final plan, however, to capture Afule, offered him a fair chance—barring failure—of taking over most of what had remained of the Turkish railway network in western Palestine, which served as the backbone of all the Turkish forces and without whose supplies they were doomed.

Allenby's superiority in manpower and equipment late in 1918—all brought up and concentrated by rail—was overwhelming. He had 57,000 infantry, 12,000 cavalry, and 540 guns, not counting reserves and rear-area personnel. These he was about to throw against the Turks, who, including reserves, it was estimated, had only 32,000 infantry, 2,000 cavalry, and 402 guns. These forces, except some German and Austrian contingents, were ragged, starving, ill-equipped, and hopeless. On overall numbers cp. the note below. (162).

(162) Wavell, p. 195; also Ops. II/2, p. 452, where figures are not substantially different. On the condition of the Turks ("hungry, ragged, verminous, comfortless, hopeless and outnumbered"), cp. Ops. II/2, p. 446.

"Ration strengths", that is overall forces in the theatre, were about 340,000 for the British, as against 247,000 for the Turks, according to Ops. II/2, 454. This means that railways on both sides supplied 587,000 mouths, as against a total population of Palestine of about 720,000. The British railways also fed 62,000 horses, 44,000 mules, 36,000 camels, and 12,500 donkeys.

On the total inability of the Turkish narrow-gauge line south of Rayak to supply, much less move, the Turkish forces, cp. Ops. II/2, p. 454.
Thus, when Allenby's attack started, his forces cut through the Turks like a hot knife through butter. After the first day's fighting (19.9.1918), the Turkish 8th Army in the Sharon had virtually ceased to exist, and the Turkish railway fell into the lap of the British with very little fighting. Tul Karem, and its station, were captured on 20.9., the important Ramin tunnel (the only tunnel in Palestine) was also seized intact on the 20th. Massudiye junction was captured in the pre-dawn of the 21st, and further up the line Jenin, and the prize of the offensive, Afule, were also seized already on the 20th. As all organized Turkish resistance had broken, the British continued their attack and extended it. Beisan was captured the same day as Afule, namely on the 20th, Haifa on 23.9., and Samakh on the 25th. Valuable Turkish rolling stock was also taken, eleven locomotives, and some 70 wagons (163). One of the fiercest fights of Allenby's final offensive took place in Samakh railway station, between a German rear-guard and Australian mounted troops on 25.9.1918. The German G.O.C., Otto Liman von Sanders, had ordered the village of Samakh to be held to the last man, as this place, linked by rail through the Yarmuk gorge with Deraa, held open a road of retreat for the Turkish and German formations, and might in the future have served as a sort of bridgehead in the Jordan

(163) For details and dates cp. Ops. II/2, pp. 508, 509, 520, 521, 525, 531, 537, 543-544; also Wavell, pp. 210, 214, 223. Map 21 in the Ops. map-case provides a good background to events.
Valley, covering Tiberias and even threatening Beisan (164). The German troops had entrenched themselves in the station itself, and also amongst the rolling stock. The Australians made a mounted attack on the station and a bloody hour-long fight developed, during which little quarter was asked for or given. Samakh station was captured at last and in it 100 dead Germans. Australian casualties numbered 78, and some 100 horses (165). With the capture of Samakh itself, situated just east of the Jordan, the whole of the Turkish rail network in western Palestine had fallen into the hands of the British. Four days after the capture of Haifa, i.e. on September 27, 1918, British supplies were being landed at that port (over the quay built by Meissner), and the railway Haifa-Samakh had been put in working order (166).

But at first the parlous state of the captured rolling stock hindered operations. Later, probably useable 1,050 mm. locomotives and wagons were brought north from Judaea, where they had become redundant - owing to the conversion of the lines to standard gauge. In the north they could now help to supply Allenby’s push to Damascus. The British were lucky in having captured the big, many-arched Majami bridge over the Jordan, south of Samakh, intact (167). However, they

(164) Ops. II/2, p. 542.
(165) Ops. II/2, p. 544. A moving picture of the battlefield will be found in Gullett.
(166) Ops. II/2, p. 562.
(167) Ops. II/2, p. 522.
were less fortunate in the fact that an important viaduct east of Samakh had been blown up by the Turks - quite apart from the demolitions carried out further up the line, near Dera'a, by the Britishers' own allies, the Arabs. The broken bridge east of Samakh took some weeks to repair - with important results unnoticed even by military historians (168). Because of the blown bridge, Allenby's main thrust on Damascus had now to be supported solely by an indifferent road over the Jordan passage at the "Bridge of the Daughters of Jacob," and through Kuneitra. Other supplies had to be sent from Beisan via Irbid. After the capture of Damascus, and of the Hejaz Railway, (described in the following section), supplies were apparently also sent from Jerusalem to Amman by truck and from there by rail to the north. All this on account of the blown bridge in the Yarmuk gorge. Had the Turks been less broken, and had resisted on the road to Damascus, the interruption in rail communications between Palestine and Syria might have had unpleasant operational consequences (169). But at least the Western Palestine line was working to Samakh.

While the Turkish railways in western Palestine had played a mainly passive role in Allenby's offensive, until re-activated by the British, they were mere pieces of property

(168) Ops. II/2, p. 545, note.

(169) Ops. II/2, pp. 562-563. According to Record, p. 97, after the capture of Damascus, troops there were fed by trucks based on the railhead at Samakh. The return journey back took 3-4 days. The columns operating near Meserib, after coming up from the Jordan valley, had no supplies at all, and depended on requisitioning. Cp. Ops. II/2, p. 584, also p. 600.
fought over - the position was to an appreciable extent different on the eastern side of the Jordan. Here the only existing railway, the Hejaz trunk line from Damascus to Ma'an and beyond, became a factor of quite weighty operational significance in the 12 days that ended with the loss of Palestine and Transjordania to the Turks.

The Hedjaz Railway, the lifeline of the Turkish garrison in northern Arabia, had become a veritable thorn in the side of the Arabs and their British allies ever since the Sherif Hussein had raised the standard of rebellion against the Turks in the Hejaz, on June 6, 1916. It may be a moot point whether the British really wanted the line destroyed in order to extirpate the Turks and hand their holdings in Arabia to Britain's volatile friends, the Bedouins, or whether they just wanted to harass the railway in order to draw off Turkish manpower for its defence. However, the facts were that the line had been the target of many raids by T. E. Lawrence and his henchmen ever since June 1917 (170). Up to the end of 1917, during which year the British had established themselves at Akaba, there were eight raids on the line and also an air raid on Ma'an station (171). However, the line was never permanently cut, as the Turks had developed an efficient repair service - and the British and the Arabs


(171) Ops. II/2, p. 399.
had to repeat their raids over and over again (172). It has been pointed out already that Allenby's first raid against Transjordan of late March 1918, in order to cut the Amman railway viaduct, had failed (173). Also a rather complicated three-column attack further south on April 11-17, which led to a temporary occupation of Ma'an station, likewise ended in a British retreat. The Turks in the town of Ma'an itself had never budged and after they had received reinforcements from the north, presumably by train (as they had before during the action at Jafileh three months earlier) they reoccupied the station too (174). Thus the Turks stayed in Ma'an and also held all the line to the north. On the other hand, on April 19-20, 1918, almost one year after they had started their attacks on the railway, the British at long last succeeded in cutting it towards the south, between Ma'an and Mudawara (175), and now did it so thoroughly that the line stayed derelict for the next 50 years. In this way Medina was finally isolated, though it did not surrender until 1919. But in Transjordan, between Ma'an and Der'a, the Turkish 4th Army stuck to its guns undismayed, secure in the knowledge that it was being supported by an unbroken railway. Thus the Turks across the Jordan held their own until September 1918, when Allenby's final offensive began to threaten their rear.

(172) For the efficient repair service of the Turks, cp. Ops. I, p. 231. Also Dieckmann, p. 65, and Massey, pp. 58, 274.
(173) Ops. II/1, chapter XV, and especially p. 347.
(175) Ibid.
When planning his final offensive that resulted in the destruction of the two Turkish armies in western Palestine, Allenby necessarily had to devote some thought to the Turkish forces across the Jordan as well. All the three Turkish armies were supplied, through and dependent on, the focal junction of Dera'a in the Hauran. It has already been pointed out above that Dera'a had been too far away to be designated as a target in Allenby's original plans for his attack. This of course was to change after the Turkish forces in western Palestine had been obliterated and after the British had broken through and were engaged in their headlong advance from Palestine into Syria. Before that had happened, and while he was still organizing his attack, Allenby had ordered Lawrence and his Arab allies in the desert to attack Dera'a. This was to be done just prior to his big move, and all he wanted was chiefly moral effect and harassment of the Turks (176). At the same time he charged "Chaytor's Force," under the command of the Australian Maj.-Gen. E.W.C. Chaytor, to hold a waiting brief in the Jordan valley. As events unfolded, Chaytor was to advance at his discretion across the Jordan and up onto the plateau in the east, to attack the Hejaz Railway, and the 4th Turkish Army that was both depending on it and defending it. Chaytor had an Australian and New Zealand ("Anzac") mounted division, and some infantry, including two Jewish battalions (177).

(176) Ops. II/2, p. 563; Wavell, p. 200.
(177) Ops. II/2, p. 450; Record, p. 44; Wavell, p. 219.
The British Jerusalem-El Bireh light railway, 1918. The photo shows, near top center, right, the extraordinary loop of the line, crossing St. Simon ridge, s.-w. of Jerusalem. (Also cp. attached map.) Left-standard railway to Lod, and track to Bittir. Right-track to Malha and Gaza.

The Zionist Commission to Palestine, April 1918, in front of their Kantara-Lod train. Second from right: Dr. Weizman. (Zionist Archives) (Pick, chapter IV).
On September 16, 1918, three days before the start of the great offensive, Lawrence and the Arabs set out cutting the railway lines leading into Dera'a junction. But German repair detachments, rushed by rail both from Afule and Damascus, strove valiantly to repair the breaches. They were only partially successful (178). The list of the places attacked on the Hejaz Railway reads as follows: Jabir, south of Dera'a - 16.9; Tel Arar, north of Dera'a - 17.9; Megeirib, west of Dera'a - 17.9; Nassib, south of Dera'a - 18.9; Mafrik, about halfway between Dera'a and Amman - 19.9; Jabir - the second attack that finally blocked the line Dera'a-Amman - 23.9; and a place north of Dera'a - 27.9;

In addition, two stations were temporarily captured, Izra and Ghazaleh, north of Dera'a, the latter with a Turkish troop train (179). The net result of all these operations was twofold: A) In their first stages the attacks stretched the nerves of the Turks and their German helpers and turned their attention to the area east across the Jordan, exactly as Allenby had wished, just on the eve of his great offensive; B) In their later stages, from about 23.9, the attacks effectively and finally prevented the three Turkish armies (or what was left of two of them) depending on Dera'a, from using both the main Hejaz line and the remains of the Haifa branch for their retreat. Indeed, this chapter of Allenby's final offensive strikingly demonstrated the importance of

(178) Ops. II/2, pp. 565-566.

(179) The list of breaches and their dates is based on Ops. II/2, pp. 565-566. For the background of all the events, cp. their chronological day-to-day description in the pages of Record.
railways for forces like the Turkish, that almost totally depended on them.

The second cutting of the section Dera'a-Amman at Jabir (23.9), where the Arabs had burned a wooden bridge put up to replace the one destroyed a week earlier, finally isolated the bulk of the Turkish 4th Army. This army by then was about to make its way north along the railway (and the ancient King's, or Pilgrim's, highway paralleling it), which provided its last rallying points. While the demolition at Mejerib (17.9) and the capture of Samakh (25.9) had also finally cut communications with the sorry remnants of the 7th and 8th Armies in Palestine, the junction of Dera'a itself held out for a few more days, as its rail link with Damascus had apparently not been permanently severed. There, all the Turks who still could walk, and all the still-organized German units, set their face. Dera'a field, supplied by the railway with fuel, kept operating, and its German planes kept bombing the Arabs. At least one Turkish gun in the area that had apparently been mounted on a railway wagon kept bothering the Arabs (180), and as a result the Bedouins did not dare to attack the station. Some trains, that carried Turkish troops who had succeeded in walking their way into Dera'a, were also despatched to Damascus (181). It was only in the morning of 27.9. that

(180) Ops. II/2, p. 565.
(181) Ops., II/2, p. 567.
Colonel von Oppen's 700 men of the German Asia Corps evacuated Dera'a, following the orders of the overall commander, Liman von Sanders. They retreated to Damascus by train, though it took them nine hours to repair, on their journey, a breach of some 450 metres that had been made in the track, some 50 kms. north of Dera'a (182). Only after the departure of the Germans, the Arabs ventured into Dera'a station, carrying out fearful slaughter and even looting a Turkish hospital train standing there. The British took over the junction the next day, September 28, 1918 (183).

Meanwhile, further south, "Chaytor's Force" had on the 22nd of September crossed the Jordan at various places on its way to attack the 4th Turkish Army. It was on the same day that this army had decided on its retreat from Amman to Dera'a (that had not yet fallen). This was three days after Allenby's breakthrough in the west. Up till then the bulk of this army had waited for its detachments at Ma'an, that were retreating to the north along the railway - their only guideline in a roadless waste (184). On 25.9.1918 Amman was captured by Chaytor's force, which thus had cut off the Turkish battalions that worked their way north from Ma'an. On the other hand, the bulk of the 4th Army, and some troops that had joined it from Katrani station, apparently by rail,

(182) Ops. II/2, p. 595, note.
(183) Ops. II/2, pp. 582-583.
(184) There had been seven Turkish battalions garrisoning Ma'an, with another eight guarding the railway between that place and Amman. The total strength of these forces is not known, but it must have been several thousands altogether. Cp. Ops. II/2, pp. 548, 551-552; Wavell, p. 222, mentions 4,000 men.
escaped Chaytor's clutches. All these Turks had managed to leave Amman the day before (24.9) in several trains, towards the north. They were not, however, to get very far, as the line to Dera'a had already been cut at Mafrak and at Jabir (185). After seizing Amman and its station, Chaytor's troops split, going along the railway, some turning north, and some following it to the south. The troops going north captured Zerka station on 26.9, and Mafrak, with one hospital train and several ammunition trains, on 28.9. The 4th Army, or most of its troops, moved from September 25 on foot, leaving their stranded trains behind and bypassing Dera'a, on their bloody way to Damascus (186). Those of Chaytor's men who had gone south from Amman - after blocking the line - were met outside Ziza station (east of Madaba), by a railway trolley flying a white flag and carrying a Turkish offer to surrender. On September 29, the whole garrison of Ma'an, as well as three trains that had accompanied it along all its way, surrendered to the British (187). The broken line from Ziza to Amman was now repaired, by the British, in order to pass Turkish hospital trains through. In the eight days it had operated on the Transjordanian plateau, mostly along the Hejaz Railway, Chaytor's force had collected 11,000 prisoners at trifling cost to itself, an achievement due not a little to the fact that the Turks had clung to their

(185) Ops. II/2, pp. 554-555.
(186) Ops. II/2, pp. 555, 560.
(187) Even prior to the formal surrender, Turks and Australians had cooperated throughout the night in guarding Ziza station, and the trains and Turks in it, against the attacks of the bloodthirsty Bedouins. Cp. Ops. II/2, pp. 556-558; Wavell, pp. 221-222.
rails like a lifeline and could be collected along them with no great effort (188). Also 11 locomotives and 106 carriages and goods wagons had been captured. They were no doubt worked again as soon as the main line had been repaired, carrying supplies to Damascus after its capture on October 1st, 1918. It will be remembered that while the railway section between Samakh and Dera'a remained cut by a broken bridge for several weeks after 25.9, some supplies were carried by trucks from the railhead at Jerusalem to Amman, and went from there by rail to Damascus.

The total number of railway stock captured, intact or damaged, by Allenby's forces up to the armistice with Turkey on 31.10.1918, and including unspecified effectives taken over in Syria, was 89 locomotives, and 468 passenger carriages and goods wagons. These figures may not include total losses during operations (189). Some of these losses probably occurred already during operations in southern Palestine in 1917. But at that time the Turkish forces had not been broken and most, though not all, rolling stock that had not been totally destroyed could be evacuated. It might be assumed that most losses of the Turkish rail system occurred during the final phase of the war when no time or lines were available for evacuation. A good many total losses of stock were also probably incurred by bombing attacks of the Royal Air Force (Royal Flying Corps to 1.4.1918), during Allenby's final offensive. During those operations British aircraft

(188) Ops. II/2, p. 558.
(189) Ops. II/2, p. 618.
carried out numerous bombing attacks on such Turkish railway
junctions as Tul Karem, Massudiye, Afule and Dera'a (190).
These attacks seem to have caused heavy damage.

Statistics Pertaining to the Wartime Railways in Palestine

In order to round off the history of railways, both
Turkish and British, and their operations in Palestine,
Sinai and Transjordania in the years 1914-1918, some statistics
regarding their working should be given.

Very little details, technical or statistical, have
survived about Meissner Pasha’s railways. The length of
his newly-built lines and their dates of building have been
summarized in tables above. The carrying capacity of his
Sinai Railway - 300 tons a day - has also been mentioned.
As for his rolling stock, there were no access:
except
for 20 locomotives delivered late in the war and probably
only assembled in part. For this information, and for a
few other details, one has to be indebted to Dieckmann (191),
who, together with Kress and Wiegand (and British sources),
provided the little that is known. An attempt, and it is
nothing more than an attempt, to assess Turkish railway
stock in wartime Palestine and its losses will look about
as follows. The following table does not include the rolling
stock of the French Beyrouth-Damascus-Mequerib railway that
was utilized by the Turks, but about which nothing is known (192).

(190) Ops. II/2, pp. 487-488; Record, pp. 112-113;
Wavell, p. 203, passim.

(191) For Dieckmann, as well as other sources, cp.
the attached bibliography; also cp. notes 41, 44 in the
first part of this chapter, dealing with the Turkish railways.

(192) For this note, see next page.
Turkish Rolling Stock in Palestine 1914-1918
(excl. French Beyrouth-Megirib Stock)

<table>
<thead>
<tr>
<th>Stock Type</th>
<th>Locomotives</th>
<th>Carriages (Passenger, Goods, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hejaz Railway Stock</td>
<td>96</td>
<td>1,168</td>
</tr>
<tr>
<td>(state in 1913) (193)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jerusalem-Jaffa Stock taken over</td>
<td>5</td>
<td>54</td>
</tr>
<tr>
<td>(194)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wartime additions (195)</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td>1,222</td>
</tr>
</tbody>
</table>

Captured by Allenby (196)

<table>
<thead>
<tr>
<th>Stock</th>
<th>Locomotives</th>
<th>Carriages (Passenger, Goods, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. wartime losses</td>
<td>32</td>
<td>754</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It will be seen that, even without taking into consideration the French Beyrouth line stock that was taken over, losses were heavy, in particular as far as carriages were concerned (197). A comparison of the quantities of the Turkish narrow-gauge stock operated during the war with the standard gauge stock - listed further on - worked by the

(192) For a speculation about the French stock, cp. note 49 above.
(193) For the sources of these figures, cp. chapter III; also Ruppin, p. 418.
(194) For the source of these figures, see chapter III.
(195) Cp. Dieckmann; also notes 41, 44.
(196) Cp. end of previous section, and note 189.
(197) References to captured and intact rolling stock - total losses were not normally recorded - abound, and will be found in Ops. pp. 164, 185, 509, 510, 520, 544, 558, 566, 583, and elsewhere; also in Massey and Wavell, on many pages. The frequent mention of captured stock stresses the importance attached to the subject.
British during the same period, will be illuminating. As
already noted (in part), in 1918 the Turkish railways had to
provide for a ration-strength (i.e. total rations for fighting
and non-fighting troops) of 100,000 in the area south of Damascus.
Of these were 32,000 infantry and 2,000 cavalry. Ammunition
had to be supplied for 402 guns. Feed had also to be provided
for approx. 39,000 animals (198). The overall ration-strength
of the Turks in Palestine and the Hejaz, including civilian
workmen, has been put as high as 247,000 (199). As local
resources were scanty, most of these supplies had to be
brought and distributed by rail. It might also be assumed
that the limited rolling stock of the Turks, apart from
supplying the army, also had to some degree to
provide for the needs of the civil population under the
control of Djemal Pasha. Owing to the different administra­
tive boundaries of the Turks as compared with what these
were later, the population of the country can only be guessed
at. According to the British Foreign Office, it was about
718,000 (200). At least some of the needs of this population,
containing some foreigners, and many clerics, must also have

(199) Ops. II/2, p. 454.
(200) Cp. note 94. The figure of 850,000 has been
worked out from Ruppin, pp. 13-15, and is based on the approxi­
mate population figures in 1915 for the districts of Kerak,
Jerusalem, Nablus, Acre, and half the population of the
Hauran. The population figure for Palestine according to
the census of 1922 was (according to Vilnay in his Hebrew,
"Guide" of 1935) 757,000.
been furnished by rail. Nothing more is known, or can be worked out, regarding the statistical aspects of the Turkish railways in Palestine during the First World War.

The position regarding the British railway network in Sinai and Palestine during the Great War is entirely different. Statistical and other details are plentiful and indeed superabundant. The following particulars are merely extracts from the available material.

By the middle of 1917, that is, some 15 months after the building of the standard-gauge Sinai railway had started, its rolling stock included 82 locomotives, 75 passenger carriages, and 1,360 goods wagons. Of these 53 locomotives, 63 passenger carriages and 898 goods wagons had been provided by the Egyptian State railways, the balance having been brought from England (201). By the time the Palestine campaign was over, effectives stood at 169 locomotives, 50 passenger carriages, 98 hospital carriages and 2,573 goods wagons. The length of the lines laid, including the double-tracked section Kantara-Rafa, and the section Hadera-Haifa, completed after the armistice, reached a total of 1,009 kms. The number of switches (points) included in these lines was 748. The number of stations built was 86 (202). These figures do not include 115 kms., or more, of

(201) Murray, p. 201; also Massey, p. 175.
(202) The above figures, and also the following, are based on a summary in Record, p. 92.
narrow-gauge railways (2 ft. 6 in. and 600 mm.) or their rolling stock, that may have been considerable. The average construction speed of the standard-gauge track was about 24 kms. (15 miles) per month (203), though the impression is that at times it may have reached 2 kms. or more per day. The lines were operated by a special Railway division of 5,500 men, and some smaller units. Building the lines was undertaken by British Royal Engineers construction companies, Canadian bridging troops, Indian pioneers, and almost 30,000 Egyptians.

By the summer of 1917 the standard lines carried an average of 22,890 tons of freight a week (as against 2,100 tons a week on the narrow Turkish line!), including building material for the new tracks, and pipes for the water supply. In the summer of 1918 provisions only, food and forage, but not including ammunition, accounted for a daily average of 2,000 tons. This figure rose to an average of 2,317 tons daily in August 1918. There were 13 trains daily from Egypt to Palestine in 1916, when the main line was single-tracked, each consisting of 25-35 12-ton goods wagons. Of these six were construction trains carrying material. Later there were 16 or more trains into Palestine. The total number of trains, in both directions in 1916, was 2,714. Unfortunately, no figures are available for 1917-1918, but some idea of the size of the traffic is given by the fact that as early as February 1918 monthly coal requirements reached 6,000 tons.

(203) Wavell, pp. 60-61; also Ops. I.
a figure that led to an attempt to convert to oil firing (204). Ammunition transports averaged 250 tons daily, during operations (205). Also moved were 15,000 gallons of gas for transport, 8,000 gallons of aviation spirits, and 5,000 tons of kerosine for cooking - this daily (206). Apart from all these supplies, the railway also transported hosts of animals (as further noted below), troops (as will be noted below), and human debris, the casualties of battle and climate, for whom the aforementioned 98 hospital coaches were intended.

On the eve of the final battle for Palestine, 19.9.1918, the British forces that depended on the railway for all their needs had a ration strength of altogether 467,650 men, of whom 226,900 were British, 111,800 Indians, and 128,950 were workers of the Egyptian Labour Corps. Also to be fed were 159,900 animals, consisting of 74,800 horses, 39,100 mules, 35,000 camels, and 11,000 donkeys (207). By the time the war had been won, there were also some 70,000 Turkish and German prisoners to be fed, and transported (208). Also

(204) Data are taken from Murray, pp. 200-201, 204; Ops., I, p. 359, II/2, pp. 439-441; Record, p. 95. Supplies carried included 250 tons of biscuits daily, 900 tons of forage, and 100,800 boxes of matches. For coal requirements, cp. Ops. II/1, p. 299. For the conversion to oil, Ops. II/2, p. 441.

(205) Record, p. 102.

(206) Record, p. 95.

(207) Record, p. 94. Wavell, pp. 194-195, gives slightly lower figures, as he possibly did not include the Kantara base in his totals.

(208) Record, p. 103.
amongst the consumers relying on the railway at one time or another were 5,905 assorted motorized vehicles and seven squadrons of the R.A.F., whose needs in fuel, brought from Egypt, were already noted above (209).

Translated into purely military terms, all the above details - quoted in order to prove how vital rails were in the framework of the Palestine campaign - mean that the railway enabled Allenby to put into the field for his final offensive the equivalent of eight infantry divisions and four cavalry divisions, or 57,000 fighting men, 12,000 sabres, and 540 guns, with all their logistic backup. In this connection it should be noted that in many ways Allenby's army of 1918 was quite a different one from the one he had had at the end of 1917. Owing to the threat of the last German offensive in France, in March 1918, the Imperial General Staff in London had practically coerced Allenby in the spring of that year to send some of his most experienced troops to the Western Front. He had to take Indian troops in their stead. This very big reshuffle could only have been carried out by means of the railway through Kantara (210).

(209) Record, pp. 96, 113. The motor vehicles included a few tanks (7-8 in 1917), lorries, ambulances, tractors, staff cars, motorcycles, etc.

(210) For Allenby's strength in 1918, cp. Ops. II/2, p.452; Wavell, p. 194-195. For the great troop exchange: Ops. II/2, pp. 412-413, 417 (where the share of the railways is referred to), 421; Wavell, p. 183.
This creation of the railway, (East-) Kantara, the terminus of the desert line into Palestine, had meanwhile grown into a huge base and shunting and repair yard, from which practically all long-distance trains originated. Without Kantara, the British railways in Sinai and Palestine could have been neither built nor operated. As mentioned before, the place had by means of a railway bridge (from the summer of 1918) direct access to the E.S.R. system, to Egyptian workshops, and the refinery at Suez, and to the big ports in Egypt. Itself it could now unload up to five ocean-going ships. It had many kms. of rails, and a military and semi-military population of no less than 100,000 men. There probably was not a soldier on the Palestine front who had not passed Kantara. Very late in the final Palestine offensive, Kantara also served as a port for a curious kind of export. At that time stores, redundant in Palestine, that had to be sent into newly-conquered Syria, could not be moved north, owing to the broken rail-bridge at Samakh, and the dearth of roads. These stores were returned by rail to Kantara, and from there were shifted by sea to Beyrouth, Tripoli and Alexandretta (211).

(211) References to Kantara are very numerous indeed in Ops. and Wavell, the ones in Ops. II/2, p. 440, and in Wavell, p. 104, must suffice. Cp. also Massey, pp. 13, 175, 332. There are very important data on Kantara in Record, text facing plate 54. For the re-shipment of stores, cp. Record, p. 103. Gullett, "Photo Record," has an interesting aerial view of Kantara.
The Jewish Aspect

There remains to point out a few links — a mere selection — between Allenby’s railways and the affairs of the Jews in Palestine. Lt.-Col. John Patterson, the gentile Irishman, commanding officer of the 38th Royal Fusiliers — the Jewish battalion — gave a moving description of his men’s train journey from Egypt into Palestine in his reminiscences (212). As he tells it, the spectacle of his men following the locomotive, belching smoke by day and fire by night, into the Holy Land, reminded him of the Children of Israel being led out of bondage in Egypt by a pillar of smoke in the day and a pillar of fire at night. All the remaining Jewish battalions of course also reached Palestine by train. There are a number of photos showing Jewish volunteers riding in open wagons on the 600 mm. line from Jaffa to their training camp (213). The “Zionist Commission” coming to Palestine via Egypt in 1918 of course also travelled by train, and there is a well-known photo of the members of the delegation, with Weizmann at their head, standing beside their carriage (214).

The further Allenby’s railway lines advanced north, the more the starving people of the Yishuv benefited by their services, their supplies, and the links they provided.

(212) Cp. Patterson in the attached bibliography; Cp. also Elam, p. 239.

(213) Photos of the Yishuv’s volunteers aboard a train can be found in the "Sefer Ha’hagana," vol. 1, part 2, opp. p. 499; in Elam, opp. p. 169; and in the Zionist Archives, Jerusalem, and elsewhere. Davies, opp. p. 144 also has a graphic shot.

(214) Encyclopaedia Hebraica, vol. 6, col. 531.
Turkish supply train, probably in the hills of Samaria, derailed by British bombing attack, late in the war. Note light rails and makeshift ties. (Nat. Libr., V. 1717).

Afula station and supply trains for Turkish Sharon front, late 1918, being bombed by Australians. Station still stands 1975. (Source: Gullett, Record).

(Pick, chapter IV).
with Egypt, where the Yishuv's refugees lived, and with the outside world. Allenby's Deputy Quartermaster, General, Maj-Gen. Sir Walter Campbell, employed empty wagons returning to Kantara for the transport of Palestine goods, probably agricultural produce for sale in Egypt (215).

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It is hoped that the above description of the British railways in Sinai and Palestine in the First World War will have proved their decisive role in the attainment of the British victory in the Near East that knocked Turkey out of the war, and had far-reaching repercussions. The Palestine campaigns were to a great and quite unknown extent a "Railway War" between both opponents. Victory went to that side that, in the words of an American Civil War general, "got there firstest with the mostest."

(215) Ops. II/1, p. 301.
Background Sources

The following articles and books contain references to railways in Palestine in 1914-1918, but were not quoted in the text.

Drexler, J.: Mit Jilderim ins Heilige Land, Ravensburg, 1919.
Notes on Maps

There is an abundance of maps as to the building and operation of railways in World War I Palestine.

The following books, listed in the bibliography, contain maps: Dalmann, Davies, Military Operations (both in text and in map-case. Very valuable!), Gullett ("Australia," and "Imperial Forces"), Kress (very valuable!), Brief Record (very useful!), Ruppin, Vilnay, Wavell (very valuable!), Woods, 2.5.19.

The following sets of maps were also consulted and found useful:

British Army, 1:40,000 maps, of 1919 - partially available in map library of National Library, Jerusalem.

Headquarters, M.E.: Road map of the Middle East, 1944 - in possession of writer.

Survey of Israel 1:100,000 maps (26 sheets).

id. 1: 50,000 maps, Israel & Sinai (restricted).

Survey of Palestine 1:100,000 maps (16 sheets)

id. 1:1,000 map of Jerusalem (6 sheets), ca. 1928, for Jerusalem - El Bireh railway

Useful maps showing railways will also be found in contemporary guidebooks like Luke (cp. bibliography), Meistermann (cp. bibliography for ch.V), and also in Imhoff (lines on the eve of the First World War; cp. bibliography for ch. III).
NOTES ON PHOTOS

In preparing the foregoing chapters, considerable use has been made of photos, either for providing a general background, or for pinpointing details as to railways. Photos will be found in the following books listed in the Bibliography: Auler, Davies, Elam, Encyclopaedia Hebraica, Gullet(!), Massey, Toldoth Ha'hagana, Steuber, Wiegand, Woods.

Photos relating to the period under discussion will also be found in E. Berghaus, "Auf den Schienen der Erde," München, 1966, (which contains a ca. 1917 photo of a flatcar, powered by an aircraft engine and a propeller, used by German airmen on the line Afula-Haifa); H. Ellis, The Pictorial Encyclopedia of Railways, London, 1969; Pictorial History of Railways, part 36, London, 1972; B. Moritz, Bilder aus Palästina, Nord-Arabien, etc., Berlin, 1916. All three illustrate the wartime Hejaz Railway.

A considerable number of contemporary railway photos will be found in archives, and similar institutions. Especially useful were pictures kept by the National Library in Jerusalem: Collection Phot. 258, and File 1717.

Other sources for photos are: The Australian War Museum, Canberra; The Imperial War Museum, London; the Archive of the Matson Photo Service in the possession of Mr. Horace Spafford-Vester of the American Colony, Jerusalem; and the Zionist Archives, Jerusalem.

The above is only a selection of sources.
V. Epilogue:

Railways in Palestine,

and Israel/Jordan, Since

1918.
RAILWAYS IN PALESTINE/ISRAEL SINCE 1918
SCHEMATIC LAYOUT

BRITISH NETWORK TO 1948
ISRAELI-BUILT SINCE 1948
TAKEN UP SINCE 1918
THE POLE SCHEME 1935

BRITISH MINOR LINES SURVIVING WORLD WAR I NOT SHOWN.
The State of the Railways in Palestine, 1919 and After;

Contraction of the Network

The previous chapters have attempted to trace in some detail the History of Railways in Palestine during the eighty years 1838-1918. The following chapter will bear the character of an epilogue only. References to sources will be fewer than in previous chapters. Nevertheless, it is hoped that a concise postscript to earlier events will be useful to describe events after 1918.

It is hoped that the foregoing chapter has shown that the struggle over Palestine in World War I had been influenced to a considerable degree by the use of railways by both contending parties. To a certain extent, the campaigns in Palestine even constituted a "railway war," not intrinsically different from earlier struggles involving a decisive use of railways.

Contd. overleaf.
that had been waged in North America, in Europe, in South Africa, and in the Far East (1). The contest in Palestine had developed into a trial of endurance between the narrow-gauge, single-track, and limited-capacity Turkish net-work, and the standard gauge, multiple-tracked, high-efficiency, rail system built by the British. As has been shown, the British won. It will now be described how the railways built, or inherited, by the British were to fare at their hands in mandatory Palestine and Transjordan. Finally, some limited space – an epilogue to an epilogue – will be devoted to a description of what Israel and Jordan were to do with railways handed over to them by their British predecessors.

With the end of hostilities late in 1918, the railways in Palestine and its adjoining territories, for some two decades, ceased to be instruments for making history. They lost the military and political importance they may have had before, as factors in the power game that went on in the Levant. They also lost a great deal of the importance they may have had previously in the economic

1) The American Civil War (1861-1865), The Austrian-Prussian War (1866), the Franco-German War (1870-1871), the Boer War (1899-1902), and the Russo-Japanese War (1904-1905), were greatly, and in some ways decisively, influenced by the use of railways. So was the First World War. This, on account of the fact that before the development of capacious road-nets, and efficient motor-transport, trains were the sole means of carrying troops and their supplies over medium and long distances.
development of the areas through which they passed. (1A)
They came to stagnate because the lands they had been supposed
to open had been cut up, owing to the demise of the Ottoman
Empire. The newly-conquered, and later mandated, territories
of Palestine and Transjordan ceased to face north, towards
the former center of power in Anatolia, but now looked west,
to the sea, and to the holder of the mandate (from 1922),
namely Britain. The newly-established boundaries hindered
railway traffic, though they did not prevent it. The unstable
political situation in Palestine from 1920 did not permit
resources to be spent on railway improvements.

At the beginning of 1919, while Palestine and its
adjoining territories were ruled by a military government,
the "Occupied Enemy Territory Administration," there were
in the country the following railway lines, many of them
operational, some laid up, and a few destroyed and inoperable.

A) Standard Gauge Lines (1,435 mm.).
1) Kantara-Gaza-Lod-Haifa;
2) (Jaffa--) Lod-Jerusalem. The Jaffa-Lod section of
this line may already have been of standard gauge at this time,
converted from 600mm. But it may have remained of narrow-gauge
until converted by the civilian mandatory government.

1A) For some economic aspects of pre-1914 railways in
Palestine, cp. chapter III; also Enc. of Islam article,
"Hijaz Railway"; p. 365; Hecker, pp. 769, 770-71; 1550, 1564-65.
Also Ruppin, pp. 301, 307, 308. Most sources considered the
undoubted economic aspects of the railways as secondary, and
devoted little space to them.
3) Rafa-Sheikh; Nuran-Beer Sheba;
4) Beer Sheba-Tineh-Junction Station (Wadi Sawar).

All these lines were operational.

B) Narrow-Gauge Lines (1,050 mm.).

1) Haifa-Afula-Beisan-Samakh-El Hameh;
2) El Hameh-Dera'a-Nassib. This stretch of the old Hejaz Railway, partly destroyed in the last days of the war, was repaired in 1919. When the war ended it came to run through territory ceded to the French, and was run by them. At some unknown date (in the 1920s) the French also relaid the branch Nassib-Bosra eski-Sham, taken up by the Turks (Meissner) during the war;

3) Dera'a-Damascus. This section also, of the old Hejaz Railway, came to be in French territory and was henceforth operated by them. The parallel Meserib-Damascus Railway, taken up during the war, though originally French-built, was never relaid by them;

4) Nassib-Amman-Ma'an-Mudawara (-Medina).

This line was repaired in 1919 and operated to Amman. The remainder of the line, as far as Ma'an, was to be inoperable to the middle 1920s, owing to the uncertain political state of southern Transjordan. The section Ma'an-Mudawara was to stay derelict for almost 50 years. When Transjordan became a British mandate, its railways were to be operated, to 1948, by the railway authorities in Palestine proper, though the two systems were separated by the French-run El Hameh-Nassib section;
5) Aneizeh-Hisheh Wood. Laid up;
6) Beer Sheba-Auja. Partly destroyed, partly taken up;
7) Beit Hanun - Tineh. Laid up;
8) Lod-Tul Karem. Taken up and relaid as British standard gauge;
9) Deir Sbeid-Huj. Probably taken up; not operating in any case;
10) Tul Karem-Qannir. Laid up;
11) Tul Karem-Liktera (Hadera). Relaid as part of the standard gauge line Lod-Tul Karem-Haifa;
12) Tul Karem-Massudiye-Nablus. Probably operational;
13) Massudiye-Afule. Probably operational;
14) Beled esh-Sheikh-Acre. This line had been taken up by the Turks, but its embankment remained. The relaying of this line will be noted later.

C) **Field Railways** (probably all of 600 mm. gauge).

1) Jaffa Port - Jaffa Station - Lod. This line has already been referred to above, under the standard gauge lines. It certainly started its life as a 600 mm. line (the successor of the old French 1892 meter gauge line to Jerusalem). It certainly was operational in 1919. It may have been converted to standard gauge by the military, but the possibility exists that this was done only later, by the civilian authorities.
2) Sarona-Jellil and Branches. Laid up, and possibly already taken up;
3) Kafr Jinnis - Beit Nabala - Lubban. Laid up;
4) Jerusalem - El Bireh. Laid up;

The local network of 2 foot 6 inch field railways, laid down before Allenby's first great offensive of 1917, before Gaza, probably had been taken up already in 1918, as the front had moved away.

It will thus be seen that when the war had ended, Palestine, Transjordan and Sinai were covered by a relatively dense network of all sorts of railways, most of which, by far, had been laid down to serve military uses. Most of them had no peacetime use. Their total length may have been 1,000 kms., or more.

Here it might be noted in passing that long stretches of the standard gauge lines that were operating in Palestine were guarded by Jewish formations of Allenby's army, after the armistice. These were chiefly the line Kantara - Lod - Haifa, and also (if a surviving photo can be trusted) the line Lod - Jerusalem. Itshak Ben-Zwi (later to be President of Israel) served in one of these units, and references to railways, both as objects to guard, and as a means of travel to meet his political comrades, abound in his letters. There are also references to Jewish
From Egypt to Palestine by Railroad

The railway arrangements in Palestine have hitherto been provisional. It is hoped, however, that in the near future travelling will be facilitated. The traveller should obtain a time-table.

According to the time-tables of April 1, 1923, there is a daily train, except Sundays, from Egypt to Palestine, and as many returning, with restaurant and sleeping carriages.

Time-Table (1923).

From the Stations in Egypt to Kantara West.

<table>
<thead>
<tr>
<th>STATIONS</th>
<th>Arr.</th>
<th>Dep.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexandria</td>
<td>16.00</td>
<td>—</td>
</tr>
<tr>
<td>Cairo</td>
<td>18.15</td>
<td>21.30</td>
</tr>
<tr>
<td>Port Said</td>
<td>18.00</td>
<td>21.30</td>
</tr>
<tr>
<td>Gaza</td>
<td>4.53</td>
<td>7.55</td>
</tr>
<tr>
<td>Ludd</td>
<td>6.30</td>
<td>10.1</td>
</tr>
<tr>
<td>Jerusalem</td>
<td>9.00</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STATIONS</th>
<th>Dep.</th>
<th>Arr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kantara West</td>
<td>18.55</td>
<td>—</td>
</tr>
<tr>
<td>Port Said</td>
<td>22.6</td>
<td>23.00</td>
</tr>
<tr>
<td>Cairo</td>
<td>19.15</td>
<td>22.15</td>
</tr>
<tr>
<td>Alexandria</td>
<td>19.15</td>
<td>5.30</td>
</tr>
</tbody>
</table>

1. At Benha passengers from Alexandria join the Cairo train.
2. Motor-cars, and sometimes railway trains, cross the Suez Canal by ferry.

N.B.—Passports are examined at Kantara West, and the customs examination takes place at Kantara East.

From the Suez Canal to Palestine

One train daily, either way, excepting on Sunday. 1st, 2nd, and 3rd class. Restaurant cars, daily. Sleeping cars, Monday, Wednesday, and Friday.

Time-Table.

I. Between Nablus and Toul-Keram.

<table>
<thead>
<tr>
<th>STATIONS</th>
<th>Arr.</th>
<th>Dep.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nablus</td>
<td>6.10</td>
<td>—</td>
</tr>
<tr>
<td>Sebastieh</td>
<td>6.40</td>
<td>—</td>
</tr>
<tr>
<td>Massudieh</td>
<td>7.00</td>
<td>—</td>
</tr>
<tr>
<td>Anbeita</td>
<td>7.26</td>
<td>—</td>
</tr>
<tr>
<td>Toul-Keram</td>
<td>7.50</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
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<th>STATIONS</th>
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<th>Arr. from Haifa</th>
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<tr>
<td>Haifa</td>
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<td>Ludd</td>
<td>17.57</td>
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II. Between Nablus, Afula, and Haifa.

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<tr>
<th>STATIONS</th>
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<tr>
<td>Nablus</td>
<td>6.10</td>
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<tr>
<td>Sebastieh</td>
<td>6.40</td>
<td>—</td>
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<td>Massudieh</td>
<td>7.00</td>
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<td>Anbeita</td>
<td>7.26</td>
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<td>Toul-Keram</td>
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<td>Afula</td>
<td>10.50</td>
<td>—</td>
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<tr>
<td>Haifa</td>
<td>16.15</td>
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Time-Table.

1. The train goes on to Haifa (see Journey XII). Passengers for Jerusalem and Jaffa change here (see Time Table Journey II).
2. Intermediate stations are indicated in the text and on the maps.
soldiers guarding the railways in a monograph devoted to the "Jewish Battalions." (2)

After the cessation of hostilities, and especially after the establishment of a civilian government in 1920, a wholesale taking up of tracks took place in Palestine. The exact details of this process are very hard to come by, and, except for the details listed further below, can only be gleaned from maps and inferred by a process of elimination — the subject was not one to interest chroniclers (3). In any case, the foremost victims were military, narrow-gauge and field railways, both Turkish and British-built. In 1920 the Turkish narrow line (Beit Hanun/Huj-) Deir Sneh - Tineh was taken up. (4)

2) Cp. Ben Zwi, "Writings" (Hebrew; see bibliography), on many pages, and Elam (cp. bibliography) pp. 280, 302-303. A photo showing Jewish soldiers guarding the line to Jerusalem appears in the "Sefer Toldoth Ha'hagana" (cp. bibliography), vol. I, part 2, p. 642. See also text on pp. 517-518.

3) Any good map of Palestine in the early 1920's will serve to show which of the country's wartime railways survived into the era of peace. Such maps can be found in traveller's reminiscences and in good guides, like Luke's "Handbook" (cp. bibliography). There are maps in the volumes of "Military Operations" (cp. bibliography) that date to about 1924. Railway timetables surviving, such as the ones in Meistermann's guide of 1923 (cp. bibliography), will also be useful.

In the same year what was left of the Auja - Beer Sheba line, after its destruction by the British and demontage by the Turks, was taken up. Also in the same year, the standard (previously narrow, Meissner's) line Beer Sheba - Tineh - Junction Station (Wadi Sarrar) was taken up.

In 1925 the remnants of what there had been of the unfinished Auja - Kusseimeh section were lifted. What was more important - the second track of the Sinai railway, Kantara - Rafa, was also removed in 1925, limiting Palestine's link with Egypt to a single track - the inheritor of the Ancient Via Maris (5). So much, at least, can be learnt from sources, though details and dates may perhaps not be quite exact. Other wartime lines were broken up, without being vouchsafed a note in any source. They just disappeared from sight. These were the 1,050 mm. lines (already listed above), Aneize - Hisheh Wood, in Transjordan, and Tul Karem - Qannir in the Carmel hills.

The 600 mm. field-railways that were removed quietly at unknown dates in 1919-1920 were all the lines of the Sarona - Jellil network and the line Beit Nabala - Lubban, in the hills of Ephraim. The section Kafr Jinnis - Beit Nabala was later converted to standard gauge to serve an army camp. Also taken up was the line Jerusalem - El Bireh.

5) Cp. Ettinger (see bibliography), p. 60. It might be added that Ettinger's doctorate on the traffic network of Palestine, mainly in the 1920's, is most useful. It was submitted to a German university in the early Nazi era (1), and printed in Palestine. It is practically unknown.
Anticipating somewhat, at the expense of chronology, but in the interest of completeness, it should be noted that in 1927 the standard gauge line Rafa - Sheikh Nuran - Beer Sheba was closed for lack of traffic. In 1928 the spur Jaffa Port - Jaffa Station was taken up, and in 1932 the narrow gauge line Afule - Massudiya - Nablus was closed for traffic (6). There may have been some attempt to reopen this line for goods traffic about 1935, but it was definitely abandoned during the Arab Disturbances of a few years later, though most of its rails were left in situ, for another 30 years. The section Massudiye - Tul Karem, as far as could be ascertained, was closed about 1938, owing to the Arab disturbances (7).

Rolling Stock Statistics

Most of the railway retrenchment in the country must have taken place just before, or just after, the establishment, about 1921, of "Palestine Railways and Operated Lines," as part of the civil, and, since 1922,

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6) Bonne (cp. bibliography), p. 231; Ettinger, pp. 14, 60; Report of the General Manager of Palestine Railways (cp. bibliography), pp. 6-7. The closure date of the line Rafa - Beer Sheba is variously given as 1926 and 1927. Cp. also Bonne Following Bonne it seems to have been 1927. Cp. also Prof. Ettingen's review of traffic developments in Palestine at that period, in vol. 6, col. 961, of the Encyclopaedia Hebraica.

7) Personal information of the writer. The date 1938 is based on a conversation with the late Prof. Ettingen.
The length of the Palestine network at that time (i.e. about 1921) was given as 518 kms. standard, and 539 kms. narrow gauge, 1,057 in all (9). This apparently included all the lines working or workable at that time in Palestine proper, in Transjordan (minus the sections worked by the French), and in Sinai (whose line was worked by the Palestine system, but now actually belonged to the British Government, i.e. the War Office).

(8) Details on the organizational aspects and the operations of Palestine Railways will be found, apart from in the Foreign Office Handbook of 1920, listed in the bibliography, in all the relevant publications of the mandatory government to 1947. These included periodic reports of various descriptions on the administration of the country, statistical abstracts, reports to the Mandatory Commission of the League of Nations, reports of the General Manager of Palestine Railways (from 1930, but containing references to earlier years), and special reports following investigations of Palestine Railways. There are also figures submitted to various Royal Commissions, like the Peel Commission (1936-1937), and the Survey of Palestine submitted to the United Nations' "UNSCOL" (1947). The files of the Colonial Office in London undoubtedly also contain many details concerning Palestine's railways. These files were not viewed by the writer. It is assumed that these files contain, in a diffuse form, merely the facts, presented concisely, in the various reports, abstracts, etc., listed above and seen by the writer, as far as they are available in Israel.

Various books on the economy of Palestine (Bonne, Ettingen, Ruppin, etc.) also contain many relevant, though often repetitious, details on the railways in the country. Material of this type, as far as used, will be found in the bibliography. Cp. also Dieckmann (in Palestine Railways bibliography). For a survey of day-to-day operations, contemporary timetables will also be found useful, such as the Palestine and Egypt Lloyd timetable of the late 1920s, in possession of the writer. Cp. also note 39.

(9) Cp. Ettingen, p. 120, for the establishment of Palestine Railways and length of tracks.
It probably included also the Jerusalem - Jaffa line that was to be shortly after (1922), to be purchased from its original French owners, that had come into their own again, after having been on the victorious side in the war (10). There are no details as to rolling stock available at that time, but it probably must have been less than the figures quoted by the Palestine Exploration Fund Quarterly for about 1918, namely: Standard gauge - 164 locomotives and 2,035 passenger carriages and goods wagons; narrow gauge - 127 locomotives (and rail tractors), 845 passenger and goods vehicles (11). Some ten years later, in 1931,

10) For details about the ownership of the Sinai section, and for the purchase of the Jerusalem line from the French for 565,000 Pounds Sterling (a tremendous sum!), cp. Bonne, p. 232; also see Ettinger, p. 24. For the working of the French section of the old Hejaz Railway, cp. Report of the General Manager of Palestine Railways (listed in the bibliography), p. 5. It was worked by them until taken over by the Syrian State Railways on 1,3.1945. Cp. Railway Directory (see bibliography) p. 304.

The taking over of the Hejaz Railway after 1918 by the British and the French raised some legal questions, as the original Turkish line had been "Wakf" (religious) property. For this cp. Report, note 14, and the article on the "Hejaz Railway" in the "Encyclopaedia of Islam." The question of ownership was to prevent the resurrection of the line for over 50 years, as responsibility for repairs to the stretch Mudawara - Medway could not be established.

The body that worked the French section of the Hejaz Railway to 1945 was the "Chemin-de-fer Damas, Hama, et prolongements," that operated in Syria since the 1890's, and was mentioned in chapter II.

11) Cp. Palestine Exploration Fund Quarterly, pp. 34-41, for 1920, quoting the journal, "Modern Transport." The figures quoted were not appreciably different from the ones noted at the end of chapter IV. Ettinger, pp. 26-27, mentioned 117 locomotives and 2,105 sundry vehicles.
the comparable figures were (12): Standard gauge track
length, including Sinai - 528 kms., narrow gauge track,
including Transjordan - 527 kms. Rolling stock in 1931
included: Standard gauge locomotives - 70, passenger
carriages - 75, goods wagons - 2,099; Narrow gauge
locomotives - 55 (plus some superannuated relics, probably
of the 1892 Jerusalem line), passenger carriages -29,
several railcars, and 349 goods and service wagons of
various descriptions (13). The railcars were both petrol
and steam-driven like the ones that served with the
Egyptian Delta railways, and constituted an innovation
in Palestine. They served the Jewish settlements in the
Jezreel and the Jordan valleys. They apparently were
the only instance of progress on the Palestine Railways.

A comparison of figures for the early 1920's and the early
1930's will provide ample proof of the stagnation that
had overtaken the Palestine network under the mandate.

Overall Stagnation of the Palestine Network, and its Reasons

The reasons for the stagnation of the Palestine
rail system were many. Most prominent, however, amongst
them, was the unfortunate layout of the lines, a fact
that had its roots in the historical development of railways
in the Holy Land. The country's trunk line, Rafa - Haifa,
bypassed the main centers of commercial activities, and of

12) Report, p. 5, also Ettinger, p. 61.
population, progressively bunched by now in the Jaffa-Tel Aviv area. The country's main railway hub, and its chief junction, was situated not there, but at Lod (Lydda). Owing to the roundabout configuration of the tracks, trains from Jaffa-Tel Aviv to Jerusalem, and even from Jaffa-Tel Aviv to Haifa, could not compete with the much more convenient road system that was by then being consolidated. The mandatory authorities did their best not to undercut the government-owned railways, and as a result the country's most important arterial road, from Jaffa-Tel Aviv to Haifa, was not fully completed until the early 1940's. But road transport kept being more popular than the railways. The more mobile, and commercially more active sections of the population, i.e. to a large extent Jews, for almost two decades preferred to travel from Jaffa-Tel Aviv to Haifa and its port (open since 1933) by the roundabout, but faster, route through Tul Karem, Jenin, and Nazareth, rather than take the trains (14).

Most of the country's rail tracks passed through scantily developed Arab areas that needed few bulky goods, and had little to despatch. Central Palestine was served

only by a narrow-gauge branch line that, owing to the gauge break, provided no direct link with the country's commercial center of Jaffa-Tel Aviv, or the capital, Jerusalem. Goods traffic with Egypt was cheaper by sea, for all sections of the population, as it required no transshipment at Kantara across the now bridgeless Suez Canal (15). What loads there had been of petrol and kerosine from Egypt to Palestine no longer needed rail services after Haifa became an oil terminal in the early 1930's, and Palestine acquired a refinery of its own.

Traffic on the Haifa-Damascus line must have shrunk into insignificance - surviving timetables indicate only three through-trains a week. This, owing to the establishment of the French mandate over Syria, and the presence of new boundaries, that resulted in the French running of the railway east of Samakh. Syria now certainly needed no imports or exports through Haifa, as it used Beyrouth exclusively. The wheat crop of the Hauran now was transported on the French railway from Dera'a to Damascus and onward.

As for the Transjordan section of the defunct Hejaz Railway - this isolated stretch of the Palestine Railways network between 1918 and 1948 had no raison d'etre at all. This line had originally formed part of the Turkish pilgrims'...  

15) The railway bridge at Kantara had been taken up after the armistice (the date could not be ascertained) as it hindered ships passing the canal, and the relatively light rail traffic did not warrant keeping a hazard to navigation. Press, (op. bibliography) in his 1920 guide, still mentions it.
railway to Medina. After the line had been broken during
the World War, and after North Arabia and the Hejaz had
been plunged into turmoil through the rise of Ibn Saud,
pilgrim traffic ceased altogether. Apart from three
trains weekly to Dera'a, and onward through French territory
to Haifa or Damascus, the line was practically dead and
useless. Nevertheless, the British kept working it,
first from (Dera'a) Nassib to Amman, and later, after the
Wahabis had been pushed back from Akaba and southern
Transjordan, they worked it to Ma'an (16). The track
from Ma'an to Mudawara, in Transjordan territory, to the
Hejazi border (established in due course), was left
derelict, and as time passed its rails were systematically
stolen by the local Bedouin (17). However, reference
must be made here to a curious event reported by the
famous H. St. J. Philby. He noted in one of his books
that in 1924 the Emir Ali, son of King Hussein, had
succeeded in bringing up - not without difficulties - a
number of trains from Medina to Amman, on the occasion of
his father's visit to that place. Philby did not fail to


17) Report, p. 26. It might not be amiss to note
here that the rails stolen by the Bedouin were Moslem
"Wakf" (religious) property, as the defunct Hejaz Railway
had stayed Wakf even after it had been taken over by the
British (and in Syria by the French). On this legal aspect
of the line cp. note 10, above. Also see Konikoff (cp.
bibliography), p. 79; Report, p. 6; and Twitchell
(cp. bibliography), p. 133.
mention that this was done despite "the supposed destruction" of the line by Lawrence and his dynamiting gangs" in the war (18). However that may have been, for practical purposes the line was dead.

While the most striking feature of the Palestine Railways network during most of the mandatory period, and certainly during the first 15 years of British rule, was its stagnation, not much less striking was the fact that it was capable of working at all. Everything militated against the mandatory railways: their unfortunate layout, based on military and not economic considerations, the necessity of working a system cut up by two different gauges in a very small area, the severing of the Transjordan section, and the fact that half the standard lines, the Sinai railways, did not even belong to the country's network, but to an outside owner, the British Government. Moreover, theoretically the building of the rail-link between Egypt and Palestine during the war closed a wide gap in the railway system of the Middle East as a whole, and at long last linked Europe, Asia and Africa by rail through the Levant States. This, theoretically, should have been of incalculable value to Palestine, as it should again, at long last, have made the country what it had been in past ages, the natural "bridge" of land routes

18) Philby, "Midian" (op. bibliography), p. 169. It might be noted in passing that Philby had not been an admirer of Lawrence.
between the continents. In fact, the country after 1918 became nothing of the kind. This was due to the gauge break between Palestine and Lebanon/Syria, between Haifa and Rayak, which made through traffic impossible, and kept the country from fulfilling its natural role as a link between continents. Thus the railways in Palestine stagnated and remained of local importance only, if that, kept alive most years only with the help of the government, and hardly paying their way.

The Palestine Railways and Politics

Details as to the working of Palestine Railways during the mandatory regime will be found galore in the various sources mentioned in the bibliography, which will not be quoted here. However, mention must be made of a factor that did not at all - or only quite incidentally - show up in statistics and which greatly influenced working of Palestine Railways since the inception of the network. This factor was politics. It has already been noted that the Palestine network to a great extent, though not entirely, served Arab areas. Also, Palestine Railways were, of necessity (in view of their small returns) paying local employees relatively low wages. As a result, the system was worked to a very great extent by Arab labour, and came to be regarded by the Jews - perhaps more than any other governmental sector - as an Arab stronghold, where
Jews could not compete, and were not welcome. "Conquest" of the mandatory railways, unlike work in the police, and in the harbours, had no particular national importance attached to it. For security and also for purely commercial reasons, the Yishuv, the Jewish sector in Palestine, rapidly developed a transportation system all its own, based on motor transport functioning on the roads. Thus, to a large extent it became independent of the government-owned, Arab-worked railways, except perhaps for the yearly moving of the bulky citrus exports. There is little reason to doubt that the stagnation of the mandatory railways was caused by their inability to put themselves at the service, and share in, the variegated economic activities of the developing Jewish National Home. The mandatory government - it might be assumed - was aware of these facts, but adapting the existing (or rather, inherited) system, to the needs of the Yishuv would have surpassed its, in any case, limited financial means, and would also have left it facing Arab charges of showing particular favour to the Jews. Thus, the only steps, taken in the 1930's to make the use of the railways more attractive to the Jewish sector was the introduction of combined bus-rail services. This involved a bus trip to Jerusalem-Lod, or bus travel from Tel Aviv to Ras el-Ain (Rosh Ha'ayin), in order to link with the trains to Haifa. This was intended
to save time in travelling to, and through, and changing trains at, Lod (Lydda) Junction, which lay in a totally Arab area, with all the implications in tense periods, of which there were many. These services, apparently, were introduced following the 1929 disturbances, which shifted Jewish travel from the dangerous roads to the relatively safe trains (19). The combined bus-train services, however, still involved an unpleasant transfer and rush from bus to train and vice-versa, and seems to have been a limited success until the 1936-1939 disturbances, when they may have picked up greater volume (20). The long-mooted building of a cut-off loop just north of Lod Station, only a few hundred meters long and relatively very inexpensive, never materialized, perhaps as it would have deprived the Arab town of Lod of some services to Haifa. The proposed loop would have bypassed Lod Junction and would have made possible direct fast trains from Jaffa/Tel Aviv to Haifa. The fact that this desirable and cheap bypass was never built, while the mandatory government spent money on various spur lines (to be listed later), signalling, and improvements, in the permanent road-bed, was taken by the Jewish sector to denote a political bias.

19) As for the sudden popularity of train travel in 1929, for security reasons, cp. ْز.ف.ف., Vol. 53, 1930, p. 237. As for Jews working on the railways in the early 1920's - the Jewish National Library has two issues of Hebrew periodicals of 1922 and 1925 published by and for railway employees. Some years later few Jewish workers were left.

20) The Palestine and Egypt Lloyd's railway timetable, probably of the late 1920's (possibly of the 1930's - there is no date), lists 3 buses daily from and to Lod, on the Jerusalem service, and 4 daily buses from Ras-el-Ain to Tel Aviv/Jaffa, and back.
Kibbutz settlers waiting at "Hassadeh" halt (today's Sdeh Nahum) for "Emek Railway" train, on Hejaz Railway's Haifa-Jordan Valley-Dera'a branch. Date probably in the 1930s.
(Source: Zionist Archives)

British-built L.M.S. type 2-3 passenger locomotive at Haifa, ca. 1935. (Source: Imperial War Museum)

Pick, chapter V.
The Pole Report and Other Proposals

Far more unfortunate in its results, and serious for the economic viability of Palestine Railways, was the miscarriage of another, much more thoroughgoing, and expensive, railway improvements scheme proposed in 1935 by the British expert, Sir Felix Pole. The independent-minded Pole apparently considered that the ills of the Palestine system could not be cured until it had been integrated more fully in the dynamic activities of the Jewish sector, and that this would mean a radical change in the layout of the existing network. Therefore, noting that "having considered the whole matter and basing this opinion on what (he) believed to be the interests of Palestine without regard to class, race or creed," he formulated the following proposals (21): He proposed building an entirely new section of the Rafa - Haifa trunk line in the Jaffa - Tel Aviv area. This was to branch off the existing line at Magdiel and was to lead south-west, directly into Tel Aviv with a large station about today's Beith Hadar, or near MiKveh Yisrael. The line was then to continue south-east, crossing the old main line Lod - Rafa - Kantara, to join the old track to Jerusalem at Na'an (Na'an). This new line would have had a branch

21) Quotation from Pole (cp. bibliography), p. 8.
to Jaffa and its port (22). Pole's proposed new track would have served a large Jewish population, i.e. the settlements of Magdiel, Petah-Tikvah, Bnei-Berak, Ramath-Gan, Rishon le-Tsion, Nes-Tsiona, Rehovoth, and others, providing them with rail service. Its express purpose was to bypass the ill-situated rail junction at Lod. It would also have practically ignored the Arab towns of Lod and Ramle and would have left Jaffa dangling at the end of a spur line. These latter facts, plus the cost of the proposed new line — a hefty 656,000 Pounds Sterling — and probably Pole's unguarded reference to the wonderful growth of population and industry that has taken place (in the country) in the last few years," were probably enough to doom his scheme (23). Nothing more was heard of it, and there were no official explanations as to why it was not acted upon. But it is very reasonable to assume that such a thorough re-alignment of the Palestine Railways network would have called down the wrath of the Arab population and its leaders on the head of the then High Commissioner, Sir Arthur Wauchope, seeing that Pole's scheme would have benefited mainly the Jewish sector — as it probably had been intended to do.


23) Pole, p. 7. For the cost of the line, cp. Ettinger, p. 52.
Thus, Palestine Railways and the Yishuv stayed apart. The fact that the railway station at Tel Aviv, at that time turning into the most important commercial center in the country, remained a dilapidated wooden shack, practically all through the mandatory period, was symbolic of the prevailing state of affairs. It might be mentioned that about 1934-1935, two other British railway experts, Sir Lawrence Halsey and Mr. C. M. Jenkin-Jones, also tried to improve the operating conditions of Palestine Railways, though by less deep-reaching methods than Sir Felix Pole (24). The visible effects of their, mainly technical, proposals were negligible.

Limited Improvements in the Mandatory Rail System

The fact that the hallmark of Palestine Railways was stagnation should not be taken to mean that there were not at least some positive developments in mandatory times. While, as mentioned before, it is not clear whether the Jaffa-Lod section of the line to Jerusalem had been converted from 600 mm. to standard 1,435 mm. gauge by the army, or by the civil authorities, it seems, in any case, to have been opened to civilian traffic about 1920 (25).

24) Ettinger, p. 42. In the stock of the Jerusalem National Library the reports of Halsey and Jenkin-Jones are bound together with the report of Sir Felix Pole.

25) Railway Directory, 1975 (cp. bibliography), p. 295. There are other interesting historical data in the directory, though they are not always exact.
In the Jewish Agency's archives there is a photo showing the first British High Commissioner, Sir Herbert Samuel, on the footplate of the locomotive hauling the "first" (civilian?) train on this line. Sometime in the early 1920's a spur, some 4 kms long, was constructed from the Jaffa-Lod line into Sarafand camp, the main British military base in Palestine. Apparently British military traffic on the railway was big enough to warrant building this spur, which seems to have served mainly troop trains coming up directly from Egypt. As a reference to contemporary maps will show, at that time there seems, as yet, to have been no metalled road whatsoever between Egypt and Palestine (26).

A War Office map, corrected to 1924, shows that by that time the old Hejaz Railway narrow-gauge branch line Beled esh-Sheikh - Acre (Akkon), from which the rails had been removed during the war, had been relaid (27). A map in Vilnay's "Guide to Palestine" (Hebrew) of 1935 shows the same line with a subtle difference. The line now no longer branched off to Acre at Beled esh-Sheikh, but had been re-aligned to start from just east of Haifa.

26) Neither Ettinger, nor Bonne, or Luke before them, mention a direct land link, in form of a useable road, between Egypt and Palestine at that time.

main station - mute evidence of the fact of Acre's decline and of the rise of Haifa (28). Thus, under the British this line became a suburban track linking the ancient city with the upstart port. It has stayed that way ever since.

In 1925 there was built what later came to be known popularly as "The Jewish Railway," a short spur, some 6-7 kms. long, from Ras el-Ain station to Petah-Tikvah. This was financed jointly by Jewish agricultural interests (P.I.C.A. [Palestine Jewish Colonization Association] and others) and the Palestine Government, and was worked by Palestine Railways. It was planned to move citrus crops to the harbours and never carried any passengers (29). After 1948 this spur was to form the beginning of the Israel Railway's Sharon line to Hadera. It was of standard gauge. At the same time, perhaps about 1930, a short branch line, some 3-4 kms. long, was laid from Tul Karem to Noor Esh-Shams quarries to the east of it. This standard track - probably - was designed to deliver stones to Haifa port, then building. It was laid onto the narrow

28) Vilnay (cp. bibliography), "Map of the Valley of Zebulon," p. 175. The remains of the old track from Beled esh-Sheikh are still shown on the Survey of Palestine 1:100,000 map, sheet 2, of 1942.

29) Bonné, p. 231; Ettinger, pp. 42, 60; Report, p. 6; Rakavoth (cp. bibliography) p. 1.
track to Massudiye Junction, and so this bit of line was triple-railed. From about 1931, a short stretch of the narrow Haifa-Acre line also became triple-railed. This was to link the very big and well-equipped railway workshops that had been built in Haifa Bay with Haifa main station. Up till then, and since the end of the War, great repairs of Palestine rolling stock had been carried out in distant Kantara (30). A short while later the triple-rail track was extended into the neighboring refineries of the Iraq Petroleum Company, to permit the distribution of fuel by railway tank-wagons. About this time some 6 kms. of the narrow Haifa-Afule track were triple-railed to provide a link with the Nesher cement factory at Yajur (Yagur). This section also sprouted short standard gauge spurs into the Wadi Rushmiya quarries at Haifa, and, later, to the subterranean oil tanks built by the Royal Navy into the slopes of Mount Carmel. Further south a standard gauge branch, some kms. long, was laid from Kafr Jinnis, north of Lod, to the big British ordnance camp at Beit Nabala. This branch was laid on top of the first section of the old British narrow wartime line from Kafr Jinnis to Lubban in the Hills of Ephraim. One more standard spur on top of an old narrow embankment was laid from Wadi Sarrar (ex-Junction) Station into the neighboring

30) Ettinger, p. 28; Report, pp. 24-25.
British ammunition dump. This spur was laid on top of the first few hundred meters of the Turkish wartime Beer Sheba line that had branched off to the south from Junction Station. There were also industrial sidings built by Palestine Railways, especially around Haifa, of which the ones to the Shemen Works, the Montacheff oil installations, and the "Grands Moulins" should be mentioned. There were others (31).

A great deal of the Palestine Railways' administration's attention in the early 1920's, and even much later, was taken up by trying to right some of the smaller, remediable, defects inherent in a war-built and war-worn network. This task included building, or improving, stations, re-aligning tracks, widening curves, extending shunting yards, improving ballast, changing outworn rails, replacing jerry-built bridges and culverts, and installing a signalling system. These activities pre-empted a great proportion of available resources. The biggest item of construction work undertaken by the mandatory railways was probably the building of the modern Haifa Central Station (about 1935). Side by side with this,

31) For the various sidings, cp. Report, p. 23, and also Jenkin-Jones, p. 51. Most of the other details as to spurs and sidings have been culled from maps, supplemented by details in Ettinger.
there proceeded the gradual conversion of locomotives from coal to oil, a fuel of which there was plenty after the inauguration of the Kirkuk (Iraq)-Haifa pipeline.

Probably the most vexing day-to-day problem facing Palestine Railways was the motley assembly of rolling stock it had to work, or to phase out, if it could not be refurbished. As late as 1930, one locomotive, 7 derelict passenger carriages, and 23 goods wagons that had survived from Navon's original 1892 meter-gauge railway to Jerusalem, were sold(32). All the 1,050 mm. stock used by the Palestine network was of German, Belgian and Swiss origin, and had mostly already survived many years of use, from 1902, including 4 years of rough wartime wear under the Turks, Meissner Pasha and Kress. Of the standard gauge stock in 1935, 7 shunting locomotives were no less than 52 years old, having originated via Allenby's wartime effectives, on the old London and South-Western Railway. Out of 64 passenger carriages working in the middle 1930's, 23 were at least 30 years old and of British origin and some had been amongst Allenby's hospital coaches. Most of the goods wagons, all very small, with 10-12 tons carrying capacity, were also of war-time vintage (33). The mainstay

(32) The Navon line has been discussed in chapter III. Report, p. 21. This long life-span of the stock serves as proof that it was actually used during the war - perhaps with minor adaptation - on the Turkish/French 1,050 mm. track, though it was itself of meter gauge. A difference of 50 mm. in width!

33) Jenkin-Jones, pp. 17, 32.
of the system were some 40 locomotives built by 1920 by the Baldwin Locomotive Works of Philadelphia, U.S.A., to replace British and Egyptian locomotives that had to be returned or scrapped after serving Murray's and Allenby's lines in the war (34). Some more color was added to the variety of rolling stock by the sleeping and dining cars, belonging to the "Cie. Internationale des Wagons-Lits," that added their (literally) plush presence to the Kantara - (Jerusalem-) Haifa trains (35), from the early 1920's onward. Accessions to the rolling stock of Palestine Railways during the mandate were few and little is known about them; 6 locomotives were purchased about 1934/35 (36). Some stock may have been rented at various times from the Egyptian State Railways, and some was rebuilt extensively in the Haifa Bay workshops, already mentioned above. A new feature on the network were a few steam- (and petrol) driven railcars, already mentioned above, that served on the lines from Haifa to Acre, and on the Yezreel and Jordan valley section, up to Samakh, and were a benefit to roadless Jewish settlements (37).


35) Report, p. 47. One of the very earliest recollections of the writer is travelling in the luxurious sleeping car, laid out in blue plush, or velvet, attached to the daily train leaving Kantara-East about 1:30 a.m. and arriving at Lod about 6:30 a.m. next morning.

36) Ettinger, p. 27; Jenkin-Jones, pp. 16-17, 32; Jane's, 1949, p. E. 22.

37) For sources regarding the railcars, see note 13 above. Also, Z.D.P.V. vol. 53, 1930, p. 57. Gilbert (cp. bibliography) p. 14, has a useful map showing the "Emek Railway" in relation to the (new) Jewish settlements.
All in all, Palestine Railways did provide adequate service. They never managed, as can be learnt from statistics, to make large profits, or, sometimes, any profits at all. (37A) The customers of the network were the military, and tourists, especially, on the line from Kantara, which was able to compete with the sea passage from Egypt. There were also local passengers, amongst them Arabs in disproportionate numbers, since Jews shied away from the trains when they could. About 1/3 of the system's revenues came from passengers who travelled in its three classes. Goods transported were cement, potash, petroleum products, citrus fruit, sulphur (from the quarries southeast of Gaza), building materials, and, to a small extent, agricultural produce (apart from citrus fruit), foodstuff in bulk (rice, wheat, etc.), machinery, and heavy equipment of all descriptions. For a while, in the 1920s, even water was amongst the "goods" carried, and water-tank-wagons were run during several summers from supply points on the coastal strip to waterless Jerusalem. (38) Considerably more could be said about the following subjects pertaining to the running of Palestine's mandatory railways: Timetables, frequency of trains, passenger fares, goods tariffs, personnel, financial results.

37A) Statistics as to the operating results of Palestine Railways will be found in the annual reports (from 1930) of the General Manager of Palestine Railways, in Jenkin Janes (cp. bibliography), and in various statistical handbooks.

38) There are references to the transport (by rail) of water from Sarafand to Jerusalem in Z.D.P.V., vol. 48, 1925, p. 405, and in Z.D.P.V., vol. 49, 1926, p. 172. A water pipeline from the coast to Jerusalem was not finished until the middle 1930s.
(income and expenditure), breakdown of traffic (passenger and goods), technical details (rolling stock, tracks, etc.), as well as general policies. Owing to considerations of space, this will not be done here, though all these headings might well form subjects for research. All that can be done here is to refer to appropriate sources listed in note 8, above, and in note below (39).

39) A list of sources as to details regarding Palestine Railways will be found in note 8 above. The following list of sources on the subject constitutes an elaboration of some of what has been said in the above note, plus a few additions:

Bonne, pp. 230-233; Ettinger, pp. 22-42, 51-56, 60-63, 64; Konikoff, pp. 77-80. There is a short and very good survey of the mandatory railways by the late Professor Ettingen in vol. 6 of the Encyclopaedia Hebraica, cols. 960-962. Meissner Pasha's wartime collaborator, F. Dieckmann, published a historical and statistical summary of the state of Palestine's railways to about 1927, in the German "Archiv fur Eisenbahnwesen," 1928 (or 1929?), pp. 387-398. There are many illuminating details in the reports of Jenkin-Jones and Pole, liberally quoted above, and dating from the middle 1930's. The Peel Report of 1937, also referred to Palestine Railways on pp. 169-170, and 322-323, though in a general way. Finally, the eminent German publication, Z.D.P.V. generally dealing with archaeological and biblical research, also devoted space to the railways of the Holy Land in its vol. 47, 1924, pp. 246-248, and elsewhere.

General details, some quite valuable (and including advertisements) on the workings of the Palestine rail system, can be gleaned from practically all guidebooks, especially Baedeker, Cury, Luke, Press and Vilnay. Timetables for all lines worked in Palestine in 1923-24 can be found in Meistermann's guide. All the above-named sources will be found in the bibliography attached to this chapter. Finally, references to the railways in the country will be found in many travel accounts and photos in illustrated albums. Also see Holdheim (cp. bibliography) in his "Zionist Handbook," p. 329.
Palestine Railways in the 1936-39 Disturbances

A fleeting reference has already been made above to the value of Palestine Railways to the Yishuv during the Arab disturbances of 1929 and 1936-39. During the latter period, especially when road travel was mostly possible only in convoys, at a heavy cost in casualties, the use of the railways for moving from Jerusalem to Tel Aviv, and from Ras el-Ain (Tel Aviv) to Haifa, provided Jews with relatively safe routes. In an indirect way, and unintentionally, Palestine Railways even furnished an important contribution to the defence posture of the Jews. Continuous Arab attacks on the railways, though no more than a nuisance as they were rather dilettante (they involved some derailments and bridge blowings and firing Jewish fields from passing trains), led to the establishment of the Railway Defence Formation of the Palestine Supernumerary Police. This formation included practically only Jews. Its men patrolled the railway, particularly the trunk line in the Sharon, by means of armed reconnaissances, and motorized trolleys, and also manned fortified posts. They were to carry their work into World War II. However, their greatest importance, as far as the Yishuv was concerned, lay not in the fact that they guarded the railway tracks, but in the fact that they were able to carry arms legally, and amassed operational
experience, which they employed in the defence of the Jewish population generally (40).

Railway Schemes in the Mandatory Period

The stagnation which, as stressed above several times, characterized actual railway operations and development in mandatory times did not at all extend to the area of planning. In the years especially to 1935, there were quite a number of proposals (apart from the official reports of Jenkin-Jones and Pole) as to how to improve the existing Palestine network. Some, though not all, of the proposals and plans aimed at making the Palestine network what it should have been — instead of being a comparative dead-end owing to the gauge break between the Palestine and the Syrian systems. Some envisaged making Palestine Railways an all-through standard gauge railway link in the center of the Levant area, joining Anatolia and Egypt. Others aimed at extending them — for Imperial military, and also for political and trade reasons — towards Mesopotamia and the East. Most of these plans, including those of purely local character, had one feature in common — they did not emanate from official bodies, determined and able to take practical steps for their implementation.

40) Cp. "Sefer Toldoth Hahagana," vol. II, part 2, pp. 907-910; Rivlin (cp. bibliography; Hebrew) pp. 259-278, who also has some relevant photos of the railway guards at work.
implementation. One or two, though, had lukewarm semi-official blessings. All shared one feature - they were never carried out. The more important of these proposals deserve at least a cursory review. Some of them would stand a much more thorough treatment than the one given below. Some more schemes there may have been, of which no record has survived.

About 1926 there seems to have cropped up a scheme for working the Jaffa/Tel Aviv - Jerusalem line by electric power. This scheme, of which there are few known details, kept being aired for a few more years (41). A similar rail electrification scheme had some twenty years earlier been proposed (as noted in chapter III), for the Hejaz line through the Yarmuk gorge, using that river's water for hydro-electric power. The 1920's proposals may have come up in connection with the concession granted in 1921 to Pinhas Rutenberg, who in fact did later build a hydro-electric power station worked by the combined waters of the Yarmuk and the Jordan rivers.

In 1929 M. Novomeisky received a concession to exploit the minerals of the Dead Sea, and sometime afterwards the Palestine Potash Company started operations. This immediately raised the question as to how the bulky produce of the new undertaking should be exported. In fact,

the problem of how to move large quantities of potash was solved for almost 20 years, to 1948, by moving the potash by trucks to Jerusalem, and sending it from there onward by rail to Haifa. A special bulk loading installation was erected for the purpose at the Jerusalem station. But this was to be in the future. While the Potash Company was preparing to inaugurate its works, a proposal became public—its sources are not at all clear—that a railway along the Jordan valley should, or would, be built to provide means for transporting potash in bulk. The new line was envisaged as leading from the northern shore of the Dead Sea, where the potash plant was located, parallel to the Jordan River to Beisan, where it would have joined the existing railway to Haifa. There was a distinct resemblance between this line and the Jordan valley line proposed by Laurence Oliphant in about 1880, and described in chapter II, though the motives for the two lines were different. The proposed track was to be supplemented by another railway leading from the planned facilities of the Potash company at the southern extremity of the Dead Sea, at Sedom, through the Aravah valley, to the (then railless) port of Akaba on the Red Sea. This proposed line, too, bore an uncanny resemblance to Oliphant's visions of a railway down the Aravah of 1880 (42).

42) Bonné, p. 157; Ettinger, pp. 53, 64; Kohn (cp. bibliography), p. 25.
These two lines seem to have become, at the time, inex- 
tricably muddled with another nebulous scheme (ignored in previous chapters owing to the total absence of details), that may have been mooted decades earlier for building a railway from Haifa to Akaba. This scheme allegedly had also been considered by Lord Kitchener in World War I, as a means of bypassing the Suez Canal. This bypass scheme may well have been a dim reflection of Oliphant's plans of 50 years earlier, and in any case such an Akaba-Haifa line had practically been in existence (though temporarily ending at Ma'an) ever since the Hejaz Railway had been built in the early 1900's (43). The British representative at the Mandate's Commission of the League of Nations, Lord Lugard, had been questioned about the Rift Valley railway schemes as early as 1928, when the Potash Company's concession was itself as yet one year away. Quite apart from other obscurities (gauges, etc.), it has never become clear who had been intended to build the railways, the Potash Company or the Government of Palestine. But the scheme, or schemes, must have become known enough to deserve mention in Sir Felix Pole's official report on the Palestine Railways of 1935 (44). Matters also came to the attention of Palestine's Arabs, who, in 1934, saw

43) For these, and other relevant details mentioned in the text, see Stratton. (cp. bibliography), pp. 197-199.

44) Pole, p. 7.
a connection between the High Commissioner's visit to Akaba and a supposed British intention to abandon Malta as a naval base and to substitute for it Haifa and Akaba, both connected by a Jordan Valley-Arava railway. In 1935 the Arabs even linked a shortage of railway wagons with the start of work on the proposed line, and even reported a British request to Ibn Saud - who still claimed Akaba after being pushed out of it in the 1920's - to permit building the line (45). The Report of the Palestine Royal (Peel) Commission of 1937 explicitly mentioned the "contemplated railway down the Araba valley," and the commission's suggestion to establish a "mandatory enclave" in the north-western corner of the Gulf of Akaba quite possibly was intended to provide for a future terminus of some future railway line (46).

The Jordan-Arava railway was never built. Nor were other contemporary proposed lines, of which even less is known, such as railways from Palestine to Port Fuad (at the northern entrance of the Suez Canal, opposite Port Said), or from Port Fuad, across the Sinai peninsula, to Akaba. Since nothing detailed is known about these lines, they may even have been identical. In any case, they were

45) Details from Stratton, who claimed the Arab daily paper, "Filistin" as a source.

mere rehashes of much earlier abortive schemes, dating from the beginning of the 20th century, or even much earlier. (47)

Much less speculative, and much more practical railways schemes, that may have had great economic and probably also military impact, were raised in the 1920s, with the intention of bridging the obstructive gauge gap between British-ruled Palestine and French-ruled Lebanon and Syria. The very existence of this relatively narrow communications-gap between these countries, that was to last continuously for more than two decades (to 1942), reflects on the nature of relations between the two mandatory powers. The schemes for bridging the gauge gap had to foresee two alternatives. A) A standard gauge link between Rayak, the terminus of the standard line from Aleppo and Turkey, down the Rift Valley to Afule and Haifa. B) A standard line, down the coast from Tripoli, another terminus of the normal gauge line from Aleppo and Turkey, past Ras el-Nakurrah, to Haifa. At Haifa both the proposed schemes would have linked with the standard gauge trunk line to Egypt. Both the above possibilities already had a history of their own.

(47) For both these lines, the southernmore of which was intended to facilitate the exploitation of manganese and copper resources in the peninsula, cp. Ettinger, p. 53, and Pole, p. 7.
The inland line Rayak - Afule (-Haifa) had already been proposed in pre-war Turkish times, in 1912, (as noted in chapter III). The coast line had also been proposed in Turkish times, as early as the 1870's (as mentioned in chapter II), and had been revived during the war by Allenby (as set forth in chapter IV).

Of these two possible lines, it was the proposed coastal railway that came in for most attention. It was mentioned as early as 1923-24. It was then apparently discussed for several years, especially in 1926-28, when it was reported to have drawn the attention of the International Sleeping-Car ("Wagons Lits") Company, which in any case was already working its carriages on the Palestine Railways line from Kantara to Haifa. This company may have had a special interest in running a through-service of sleeping-car trains (combined with its dining-car) all the way from Istanbul, via Syria, Lebanon and Palestine to Kantara, and possibly into Egypt. This would have been a natural extension of the Orient Express from (London) Ostend to Istanbul. This, probably very tentative, plan was reported to have been quashed about 1929 by the French who, it will be remembered from previous chapters, already had quite a record of railway development in the Levant when it was not to their liking. In this case they are supposed to have feared the new line
would draw passenger traffic (on French ships from Marseilles) away from Beyrouth. By 1931 it was reported that the French were reconsidering their negative attitude, and during the following years the line was still under discussion. Sometime or other, it seems to have also been proposed to build a light "steam train," down the coast. Nothing concrete was done, however, and the Haifa - Beyrouth - Tripoli railway came to be realized only during World War II, in 1942, under entirely different circumstances (48). At that time the gauge gap between Palestine and Lebanon and Syria was finally closed, unfortunately only for a few years.

Perhaps the most intriguing railway building scheme - in view of the secrecy surrounding many of its features and its far-flung background - that cropped up in the inter-war years in Palestine, Transjordan, and the Middle East region as a whole, was the proposed Haifa - Baghdad railway. The interest attached to this scheme was based on its potential political, commercial, and military, influence on British Imperial policies, and also on the grand scale on which it was conceived. While the suggested

48) The following sources are only a selection of the material that might be found regarding the Palestine-Lebanon - Syria standard gauge schemes: Ettinger, pp. 52-53; Keeling (cp. bibliography), p. 383; Kohn, p. 25; Stratton, p. 129; and especially the Z.D.P.V., vol. 48, 1925, p. 167; vol. 52, 1929, pp. 178-179; vol. 54, 1931, p. 78.
Haifa-Tripoli railway, discussed above, was only about 240 kms. long (and the mooted line to Rayak even shorter), the line Haifa - Baghdad would have bridged a distance of some 1,000 kms. or more. It would have passed not through cultivated, easily accessible areas, but through a remote, dangerous, mostly waterless, howling wilderness. Relatively little has been written about this scheme which, unfortunately, will also be treated here rather perfunctorily, owing to the limitations of a chapter that is planned merely as a summing-up and an epilogue (49).

The proposed Haifa - Baghdad railway - not to be confused with the much more famous Baghdad Railway of German ancestry, that led from Anatolia to Mesopotamia - like some other railway schemes already mentioned, by the end of the First World War already had quite a history of its own. In a way it was a near relation of the British railway schemes that had proposed building lines across the Syro-Arabian desert at least since the days of Colonel Chesney, around the middle of the 19th century (50). Its own particular history has been described, unfortunately only in a very general way, by Christina Phelps Grant in

49) **Background information as to the proposed trans-desert railway will be found in Hoskins** (cp. bibliography). A general review of the area involved, from the British Imperial point of view will also be found in Kohn, pp. 26-32.

50) **The latest effort to describe the "near relations" of the Haifa - Baghdad railway is the book by E. Elath, mentioned in the bibliography of chapter II.**
her book on the Syrian Desert (51). Some more details were added to the subject in chapter II. According to Grant, a railway Haifa/Acre - Salkhad (Hauran) - Wadi Sirhan - Jauf - Kuweit/Basra had been proposed (by sponsors unknown) as early as 1878 (52). According to Stratton (53), who seems to have made a deeper study of this particular subject, this railway scheme seems to have entered the level of international power politics at the time of the Sykes-Picot Agreement of 1916. It then became an item of Anglo-French negotiations at the Paris Peace conference, and was finalized in articles 5, 6, 7 and 9 of the San Remo Convention (1922) on the allocation of mandates in the Middle East. While details will not be gone into here, it might yet be said that, beginning with the Sykes-Picot Agreement, which provided for a British sphere of influence running from Mesopotamia to Jordan, with a British enclave on the Mediterranean about Haifa/Acre (54), up to the San Remo Convention, which provided for a temporary British use of the Yarmuk gorge, and of the French-run railway from El -Hamah to (Dera’a) Nassib, everything pointed to a serious British intention of building

51) Grant (op. bibliography), pp. 122, 266-269; 390.

52) According to Grant, there had been a variation to this scheme in 1908, when a certain C.E. Drummend-Black had wanted to build a line Port Said - Akaba - Jauf - Basra/Kuweit.

53) Stratton, pp. 116-129 and 189-203, but especially pp. 119-122. His survey also contains maps.

54) Lenczowki (op. bibliography) pp. 70-72, with a useful map on p. 71.
a trans-Arabian railway. This, presumably, was to run in tandem with an envisaged oil pipeline from Kirkuk/Massul to the Mediterranean. While at San Remo the northern borders of the British mandated areas in Palestine, Transjordan and Iraq were delineated, an agreement with Ibn Saud in 1925 also fixed the southern boundaries of the British controlled territories in the Syrian Desert, thus creating the well-known "funnel" between Transjordan and Iraq, which still features largely in all maps of the Middle East, up to today, and which was obviously shaped intentionally to secure the southern flank of any railway and pipeline (which was indeed later built) from the Tigris-Euphrates Valley to the sea. A very reputable and meticulous German encyclopaedia of about 1928, already showed on a map of the Middle East, not only the "funnel" mentioned above, but also a complete railway leading through it from Baghdad to Amman (55).

The envisaged British trans-Desert railway did not remain an abstract exercise in diplomatic negotiations, though to this day it seems not to be clear who would have had to build it in actual fact. Since it was conceived –

55) Meyer's Lexikon (cp. bibliography), 1928, vol. 9, map between pp. 592-593. Gilbert also shows the "funnel" on several maps, the first on p. 9, "Britain and the Arabs, 1917-1971." Few readers of present-day atlases realize that the present territorial link, of great strategic importance, between the sovereign states of Jordan and Iraq, was originally fixed in order to pass through a never-built railway.
exactly by whom is still a matter for research - as a key-piece of the all-British route from the Mediterranean to the Persian Gulf, by-passing troubled Egypt and its Suez Canal, since it also might have been of considerable commercial importance as the most direct trade link of Persia and Iraq with Europe through British-controlled territory, and since it also would have served as a barrier to Ibn Saud's ambitions, a couple of expeditions were undertaken, apparently under various pretexts and suitable disguises, to reconnoitre the territories through which a railway might be laid. Amongst the men who took part in these expeditions, from the early 1920's, were Brigadier-General O. Mance, a Mr. Taylor of unknown antecedents, Colonel Newcombe, one of Lawrence's collaborators, the famous H. St. J. Philby, and Major A.L. Holt (56).

The best documented of these expeditions was the one carried out in 1920-1922, in several instalments, by Major Holt, and with the partial participation of Philby. Holt himself was, significantly, a railway engineer. There exist the minutes of a lecture by him on his expedition, but they are not very enlightening. On one occasion, at least, one of his journeys was described as a quest for possible landing-grounds for the Royal Air Force, in the Syrian Desert (57). There is some uncertainty

57) For details about this lecture, see bibliography.
about the proposed first stretch of the line, from Haifa to the borders of the desert. It might have been planned to climb to the Transjordanian plateau through the Yarmuk gorge, either utilizing the French rail section, mostly along the northern banks of the river, or using a new, British, track along the southern reaches of the river. Perhaps an entirely new line was envisaged, branching off at Beisan from the Haifa - Samakh track, to climb up south-east through the valley of the River Zerka (Yabbok). What is certain is that Holt wanted to start his trans-desert railway either at Mafrak (according to Grant), or at Samrah station, (south of Mafrak; according to Stratton), both on the trunk line Dera'a (Nassib to Amman/Ma'an. He wanted to continue his track through Kasr Azrak, Rutba, and Hit, to Baghdad (58). The vexing question of what gauge the new line would have had - a most important detail in view of its many implications - was not mentioned in the 1920's, nor was it broached at a later stage. Palestine Railways, and Egyptian State Railways, with which the line should have linked up, were (except for the short stretch east of Haifa) operating on the more efficient standard gauge. On the other hand, most of the Iraqi railways with which the proposed line was expected to link up at its eastern extremity, were of He

58) Ettinger, pp. 54-55; Grant, p. 269; Stratton, p. 193.
much-cheaper-to-construct narrow gauge.

In any case, the trans-desert line was not built in the 1920's, for reasons that can only be conjectured. The post-World War I period was one of retrenchment in Britain; for a number of years the areas through which the line would have passed were palpably unsafe owing to Bedouin raids; in view of the, at that time, undeveloped state of Iraq and Persia, no early commercial returns could be expected from the railway. Another reason for leaving the line in temporary abeyance may have been that the former perennial threat of Czarist Russia to the Middle East - which provided the background for earlier schemes of railway building - had receded. Yet the Haifa - Baghdad railway project was not quite dead.

After 1929 the planning and building of Haifa harbour was begun, and this large undertaking invited speculations about the possibility of making the new harbour an outlet for the trade of Iraq. That country at the time was on its way towards becoming independent, and expected considerable development, partly based on the exploitation of its oil resources. A railway from Mesopotamia to the Mediterranean might have served as an alternative to a pipeline for transporting raw oil, and it would have been more flexible, serving many other purposes, as well. In 1930 a possible Haifa - Baghdad railway was mentioned both by a professional British journal, the "Railway Gazette,"
and in the foremost daily, the London "Times" (of 17.9.1930). About this time, the British "Colonial Development Fund," acting, perhaps, in concert with the Palestine Government, allotted 100,000 Pounds Sterling, a very large sum, for a thorough survey of the route for an eventual Haifa - Baghdad railway. The survey was carried out in 1930-1931 and employed 540 engineers and surveyors. The work was undertaken by the British firm of Rendell, Palmer, and Tritton - the selfsame firm that was engaged in building the harbour at Haifa (59). The results of the survey were - for unknown reasons - never published. However, its salient features became known (60). It bore a strong resemblance to its predecessor of Holt's days. The line was to have climbed the Transjordanian plateau either through the Wadi Zerka (or through the Wadi Arab, to the north of it), and was to have crossed the Dera'a - Amman track near, or at, Mafrak. It was then to have continued through Rutba and Hit, to pass along the Euphrates via Ramadi and Faluja, to end on the Tigris at Baghdad. There were to have been seven tunnels and eight viaducts, most on the Transjordan desert stretch. However, by the time the survey was being completed, Britain was in the

59) Ettinger, pp. 54-55; Keeling, p. 378; Stratton, p. 1938

60) Most of the following details are from Keeling (cp. bibliography), who also has a map. Keeling was quoted by Ettinger.
throes of the World slump. As it also was to turn out, Iraq refused to participate, Transjordan never had any resources of its own, and Palestine by itself could never have been expected to pay the estimated cost of the railway, that ran to some 7-8 million Pounds Sterling. Thus the line was never built, the Kirkuk - Haifa pipeline of the Iraq Petroleum Company partly substituted for it, and the whole scheme was dead. As far as can be made out, it was never revived (61). In due course, the place of the railway was taken first by a rough track, and then by a metalled road, Haifa - Beisan - Sheikh Hussein Bridge - Irbid - Mafrak - Rutba - Ramadi - Faluja - Baghdad. It led, very roughly, along the track that had been proposed for the railway.

Palestine Railways as Military Carriers

In the late 1930's Palestine Railways played a largely unsung role transporting some 25-30,000 British troops to Palestine, in order to quell the Arab disturbances of 1936-39. In these years, as indeed throughout the whole of the inter-war period, railways were the chief strategic means that served to shift British forces, including the R.A.F., which for long periods was the sole representative of British might in Transjordan and Iraq, throughout the Middle East area administered from London. Troops, and their supplies, were moved by train from Egypt, or through

61) The Haifa - Baghdad project was also mentioned by Pole, p. 7, and by Kohn, p. 26 passim, as might be usefully noted again.
Haifa port. The peak movements probably occurred in 1937-38 (62). In 1939 there operated in the country some 27,500 soldiers who depended entirely on the railway for their logistic support (63). The rolling stock at the disposal of Palestine Railways, with which it entered the Second World War, was as follows: 92 locomotives, of which 30 were of narrow gauge; 78 passenger carriages (standard and narrow gauge); and 2,358 goods wagons, of which 337 were of narrow gauge. Total carrying capacity was 24,867 tons (64).

**Palestine Railways in World War II**

It has already been noted above that in the two decades between the Wars, Palestine's rail network had been stagnating as far as development was concerned. Owing to the absence of a bridge across the Suez Canal it had no direct links with Egypt, and owing to the gauge break on the line to Syria, it had only insignificant ties with that country. For most purposes, except for the carriage of troops and tourists from Egypt, it worked in relative isolation, and was of little consequence.

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63) Playfair, p. 93.

64) Cp. Prof. Ettingen in: Encyclopaedia Hebraica (Hebrew), vol. 6, col. 962. The source also gives important details on financial returns of the railways from 1922 right down to 1946.
within the traffic framework of the Middle East, on the grand international scale. The coming of World War II changed all that and made the Palestine railway system the most important one in the Middle East, after the much more extensive Egyptian State Railways, and far ahead of the railways of Syria, Iraq and the Sudan, and possibly Iran. As will be shown later on (though not in the depth the subject deserves), the war years were to become a period of considerable development, and great strategic services. If the following treatment of Palestine Railways in 1939-45 will be relatively perfunctory, the reasons are two: 1) The present chapter is only in the nature of an epilogue; 2) Very few sources are available as to the work of the Palestine network in World War II, as the subject was secret at the time. After the war the country was in the throes of civil disturbances that finally led to the relinquishment of the mandate, and there seems to have been no time for, or interest in, the subject. No full study of the subject seems ever to have been made, let alone published, either locally or in Britain. All there is are a few maps, some reports and statistics, some photos, and the possibility of drawing conclusions from general, and military, events in the area. However, it is hoped that what there is will suffice to draw at least a very general picture (65).

65) Main sources are Kirby, Playfair, "Rakavoth Erets-Yisrael," and a (restricted) Army Handbook on Palestine - all listed in the bibliography.
When war broke out in 1939, and spread to Eastern Mediterranean in the summer of 1940, Egypt was the main British base in the Middle East, with Palestine an important subsidiary base (and rest and training area). Its light, and food, industries, came to play an ever more important role in supplying the troops of the Middle East Forces. Haifa became an important ancillary naval base. After the Vichy French pulled out of the war in the summer of 1940, Palestine and Transjordan turned into forward outposts watching over a potentially hostile Syria. In July 1941 Palestine became a springboard for the invasion of Syria. From it the forces set out which captured the northerly neighbour, and also from it the forces had departed, almost simultaneously, that had to subjugate rebellious Iraq. After the occupation of Syria and Iraq (and also of Persia, in August 1941), Palestine became the geographic and strategic focus of the British-occupied states of the Levant. In railway terms - it might be said that it became the military "shunting yard" of the Middle East Forces. It also became sort of a commercial center. To it, and from it, were shifted - by rail - soldiers, equipment, and military stores, and also civilian supplies distributed by the British Middle East Supply Center, that fed the populations of the Levant. The country became the hub of military and civilian traffic, to and from Egypt, in the south, Cyprus in the north-west, Lebanon and Syria.
(and also neutral Turkey) in the north, Iraq and Persia (the area of "Paiforce"), in the north-east, and Transjordan in the east. Towards 1942 Palestine became, too, the base for American installations, that had to be supplied by rail. It also became a major concentration of airfields that played an ever more important role in 1942-43, operating as far away as Libya and the Italian Dodecanese. These air-fields had to be supplied by rail with fuel and ammunition.

Owing to the fact that the British Official History of the Second World War in the Middle East had not been completed to 1975, there are as yet no statistical figures available as to the size of the forces that were stationed in the Middle East, and especially in the Levant, at various times in the Second World War, and had to be fed by rail. But rations strengths must have been enormous, running into hundreds of thousands (66).

Supplies for the civilian populations domiciled in the Eastern Mediterranean countries, coming mostly from overseas, through unloading ports, mostly in Egypt,

66) A fair guess is more than 200,000. Some idea of the military logistical needs of the Middle East at the beginning of the War, in 1939, is given by the chapter "The Logistic Foundation, 1939-40" in Playfair (cp. bibliography), I, pp. 59-80. Details of the British Land Forces Order of Battle (units only, though no figures) as of mid-November 1942, are found in Playfair, vol. IV, appendix 6, pp. 483-484. These give some indication as to the numbers of men and supplies that had to be moved.
also had to be moved, efficiently and by rail, if not for humanitarian reasons then at least for political reasons, in order to keep the natives quiet and impressed with the Empire's capabilities to look after them. The civilian populations that had to be, at least, partially supplied, at a guess, must have numbered (excluding Egypt) some 10 million souls (67).

In assessing the importance of railways in wartime Palestine (and neighbouring countries) in the years 1939-45, it must be noted that at the time the utilization of motor transport over roads was not practicable, except to a very limited extent, and usually over only short distances. Trucks, with a large total carrying capacity, existed only in limited numbers in Palestine (and in adjoining countries), and they also demanded spares and petrol which were in short supply (68). But perhaps the greatest handicap in developing motor transport for logistic purposes in those years lay in the state of the main arterial road of the Middle East as a whole, the highway linking Egypt with Palestine, Syria/Lebanon,

67) Figures based on Bullard (cp. bibliography), appendix I, p. 534, with some appropriate changes, as he gave estimates for 1945.

68) There were only some 14,700 motor vehicles, of all types, with trucks in the minority in Palestine about 1944. Their numbers had actually decreased since 1940. Cp. Encyclopaedia Hebraica, vol. 6, col. 956. The number of trucks in the other Levant States must have been even less, as there more reliance was placed on traditional means of transport, camels and donkeys. The usually informative British "Statesman's Yearbook" was unfortunately silent on the subject of motor transport for these years, perhaps for security reasons.
Transjordan and Iraq. Throughout the Second World War this road - already mentioned once above, very fleetingly - was the only link practicable for motor transport joining Egypt with the Levant. It crossed the Suez Canal at Ismailia by means of a limited-capacity ferry, and went to Bir Hassane in Central Sinai, where it divided into two branches. One continued along the ancient "Patriarch's Highway," via Auja Hafir and Beer Sheba, to Jerusalem and onward. The other turned north to El Arish, to parallel, from there, the railway to Gaza, into the Shepela, the Sharon, and north. This road, though asphalted, was narrow and in a permanent bad state of repair over long stretches, owing to the nature of the ground and the absence of adequate soling. Apart from it, there was only one improved track, very steep in parts, that led along the ancient "Derb el Haj" (Pilgrims Road) from Akaba to Suez, which was never suitable for major motor traffic (69).

These facts effectively limited the use of motor vehicles as a practical means of large-scale transportation between Egypt and the areas lying to the north of it (70).

69) The source for these details is a military road map of 1944 issued by British headquarters in Cairo, and in possession of the writer.

70) It might be noted that some 75-100 of the, at that time, standard, 3-ton lorries, were needed to carry the load hauled by one train (of approx. 15-20 ton wagons). See "Rakavoth" (cp. bibliography), p. 7.
Therefore, Palestine Railways were left, in fact, as the sole mainstay, and central link, of long-range wartime transportation in the Middle East. Fortunately, owing to Murray's and Allenby's building activities in World War I, the track alignment lay in the right direction, west to north, from Egypt to Palestine, and beyond. Thus it came about that the Palestine network managed to show some impressive working results during World War II. In 1942, during the British build-up for the Battle of Alamein (October), there was a 7 million ton-kilometer rise in just one month (71). In the one month of August 1943 alone, the standard gauge network (excluding narrow-gauge lines) reached 46 million ton-kilometers, as against 116 million ton-kilometers during the whole of the year 1938-39. In 1943-44 the standard network reached altogether a total of 501 million ton-kilometers, i.e. an increase of 330% over results for 1938-39. These results were achieved at the price of a temporary increase of serious accidents, that led to an augmentation of staff, many of them Jews (72). Earlier, in 1941, Palestine Railways provided logistic support for the invasion of Syria, and

71) The term ton-kilometer denotes the total weight of loads, in tons, that pass over one kilometer of line during a given time.

72) These statistics, and many of the following details, were taken from a summary by Kirby, the long-time Manager of Palestine Railways (cp. bibliography).
2-3-2 tender locomotive of Palestine Railways, built about 1920 by Baldwin Locomotive Works, Philadelphia.
(Source: Israel Information Office)

One of 23 British-built (1942) 1-4 heavy freight locomotives which worked World War II trains on the line from Haifa to Kantara.
(Source: Israel Information Office)
the re-occupation of Iraq, by way of Transjordan. After
the successful completion of these operations, traffic
on the narrow-gauge line to Damascus doubled. The Trans-
jordan section of the late Hejaz Railway returned to work
only after the Vichy-French had been evicted from the
section El-\textit{Hamme} Dera'a, which they had held for a year
prior to July 1941. Before the Battle of El Alamein,
already mentioned above, the Palestine network was
practically choked with troops and supplies going down
to the Egyptian front across the newly-built Firdan Bridge
across the Suez Canal (73).

Wartime Expansion and Improvements

In order to live up to the tasks imposed on it by the
war, the Palestine rail system underwent an expansion
comparable to that of World War I. Derelict rolling stock,
locomotives and wagons and carriages in all stages of
dilapidation, was pressed into service again, largely
thanks to the efforts of the expanded Railway Workshops
in Haifa Bay. Amongst the derelicts were some of Allenby's
ambulance-carriages, originally built in England in the
years 1895-1906 (74). The lack of passenger carriages for

73) Personal observation of the writer who travelled
by rail to Egypt on October 19, 1942. The Firdan Bridge
will be noted later.

74) Details from Kirby.
transporting troops led to the hiring of a considerable number of coaches from the Egyptian State Railway (75). The number of goods wagons increased by almost 100%, owing to the addition of some 2,000 vehicles, mostly large American-type 4-axled wagons, which were a novelty on the network since the original Palestine stock had always been small and 2-axled. A number of tank cars, for petrol and aviation fuel, were also added. While the standard Palestine goods wagons carried 10-12 tons each, the new wagons, supplied by the American War Department, hauled 20-35 tons each. Altogether, the Palestine network now operated some 4,500 goods vehicles. The number of steam locomotives also rose very sharply by the arrival of 50 new units, some very big indeed (with up to 4 driving wheels), which offered an unusual sight alongside the staid Palestine motive power. Some were British-built (23 London-Midland-Scottish freight locomotives) and some were American-built "Pacific" type passenger locomotives, supplied, as far as can be ascertained, by the Baldwin works of Philadelphia, which in 1892 had also built the miniature meter-gauge locomotives of the Jaffa-Jerusalem railway.

75) The daily train from Haifa to Cairo in 1942-44, contained up to 16 coaches (including a dining-car and a sleeper), of which no more than 3-4 on the average were Palestine stock. Extra troop-trains consisted almost exclusively of Egyptian carriages. Personal observation of the writer.
The first diesel locomotives, originally intended for the British military line Alexandria-Tobruk, in Egypt and Libya, also came to work in Palestine. The first diesel ever to climb to Jerusalem - the big steam engines were unable to negotiate the narrow Judaean curves - was an American-built Alco locomotive, late in 1942. Diesel shunting locomotives of various descriptions were also added. Owing to the shortage of coal, older locomotives were converted, and gradually the whole network went over to oil traction.

As the war went on, sections of the tracks were realigned and shortened, bridges were strengthened for heavier trains, and stations improved. Shunting yards were greatly expanded; Kantara was ultimately able to handle 2,000 goods wagons a day, Lod - 1,000, and Haifa - 900. Considering that wagons carried anything between 10 and 35 tons apiece, these figures give an indication of the amount of loads handled (76). Perhaps the most important improvement in the working of the Palestine network resulted from a development that was actually undertaken, probably by the E.S.R., outside Palestine Railways' jurisdiction.

76) A great many of the foregoing details and also some of the following ones, have been taken from the (at that time, "restricted") Handbook on Palestine, of British Headquarters in Jerusalem of 1947 (cp. bibliography) in the possession of the writer.
This was the building of the Firdan swing-bridge over the Suez Canal, south of Kantara, about 1941-42 (77). The building of this bridge probably had quite incalculable results for the pursuit of the war in the Middle East. It enabled trains to be run without the previously necessary transshipment at Kantara, directly from Haifa to Cairo. Later, through-trains could be run (at least theoretically) from Constantinople to Alexandria, and also from Syria and from Baghdad in Iraq to Assuan in Upper Egypt.

New Wartime Spurs and Lines

Apart from the items of expansion detailed above, considerable lengths of track were laid down in Palestine and adjoining areas during the war. They may have reached 

77) The exact date the bridge was built is unknown. Nor is there any certainty as to who operated it in practice, which might have been the Egyptian railways, as Palestine Railways worked only as far as Kantara. However, there is no doubt about the importance of the bridge for the Palestine network, which, but for its construction, might have continued to operate in isolation. Cp. also Schonfield, p. 109, who places the bridge at Kantara, while actually it stood quite a distance to the south. The bridge survived the 1967 and 1973 wars, though it is not at all clear if the original bridge had not been meanwhile replaced (after an accidental ramming by a ship) with a newer structure.
in all some 240 kms. or more, and can be traced on still available maps, especially of the 1:100,000 series of the Survey of Palestine, and on contemporary maps of Sinai and Jordan. A considerable number of military spurs were laid down to link the main lines with installations and camps. Some of the spurs were quite long, reaching several kms. The more important of them were at the following places: Bassa (near the Lebanese border); at both sides of Tel el-Fukhar (Acre); Kurda (in Haifa Bay); Beled esh-Sheikh to serve the Navy’s underground oil storage tanks, already mentioned before); Neuhardthof and Tire (both south of Haifa); Ras el-Ain (for the R.A.F.); Kafr Jinnis (to beit Nabala; possibly already laid down in peacetime, on top of a World War I line to Lubban); Wadi Sallar; El Jiya; and also at other places in the south of the country, especially around Gaza and Rafa. In August 1942 a ca. 10 kms. long spur, actually a fully-fledged branch line, was laid down from Kafr Jinnis to Tel Litwinsky, to serve the new American base there. All these spurs were of standard gauge. In July-September 1942, just before Alamein, 12 crossing-places were opened on the section Kantara-Rafa. These were actually long stretches where the single-track line had been double-tracked, to permit an easier flow of traffic. To some extent this was a partial revival of Allenby’s double-track railway of World War I times.
These crossing-places (and the supervising new stations) enabled the capacity of the Palestine-Egypt trunk line to be increased to about 17-18 trains daily. In other words, the carrying capacity of the line rose to some 5-6,000 tons daily.

Apart from the various spur lines, three entirely new railway lines were built after 1941 that were of very great importance. One of them was the narrow-gauge branch line of the old Hejaz Railway, which led from Ma'an in Transjordan to Naqib Ashtar, halfway to Akaba. This branch was completed in March 1942, and was some 40 kms. long. The line was clearly built by the British in order to anticipate a possible conquest of Alexandria, or all of Egypt, by Rommel's German "Africa Corps," in which case Akaba might have served as a possible outlet for Palestine and Syria. This stretch of track was closed down in August 1943. It is not known why construction was never continued to Akaba. Either the military position had improved sufficiently in 1943 to make a continuation superfluous, or the geographical difficulties of leading the line down from the high Mountains of Edom into the Arava rift valley were too great to be overcome. In any case, the terminus at Naqib Ashtar was connected with Akaba by a very good road. This line was a direct successor of the railways that Oliphant in 1880, and Meissner Pasha in 1906, had wanted
to build from the Transjordanian heights down to the Red Sea. Its derelict trace is still shown on most maps of Jordan (77 A).

Of much more actual importance for several years was the railway line built by the British in 1941/42 (dates are lacking) down and along the eastern bank of the Suez Canal. This line led south from Kantara to Firdan Bridge, being identical on this section with the Haifa - Kantara - Cairo line. The Firdan Bridge also served as its link with the E.S.R. System, and with the railway Port Said - Ismailia - Suez, that paralleled it along the western side of the Suez Canal. From Firdan Bridge this new line continued south, along the eastern bank of the Canal, along the eastern shores of Lake Timsah, and of the two Bitter Lakes, to reach El Shatt, and end at Port Taufik, at the southern entrance of the Suez Canal, opposite the harbor of Suez itself. The line was about 120 kms. long. Its practical importance was very great, as it enabled stores, military and civilian, for Palestine and the Levant as a whole, to be discharged directly from ships into trains over the new, war-built, jetties of Port Taufik. Some goods were perhaps also unloaded unto a branch line that led down to the shores of the Great Bitter Lake. In this way loads could be carried directly to their destinations in Palestine and beyond,

77 A) All details from "Handbook", cp. note 76, and note 78.
without cluttering up wharves on the western bank of the Canal, especially at Suez, that were busy enough to supply the needs of Egypt and all the North African front. Thus Port Taufik, with the help of the new railway, in World War II, came to fulfill the same port functions on the Suez Canal that Kantara and its railway yards had discharged in World War I (78). As the line is mentioned nowhere in sources, it must have ceased operations when it became redundant after the war moved away from the Middle East, about 1943. Its rails, however, were left in place and intact, to be used to bolster up Israeli strong-points along the Suez Canal after about 1969-70.

However, easily the most potentially important of the three major railways built in Palestine, and adjoining areas, in the Second World War, was the standard-gauge line, about 40 kms. or so long, built from Haifa, via Acre, Naharia, E-Zib, and Bassa to the Lebanese border at Ras en-Nakura. It followed the age-old western branch of the Via Maris to the north. Its immediate importance lay in the fact that it constituted the southern segment of the British-conceived, army-built H.B.T. (Haifa-Beyrouth-

78) Details of the Ma'an-Naqb Astar line, few as they are, have been taken from the British Army Handbook on Palestine, p. 47. As far as could be ascertained, there exists no description, or even a reference anywhere, to the 120 Kms. long line Kantara-Port Taufik. The above details were arrived at by a process of deduction, by personal visits to various stretches, and by references to the Survey of Israel 1:250,000 map "El Arish," of 1974. This map was drawn in 1964 and updated in 1973. It shows the whole line, including stations.
Tripoli) Railway, the long-awaited, often-planned (since the days of the Austrian Archduke Ludwig Salvator in 1879), and frequently discussed rail link that was to close the gauge gap between Lebanon/Syria and Egypt. It was the "missing link," that, even more than the section Nisibin-Tel Kotchek on the Baghdad Railway, finished in July 1940, was finally to wield the Middle Eastern standard gauge railway network into one integrated system. The line from Haifa was started in November 1941, reached Beyrouth in September 1942, and joined up with the Syrian/Lebanese standard-gauge line at Tripoli in December of that year. Most of the work was carried out by African auxiliaries under the supervision of South-African and other Dominion troops. It involved conversion of the Haifa (Kurdani)-Acre stretch from narrow to standard gauge, building a big station at Bassa, and punching a tunnel (in two sections), altogether some 350 meters long, through the Ras en-Nakura promontory. During the five years it was to operate (to 1947), this line carried only military traffic, and was never open to civilian use. Probably like the Kantara-Port Taufik line, it was run by Palestine Railways, under British army control. (79). Thus, only for five short years the railways of Palestine carried out the task (and that only partially) of being a link between continents, as the successors of the country's ancient highways.

79) Details from Handbook, p. 47. All maps of after 1942 show this line.
Haifa-East Station, February 1945. Departure of daily train for Cairo, with sections for Jerusalem/Tel Aviv. Left corner: Hejaz Railway narrow stock. Center: Standard gauge train headed by two Palestine carriages, followed by International dining-car (dark), and by mostly Egyptian-lent stock. What appears to be British troops entraining at end of platform. Center foreground: One standard (1,435 mm.) and one narrow, Hejaz track (1,050 mm.).
(Source: Palestine Information Office)

Military, combined troop and freight, train, blown up ca. 1946/47 near Hadera(?). One, very ancient, carriage, torn open. (Source: Imperial War Museum)
Postscript to the War

During the Second World War, the Palestine network carried on its tracks a variegated selection of peoples with few equals in the world: Jewish and Arab civilians, local and British soldiers, Australian, New-Zealand, South-African, American, Free French, Czech, Polish, and Greek troops, and also German and Italian prisoners. Over its tracks there travelled also the few European Jews that succeeded in making their way, by rail via Turkey, to Palestine. It might be claimed that railways, and in particular Palestine’s railways, owing to their great expansion, held the British and British-occupied territories in the Middle East together during the war, making them function both as viable civilian and economic entities, and as military bases that played a considerable role in ending the struggle victoriously.

The End of Palestine Railways

By the time hostilities ended in May 1945, there had been already the first indications of Jewish resistance that was to sweep the British out of Palestine within three years. From 1945 to 1948 the country gradually came to be engulfed by a mounting wave of violence that found in the railways a tempting target. Railways came
to be progressively more important as objects to be attacked, the more they served the British as a means of moving and supplying the forces that were used to suppress Jewish opposition.

In 1946, even after army rolling stock and carriages lent by the E.S.R. had been returned, Palestine Railways were still a formidable organization, which even still showed occasional profits (80). In the "Night of the Railways," as early as November 1st, 1945, the "Hagana", the Jewish Defence Organization, in cooperation with other resistance groups, sabotaged a considerable number of points on the railways. In the "Night of the Bridges," on June 17, 1946, one of the major bridges in the Yarmuk Gorge east of Samakh was so efficiently blown that the line was never again restored. The rail links between Palestine, Syria and Transjordan have stayed severed ever since (81). When the Hagana ceased its operations, the two dissident groups, the "National Military Organization" ("Etsel"), and the "Stern Group" ("Lehi") took over. British troop-trains in particular were attacked, usually by means of mines. Stations also were attacked, for instance,


81) Details of these two sabotage actions are given at length (including a map) in the "Sefer Toldoth Ha’hagana" (Hebrew; cp. bibliography). Pages are listed in the index volume.
in Jerusalem, at Lod Junction, and in Haifa, where most of Meissner Pasha's imposing Hejaz Railway Terminus (dating from about 1905) was blown up. Rolling stock was burnt and there was even a daring attempt on the vital Railway Workshops in Haifa Bay. Most of the large-scale raids were carried out by Etsel (82). The list of the attacks on the railways by Lehi included at least 19 operations, between 19.10.1946 and 29.2.1948, which caused some 60 British casualties, including 28 killed (83).

The result of all these raids was a creeping paralysis of Palestine's rail network. At times it temporarily ceased operations entirely, on account of the destruction of tracks, blowing up of bridges, and the sabotaging of signalling installations. Finally, trains ran, if at all, only in the daylight. Cumulative losses of rolling stock became heavy, and the staff became progressively unwilling to risk its life in a lost cause. Ordinary citizens ceased to use the railways, and, as far as can be established, civilian rail services stopped functioning entirely about March-April 1948 (84). By that time Arab

82) For Etsel operations against Palestine Railways cp. Niv (Hebrew; see bibliography), vol. III, pp. 183-186; 258, 266-273.

83) Banai (Hebrew; cp. bibliography), pp. 667-677.

84) A good idea of the state of Palestine Railways in the very last stages of the mandate's dissolution (including statistics) can be gleaned from the pages of "Rakavoth" (Hebrew; cp. bibliography). Freier (Hebrew; cp. bibliography), whose study of the last months of British rule in Palestine has unfortunately never been published, devotes some space to the role of railways in the spreading chaos. Cp. especially pp. 103-105.
guerrillas too had joined in making railway services impossible. Use of the railways for military purposes, i.e., for the evacuation of stores after the British had finally decided to withdraw from the country, continued sporadically, as occasions demanded. Trains, assembled ad hoc, were used to move bulky military items, and heavy fighting vehicles, and were despatched under heavy guard. Destinations were the two main evacuation bases, Haifa port, in which equipment was concentrated for loading on ships bound for the United Kingdom, and the camps at Rafa, that sprawled across the Palestine-Egypt border, from which equipment was progressively moved by trains through Kantara to the British-held Suez Canal Zone.

Thus railways, that had played such a major role in the conquest of Palestine by the British under Murray and Allenby in 1916-18, also played a vital role — only lightly touched upon above — in the evacuation of Palestine by the British (85). By the end of the mandate, on May 15, 1948, apart, possibly, for some train movements in the Haifa enclave (evacuated 30.6.1948), railways in Palestine had ceased to operate, or even to exist, as a viable body.

85) Freier's above-mentioned study contains practically a day-to-day description of the evacuation of the British Forces, their troops and equipment, from Palestine in 1947-48. His survey proves unequivocally that, movement by road being out of the question owing to the blockages instituted both by Jews and Arabs (which the British forebode to fight), the British evacuation of all important areas of Palestine, at all times, could only have been carried out by means of the railways.
Epilogue to an Epilogue:

Railway Developments after 1948

When Palestine Railways stopped operating in the spring of 1948, its system changed from being the central link of rail transportation in the Middle East - as it had been during World War II - into a truncated network that had no more than local importance. With the breakup of the Palestine network, Egypt had no land link anymore with the northern Levant States, Lebanon and Syria, nor with Anatolia or Mesopotamia, nor they with her. Jordan was left cut off entirely from the Mediterranean, except through Beyrouth or the Suez Canal. Newly-founded Israel, of course, had no rail-links with any of the neighbouring countries.

In the field, the state of the network was as follows:
1) The main line from Kantara (with its southward extension along the Suez Canal to Port Taufik) to Lod and Haifa was cut at Deir Sneid, at the northern end of the Egyptian-occupied Gaza Strip;
2) The main line Haifa-Beyrouth-Tripoli was cut by the Lebanese at Ras en-Nakura, the tunnel there being blocked;
3) The main line Haifa-Lod was cut by the Jordanians, who held a 2-3 kms. stretch around the Tul Karem station;
4) The main line TelAviv/Jaffa to Jerusalem was cut by the Jordanians for a distance of some 12 kms. from about Bittir to Beit Safafa, just outside Jerusalem.
5) The narrow-gauge Haifa-Beisan-Samakh line was cut by the Jordanians over a 3 km stretch, at Naharayim, where the line crossed both the Jordan and the Yarmuk rivers near their confluence. Further up, east of Samakh, the line had already been effectively broken in 1946, in the early days of the Hagana's operations against the British mandatory government;

6) The narrow-gauge sections in the mountains of Samaria, (Afulee)Jenin-Massudiye-Nablus/Tul Karem, passed entirely into Jordanian hands. However, these stretches of line were entirely isolated by Israeli-held territory from their Jordanian parent system, and there was no rolling stock left on them, as they had been shut down for regular traffic even before the Second World War;

7) The only part of the defunct Palestine Railway system unaffected by the Arab-Israeli War of 1948 remained the section Nassib-Ma'an of the erstwhile Hejaz Railway in the Kingdom of Transjordan (86).

There now remains to give a necessarily short and perfunctory survey and summary - an epilogue to an epilogue - of the successor-railways to the Palestine network that grew up after 1948.

86) The breakup of Palestine's railway system is graphically demonstrated by any general map of Palestine/Israel, topographical and political maps, and war maps of 1948 and after. It is also shown, including maps, in the periodic editions of Jane's World Railways, and other professional publications (cp. bibliography).
Lines in Egyptian Territory

After Egypt occupied the Gaza Strip the trunk line from Kantara came to be worked by the Egyptian State Railways. There is little doubt - though nothing was ever published on the subject - that the operations of the Egyptian army in the southern areas of the Holy Land during Israel's War of Independence were to a considerable extent facilitated by the logistic support of the war-proved Sinai line. It is not definitely known whether this stretch of track was ever purchased from the British Government (which had built it in World War I), but it seems to have been sold by the British to the Egyptians on April 1st, 1948. The line Kantara-Gaza was normally probably operated once a day (according to observers on the Israeli side). The section from Gaza station, north to the armistice line at Deir Sneid, altogether some 10 kms. long, was partially torn up. The war-built line Kantara-Port Taufik was not worked by the Egyptians, though kept in a useable state, as proved after 1967.

During the Suez Campaign of 1956, the greater part of the Sinai railway, up to about 16 kms. (10 miles) from Kantara, fell into Israeli hands, and the whole line was hooked up within a few days with the Israeli network, the section Deir Sneid-Gaza being speedily rebuilt. On that occasion some Egyptian rolling stock was taken over. After Israel's withdrawal early in 1957, the line was again cut at Deir Sneid, and traffic to Egypt was restarted by E.S.R.
During the Six Day War of 1967, the Egyptian lines in Sinai again fell into Israeli hands, together with a quantity of rolling stock, some diesel locomotives, a few passenger carriages, and perhaps a few dozen goods wagons. These could not be withdrawn owing to the blocking of the line by blown ammunition trains on both sides of El Arish (87). After the clearance of the tracks, and another link-up with Israel Railways at Deir Sneid, the Egyptian Sinai railways were put to fruitful use in evacuating captured war material. There are no details, but under the management of Israel technicians, many thousands of tons of load (tanks, guns, trucks, ammunition and stores) must have been moved into Israel. Even the British-built wartime railway along the eastern bank of the Suez Canal was reopened after more than 20 years of disuse, possibly, but not certainly, as far as Port Taufik. It was probably used to transport into Israel abandoned Egyptian war material from the Mitla-Giddi Passes area. However, this line was abandoned again as the Egyptians shelled trains carrying military loads near Kantara, causing damage and casualties. About 1969, or after, most of this railway was taken up, as were also the rails in the Kantara station and shunting yard, in order to use the rails as stiffening

87) Personal observation of the writer. Some of the ex-Egyptian diesel engines were still in the service of Israel Railways in 1975.
Railway Relics in Israel.
(1965-1970)

Top: Abandoned Jaffa Station, built ca. 1890 for French line to Jerusalem.

Center: Abandoned Tel esh-Shammam Station in Jezre'el Valley (to-day Kfar Yehoshua). On ex-Hejaz Railway branch, from Haifa to Dera'a.

Bottom: Abandoned track and cutting of Turkish Sinai Railway of World War I, in northern Negev.

(Photos: Pick.)

Pick, chapter V.
for the strong points of the "Bar-Lev Line" along the Suez Canal. Shortly afterwards, apparently, the rails of the section Kantara-El Arish were also taken up by the Israelis for fortification purposes - a use the original British builders certainly could never have foreseen. Thus, some 50 years and more after Sir Archibald Murray started laying down his trans-Sinai line, a railway gap of some 150 kms. again opened up between Egypt and its northern neighbour. When war broke out again between Israel and the Arabs in 1973, practically nothing had been left of the Sinai railway amid the wind-blown desolation east of the Suez Canal, except for some abandoned station buildings (the one at Mazpak served as the nucleus of the Israeli settlement of Nahal-Yam), a few broken-down signalling-masts, and the relics of some rusty, railless, goods wagons. Nothing was left of the rails that made history in two World Wars. The present terminus of the line from Lod and Gaza is at El Arish. The elaborate railway swing-bridge over the Suez Canal at Firdan, south of Kantara, that was built by the British about 1941-42, was not damaged by either protagonist in 1967, or in 1973, and its two sections survived.
Lines in Jordanian Territory

After the abandonment of Palestine Railways by the British in 1948, the running of the orphaned section in Transjordan was taken over by the local kingdom, under the name of "Jordan Royal Hashemite Railways." Its length, altogether, was 366 kms. (88). All that was worked at first were 323 kms., between Nassib and Ma'an. Traffic up to the middle 1960's was meagre (89). The rolling stock left by the British was limited in the extreme. The lines Ma'an-Naqb Ashtar, and Ma'an-Mudawara (derelict since World War I), were not worked. The isolated sections in the Jordan-occupied territories in Samaria, west of the Jordan, were, of course, abandoned. These were destined to be taken up by Israel after 1970, as far as they had not been previously stolen (90).

The most revolutionary events on the Jordan rail network were two, and they occurred after 1963. They were the reconstruction of the trunk line from Ma'an to the Saudi border south of Mudawara, and the construction of the new line to Akaba, that branched off the trunk line.


89) Hachette, "Guide" (cp. bibliography), pp. 523, 533.

90) The scant available details about the development of the Jordan rail system after 1948 were taken, apart from out of the Railway Directory (various years), and Hachette already mentioned above, from World Railways, especially for 1971-72, p. 501, and the Pictorial History of Railways, part 36, pp. 705-708 (cp. bibliography). Rolling stock left by the British seems to have consisted, at the most, of 17 locomotives, 8 passenger vehicles and some 370 goods wagons and tankers.
About 1954 the three governments of Jordan, Syria and Saudi Arabia agreed to reconstruct the Hejaz Pilgrims' Railway down to Medina. After considerable disagreement between the three partners, rebuilding the line was started late in 1963, or early in 1964, by a British firm, which completed the reconstruction of the whole track - everything except for the laying of rails - by 1969. Here disagreements again intervened, and Jordan apparently continued the work alone. By the early 1970's the whole of the line, some 120 kms. long, from Ma'an to the Saudi border was workable again. While the Saudi-Arabian track to Medina (which in any case does not fall within the framework of this survey) remained railless, Jordan, with German financial assistance began, in November 1972, to build a 116 kms. long branch to Akaba, which was completed in June 1975. The line, like all the network in Jordan, is of 1,050 mm. gauge, and intended to facilitate phosphate exports from Russeife (north-east of Amman) and from El Hasa (north of Ma'an). It branches off at Hattiye, about halfway between Ma'an and Mudawara, and passing very difficult and waterless territory, succeeded where the British wartime line to Naqb Ashtar failed, namely, in giving the Transjordanian plateau a rail outlet down to the Red Sea. The new railway was built by a German firm, and is being temporarily run with the assistance of the German Federal Railways. Its official opening took place
late in June 1975. Thus, after the lapse of 69 years, there came to fruition the project of the German Meissner Pasha who, as described in a previous chapter, in 1906, (and again in 1914) envisaged linking Ma'an by means of his Hejaz Railway with Akaba (91). The line to Akaba can already be found on maps (92).

Lines Left in Syrian Territory

For the sake of completeness, a very short reference should be made to the fate of the section El-Hamme-Der'a'a of the late Hejaz Railway, that Meissner Pasha had built up the Yarmuk Gorge. It has been noted already that this line came to belong to the French-mandated territory of Syria after the First World War, and divided the network of Palestine Railways proper (west of the Jordan) from the British-operated lines in Transjordan. This section was run from 1919 by the "Chemin-de-fer de Damas, Hama, et prolongements" which had worked French-owned railways in Syria since the 1890's. After the establishment of the

91) The completion of the German-built Ma'an-Hattiye-Akaba line was reported by the Munich daily "Süddeutsche Zeitung" on 23.5.1975. The antecedents of this work were described by K. Becker, in the German periodical "Orient", p. 193 passim, in October 1963. For further details of the Jordanian network and its expansion, see Railway Directory, 1975, pp. 304-305; World Railways 1971-72, pp. 472, 501, 510; Encyclopaedia of Islam ("Hijaz Railway"), p. 365; Statesman's Yearbook 1973-74, pp. 1110, 1287. Also Hoade (cp. bibliography) pp. 313-317.

quasi-independent Syrian Republic in 1943, the section was taken over by the Syrian State Railways Administration on 1.3.1945. However, the line stopped operations in the summer of 1946, after the Jewish "Hagana" blew up a railway viaduct in Palestine territory, and thus severed its continuation towards Samakh and Haifa. This section never operated again, and long stretches of its track, especially where it meandered across the Yarmuk several times into Jordan territory (only to cross into Syria again), were taken up when Syria and Jordan started their abortive project to build the Muheibe Dam across the Yarmuk Gorge. Meissner's tunnels, though railless, still exist (93).

The Development of Israel Railways

The above survey of the fate, after 1948, of the components that used to make up the Palestine Railways system should fittingly conclude with a short description of what happened after the British evacuation to the nucleus of what used to be the mandatory rail network, i.e. - Israel Railways. It might be stressed that this particular subject - like other subjects mentioned earlier

93) Railway Directory, 1975, p. 304, on the "Hedjaz Railway." In 1973 the writer had occasion to observe the railless and dilapidated remnants of the Yarmuk section from a vantage point on the Israeli side of the gorge.
in this chapter - also deserves more than a mere per-
functory review. Data on the development of the railways
in Israel are ample and available in the shape of press
notices, official reports, government statistics and maps.
Unfortunately, they never had a thorough treatment. The
following details will also, necessarily, be in the nature
of a short summing up only.

Active preparations for the establishment of Israel
Railways seem to have started at least as early as April
20, 1948. (perhaps even before this date), that is almost
one month before the end of the mandate (94). The network
actually taken over by the new State of Israel was not
only cut off from the neighbouring countries - a situation
that was to persist ever since - it had also been cut up
by hostilities into unconnected fragments. There was no
traffic on the main trunk line between Tel Aviv and Haifa,
because of the short Arab-held stretch at Tul Karem, and
there was no link between Tel Aviv and Jerusalem, on account
of the Arab blockage between Bittir and Beit Safafa, just

94) Sources for the above details, and for some that
will be used on the following pages, are a list of relevant
details published by the Public Relations Department of
Israel Railways, and also the Railway Directory and Yearbook
for 1967-68, p. 248. The writer distinctly remembers having
read sometime an account of the preparations made by the
Jewish pre-state authorities to take over Palestine
Railways when the British mandate ended, but unfortunately
failed to note down bibliographic details. The moving
spirit behind these preparations may well have been
Mr. Peikowich, one of the highest Jewish officials of
Palestine Railways, and father of Yigael Allon.
outside Jerusalem. Most of the rolling stock of Palestine Railways had been providentially concentrated at Haifa - the British enclave that was to function until the final evacuation on June 30 - and there was no way of moving it south. Some stock had also been left at Lod Junction, where it was soon captured by Israeli Forces. The British had been scrupulous in leaving all mandatory rolling stock in the country, and had moved out to Egypt only leased E.S.R. wagons, and the sleeping and dining-cars of the Cie. Internationale. But the passenger and goods stock left was mostly old, and certainly worn, after nine years of World War and civil disturbances, with their inevitable results from the point of view of mechanical repairs and upkeep. All remaining locomotives were steam-driven; all the wartime diesels had been returned to their owners, the British Army. The signalling system, archaic to begin with, and not renewed during the war, was totally disrupted, the state of the track deplorable.

Details about the quantity of rolling stock taken over by Israel Railways (the Arabs had inherited practically no stock at all) differ. They range from 52 locomotives, 38 passenger carriages, and 2,400 goods wagons - all of standard gauge - to some 106 locomotives (14 of narrow-gauge), 79 passenger carriages (18 narrow) to some 2,450 assorted goods wagons (21 of them narrow) (95).
Arrival of first Israel Railways train at Jerusalem station, summer 1949. On the left—Guard of Honor. Locomotive already bears Israel Railways emblem, but station name board is still "mandatory", English, Arabic, Hebrew. (Source: Zionist Archives)

Lod Junction in the 1950s. This was the country's most important station ever since 1918. Dominating platform is watchtower, dating from 1945-48 disturbances. (Source: Isr. Inf. Off.)

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goods wagons (215 of them narrow gauge). The length of the
standard gauge track taken over was close on 300 kms.
The narrow-gauge line Haifa-Jordan Valley was never
operated again; long sections of it were subsequently
taken up, and the narrow rolling stock was sold in due course.

The first trains run by Israel Railways served the
suburban line Haifa-Kiriath Haim, from 20.6.1948. The
first inter-urban service was started to Hadera, on 3.5.1949.
In the Rhodes Armistic Agreement between Israel and
Jordan of April 3, 1949, railways seem to have figured
to some extent. The Arabs agreed to withdraw from the
stretch Bittir-Beit Safafa, outside Jerusalem, and as a
result traffic between Tel Aviv and Jerusalem was re-
opened on August 3, 1949. The price for the re-opening
of the line was Israel’s permission to let Arab land-
holders from Bittir to work their lands on the Israeli
side of the track which here actually formed the border.
This little known arrangement worked with nary a hitch
for 18 years to 1967, though for a decade or so armed guards

95) The lower figures are taken from the Encyclopaedia
Hebraica, vol. 6, col. 962. It should be stressed that
the late Prof. Ettingen, who provided the figures, was an
ardent railway fan, and all the technical details he
included in his survey in the Encyclopaedia as to the
railways of Palestine/Israel up to 1955 are invaluable.

The higher figures quoted in the text have been taken
for 1946, p. 94, gave the stock of Palestine Railways
(apparently of both gauges) after the end of World War II
as 94 locomotives, 15 railcars, 136 carriages and 2,459
wagons.

96) These dates, and some of the following, were
supplied by courtesy of Israel Railways. It is assumed
that they are substantially correct.
accompanied each train on the last lap of the journey through the mountains, from Hartuv to Jerusalem. The 2 kms. of track from Jaffa station to Tel Aviv, that had witnessed so many bombs thrown from passing trains in 1936-39, were taken up.

On the Haifa-Lod trunk line the Arabs did not agree to relinquish their hold on Tul Karem station, where for many years one abandoned locomotive and two goods wagons stood in desolate isolation. However, the Arabs agreed, following the armistice, not to interfere with the building of a short Israeli detour, bypassing Tul Karem station. This hurriedly-built section came into operation in September 1949, and thus, at last, the two isolated main sections of Israel Railways were again linked up, and passenger and goods traffic between north and south was re-established. At about the same time, planning was initiated for the building of a new railway paralleling the coast, through the Sharon plain, from Hadera directly to Tel Aviv. This was a far more ambitious scheme than the similar one proposed in 1935 by Sir Felix Pole.

There were other developments about, and after, 1950. Tracks to former military camps were taken up, at Akko, Tel Litwinsky, Beit Nabala, and in the south. Services were gradually extended, for instance from Haifa to Akko and Nahariya, and train frequencies increased. Services, though for goods only, were reopened on the trunk line
from Lod, via Rehovoth, to Ashkelon (former Majdal) and its factory complex. In August 1952 the first of three diesel-electric locomotives furnished by the U.S. was put to work, a revolutionary step that within several years led to the total dieselization of the whole Israeli network. For a number of years a long line of mute steam locomotives, some of which may have served Allenby, stood in Lod station, as a reminder that the steam era had passed in Israel as well.

In April 1953 the direct coast line through the Sharon was opened into Tel Aviv. The new track branched off the 1918 trunk line just north of Hadera, at Remez Junction, and went via Nethania to Tel Aviv North (now Benei Berak). From there it continued east to join the Petah-Tikva-Rosh Ha'ayin (Ras el-Ain) "citrus branch" that had been built by Jewish interests in the 1920's. Some time later, in 1954, the coastal line was led directly into the new Tel Aviv Central (now-North) station. Meanwhile Tel Aviv South also acquired a new station, a rebuilt warehouse that replaced/ramshackle wooden shed that - significantly - had served Tel Aviv throughout the whole mandatory period. Early in 1956 Israel Railways began to operate German-built diesel railcar sets that had been delivered under the Reparations Agreement, to be followed by other passenger stock. This was the beginning of a process that led gradually to the total withdrawal of the
Awaiting scrapping outside Israel Railways Haifa Bay workshops, ca. 1950. Swiss-built (Winterthur) locomotive of the former Turkish Hejaz Railway. Built in 1909, this 1,050 mm gauge locomotive lasted through two World Wars. (Source: Israel Information Office)

One of Israel's first diesel locomotives, about 1952. An American-built General Electric locomotive heading former mandatory, British-built, stock in Haifa-East station. (Source: Israel Information Office)

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ancient Palestine Railways passenger carriages, and their
replacement by German, French, and Yugoslav-built carriages.
Goods wagons, too, were progressively replaced, and some
of the new wagons were assembled locally in the Haifa Bay
workshops. In the 1960s Israel Railways rolling stock
bore practically no resemblance to the stock left by the
British in 1948. Contemporaneously, modern signalling was
introduced, first on the Haifa-Tel Aviv line, and then
elsewhere. Rails and ties were also replaced systematically,
permitting much higher speeds (100 kms. p.h., and more,
on the Sharon stretch) than the 80 kms. top speed of
mandatory times.

On March 29, 1956 a new line, to Kiriath Gath and
Beer Sheba, was inaugurated, which branched off the Lod-
Jerusalem line at Na'an. Parts of this line were laid on
the embankment of Meissner Pasha's 1915 Sinai Railway.
The construction of the deep-water port at Ashdod led,
in November 1961, to the opening of a new branch line,
several kms. long, from Plesheth Junction, on the trunk
line Lod-Ashkelon, to the new harbour installations.
About at the same time a short branch had been built from
the main line north of Lod, to the big quarries at Tirath
Yehuda. This for the purpose of supplying rocks - trans-
ported by rail - for the construction of the Ashdod
breakwaters. In September 1965 the extension of the
Beer Sheba line to the development town of Dimona was opened.
Israel's biggest, American-built, diesel locomotive, ca. 1973, outside the Haifa Bay workshops. Behind it—diesel shunting engine. Right: One carriage of German-built diesel sets, delivered under 1952 agreement on Reparations. (Source: Israel Information Office)

Double-headed special train of French-built carriages inaugurating Beer Sheba-Oron section, 1970. This section is part of the Haifa-Elath railway, under construction. (Source: Israel Information Office)

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Early in March 1970 this section was extended to the mining complex at Oran, deep in the Negev. Shortly after, a branch of this line was built from Mamshith (on the line to Oran) to the chemical complex at Tsefah. In the same year, 1970, the new Tel Aviv South station was opened, outside town, near Mikveh Yisrael, which now serves as the terminus of the line to Jerusalem, replacing the old station that cluttered the center of town. The fact has already been mentioned that since June 1967 Israel Railways have been linked up with the previously Egyptian-run line Gaza-Kantara and beyond, across Sinai. This line is still being operated to El Arish, as occasion requires, though a 1972 attempt to run a passenger service Gaza-Tel Aviv miscarried. However, goods unloaded at Gaza port are still occasionally being carried north by rail (97). On January 28, 1975 work was started on the extention of the line terminating at Oran down the very difficult descent into the Arava rift valley, to the mining works at Hor Ha'har. This stretch will involve the building of the longest, and highest, railway bridge in Israel, over the Nahal Tsin. It will be

97) As already noted, a number of the above dates were furnished by Israel Railways. More details will be found in the various editions of World Railways, and of the yearly Railway Directory.

A very useful map, 1:750,000 of the Israeli network, including all stations, and showing also proposed lines, was published in English about 1969 by Israel Railways.
an additional section of the railway linking central Israel, via Beer Sheba, with Sdom on the Dead Sea, and with Eilath on the Red Sea (98). Operating results of Israel Railways, traffic breakdowns, and technical details for the period 1948-1975, will not be detailed here for reasons of space, and because, unlike the historical subjects of the above survey, they will be found, well summarized, elsewhere (99).

In the middle 1970's the Israeli railway system consisted of the following sections:

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98) Date from the Israeli press. The railway to Eilath/Sdom is being built in accordance with a preliminary feasibility study entitled "The Railway of the Three Seas" (Mediterranean, Dead and Red Seas) prepared under German auspices in 1963. Cp. Regling-Voss, in bibliography.

99) Israel Railways have published statistical abstracts and reports for many years. These also, occasionally, contain illustrations and are frequently published in languages other than Hebrew. Statistics regarding the Israel network will also be found in relevant professional publications (cp. bibliography), in the Statesman's Yearbook, and in the handbooks of "Europa" Publications (London).
## Israel Railways System

### British-Run to 1948

<table>
<thead>
<tr>
<th>Section</th>
<th>Length in Kms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haifa-Naharia-Lebanese Border</td>
<td>37</td>
</tr>
<tr>
<td>Haifa-Lod</td>
<td>113</td>
</tr>
<tr>
<td>Lod-Rehovoth-Ashkelon</td>
<td>42</td>
</tr>
<tr>
<td>Tel Aviv-Jerusalem</td>
<td>87</td>
</tr>
<tr>
<td>Rosh Ha'ayin-Petah Tikvah</td>
<td>6</td>
</tr>
<tr>
<td>Haifa-Nesher</td>
<td>6</td>
</tr>
<tr>
<td>Ashkelon-Gaza-El Arish, about</td>
<td>120</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>411</strong></td>
</tr>
</tbody>
</table>

### Israeli-Built to 1970

<table>
<thead>
<tr>
<th>Section</th>
<th>Length in Kms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bnei Berak-Petah Tikvah</td>
<td>6</td>
</tr>
<tr>
<td>Remez Jct.-Tel Baruh-Bnei Berak</td>
<td>43</td>
</tr>
<tr>
<td>Tel Baruh-Tel Aviv (North)</td>
<td>4</td>
</tr>
<tr>
<td>Na'an-Beer Sheba</td>
<td>74</td>
</tr>
<tr>
<td>Flesheh Jct.-Ashdod</td>
<td>7</td>
</tr>
<tr>
<td>Beer Sheba-Dimona</td>
<td>37</td>
</tr>
<tr>
<td>Dimona-Oran</td>
<td>29</td>
</tr>
<tr>
<td>Mamshit-Tsefah</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>215</strong></td>
</tr>
</tbody>
</table>

**Overall Total:** 626 kms. (approximately)

**Note:** The above Grand Total does not include various spurs, occasional short double-tracked sections, and multiple rail tracks in stations and shunting yards.

Some distances may be approximate.

Details compiled mainly from Railway Directory, 1975, and corrected.
The latest available figures for Israel Railways, from a reliable source, give the overall length of track, including spurs, and lines open but not at present worked (like the section Remez Junction-Rosh Ha'ayin, closed since 1970) as 809 kms. Rolling stock comprises 34 diesel-electric main-line locomotives, 21 diesel shunting locomotives, 107 passenger carriages and 2,305 goods wagons of all varieties (100). There is another figure from another professional source that gives the total length of the Israel network, excluding Sinai, in 1973, as 793 kms. While slight discrepancies in railway track mileage are usual, the figure of 793 kms. is of interest, as it works out the density of the Israeli system at 3.91 kms. of railway track per square km. of country, without Sinai. This gives Israel a higher density of railways than has the U.S. - which has 3.52 kms. of rail per square km. (101).

The attached two maps, showing the present rail systems of Israel and Jordan, illustrate the ultimate stage in the chequered development of railways in Palestine-Israel, and adjoining areas, that started about 1838 with an idea that came to Sir Moses Montefiore, and has continued for almost 140 years.

100) Figures for table and statistics are based, with corrections, on Railway Directory, 1975, p. 295.

The Railway Systems of Israel and Jordan. 1975.

Top: The Network of Israel Railways.
Left: The Jordanian Railway Network.

(Source: Railway Directory)

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Note on Maps and Photos

There is no dearth of maps to illustrate the development of railways in Palestine since 1918, and in Israel and Jordan after 1948. Some have already been referred to in the notes to the text of the foregoing chapter.

The best maps, most reliable and detailed, are the mandatory maps, 1:100,000, published in various editions by the Survey of Palestine, and the maps of the Survey of Israel, 1:50,000 (restricted), 1:100,000, and 1:250,000. They will be found to lend a useful background to what has been said in the text. Two very useful maps, with adequate coverage of railway developments in recent years, are:

1) Naher Osten/Middle East, 1:500,000, Kümmerly and Frey, Bern, late 1960's;
2) Carta's Israel and Adjoining Countries, 1:750,000, Kümmerly and Frey, Bern, early 1970's.

As already noted, most guidebooks to Palestine/Israel contain maps, some very good, and showing railways. Some travel descriptions have good maps, as have professional railway publications that continually (usually annually) update their maps. The "Atlas of Israel" (Hebrew & English editions) has maps referring to the development of communications in the Holy Land at various periods. C.p. the bibliographies to the various chapters of this survey for further details.
There are also many photos to be had of railways in Palestine/Israel. These will be found in institutional archives (Israel Information Office, Tel Aviv; Imperial War Museum, London; Keren Hayesod Archive, Jerusalem; Zionist Archives, Jerusalem; etc.), and in newspaper collections. Israel Railways also provide (mostly contemporary) photos. Older illustrative material may be found in advertisements, travel posters, and pamphlets destined for tourists. There are also private collections of amateur photos (of which the writer has one). Professional photographers also have interesting, but expensive, pictures.

Books on various aspects of Palestine/Israel also will prove fruitful sources of photos. Especially useful are illustrated travel descriptions, photographic records of the country, and monographs dealing with particular periods in the history of the country. In most of these publications photos of railway details are wholly incidental, but very illuminating nonetheless. To this type belong the books (listed in the bibliography) by Rivlin (for the 1936-39 disturbances) and by Banai and Niv (on the period 1945-48).
The Development of Railways in Palestine from 1838 Onward

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Notes

1) The above bibliography contains a number of titles referring to the Baghdad Railway. These sources invariably also mention railway developments in Palestine as well.

2) A number of titles in the above bibliography do not appear in the text. Most were included in the original draft of chapter III but were omitted from the text when it was cut by approximately half. As these titles constitute valuable background material, they were kept in the bibliography.

3) A limited number of titles taken from periodicals, and a very few books (Kübel, Mygund, Schmidt) were not available to the writer, and could not be traced through Inter-Library Exchange. As they did exist at some time, and may have survived two World Wars somewhere, they were included in the bibliography, for the sake of completeness.
The following Hebrew bibliography contains the Hebrew sources used in the foregoing thesis.

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