

## RAILWAYS IN THE PALESTINE CAMPAIGN.

[We are indebted to the courtesy of the Editor of *Modern Transport* (33, King Street, Covent Garden, W.C. 2) for permission to use an illustrated article on the above subject, which appeared in the issue of Oct. 18th, as part of an extensive series on "Transportation and the War." Very much of the article is of general interest, and also important from the point of view of the P.E.F., and we are glad, therefore, to be able to reprint large portions of it, and to reproduce five of the maps and illustrations. The first part of the article and a number of paragraphs of a purely technical value have been omitted, but all omissions are indicated in the usual way.—ED.]

"The development of military railways in Palestine began in the early part of 1916. Up to that time the British Forces had merely maintained a defensive position along the Suez Canal, but towards the end of 1915 the situation on this front was considered to present several favourable features which, if fully utilised, might result in a decisive success. In the event of an advance by our troops it was considered possible to maintain an efficient line of communication and also better lateral communication than the enemy had. In fact, there was every possibility for the tactical employment of railways and water pipe-lines in a manner which would actively interfere with the enemy's plans and delay his preparation. . . .

## "(1) THE MAIN LINE EAST OF KANTARA.

"Following on the decision to advance in Palestine, a line from Kantara on the east bank of the canal running along the coast towards Romani and El Arish in rear of the troops, was an obvious necessity to maintain efficient communication with the base.

"It was decided to construct this as a single line of standard gauge material, the question of doubling being deferred pending developments in the campaign. Consequently in the spring of 1916, a commencement was made with a quantity of material supplied by the War Office. As previously mentioned, Egyptian labour was utilised on the formation, but R.E. Construction companies were responsible for the laying of the track.

**NOTES.**

**Gauges**



**Single Line**



**Double Line**



MAP SHOWING THE RAILWAYS OPERATED IN THE PALESTINE CAMPAIGN.

(From Modern Transport.)

“By the summer the line had reached Romani (41 km. from Kantara) in the rear of the British position. On August 4, 1916, the Turks carried out an attack on the British Forces near Romani, but had to retreat with heavy losses. The British then advanced and after meeting with some resistance from the enemy, entered El Arish on December 21. Meantime the railway was also being pushed forward, and on January 20, 1917, *i.e.*, one month after the town had been occupied, a new station was open for traffic at El Arish (155 km. from Kantara).

“The troops followed up their success at El Arish by a further advance, and on January 9, the strong enemy position at Rafa was taken by Anzac mounted troops and the Imperial Camel Corps. It became necessary, therefore, to progress with the railway to Rafa, and arrangements were made by the War Office to supply further material. By the middle of March, 1917, the railway had reached Rafa, a distance of 200 km. from Kantara, the base.

“So rapidly did the British advance that on March 27 General Sir A. Murray reached the outskirts of Gaza and there defeated 20,000 Turks, taking 900 prisoners, including the General and Divisional Staff of the 53rd Turkish Division.

“It then became necessary, in order to keep pace with the advance, to continue the extension of this line towards Gaza. . . .

“At the time of General Stewart’s visit—June, 1917—the railway, which followed closely the Mediterranean coast line and had no gradient exceeding one per cent., had been constructed for a distance of about 219 kms. to Deir El Belah, a point about 13 kms. south-west of Gaza, where our advance at that time was halted. In order, also, to widen the front served by the railway and possibly to connect with the trace of the Turkish line at Beersheba, a branch line was being constructed from Rafa running due east for about 24 kms. past Shellal and over the Wadi-el-Ghuzze.

#### “(2) THE QUESTION OF DOUBLING, KANTARA TO RAFA.

“On June 29, 1917, General Sir Edmund Allenby took over the Palestine Command and plans for a further advance were prepared. To meet the increasing needs of the Force, consideration was given as to the necessity or otherwise of doubling the Kantara line. . . .

“In considering the ultimate capacity of the line if left as a single track, it had to be borne in mind that the sleepers were laid

directly on the sand without any other form of ballast. The track when laid was liable in parts to be covered by drifting sand in a storm. During a sandstorm traffic was considerably delayed; efforts had been made to push trains through, but this only led to a number of derailments, so that in the event of a storm lasting five days, there were heavy arrears to be made up. Some trouble was experienced by sand working into the axle-boxes and the working parts of locomotives and rolling-stock; this was accentuated whenever the weather was windy. Plate II, which is a view of a section of the Hedjaz railway, will give an idea of the obstruction caused by sand drifting on to the track in parts of Palestine and Syria. It was not uncommon for trains to be brought to a standstill by waves of sand. Sand fences to guard against drifting were erected as rapidly as possible, but the standard speed for normal operation had always to be kept below that possible on a well ballasted stone track. . . .

“By the end of July a commencement had been made with the doubling of the line to Rafa. Some difficulty having been experienced in the severe gradient east of Rafa station, a deviation of about 10 km. in length was made to do away with the necessity of reducing the weights of trains east of El Arish. A similar deviation was made between km. 191 and 194, making it unnecessary to reduce engine loads beyond El Arish. . . .

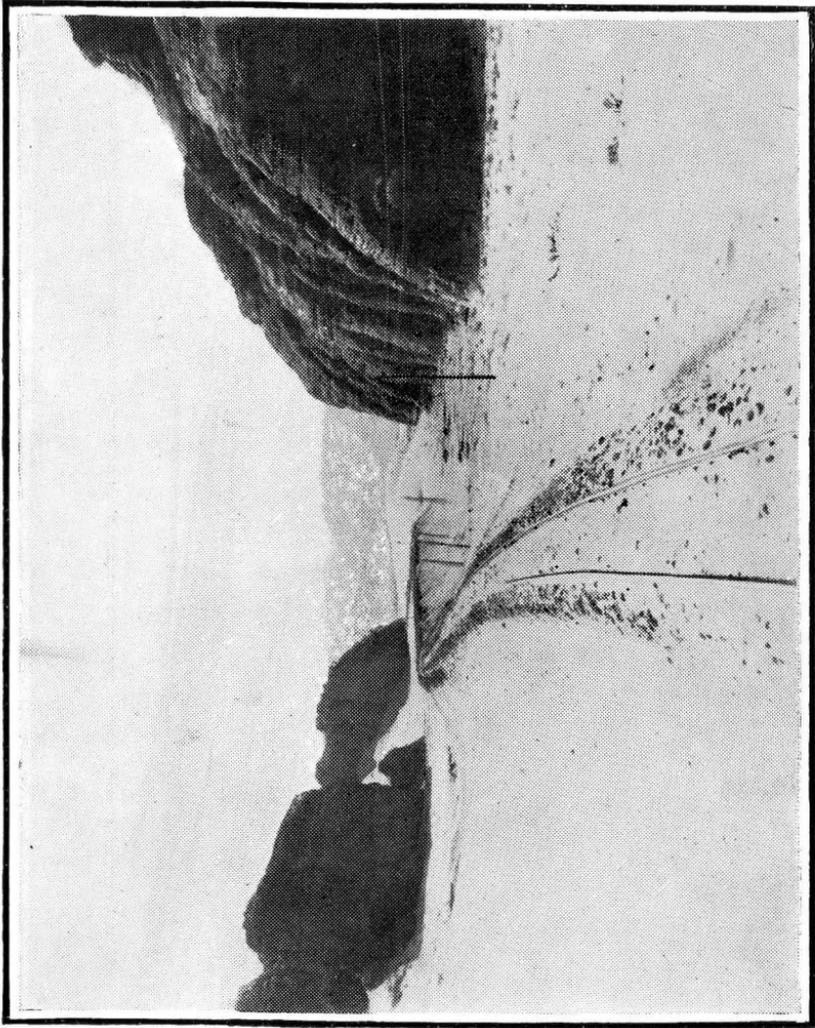
### “(3) EXTENSIONS BEYOND GAZA.

“... Although it was necessary to proceed speedily with the doubling to Rafa, it was also essential to push on with the extension of the main line beyond Gaza to Jaffa. . . .

“An extension of the Rafa to Shellal line towards Ifteis, eight miles north-east, was then sanctioned, and schemes for a single line from El Belah to Jaffa, and alternatively, a double line from Rafa to Jaffa, were being prepared. The former, it was estimated, would require 112 miles and the latter 220 miles of track. . . .

### “(4) JAFFA AND WADI SURAH EXTENSIONS.

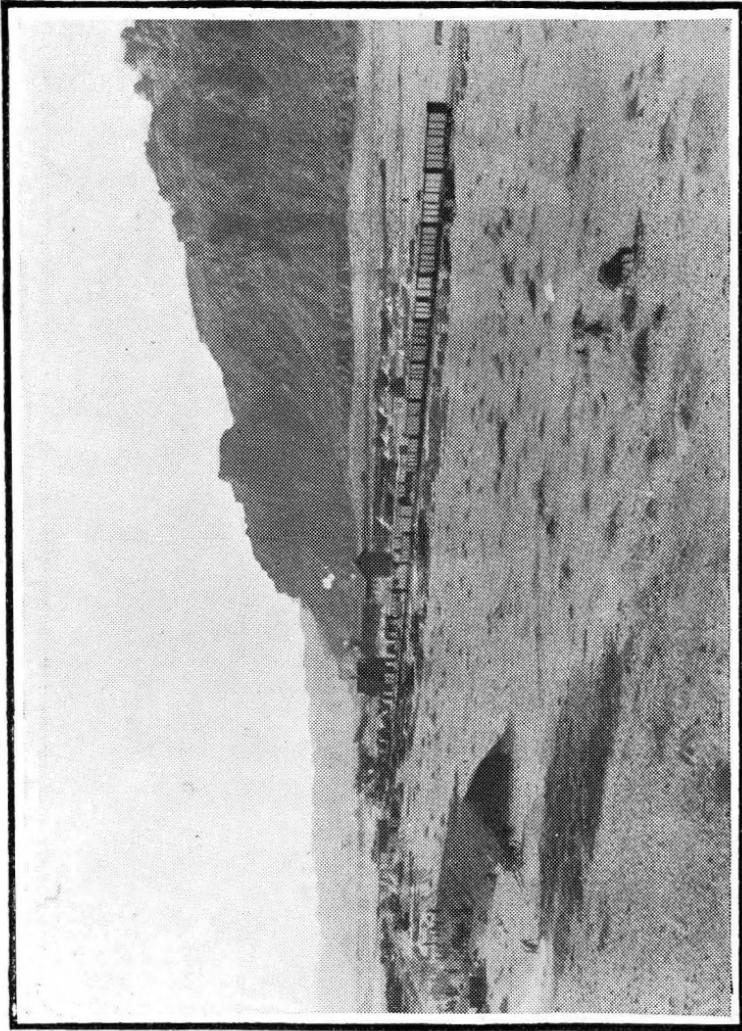
“By September, 1917, further developments were being planned in the Palestine Campaign and the question of Egypt's rail requirements in connection with a contemplated advance were given further consideration. In order to satisfy tactical requirements, and to



HEDJAZ RAILWAY.

The narrow Pass of Abu Taka, showing Sand Drifts.

(From *Modern Transport*.)



HEDJAZ RAILWAY: EL-ULA STATION.  
The Entrance to the Sacred Province of Hedjaz.

(From *Modern Transport*.)

maintain the right and left flanks of the force as it advanced it was necessary to provide for one single line from Rafa to Jaffa along the coast, and another single line from Rafa to Shellal and Ifteis, and thence following the Turkish track to Wadi Surah and on to Jerusalem, with a connecting single line from Jaffa *via* Ramleh to Wadi Surah. The first line would have to leave the coast in the neighbourhood of Yebna, reaching Jaffa *via* Ramleh, and it was hoped that no severer gradient than 1 in 100 would be encountered. This line would enable 7 infantry and 3 cavalry divisions to be maintained, and the second line to Wadi Surah 5 divisions. Arrangements were also being made to use motor transport to a modified extent if suitable roads became available, but it was realised that this form of transport could not be relied upon except as a means of distribution from the railways.

“The contemplated advance on the whole of the British front was successfully carried out, and on October 31, 1917, General Allenby took Beersheba, capturing 1,800 Turks and 9 guns. The fall of Gaza took place on the 7th of the following month, and on the 9th the Turks were in full retreat from Wadi Hesi and Ascalon on Hebron and Jerusalem, suffering a loss of 70 guns and 10,000 casualties. The rout of the Turks was so complete, that by November 17 Jaffa was entered by Australian and New Zealand troops, and December 9, 1917, witnessed the fall of Jerusalem. On the 11th General Allenby entered Jerusalem accompanied by the military attachés of France, Italy and the United States, and received a message of congratulation from the King. The result of this extensive advance was to necessitate still further railway construction and operation, and steps were at once taken to push the work forward. . . .

“(5) THE BEIT HANUM-WADI SURAH LINE CAPTURED FROM  
THE TURKS.

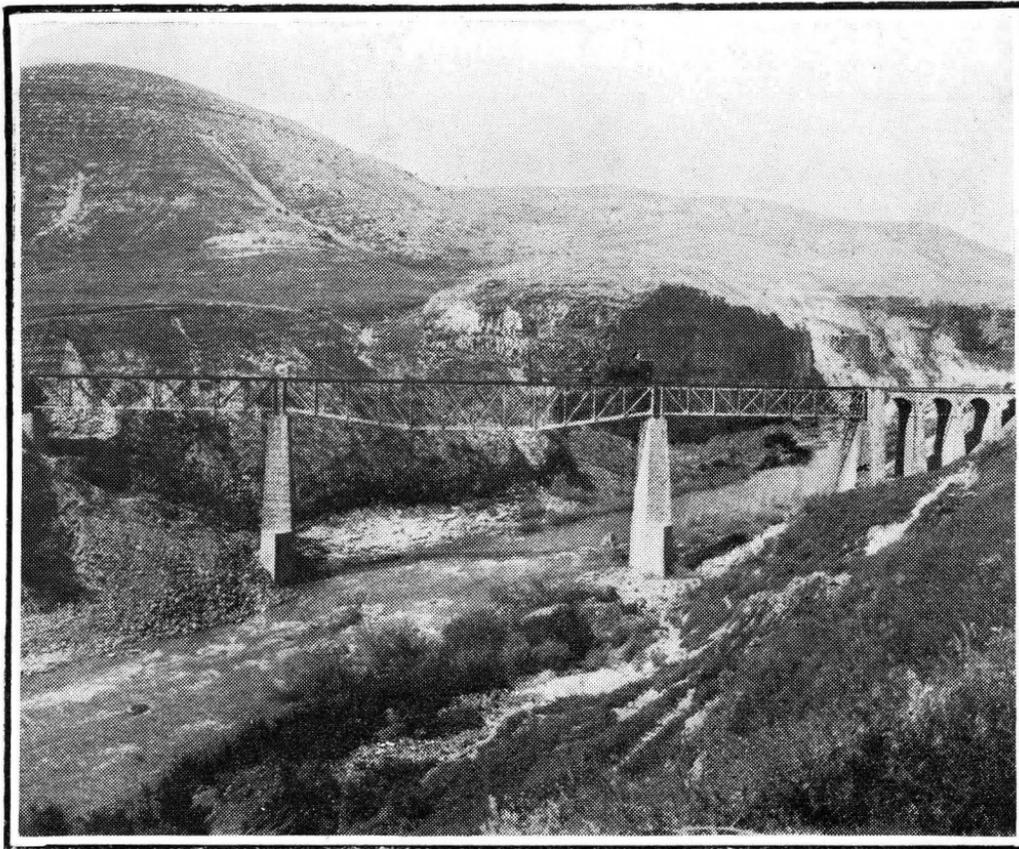
“The Turkish Beit Hanum-Wadi Surah Line, which was captured in the advance, was found to be practically undamaged, and by the end of November, when the main line had been extended as far as Beit Hanum, the Turkish line was being used for carrying supplies. Arrangements were made for continuing the construction of the main line (from Beit Hanum) within easy distance of the coast as far as Yebnah and thence to Ludd.

“By the middle of December the Turkish line from Beit Hanum to Wadi Surah (1.05 metre gauge) was being regularly used. From Deir Sineid, the transshipping point on the standard gauge line, to Wadi Surah, the number of trains per day averaged 7 of a capacity of from 45 to 85 tons of useful load according to engine. One ammunition train was being run each day along the branch to Jerusalem as far as we could get to feed the advancing troops. An interesting fact was that the Turkish line had eleven sleepers to a rail length, of which four or five were steel and the remainder wood. In the wood sleepers there were no fastenings, and they relied on the steel to keep the gauge of the line, which seemed to answer the purpose quite well. The line also was roughly ballasted.

“With the capture of Jerusalem on December 9, 1917, the branch from Wadi Surah to that point, a line of 1.05 metre gauge, fell into our hands. On this line all bridges were thoroughly destroyed by the enemy, but by January 6 they had been repaired, and the line would have been opened on that date had not heavy rains caused wash-outs.

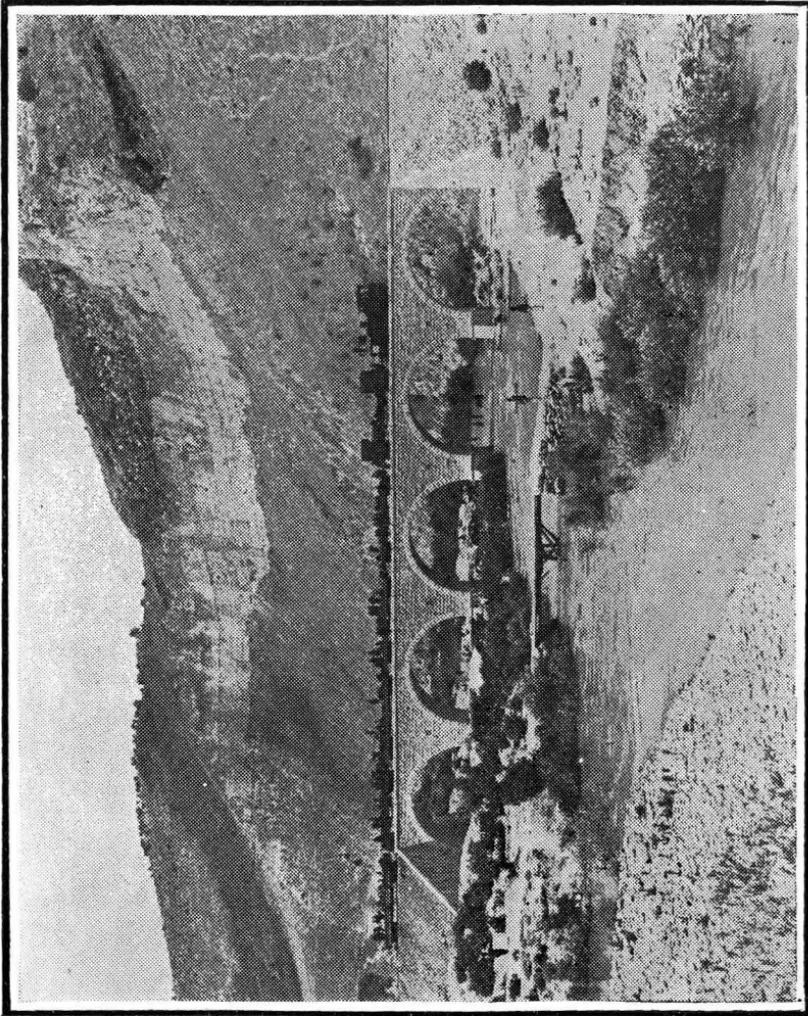
“It was estimated that when the broad gauge track had reached Wadi Surah, the rolling stock which had been captured and a certain amount borrowed from Egypt and Sudan would suffice for 600 tons of supplies or stores daily from Wadi Surah to Jerusalem on the 1.05 metre gauge. This apparently would meet military needs. If, however, food had also to be transported for the civil population, it would probably be necessary to carry the standard gauge as far as Jerusalem. The line was made fit for traffic for a distance of 43 km. by December 14, and, during the following week, an average of 364 tons were carried per day, there being a short ruling gradient of 1 in 45. From Ludd the line had a ruling gradient of 1 in 50, with curves of 140 metres radius. The total distance from Ludd to Jerusalem was 60 kilometres. The fact that several of the engines were too heavy for the rails, and that all the stock from Egypt and the Sudan (3 ft. 6 in. gauge) was half an inch too wide for the Turkish gauge (1.05 metres or 3 ft. 5½ in.), necessitated very careful working; the speed was kept down and everything possible done to make the line last until such time as it was possible to relay it with standard gauge.

“Whilst the British were working the Turkish lines, the question of rolling-stock for the 1.05 metre gauge was a difficult problem. . . .



YARMAK VALLEY RAILWAY.  
Second largest Bridge after entering Yarmak Valley. (Spans 98 feet and 165 feet.)

(From *Modern Transport.*)



YARMAK VALLEY RAILWAY.  
Ninth Bridge near Makarim.

(From *Modern Transport*.)

"The Jerusalem branch was gradually converted to standard gauge, and by April 5, 1918, the standard gauge had reached Artuf (53 km. from Jerusalem). . . .

"Arrangements were subsequently made to carry the main line beyond Ramleh to supply the front line and a station was built at Ludd.

#### "(6) FURTHER RAILWAY DEVELOPMENTS.

"The year 1918 marked a considerable extension of the main line from Kantara coincident with the rapid advance of General Allenby's troops. In February the Turks retreated north of Jericho beyond the Jordan. In the following month the Jordan was crossed by General Allenby, an advance being made towards the Hedjaz railway. Es Salt, situated midway between the Jordan and the Hedjaz railway, was occupied by Australian troops on May 1, 1918, but in order to consolidate the front line, troops withdrew from Es Salt behind the Jordan on the 3rd of the month, capturing 900 Turks. At this time the front occupied by the British stretched from a point on the coast about 10 miles north of Jaffa across to the River Jordan, and thence down to the Dead Sea.

"By March 30 the construction of the main line had reached km. 315, *i.e.*, about 8 km. north of Ludd. By the end of June the branch line from Rafa to Beersheba had been completed and the branch line from Ludd to Jerusalem had been converted from the Turkish 1.05 metre gauge to 4 ft. 8½ in. gauge. The Turkish line running northward from the Beersheba branch at Irgeig up to Wadi Surah on the Jerusalem line was being converted to standard gauge, the intention being that when this line was complete it would serve as an alternative route to the single track main line from Rafa to Ludd.

"To facilitate the supply to the front line, a 2 ft. 6 in. gauge railway was constructed from Kefr Jinnis (km. 308 on the main line) to El Lubban, this line being subsequently taken up when the troops advanced.

"By July 15, 1918, the conversion to standard gauge of the Turkish line from Irgeig to Wadi Surah Junction on the Jerusalem branch had been completed, but owing to the rapid advance of the troops it was decided to pull up the line as the track was urgently required for other theatres of the war. This line was therefore closed to traffic on October 18, 1918.

“Coincident with a further general advance during the summer campaign, there was great constructional activity on the main line of the Kantara railway, which, by the end of September, had reached km. 323. The progress of the troops was very rapid, and, by September 20, Nazareth was occupied, and, on the 22nd, the 7th and 8th Turkish armies were rendered *hors de combat*. The army on the left flank forged ahead, and on the 23rd Haifa and Acre had been captured, thus rendering necessary an extension of the Kantara main line up to these points. The armies on the right flank had also been active, and on the same day Colonial and Jewish troops in pursuit of the 4th Turkish army reached Es Salt, and Maan was occupied by King Hussein's Arabs. On the 25th, Tiberius, on the Sea of Galilee, and Annam, on the Hedjaz railway, were both occupied by General Allenby, who, up to that date, had captured 45,000 prisoners and 265 guns.

“Consequent on the advance, there was an appreciable increase in the personnel and goods carried, the former amounting to 44,000 per week for the September quarter, as compared with 36,270 per week during the quarter ended June 30, and the latter 30,800 tons per week, as compared with 28,800. Additional locomotives had also been supplied, as many as 164 then being on charge with 2,035 wagons. There were also 127 narrow gauge locomotives and tractors, and 845 wagons and coaches.

“The advance was continued in October, and on the 1st of that month Damascus was entered by the British, 7,000 prisoners being captured. From Damascus the troops pushed forward rapidly, and on the 7th of the month General Allenby reported that he, with the King of the Hedjaz, had, since September 18, taken 79,000 prisoners. Sidon was occupied by the British, and Beirut by the French. On the 26th of the month Aleppo was taken, thus completing the conquest of Syria, and cutting the Turkish communications over the Baghdad Railway.

“Meanwhile the main railway in the rear of the troops was being very rapidly laid—in fact, the quarter ending December, 1918, witnessed an extension of nearly 100 km. In September the line reached only as far as km. 323, but by the end of the quarter it had been extended to Haifa, at km. 412, where a station was opened, and twelve new stations had been opened en route.

“Following on the conquest of Syria, the Turkish army on the Tigris was defeated on October 30 by the Mesopotamian Expe-

ditionary Force advancing north-west towards Mosul. The enemy sued for an armistice, which was granted from 12 noon on the following day (October 31).

“Plates I and II are photographs taken on the Hedjaz railway, which lies east of and parallel with the River Jordan. El Ula station, shown in Plate III, marks the entrance to the sacred province of Hedjaz; beyond this point no Christian may go. Plates IV and V show bridges on the Yarmak Valley Railway, which was captured in the later stages of the campaign. It is interesting to observe that a photograph of the bridge in Plate V was sent by Kasim Pasha to the Sultan Abdul Hamid. It was the first photograph of the line to be seen in Constantinople, and, on receiving it, Abdul Hamid decorated Meisner Pasha with a gold medal.”<sup>1</sup>

## ARCHAEOLOGICAL NOTES ON JEWISH ANTIQUITIES.

By JOSEPH OFFORD, M.R.A.S.

(Continued from Q.S., 1919, p. 186.)

### LX.—*The Double-headed Eagle and the Etruscans and Hittites.*

A WRITER in the *Morning Post* has been tracing back in artistic history the double-headed Eagle of Prussia (or Germany) to the Tarquins, the founders of Rome.

But this heraldic symbol is far older than its utilisation by any race by the Tiber, being the crest of the earlier Hittite princes of Palestine and Syria. That it was brought over from the Near East to Italy is quite in agreement with the persistent statements in the classics that the Etruscans came from Asia. They certainly, for a time, introduced the Egyptian scarab-shaped seals into their new home. The syllable “Tar” of Tarquin, is the “Tar” of Tarkondemos and other Hittite personages. It may be the Tar of Tarshish,

<sup>1</sup> For the continuation of the article, which was almost wholly technical, see *Modern Transport*, Oct. 25th.