HaRakevet

ISSN 0964-8763.

Series 16
Issue No. 61 July 2003

הרכבת

A Quarterly Journal on the Railways of the Middle East
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61:2.

EDITORIAL.

The past few months have seen the conflict in Iraq first flare up, and then reduce to a sullen simmering following a very quick military operation. The gentleman on the back cover of issue 60 is currently nowhere to be seen. Hard news about the railways there is hard to obtain - rumours abound. In the meantime, a tragic attack in Israel cost the life of a security guard on the station of Kfar Saba (there have been, of course, many other attacks and deaths in the period in question, but not on the railways).

Due to an oversight the Subscription Renewal Form did not go out with issue 60, as planned, and will be enclosed with this issue, to cover the 'Series' 60-63. It is hoped that readers will renew - this magazine has never been and is unlikely ever to be 'commercial' in any sense, but the Editor, who is subsidising it from his own pocket, hopes to keep its costs to a minimum. Subscriptions if possible direct to the address in Leeds.

Work on an Index has reached the stage that a 67-page long version covering issues 1 - 48 is basically complete - and can be sent by e-mail in Works or Word attachment on request to the Editor. It is unlikely that it will ever be worth printing this out as a separate item, as the Index for issues 1 - 20 was once done.

Despite everything, there is good news too. Enjoy !

The Editor.

61:3.

At the Ramta Works in Beersheba, on 6th. Dec. 2002, the "Pasim" (Israel Railway Enthusiasts Club) observe an IC3 unit being completed. Note the rubberised end has not yet been inflated.

(Photo: Hans Kohut).

61:4.

NEWS FROM THE LINE.

(a). POLITICAL CHANGES.

The new Minister of Transport did not stay long in post ! On 25/03/03 it was reported on "Israel Line":

"Minister of Transportation Avigdor Lieberman (National Union) resigned on Monday from the Knesset to allow former MK and fellow party member Eliezer (Chita) Cohen to enter the parliament, MA'ARIV reported. The resignation will take effect after 48 hours. Lieberman handed in his resignation letter to Knesset Speaker Reuven Rivlin, and said: "I feel that by serving as a cabinet minister, I might be hampering with my party's parliamentary work. Since the issue of the constitution and that of a constitutional court are among the foundations of our party, it is only appropriate that Eliezer Cohen should resume serving as MK to promote them, as he did in the 15th Knesset."

(b). NEW TIMETABLE FROM 12.04.2003.

The new timetable was to be introduced as from Saturday evening 12th. April, together with the opening of the line from Tel Aviv to Kfar Sava, which will involve the opening of two new stations - Rosh HaAyin Tzafon (North) (also called Kessem after the local road interchange) and Kfar Sava Nordau; In addition the new Ramla station will be opened, to be served by 25 trains with a 14-min. journey time to Tel Aviv. [See below for Sybil's observations on station names.] Yossi Snir added, when announcing this, that the aim is to expand the rail network with new lines while retaining standards of service on the existing lines, in order to bring the periphery of the country in closer contact with the centre, relieve road congestion and bring more passengers to their destinations faster.

On the Tel Aviv - Kfar Sava line there will be 27 trains in each direction, with a travel time of 22 minutes; construction works continue and the second station in Kfar Sava, to be called Sokolov, should open in 2004. However, despite the promises noted above, existing services ARE being affected. The existing station at Rosh HaAyin (a new station, but built on the site of the former station of Mandate times) is to be closed temporarily until services are introduced (or resumed) in the future on the Rosh HaAyin - Lod section, which is currently closed for refurbishment. The new Kessem station is situated further north, and will be served by three bus lines as opposed to the current station's two; bus frequency will be doubled to four an hour; and the parking area will offer room for 500 cars rather than 200. However, bad news for existing passengers at Petah Tikva-Segula and B'nei Berak is that trains will call at these sta-

61:1. Cover Photo:

Old and New. In the pouring rain of the winter of 2003, with the upper slopes of Mount Carmel obscured by cloud, Co-Co 704 waits to leave Haifa East on 5th. February 2003 with the empty stock of a train for Tel Aviv. In the foreground, Cowans Sheldon steam crane 3855/1918 stands in the railway museum compound.

Visible are also the old (former Hedjaz) station building and the brutal-modern footbridge to the museum.

(Photo: Paul Cotterell.)

tions only once an hour in each direction, until the new Kessem station is totally completed - i.e. until a second platform there can be brought into operation.

(For those who have difficulty unravelling the above, the situation until April was that these services departed Tel Aviv northbound, used the third track through to Universita (where the fourth track is not yet installed), then diverge eastwards along single track, with passing loops in B'nei Berak (two platforms, and the loop in use) and Petah Tikvah (loop and second platform completed but not in use at the time of the Editor's visit); a little further east, the line curves southwards to join the north-south line, and here at the junction is where Rosh HaAyin (two platforms plus through track) station stands. The new line diverges northwards beforehand, just where the existing line curved southwards, effectively forming the west-to-north spur of a new triangle. Presumably until Kessem is complete there is no opportunity for standing or crossing trains there, and so the same set has to come in and get out pretty quickly, and there is no time for station stops en route. But it does seem a bizarre bit of operating.

A timetable leaflet indicates weekdays trains northbound from Ramle at 06.03, 07.18, 08.09, 09.10, 10.07, 11.10, 13.10, 15.12, 16.10, 17.10, 18.10, 19.10 and 20.10 - definitely NOT a 'clockface' system - and intriguingly, only the second of these is shown as stopping at Lod ! The 11.10 and 13.10 terminate at T.A. Merkaz, of the others some stop at Segula, some at both B'nei Berak and Segula - it all seems designed to confuse.)

On the Tel Aviv - Ashdod line there will be an additional train at 06.54 from Ashdod.

On the Tel Aviv - Beersheba line, the last northbound train will now be earlier, at 20.44. This reflects low useage of services from Beersheba in the evenings. Incidentally, only two trains each way to/from Beersheba will call at Ramle - "due to low demand".

On the "main line" there will be additional northbound fast services departing Tel Aviv at 07.04 and 18.04, both continuing on to Akko. An additional southbound service departs Haifa at 09.17. However, in the evenings from 20.00 services will be reduced to one per hour in each direction due to low useage. The fast services southbound from Hadera West are brought forward to 06.58 and 07.58, and an additional train will run from Tel Aviv at 19.49.

In the following weeks the railways will employ extensive advertisisng and the assistance of stewardesses on stations and trains, plus direct mail shots to local residents, to inform them of these changes.

A later note from Aharon states that these stations were all opened on 12.04.03 without ceremony, as Snir is quoted as saying "Let's first run the services smoothly and efficiently, and then invite all the VIP's!"

(c). BOMB ATTACK AT KFAR SAVA STATION.

Alas, hardly had the new station opened when it hit the headlines again in grim fashion. The following is taken from the "Israel Line" e-mail news briefing of Friday 25th. April:

"Security Guard Dies in Homicide Bombing at Kfar Sava Station

Alexander Kostyuk, 23, a security guard at the Kfar Sava train station, was killed on Thursday while preventing a homicide bomber from entering the station during the morning rush hour, THE JERUSALEM POST reported. Fourteen people were wounded in the blast - two were listed in serious condition and the rest sustained light injuries.

The bomber was identified as 18-year-old Ahmed Khaled Khatib of the Balata refugee camp located on the outskirts of Nablus. He was said to belong to a terror group composed of members of the Al-Aqsa Martyrs Brigade (the military wing of Palestinian Authority Chairman Yasser Arafat's Fatah) and the Abu Ali Mustafa Brigades (the military wing of the Popular Front for the Liberation of Palestine).

According to eyewitnesses, Khatib was fashionably dressed, wearing a black leather jacket and sunglasses. He was carrying an explosive belt hidden underneath his jacket and containing five kilograms of explosives and insecticide together with nails and washers in order to inflict as much damage as possible. Kostyuk was suspicious of the terrorist and asked him to present an ID card. The bomber pretended to reach for it inside his coat, but instead detonated his bomb.

Kostyuk's family decided that Alexander - who is survived by his parents and a younger sibling - would be buried in Israel.

Israel Police Insp.-Gen. Shlomo Aharonishky, who arrived at the scene shortly after the explosion, said the security guard had averted a more serious disaster by preventing the homicide bomber from entering the railway station, inside which were some 250 people. "It should be recalled that during the course of the [Pesach] holidays, many terror attacks were thwarted," Aharonishky said. "Unfortunately, we are talking about an attack by a terrorist who managed to evade the security forces, reach the railway station, and blow himself up. There is no doubt that the guard at the entrance, who did his job as demanded of him, prevented a bigger disaster with more casualties and damage. We understand today that with all the successful preventions and all the extra measures, it is still impossible to block [terrorists] with 100 percent success."

There have been as many as 60 general warnings of pending terrorist attacks over the holiday period. Aharonishky said it was known that the motivation of various Palestinian groups to carry out attacks was high, regardless of political developments, and that the security forces had to continue to be prepared accordingly. His comments were echoed by Minister of Internal Security Tzahi Hanegbi, who maintained that Hamas, Islamic Jihad, and other terrorist groups did not need any pretexts for trying to perpetrate murderous attacks as demonstrated over the past two-and-a-half years.

Minister of Defense Shaul Mofaz held an assessment session with the defense establishment and army officers during where it was decided the current counter-terrorism policies would remain unchanged and that there would be no specific response to the Kfar Sava bombing."

A later article in 'Ha'aretz' noted that the poor Kostyuk (z.l.), whose father is Jewish but mother not, would be "buried in a cemetery section reserved for non-Jews, in a secular ceremony."

On 25th. May 2003 "Minister of Transport Avigdor Lieberman awarded a certificate of appreciation to the family of Alexander Kostyok [sic], the security guard killed while preventing a homicide bomber from entering the Kfar Sava railway station last month, HA'ARETZ reported. The award was given at a special memorial ceremony during which the station was renamed in Kostyok's honor. The ceremony was also attended by Police Commissioner Shlomo Aharonishky and other senior police officials."

Meanwhile, according to 'Yediot Aharonot' (28/04), "security officials believe that the suicide bombing attack outside the Kfar Saba train station, in which security guard Alexander Kostyuk was killed and 13 people were injured,

was perpetrated by Tanzim members who received funding and instructions from Iran. Israeli troops arrested today Fatah and PFLP members Amir Thoqan and Allam Kabi who are directly responsible for planning the Kfar Saba attack. Two Israeli soldiers sustained light to moderate injuries in the efforts to arrest the two. "Iran is trying to ignite the flames of terror in order to make it difficult for Abu Mazen to take up his new position," ISA director Avi Dichter told the government at its weekly meeting on Sunday."

Hans Kohut has written that he had a lucky escape on that day, when he missed the 08.31 train from Tel Aviv Mercaz and caught the 09.31 instead. "We got as far as Segula, and then proceeded at a snail's pace but only to Rosh haAyin North, where we were stuck for about an hour, waiting for movement orders; eventually we were ordered to retun to Tel Aviv Hahaganah."

(d). TRAFFIC STATISTICS.

In March 2003 there were 1,650,455 passengers - 36% more than in March 2002 ! The rise per line was as follows:

Ashdod - Haifa - Nahariyya. + 41%. (112,870).
Ashdod - Tel Aviv. + 40%. (283,880).
Tel Aviv - Netanya. + 38%.
Tel Aviv - Haifa. + 24%.
Tel Aviv - Nahariyya. + 39%.
Haifa - Nahariyya. + 40%.
Tel Aviv - Rosh HaAyin. + 42%.
Tel Aviv - Beer Sheba. + 44%.

An interesting point in this statistic is that the rises in passenger traffic do not necessarily reflect the line's share of the total traffic. The following data indicate:

Tel Aviv - Haifa line.
25% of the total.
Tel Aviv - Ashdod line. 17%
Tel Aviv - Beer Sheba. 14%
Tel Aviv - Nahariyya. 14%.
Tel Aviv - Netanya. 11%.
Haifa - Nahariyya. 8%.
Ashdod - Haifa - Nahariyya. 7%.
Tel Aviv - Rosh HaAyin. 4%.

About 46% of the passengers are commuters, and 34% are non-civilian. In March, average distance travelled was 64km., average passengers per train 282, 105,044 passenger/km.

(e). PLANNED DATES.

Prime Minister Sharon has recently decided to measure his ministers by implementation of deadlines! This includes:

Opening of Tel Aviv - Ben Gurion Airport line, together with the new airport terminal, by April 2004; Upgrading Lod - Rosh haAyin line by June 2003; the lines to Rishon leZion and to Beit Shemesh by Sept. 2003; design of a line Akko - Carmiel by July 2003 and works to start by October 2005; design of a line Haifas - Nazareth by December 21003 and works to start by December 2005; closing all financial issues on the Jerusalem LRV system by November 2003 and works to start by the end of 2003, with the first line operationasl by 2006; changing the status of the railways to Israel Railways Ltd. by the end of June 2003; allocating money: - $1.3 billion for five years from external sources for development programmes up to 2007; in addition $1.2 billion from Government budgets. The negotiations with banks for the initial $150M to be completed by November 2003.

Very ambitions, but let us hope!

(g). FINANCIAL CONSTRAINTS LEAD TO HALTS.

From a press release of 20.05.03 by the Minister of Transport: The Ministry has decided to check once again the viability of building the fast link to Jerusalem, known as 'Option A1'; this is due to the fact that the status of the railways will be altered soon as they become a private corporation "Israel Railways Ltd.", and the money for such a project - costing more than $600M will come partially from external sources. The Ministry added that other infrastructure projects are also being re-examined in light of the current economic difficulties, but that the viability of the scheme had been assured in earlier studies, and they hope that work will finally be approved in the end. The Ministry is also discussing the other option, 'G', which involves improvements to the existing, older line to Jerusalem, which is at present being upgraded (this work being known as Option 'S'). Option G involves boring several new tunnels totalling 5km. to reduce some of the curvature and mileage on the old line, which will enable a travelling time of 54 minutes as opposed to 75 minutes under the simple 'S' upgrading option. However, this will cost more than $300M, as opposed to around $85M for the Option 'S'. Interestingly, the Jerusalem Municipality (where elections are in any case to be held in June) prefers at present Option 'G', on the basis that if option 'A1' is realised, many inhabitants of Jerusalem might leave and move out to Modi'in, which will then be on the new line (and through which Tel Aviv - Jerusalem will be a matter of 30 minutes only). Work between Ben Gurion Airport and Modi'in is already well under way - see also the tenders issued, elsewhere in this issue. Israel Railways G.M., Mr. Yossi Snir, announced that "We are continuing with the implementation of option A1 as usual."

(h). MORE ON PROPERTY VALUES.

A recent survey has re-confirmed that the prices of real estate in areas located along the railway lines which provide frequent and convenient passenger services are rising steadily, despite the fierce competition from much cheaper bus services; these sites are becoming very popular, creating an "emigration" from the cities to the so-called satellite settlements. [Shades of 'Metroland'! Ed.]; as a result of these facts, the Ministry of Finance took an historic commitment (despite the other items noted here) to create within five years a rail link to each city or town with 50,000 or more inhabitants !

(i). PROGRESS AT BET SHEMESH.

More despatches from Sybil Ehrlich, who lives locally:

On Friday 04.04.03: "As you probably know, track laying towards Beit Shemesh was delayed by the bridge washout at Nahal Sorek about a month ago. The heavy rains damaged the bridge, and the works train was stranded in Nahal Sorek station. The bridge has now been repaired, and today I saw from my living-room window (using binoculars) the works train. I rushed down there as fast as I could (it is about 2.5 km from Beit Shemesh station) and was just in time to see the crew packing up for the day, at 10:20 a.m. I was able to exchange a few words with one man who recognized me from my explorations, before the train returned to Lod. I'm planning to go back on Sunday morning to see how things are doing.

Meanwhile, Beit Shemesh station is nearly ready. The paving on the platforms is almost finished, the underground passage is tiled, the reconstructed station house is looking particularly lovely..."

On 08.04.03 she added: "This morning I spent a happy half-hour watching track being laid - an interesting experience - about 200 metres from the Tzora road. It is due to reach the main road at Beit Shemesh station this Friday (April 11). There are conflicting

views on when it will actually be in the station. The works train crew told me they will stop at the road, but the station works manager said they will be in the station next week."

On 13.04 there was more! "I've just spent a happy morning trying out the new Ramle-Kfar Saba line. Very nice. I started from Ramle on the 10:07, and stayed on all the way to the end. The other terminus is called... wait for it... the platform signs say "Hod Hasharon-Kfar Saba". The street-side sign is "Kfar Saba-Hod Hasharon" (I took a photo showing both these signs together!), and on tickets it is "Nordau KS". That should keep everyone happy, except for those of us who want to know how the station should be filed alphabetically! From there I took the next train back to "Rosh Ha'ayin Tzafon" (station signs inside and out), or "R. Ha'ayin Kesem" (on ticket)!

I had already got definite oral confirmation from Benny Naor that photography with an ordinary camera (not video) is permitted, and if a security guard says otherwise he is exceeding his authority. I am happy to report that I had no problems at all with photographing. On each station I went to the end of the platform, unlike a normal person who makes for the exit, and when I was asked "Lady, where are you going?" I grinned and said I was going to take photos. "Oh, that's OK then!" Obviously the guards have received new and proper instructions. I was busy photographing at Rosh Ha'ayin Tzafon when I bumped into Chen Melling, doing the same trip in reverse!

Track is now about 10 metres from the road at Beit Shemesh. I don't know whether you know how track laying is done, but it was certainly an eye-opener for me.

First of all, outer guide rails are laid for that day's work. The amount of track to be laid in a day is the amount of material that the works train can carry. I haven't seen the outer rails actually being laid because that is done first thing in the morning and I have never been there early enough. Two cranes, each driven by one man, run on these outer rails. They bring a ready-made section of track, 18 metres in length with 31 concrete sleepers, and lower it onto the ground, where three men bolt it to the previous section. While the new section is being attached, the cranes go back to the works train to pick up the next section, and so it goes on. It is a very quick process. The loco in use is 603."

61:5.

LIGHT RAIL PROJECTS.

(a). TEL AVIV LRV/METRO.

From a press release of the Ministry of Transport, 25/03/03: The Interministerial Tenders Committee, headed by the Deputy General Accountant of the Finance Ministry, Mr. David Gershonowitz, will publish in the next month the lost of competing groups which has reached the final stage in the international tender for the first LRV (the Red Line) at Tel Aviv.

The four groups comprise:

1. Siemens Transportation of Germany, Aecon of Canada, HTM of the Netherlands, Africa-Israel, and the Egged bus company.

2. Bombardier Transportation of Canada, Bouygnes and RATP of France, Nechushim-u-Binyan (Real estate & construction), and the Dan bus company.

3. Alstom and Connex of France, Ashtrom, Shikun-u-Binuy (housing & construction), and Polar Investments of Israel.

4. CAF of Spain, Daewoo International of South Korea, BVG of Germany and Shapir Engineering, Osif, Granite-HaCarmel and Bateman Engineering of Israel.

As already announced, the Red Line will start at the Central Bus Station at Petach Tikva, pass near the Beilinson Hospital and in the median of the congested Jabotinsky Road, through Bnei Berak and Ramat Gan, Tel Aviv Savidor Station (interchange with IR), Petah-Tikvah Road, near Hashalom station (Azrieli Mall), HaKirya (Government offices), Manshiye (near Jaffa), and then along the Jerusalem Avenue to the south of Bat Yam. The line should cost about $1Billion.

The Minister of Transport (at this point still Mr. Avigdor Liberman) met on this day with senior managers of the project ('NTA'), the Chairman Mr. Kutchik and the General Manager Mr. Yishai Dotan, who introduced him to the whole project for the LRV/Metro for the Greater Tel Aviv area. Lieberman said that for an efficient and fast service to be created, it would be necessary to integrate buses, the railways and the LRV line.

[The Editor adds: This is, as with the Jerusalem project, an impressive line-up, displaying great confidence and faith in the future prospects in this troubled country. Each consortium incorporates a rail vehicle constructor of international reputation, and an experienced European public transport operator, as well as the international finance house and local construction firm.]

And: From "Railway Gazette" Metro Report 2003, pp. 54f.:

TEL AVIV Red line ready to begin

Pre-qualification of bidders to finance, build and operate the first route of Tel Aviv's planned light rail network was nearing completion in April. Bids for the Red line were called in November 2001 and have been received from four international groups. We expect to announce the winning bidder for the 32-year concession in 2004.

Statutory planning procedures and public hearings will be completed this summer, and we expect construction to commence next year, on course for opening in 2010.

Utility relocation works have already begun on several at grade sections and we will shortly be starting work on property acquisition, which is expected to continue until 2005. In some areas strips of land have already been cleared to make way for dedicated busways; which will later be converted to light rail.

Growth and congestion

Situated on the Mediterranean coast, the Tel Aviv metropolitan area is Israel's commercial and financial centre. The current population of 2.8 million is expected to rise to 3.5 million by 2020, and population density in the central area will eventually reach 2 300 people/sq. km, amongst the highest in the world.

Rapid growth in the central business district has led to ever-increasing traffic jams, with a negative impact on the quality of life, the environment and the national economy. Though Israel Railways has been steadily expanding its suburban and inter-city network, most public transport is still provided by buses, which are increasingly caught up in the worsening road congestion.

The Israeli government's favoured way to solve the traffic problems is through a light rail-based mass transit system, interfacing with other public and private transportation modes.
Metropolitan Mass Transit System Ltd (NTA) was established in 1997 as a government company responsible for the implementation of a mass transit system in the Tel Aviv metropolitan area. The board is chaired by Yossi Kucik, former Director General of the Prime Minister's office.

NTA Ltd, with the assistance of

Mesillot, the project management joint venture of Amy-Metom Ltd, Hatch Mott MacDonald and Delcan, is responsible for preliminary design, statutory processes, environmental impact reporting, soil and property investigations, specifications and procedures and all contract documentation necessary for the design build-operate-transfer concession. This is designed to involve the private sector and reduce the burden on the state budget. After the 32-year concession period, ownership of the system will be transferred to the state of Israel.

The Red line

The 22.5 km long Red line will be the first part of the planned light rail network to be implemented, and will form the backbone of the system. It is located on one of the most heavily-used traffic corridors in the metropolis, with one of the highest population densities.

The first 7.5 km is at-grade in a segregated right of way with signalled crossings, from the southern city of Bat Yam, northwards along Jerusalem Boulevard in southern Tel Aviv-Jaffa. On reaching the coast at Jaffa the alignment turns east and runs in tunnel for the next 9.5 km, with eight underground stations, passing through central Tel Aviv and then eastwards through Ramat Gan and B'nei Brak. The line returns to grade in B'nei Brak close to the Highway 4 (Geha) intersection, and continues for 5.5km through Petach Tikva, terminating at the central bus station. The tunnels will be constructed to heavy metro standards to allow for future upgrading to provide increased capacity. The depot will be located in Kiryat Aryeh, an industrial zone in northwest Petach Tikva.

Services will be provided by 70 m long, 2 650 mm wide, 65% low-floor light rail vehicles. These will operate at 3 min intervals on the at-grade sections to meet the peak demand forecast for the year 2040. The forecast demand for the tunnel sections is substantially higher, and here there will be additional shuttle trains, doubling capacity to 20 000 passengers/h. The Red line has been designated a priority national project and, as such, it is receiving substantial human and financial resources, as well as the promise of a grant to the successful bidder when construction is complete.

Future lines

In addition to detailed planning of the Red line, feasibility studies and preliminary design work are in hand for three other light rail routes serving the wider conurbation. Running mainly at-grade, the 17 km Green line will form the Initial Operating System of the network together with the Red line. Branches from the Holon industrial area and the western part of Rishon-le-Zion will meet just south of central Holon, continuing through the town centre to the border with Tel Aviv on route 44. The Green line will turn west and then north to meet the Red line at the south side of Tel Aviv's central business district. Two alternatives are being investigated for the northern end of the Green line. It will either merge with the Red line, or cross the Red line and continue north through the north-western suburbs of Tel Aviv, Ramat Aviv and along the coast to Herzliya industrial area.

The 14 km Yellow line starts at an interchange with the Red line at the boundary with Bnei Brak, and goes north, crossing the Israel Railways line near Ramat Gan Stadium. After continuing north through Ramat Hasharon, it passes through Herzliya town before terminating at the Herzliya industrial area, close to the sea.

The 12 km Purple line starts near the Red line interchange at Allenby Street and proceeds east, passing the Tel Aviv Central Bus Station, crossing the Ayalon highway and Israel Railways, proceeding through the Hatikva, neighbourhood, the southern part of Givatayim, and eastward to Or Yehuda."

At the end of May NTA, the project management, had begun to check the possibility of using USA guarantee funding to finance the 1st. line (Red Line) - the first section, from Tel Aviv to Bat Yam would cost more than $1Bn.; it is hoped that the whole line, to be built under the BOT system, will open in 2010. The preferred bidder is to be chosen by the end of 2004 and works are to start in 2005. The Chairman, Mr. Kotcic, and the Manager, Mr. Yishai Dotan, have started discussions with the Ministries of Finance and Transport in order to create a steering team which will take care of the whole financing issue.

Meanwhile the Ministry of Transport has agreed to approve construction of the Red Line section within the Bnei Berak area under Jabotinsky Road by the cut-and-cover system. It has accepted the argument that this road, which is considered to be one of the most congested in the whole of Israel, is already suffering from lack of capacity for cars and buses, and will therefore be unable to accommodate LRV trams as well. At the moment the road is already being substantially rebuilt to allow for central bus lanes, but of course the new scheme would mean digging up the whole road once again.

This is not yet the final word. The Ministry of Finance is against any tunnel, which would be an expensive option, and would prefer an elevated alignment if there is no space on the road surface, but the Ministry will then face opposition from local inhabitants who claim against the potential noise of operation (ironic if they already live on this road), as well as against disruption to privacy in their homes if paasssengers can see through their windows. We shall have to wait and see how this is all resolved.

(b). JERUSALEM UPDATE.

In a press release of 30.03.2003 the Ministry of Transport and the Jerusalem Transportation Master Plan Management Team announced that "the people of Jerusalem will choose the LRV model for the first line". For the first time in Israel, public participation will be invited in choosing the exterior design of the front of the vehicles. This decision was taken by the project's Chairman Eitan Meir (who is now also General Manager of the Municipality) and Dr. Moshe Hirsch, the Manager of the City's Transportation Plan. Both said that they are "very satisfied by the willingness of the winner, the City Pass group headed by Alstom, to design a model of the Citadis that will be unique to the city's special character. Alstom also provided the project with the special services of designer Axel Anthovem, who recently prepared several models after visiting Jerusalem to get to know its unique character. A committee of specialists headed by the City's Chief Architect Uri Shitreet has chosen the three short-listed models for the public to decide from - the public will have two weeks to choose, after which the project management together with the new temporary Mayor of Jerusalem, Mr. Uri Lupolyansky, will choose the final winner and pass this decision to City Pass by 15.04.2003."

It has also been decided that no advertisements will mar the exteriors of the LRV vehicles!

It is still planned to start operation on Line 1 in 2006, along 13.8km. from Pisgat Ze'ev through Rehov Yafo to Mount Herzl; there would be 23 stations, to be operated by 23 LRV trains totalling 69 vehicles, each with a capacity of 150 passengers, frequency intervals of 5 minutes at peak hours and a capacity for about 100,000 journeys daily.

Continued on page 8

ISRAEL RAILWAYS TENDERS.

(a). BN/KB/04/03. Construction of Malkha (Manakhat) Station, Jerusalem.

Works include: The station building, new platforms including roofs, elevators and escalators, air-conditioning systems, electricity and communications, water, sewage, drainage, signs, parking area, and various development works. Time for implementation: 15 months. Bids by 28/04/2003. Note: This station will be adjacent to the city's biggest shopping mall, bearing the same name. It also incorporates a bus terminal, and one of the planned LRV lines will also serve it. One intention is that this would replace the historic station opposite the Khan, and also serve as a freight terminal for the Jerusalem area. However, opposition from nearby inhabitants has thus far prevented implementation; in addition, there are still proposals to restore services to the old station nearer to the city centre, and not allow it to fall prey to "real estate sharks" !

(b). BN/KB/05/03. Removal of a sewage line at Rosh HaAyin station.

Works include sewerage, sealing of existing sewage pipes by inserting a sleeve, building a pumping station, purifying installation, and electricity and control systems. Time for implementation: 4 months. Bids by 22.05.03.

(c). BN/KB/07/03. Construction of Modi'in Central Station; the station building and a tunnel of 400 metres.

The project consists of:

- Structure 1: The building of Modi'in Central station.
- Structure 2. Construction of a tunnel under the station.

Time for implementation: 18 months. Bids by 30.06.2003.

(d). BN/KB/08/03. Constructing a prefabricated building at Tel Aviv Savidor Station.

The works include: design and manufactuire of the building envelope, at the area of the railway's Management Complex in an area of 280 sq.m., finishing works, sanitary installations, electricity and air conditioning.

Tme for implementation: 3 months. Bids by 11.06.03.

(e). HN/KB/12/03. Enlargement of track embankment on a section of the Beer Sheba - Dimona main line.

Works include: earthworks, roadbeds and infrastructures, extending existing viaducts, etc. Time for implementation: 6 months. Bids by 18.06.03.

(f). MS/SR/08/03. Repair services including supply of spare parts for cardan shafts for Bombardier IC3 trains.

The contract is for 24 months with an option for extension for an additional 36 months. Last date for bids: 14/04/03.

(g). MC/KB/02/03. Various low-voltage electrical works at the refuelling ramp at Haifa East locomotive depot.

To include. supply and installation of lighting, supply of electricity lines, connection to main electricity board etc. Time for implementation: 3 months. Bids by 12.05.2003.

(h). HN/KB/11/03. Construction of a Freight Terminal at Ramat Hovav (south of Beersheba.)

The works include: main building and a peripheral electronic detecting and warning system phase 1, and an option for the same system phase 2, an option for a temporary access road and an option for a pumping station.

The building includes: 3500 sq. m. of complete infrastructure and asphalt for the terminal, drainage works, construction and locksmith works, sewage and sanitary installations, electricity, external lighting system, (25/10 m. high) and communications, fire-detecting and -fighting system, as well as a peripheral electronic detecting and warning system which includes - among others - a computerized control centre, inspection and verification system, communication and control cables, etc.

Time for implementation: Building and warning system Phase 1, 5.5 months.

Warning system Phase 2. 3 months.
Temporary access road: 2 months.,
Pumping station: 3 months.
Bids by 14.05.03.

(i). HN/RC/01/03. International tender for manufacture and supply of rail fastening accessories for IR Workshops.

Various rail fasteners for UIC-60 and UIC-54 type rail, for concrete or steel bases.

Bids by 25.06.03.

(j). NO/SR/10/03. Providing cleaning services at railway stations and various control centres of the Southern Division. To include Kiryat Gat, Shikma Junc. and Pleshet Junc., and various centres in the region. Contract is for 12 months, optional extensions of additional 36 months. Bids by 19.05.03.

(k). MT/RC/01/03. For manufacture and supply of new Flat Bogie Wagons of 22.5 ton axle load (90 tons gross).

also MT/RC/02/03. For manufacture and supply of new and/or rebuilt Bogies of Type Y25 for Bogie Flat Wagons. Bids by 19.05.03.

(l). MS/RC/2003/16. Permission for use of area of 1045 sq. m. at the former siding of Etz-Ha-Zayit ("Olive oil factory") at Petakh-Tikva. The contract is for 12 months with optional extension for a further 24 months, bids by 18.05.03.

(m). MS/RC/2003/17 & 18. Permission for use of 2 areas at Beer Sheva North Station. For 12 months plus optional addition of 24 months. Bids by 18.05.03.

(n). MS/RC/2003/20. Permission to operate a Buffet at Netanya Station. Contract for 12 months, optional extension of additional 24 months, bids by 25.05.03.

(o). MS/RC/2003/21. Permission for use of areas at B'nei Berag station. Contract for 36 months, bids by 18.05.03.

(p). MS/RC/2003/23. Permission to operate a Buffet at Haifa Central Station.

Contract for 36 months, bids by 25.05.2003.

[Note: This station, built in 1937, is now being entirely rebuilt, including canopies over the platforms as well as a pedestrian subway to replace the historical pedestrian bridge. N.B. Removal of the bridge also increases operational flexibility, as this formed a loading-gauge restriction on container traffic through tracks 1 and 2.]

(q). MS/RC/2003/26. Permission to operate a coffee trolley, chairs and tables at Ashdod Ad Halom Station. Contract for 12 months plus optional additional 24 months. Bids by 25.05.2003. (This station is still under construction.)

(r). TK/KB/03/03. For supply and installation of Video Conference System and an option for supply and installation of an enlarged system and auxiliary peripheral equipment. Tender is for 36 months, plus 36 months for the option.

(s). MC/SR/14/03. Framework agreement for rebuilding and repairing rotors of GM-EMD diesel locomotive traction motors. This refers to rotors of GM-EMD traction motors type D77B or D78 and D43; the quotes for each type will be checked and considered separately, each bidder can quote for one or more sets of rotors. The contract is for 24 months with optional extension of additional 36 months. Bids by 18.06.03.

NOTES AND COMMENTS.

(a). BOMBARDIER WORKS.

The Editor was fortunate enough to be able to enjoy a personal guided tour of the Bombardier carriage works at Görlitz, east of Dresden and on the German/Polish border, on 28/03/2003. The works are extensive, built on a sloping site adjacent to the Görlitz - Cottbus line. None of the double-deck carriages for Israel Railways was actually under construction at the time, though an IR delegation was due to sign further contracts for further options. Instead, similar vehicles for DB and the new operator of Hamburg-Bremen services, as well as double-deck electrical multiple units for the Dutch railways were being built. This factory is now the main construction site for double-deck vehicles within the Bombardier group, as well as for the ICE coaches, constructed from aluminium extruded strips.

Snippets of information include that the Works used to employ 3,000 in DDR times; this sank soon after the "Wende" to 1,000 but is now up to 1,300 again, despite many services being sub-contracted out and the lack of any "political" Party positions any more. Much modernisation has been carried out, and coach bodies are moved around the construction and painting areas by air-cushion.

The first body of any new coach design is "tested to destruction" under various forms of pressure, but of course explosives are not a part of this testing process - yet. However, it was pointed out that one significant difference between the Israeli and German vehicles (apart from the additional air-conditioning capacity and the signs) is that the Israeli coaches do not have waste bins. For security reasons only small plastic bags are hung up for waste. The decision to paint the Israeli vehicles the DB red colour scheme was apparently taken by the Israeli purchasers themselves - they liked what they saw!

My guide, who had worked at the VEB Görlitz since 1963, was aware of the coaches built here and at Bautzen (not far away - but Görlitz was once Prussia whereas Bautzen was Saxony !) for Iraq and Syria, but although he had accompanied coaches to Romania and Czechoslovakia for commissioning, he had not been allowed to do this in the Middle East, and not even in Yugoslavia, since he had relatives in "the West" and was therefore not allowed outside the area of "brotherly and comradely Socialist countries"!

Continued from page 6

[Ed. adds: Is this purely a public relations exercise? Surely no manufacturer now wants to start making special designs and moulds for individual customers?]

It was later announced (24/04/03) that the Alstom Citadis version with the rounded front cab had won 65% of the votes of the citizens who took part. For the record, there were about 14,000 participants in the trial, of whom ca. 1000 came from East Jerusalem, 13,000 from West Jerusalem; 26% voted for the triangular cab and 9% for the square-ended version. The project manager Dr. Moshe Hirsch said that the successs of the idea had encouraged the management to consult the public also on issues of the LRV's internal design.

(b). EARLY ISRAELI ENTHUSIASTS.

From Hans Kohut has come a wad of snippets of historical interest, which deserve to be recorded before all gets forgotten. Hans is now 84 and has in recent years donated a large part of his lifetime collection of railway books, magazines and papers to the "Pasim" group and around 750kg. - a quarter of a ton! - of materials to the IRM. 71 large cartons of around 10 kg. each, plus 35 visits to the museum with about 8kg. of material each time.

From his letter:

"The late Ilan Falkov was a long-time personal friend; we called each other by our first names only, after I learned that he was actually Ilan Palgi, when he served in the Israeli Merchant Navy in the 1960's. (He sailed on the M.V. "Qeshet".) In 1973 (though the UIC Report of William Wenger lists 1974) he was appointed to IR."

Hans considers that one of the co-initiators of the Railway Museum was Dr. Franz Stockl, an Advocat/Notary from Bad Ischl in Austria, who in the 1950's and 1960's was a noted railway author. "He had made a survey of railway museums around the world, after first listing railway societies. Ours of course was just starting, but our address was already in many leading railway magazines worldwide. He managed to find the address of the Society of Friends of Israel Railways, which we had founded in 1963. (Aron Golderg, now Gazit, was the youngest member then and remains so now!) By the way, Ilan Palgi also found our address, via the American "Rail" Magazine (editor, Freeman Hubbard) and "Trains" (Editor, D.P. Morgan).

Avraham Zwick, Savidor's successor, was G.M. from 1964 to 1973; Moshe Gabrieli (Public Relations & Press Offier) and E. Inbal, (Traffic and Commercial Manager) all served well over ten years at their posts. Ilan told me he had a health condition (heart?) which had bothered him intermitttently. He was then really instrumental in getting the museum opened - I know, as I was there! Incidentally, Engineer Zwick also died around the same time as Falkov. He had presided over the opening of the line from Beersheba to Nahal Zin, and - against his will - also the truncating of the Tel Aviv line to the South station out on the city's edge, when Shimon Peres was Transport Miniuster."

From a letter Hans wrote to Ilan on 4th. August 1964:

"Savidor resigned on June 15th. 1964, after being reprimanded by a Committtee of Inquiry investigating the causes of the Bet Yehoshua crash in December 1963. The former Deputy G,M. took over as Acting G.M."

At the Tel Aviv Near-East Trade Fair in June the Railways were represented with two 0-Gauge model trains in operation. "IR has received three new diesel locos, Nos. 119, 120 and 121, all of them already in action. 8 new passenger coaches have been received so far from Yugoslavia - I have not yet seen them in Tel Aviv as they are used solely on the Haifa - Jerusalem direct run over the old line (Tulkarm-Lod). The summer schedule is in operation and trains are very crowded. The work on the Beer Sheba - Dimona line is in full swing, and it looks as if the continuation to Oron (phosphate plant) will be started as fast as possible, because road transport is inadequate and too expensive!"

In 1978 Hans had a Letter of Introduction issued by the "Association Cheminots Artistiques d'Israel", whose letterhead describes it as "Membre de la FI.S.A.I.C.", Federation Internationale des Societe Artistiques et Intellectuelles de Cheminots", M. Lemberg being Secretary of the Northern District. Does anyone know more of this group ? It is intriguing that French was still being used. (In the early days of Israel, when anti-British feeling was still high and there was of course much French spoken in neighbouring Syria, Lebanon and Egypt, there was a serious attempt to introduce French as the third 'national language' after Hebrew and Arabic - the Post Office in Israel still retains elements of this tendency.

(c). MORE BACKGROUND TO THE SAFB Bo-Bo's.

Hans-Henrik Landsvig writes from Copenhagen:

"Regarding the CFL engines, I found them in the conveniently titled book: "Benelux Lokomotieven en Treinstellen 1977-01-01". (Frank Stenvalls Förlag, Malmö ISBN 91-7266-029-5)

That is about all I know about these Luxembourg-engines. Apparently the G-12 never became popular in Europe. There were three European holders of GM-licences: SAFB, Nohab in Sweden, and Henschel in Germany.

As far as I know Henschel built three G 12s for a Dutch mining company; Nohab built five for the Swedish Railways - SJ - but with major changes: - Three-axle trucks, longer body and higher-placed cab. Class T41. Picture sent separately from "Svenska Lok och Motorvagnar 73-01-01". (Also Frank Stenvalls Förlag ISBN 91-85098-14-0). These are obviously ancestors to the lone Swedish-built engine in Israel).

And then there was a demonstrator known as GM 7707, built in La Grange, USA, and modified in London, Ontario. It ran in several European countries in 1953 and 1955, sponsored by the three aforementioned licence-holders - before being sold to SJ as Class T42.

I had a closer look in the Benelux-book but the Luxembourg ones are the only "G12-clones" there. But it occurred to me that the brass from Israeli Railways may have seen the demonstrator in Europe (even though of course the Israeli SAFB-locomotives are built already in 1952). Incidentally in Paul Cotterell's book they seem to have GM-serial numbers but the Luxembourg ones seem to have SAFB-numbers.

So here are some dates from the Danish book "Motormateriel 5": Arrived Gothenburg (M/V Visbyholm) 27th. July 1954. Test runs in Norway and Sweden. 12th. August 54 arriving Elsinore, Denmark by ferry. Test runs in Denmark. Left Padborg for Germany 14th. or 15th. August, according to a contemporary newspaper article for test runs in Germany, Netherlands, Belgium and France. Back in Boden, Sweden, 6th. December 54. 10th. May 1955. Passing through Denmark for testing in Austria, Yugoslavia and Germany. A visit to Turkey was cancelled. 26th. August 55 back in Boden, Sweden. It is now preserved in Norway.

One picture is from Svenska Lok och Motorvagnar 73-01-01. The other from Motormateriel 5 (Banebøger ISBN 87-88632 79-2) a book dealing with the various GM-locos running in Denmark. The pictures show 7707 in Korsør and Fredericia while being tested by the DSB in 1954, but the Danes went for larger engines."

(d). ESSLINGEN RAILCAR REBUILDS.

The Esslingen railcar trailers were rebuilt not at Ramta but at Ha'argaz (though the first one or two were handled at Qishon Works). The Ha'argaz works is now closed - it was accessed by a spur towards the former Sarafand (Tzirifin) Camp, on the Tel Aviv - Lod line. Aharon Gazit informs me that the rectangular rather than rounded lights at the ends of the coach bodies were his idea, plus the toilet doors.

(e). Re: 59:18:2: BEERSHEBA..

From Paul: "The editor wondered if there was still "a depot of any sort" in Beersheba in 1923. The answer is affirmative. Writing about the Rafa-Beersheba Section in 1935, the Acting Chief Engineer noted that "When this line was salved [ie. lifted] in 1927 the Station buildings at Beersheba were handed over to Public Works [Department]". And, of course, the old Turkish station building is still standing today."

(f). Re: Harakevet 60 - Back Cover.

From Paul: "It seems that the editorial eye was distracted by the, um, heroic stance of Saddam Hussein in the poster on the back page of issue 60, since he (the editor) failed to make mention of a steam loco partly hidden just above and behind the diesel. This would be the Baghdad Railway 0-6-0 No.405 (Borsig 1912 and originally a tank engine), which is shown on Page 88 of *Middle East Railways*. Judging from the poster the loco looks to be in good condition still, and one hopes the Americans didn't nuke it in the recent war."

(g). "THE HOLIDAYS TRAIN".

From Samuel Mauriciu, a silversmith in Israel, has come a set of pictures of a wonderful set of artefacts for celebrating the Jewish festivals. It comprises a quite detailed 2-6-2 steam loco, which incorporates a Kiddush cup, candlesticks, Havdalah implements, a Bessamim box and Tzedaka box; a bogie carriage with eight windows, oil and wicks containers, suitable for use as a Chanukiah; a four-wheel tank wagon that doubles as a holder for a Megillat Esther, the tank section being detachable, and drawers hold 'Greggers'; and a box wagon, used as an Etrog holder for Sukkot. (The Editor will not explain all these technical terms here - if you don't understand them, then you are unlikely to be interested in a purchase !). The work is all by hand, of course, the train together is 138cm. long, and weights 9kg. of 925 sterling silver. Construction requires around 4 months !

No price is listed, but contact can be made by phone (972)-3-5286701, or e-mail at < samuelm-art@barak.net.il >

61:8.

OTHER MIDDLE EAST RAILWAYS.

A. IRAN.

(i). ROMANIAN DIESELS.

In "Today's Railways" No. 88 is an article (pp.20-27) by Nick Lawford on the Romanian 060DA class of Diesel-Electric Co-Co diesels built successfully from 1959 (to a Swiss design) in Romania for the CFR, industrial users, Poland (Class ST43), Bulgaria (Class 06), China and elsewhere. It includes the following information:

p.26. "An interesting derivative version appeared in 1971, designated 060 DB of which only two were built. These were single-ended locos designed to operate as a twin unit, acting as prototypes for a possible order from

Iran. Class 060 DB have 12DLA engines uprated to 1839 kW. 060 DB 001 and 002 remained in Romania as industrial shunters at Isalnita power station near Craiova. As far as is known, the locos are still there."

On p. 27: "Iran Railways hired 60-0447, 0704, 0708, 0842, 0949, 0977, 1135, 1205, 1209 and 1310 from SAAF [the State corporation for dealing with sales of redundant locos. Ed.] but returned them in 2002. However, a company which acquired some other Class 60's for scrap is to refurbish some for future use in Iran."

(ii). TEHRAN METRO.

In "Railway Gazette"'s "Metro Report" 2003 p. 91 appears the following description of the history and plans of this system, together with a reference to a further five being considered!

"A HIGHWAY UNDER THE CITY".

It is now four years since the first section of Tehran's metro and suburban rail network was opened for traffic. Since that time we have completed over two-thirds of the 90 km initial phase, serving 41 of the 52 planned stations. Another 8.5 km and three stations were inaugurated in March, and the rest of the network will be completed by 2008.

In addition, we have already started outline planning for the second phase, which will add a further four lines. When the concept of the Tehran metro was first floated in 1974, the projected network comprised eight lines totalling 146 km. Of these, four covering 63 km were selected allocated for the first phase. Tehran Urban & Suburban Railway Co was established to oversee construction and operation of the network, and an initial contract was awarded in March 1976.

By 1979 the contractors had completed 2,870m. of tunnel and 90% of the structures for three stations, but work was then halted following the Islamic revolution. As Tehran's traffic problems became more and more complicated and the air pollution worsened, the metro project was revived. A key modification was the inclusion of the Tehran - Mehrshahr suburban route (Line 5), serving new residential communities springing up to the west of the historic capital.

TUSRC was reactivated, and financing for the metro programme was provided by a consortium of four local banks, enabling construction work to resume in 1986. Work progressed slowly at first, but a milestone was reached in April 1995, when contracts were signed with the Chinese companies CNTIC and CITIC to supply rolling stock and fixed installations for Lines 1 and 2 respectively. The following month saw a similar contract signed with NORINCO of China to equip Line 5. Civil works and operations on all three lines remain the sole responsibility of Iranian firms.

The funding situation was alleviated in July 2000, when TUSRC was officially transferred to the Tehran municipality. As a result, the corporate debts were paid back to the banks, and the credits required for future work are being provided from the government's development budget. Other funding is coming from the municipality and from fares revenue.

Phased opening

The first section to open was the 31.5 km of Line 5 between Tehran and Karaj, which was inaugurated in the February 1999 together with the stations at Sadeghiyeh Square, Vardavard and Karaj. The remaining 10 km is nearing completion, and is expected to open with one more station in mid-2004. Line 5 runs entirely above ground. The stations have 300m long platforms 4,500 mm wide to accommodate substantial peak-hour flows.

The next route to open was Line 2, which runs east-west to an inter-change with Line 5 at Sadeghiyeh Square. The first 9.3 km and nine stations began operation on February 20 2000 (MROO p54). When completed, Line 2 will be 20.4 km long.

Line 1 runs north-south across the capital, and is now 28.1 km long. The first 8.5 km section was formally inaugurated by President Mohammad Khatami on August 28 2001. This ran from Darvazeh-Dotat to Ali Abad via an interchange with Line 2 at Imam Khomeini Square in the city centre. A 7 km second phase followed in March 2002 running north to Jahan-e-Koodak and Mirdabad. The third section, adding another 5 km and two stations at Javanmard-e-Ghassab and Shahr-el-Rey was formally inaugurated by Mahdi Karrubi, the Head of the Iranian Parliament, on October 23 2002. This year saw the completion of the final southernmost section as far as Haram-e-Motahhar.

Line 1 now serves 22 stations, of which eight at the southern end are at ground level and the rest under ground. To ensure rapid passenger transfer, the stations have a total of 123 escalators and lifts connecting the street, mezzanine booking halls and platforms. All 19 stations on Line 2 are underground, so the number of escalators and lifts is correspondingly higher at 135. Both lines have 140 m. long platforms able to accommodate seven-car trains. The platform width at the underground stations has been standardised at 3 600 mm.

As the network has gradually been put into service, the operating hours have also expanded. When Line 5 was commissioned, the trains were only running for 3 hours a day. By March 2002 this had increased to 16 h/day from 06.00 to 22.00. In the longer term we hope to extend the hours of service until midnight, giving a target of 18 working hours per day. Headways have decreased as more rolling stock has been commissioned.

Standard off-peak intervals are now 10 min. on the metro lines and 20 min. on Line 5. By 2006 we hope to reach the peak-hour design headways of 2 min. and 10 min. respectively.

Rolling stock

Ithough ordered through different Chinese suppliers, the trains for both metro lines were built by Changchun Car Co to the same technical specification. Both lines are equipped with a 750 V DC third-rail power supply.

Each unit comprises seven 19.5 m long cars, 2 600 mm. wide. The Line 1 trains have all vehicles motored, but the Line 2 sets include two trailers. Maximum speed is 80 km/h. Hostler controls are included in two centre cars, allowing the trains to be split into three and four-car units for movement within the depot. Longitudinal seating is provided for 42 passengers in each driving car and 46 in the intermediate vehicles, bringing the total for each train to 314. Standing capacity is provided for a further 1,032 passengers at 4/ sq.m.

The 1996 contracts covered an initial fleet of 31 trainsets, of which 20 are allocated to Line 1 and 11 to Line 2. In 2000 we confirmed a follow-on option for 84 trains, which will bring the fleet to 805 vehicles.

Line 5 is worked by six push-pull trains, each of which is formed from eight Changchun-built double-deck coaches marshalled between two locos built by Zhouzhou Electric Loco Works. To suit the longer distances and higher maximum speed of 130 km/h, this line is wired at 25 kV 50 Hz. With 26.6 m long coaches, each train is 248 m in length. Car width is 3 100 mm. The coaches have seats for 82 in the upper saloon and 78 in the lower, giving a capacity of 1280 passengers per train.

Expansion plans

Earlier this year tenders were called for construction of Lines 3 and 4, which are both expected to open in 2008. Line 3 will run northeast-southwest for 37 km. across the city, serving 32 stations, and Line 4 will run east-west for 20 km. with 22 stations.

TUSRC is now seeking funding for a further phase of construction, including four more lines and five extensions (RG 11.02 p672). Line 1 would be continued north from Mirdamad to Shariati and south from Haram-e-Motahliar to Imam Khomeini Airport. Line 2 would run east from Dardasht to Pardis, and Line 3 would be extended southwest from Javadieh to Sharyar. A short extension would take Line 4 from Azadi Square to the domestic airport.

Of the four new lines, Line 6 would link Bokharaei in the southeast with Sadeghieh in the northwest, parallelling parts of Lines 1 and 2. Line 7 would loop through the southwest of the city, connecting Takliti Stadium with Yousef Abad. Line 8 would parallel Line 7, connecting Moshiryeh with Azadi Square via Nazi Abad. Line 9 would also start from Moshiryeh and provide an outer orbital route in the northeast sector.

We are also looking at developing further suburban lines. As well as a 25 km extension of Line 5 from Mehrshahr to Hashtgerd, new routes would link the southern end of Line 1 with Vavan and the eastern end of Line 2 at Pardis to Damavand. Another route is envisaged to run southeast from Moshiryeh to Varamin.

Traffic takes off

Tehran's residents have responded very positively to their new metro. In the first three years of operation from March 1999 to March 2003 TUSRC carried over 240 million passengers. In March 2002, Line 5 carried more than 2 million riders, a 53% increase on the equivalent month in 2001. The western part of Line 2 recorded 4.2 million passenger journeys, double the figure achieved a year earlier. In the first two months of 2003 we carried 28 million, compared to 140 million for the whole of 2002.

Our surveys indicate that most of our riders are middle-class, as far as their education and income are concerned. When interviewed, 98% of passengers say they use the metro because of its punctuality, speed, safety, comfort, and low fares.

Despite the steady growth in ridership, the metro still accounts for only around 5% of the 11.5 million trips per day made in the Tehran urban area. As such, it is not sufficient to relieve the city from its growing traffic congestion problems.

We expect that by the time Lines 3 and 4 are operational, the metro will be carrying 170 000 passengers/h at peak times. Together, the five lines will account for a much more satisfactory 25% of total urban trips, justifying the government's willingness to allocate national resources for further metro construction in both Tehran and five other Iranian cities.

The photos of the original article cannot be reproduced here, but the captions were:

"The 11 seven-car trainsets allocated to Line 2 enable a 10 min interval off-peak service to be operated from 06.00 to 22.00 each day."

"The Changchun built seven-car trains for Line 2 are similar to those for Line I (right) but include two trailer cars; all vehicles on the Line 1 units are motored."

"Crowds board a Line 2 train at the city-centre interchange at Imam Khomeini Square."

B. IRAQ.

Since the last issue, the conflict in Iraq has flared and then died down. Remarkably little appears to have been noted, reported or published on the railways. The Editor - like many people - spent days glued to the television set, but saw at most a few rails set in the dockside at Umm Qasr and an embankment with rails behind a reporter from Basra. There were some reports on an internet site that the railway from the Syrian port of Latakia into Iraq had been used for conveyance of arms and ammunition and had therefore been blown up or blocked by US Marines. There seemed to be little interest (or ability) to mobilise the rail line from Basra towards Baghdad for the delivery of military supplies, although we heard much of the difficulties facing road transport. In short, any hard information is still awaited, and will be welcomed.

Marc Stegeman has sent a cutting from "Metro" (Amsterdam) from Friday 02/05/03, p.5. This includes a photo of an Iraqi waving a green flag as a train (formed of green-painted coaches) as "the first train from Baghdad Central Station departs for the southern city of Umm Qasr. Since this week passengers can use the public transport again, for the first time since the war began in March."

C. TURKEY.

(i). NEW THREE-CAR DIESEL MULTIPLE UNITS.

In "Lok Magazin" 5/2003 p. 33 is a note from Thomas Meyer-Eppler: "The TCDD has ordered the prototype for a new series of diesel units from the State-owned firm Tüvasas in Adapazari. It should be ready by the end of this year. It will be developed from the DH5600-type diesel units, eleven of which were built in the early nineties together with Ganz-Hunslet of Hungary.

The three coaches of the new units will have a standard body length of 23.9m, underfloor-motors of 550 kV, hydraulic transmission on both axles of a bogie, a floor height of 1,250mm and wide central doors. The end coaches will have streamlined ends added, bringing their overall length to 24.44m. A top speed of 160 km/h is envisaged. Should the prototype meet expectations, a total of 168 individual coaches will be ordered, which can then be worked as 2-, 3- or 4-car units."

(ii). M.A.N. DIESELS.

Incidentally, an article in "World War 2 Railway Study Group Bulletin", itself a translation of a German article, refers to a MAN diesel railcar "for Turkey" which was standing at the north end shed area during an air raid on the loco depot at Hof on 8th. April 1945, "this train was slightly damaged, but was completely looted after the war."

D. JORDAN.

NEW PHOSPHATE BRANCH. From "I.R.J." March 2003. "The government plans to build a 22-5 km. line will connect Shidiyeh Phosphates Mines to the mainline network, allowing phosphates to be transported directly by rail to Aqaba."

E. EGYPT.

OLD BOGIES. A bit of old news - from "Railway Age" Feb. 1998 p. 27 - "ANF-Industrie, a member of the Bombardier Transportation, France, has won a $4.24-million contract from Egyptian National Railways to refurbish 80 turbotrain bogies."

F. DUBAI.

NEW METRO. From "I.R.J." March 2003: "Construction will start this

year if a $US 730 M two-line metro. The Red Line will run from the boirder with Sharjah to Jebel Ali, while the Green line will link Dubai International Airport with Al Ghubaiba along the Khalid bin Al Waleed Road. Total length will be 50km with 37 stations. Construction will take up to six years."

G. SYRIA.

(i). **WAGONS**. From "I.R.J." March 2003: "Syrian Railways has invited tenderers to supply 80 tank wagons for phosphate transport."

(ii). **LOCO REFURBISHMENT**. In 'Lok Magazin' 6/2003 p.32 is a note by Thomas Meyer-Eppler and photo by G. Riedl: "The thirty new Alsthon Co-Co diesels were originally intended to replace the diesel locos of the LDE 2800 series, built in the USSR in the 1970's and 1980's; However, the Syrians have now decided instead to refurbish these robust locos as well." The photo shows LDE 2800.751 in new livery, blue with wide red bodyside stripe flanked by thinner white stripes.

61:9.

FROM THEN TILL NOW.

(Part 12.)

Noted in reading by Paul Cotterell from Baruch Katinke's book 'Me'az v'ad Hena'; see earlier installments in 11:22, 13:17, 16:15, 19:19, 20:15, 24:11, 30:21, 38:15, 46:12, 49:16 and 59:15. This is the chapter entitled 'Luther, Isolani, Galileo' on pp. 202-4 of that book.

After the failure of the winter attack on the Suez Canal and following the rout suffered by the Turkish-German forces in the Sinai Desert, the British army began advancing through the desert almost up to the gates of Gaza. The town had already been emptied of its inhabitants in accordance with Djemal Pasha's expulsion order, and only a small defense force remained in the place. Most of the surviving Turkish and German forces were posted near Deir Suneid station, close to Gaza, through which passed the train from Beersheba to Auja-el-Hafir [see Note 1]. The railway was exhausted by two years of war and the wagons, and especially the engines, were worn out by too much use and too few spare parts. Sometimes the trains stopped in the middle of their journey because of breakdowns and it was necessary to call out an assisting loco to bring them to their destination. The German officers joked about the inefficiency of the railway in general and the locomotives in particular. A few of the engines received derogatory nicknames according to their peculiar inefficiency. Thus one loco was nicknamed 'Luther' because of the famous remark made by the German reformer Martin Luther as he stood before his judges: "Here I stand and from here I shall not move". Another engine was nicknamed 'Graf Isolani' [?spelling], well known from the writings of a German poet who said: "Although you came late, still you came, Graf Isolani" [see Note 2]. Yet another loco received the nickname 'Galileo' because of his famous saying: "Nevertheless, it does move". And not just the locomotives but also roads were given amusing and derogatory nicknames. For example, the Germans interpreted the name 'Sultan's Way' (a road in Turkish) by saying that the 'Sultan's Way' was, in fact, a line that carts and cars travel parallel to, because the state of the roads in the country was such that it was best to travel alongside them [see Note 3]. One day the attack on Deir Suneid [sic] began. This offensive is known as the attack on Gaza. A great British force consisting of English, Indians, New Zealanders, Australians and Africans, armed with the best weapons, entered battle against the Turks. The Anglo-French airforce also took part in the attack, and the mighty Royal Navy shelled the Gaza sector with its guns. The battle lasted for two whole days. Both sides each lost more than 5,000 dead and many more wounded. At first it was difficult to forecast who would win: the English thanks to their superior arms and their great number, or the Turks thanks to their courage and tenacity. But on the second day, half an hour before midnight, the British army withdrew leaving behind its thousands of dead. It was an open secret to all that the Turkish-German army had already received an order to retreat that same night, at midnight, and if the English had not left half an hour before midnight they would have emerged the victors. During the two days of battle the railway continued working, with its last reserves of strength, for the army. Trains brought up equipment and reinforcements. Others took out the wounded and dead officers. All that time I was awake and active close to the battlefield, urging and encouraging my men in their work. Suddenly silence descended. No more screaming and no more firing. Dead tired I fell onto my bed, in a coach which stood a few kilometres away from the firing line, and fell asleep. About thirty-six hours after the battle I was escorted to the Turkish commanding officer, a colonel, in order to check the damage caused to the railway in the battle. We departed aboard a hand-trolley pushed by four soldiers and crossed the front line. In places where the rails were broken we dismounted from the trolley and the four soldiers lifted it across the shattered section. Moving forward we saw a huge pile of many shells which had not exploded. Tens of Austrian soldiers were milling around collecting unexploded shells and piling them on that artificial hill. All sorts of shells, big and small, were laid next to and on each other. The area was sand dunes and most of the shells fired from the British warships had slid over the sand without exploding. We got off the trolley and, with the colonel leading the way, approached the pile. Soldiers were erecting a barbed wire fence around it to prevent anyone getting near. One soldier was inserting angle-iron fence posts into the ground, using a three inch shell as a hammer. The colonel took one look, turned and fled, with me at his heels. At a distance of some hundred metres the colonel threw himself to the ground and motioned me to do the same, quickly. After a few minutes we got up. From a distance the colonel called to the soldier who approached us with his hammer - the unexploded shell - in his hand. The colonel reprimanded him harshly for his thoughtlessness as, if the shell in his hand exploded it would also set off the hundreds [sic] of tons of shells in the pile and all the team working by the pile would be wiped off the face of the earth. The soldier stood at attention and listened, but when the colonel had finished the soldier replied insolently: "Colonel sir, if you had been busy like me at this sort of work for two years straight, then you too, sir, would not give special importance to this hammer in my hand. It, and all those like it, are completely harmless". And so saying he quietly returned to his work. After leav-

60cm. PERMANENT WAY MATERIAL AT TULKAREM.

Paul Cotterell.

The above is the title of File 118.8/23 in the IRM Archives. It includes internal correspondence on this and related matters. I have extracted what I consider to be the more interesting items for dissection and discussion. *[Ed. notes: Comments in square brackets are added by Paul unless specifically referring to my own interpolations.]*

a). On 11/10/1921 the PR General Manager wrote to the Loco Superintendent and Chief Engineer stating that "There are a couple of 60cm. gauge engines and a quantity of track lying near the Provisioning Depot, at Ludd. The above is to be moved at once to some other more suitable position. It is difficult to understand why this was not done prior to the 60cm. gauge line being taken up."

[The 60cm. gauge line taken up would have been that to Jaffa dating from 1918, standard gauged in summer 1920. A photograph, dated March 1924, of a derelict Baldwin 4-6-0T at Ludd/Lod appears in the 'Industrial Railway record' No. 162 of September 2000.]

On 13/10/1921 the District Engineer, No. 2 District, wrote to the Chief Engineer on the subject: "The 60cm. Gauge locos lying at present near the Provision Depot, Ludd, are shortly to be removed by Loco Department. Please arrange to pick up and stack all 60cm. gauge track in the vicinity. [This work was done by the end of the same month.]

The next memo on the subject is dated 10/3/1922 and went from the District Engineer to the Chief Engineer: "Below is a list of the material stacked in Ludd.

Stacked in Ludd.	Rq'd to complete 13 kilos track.
20lb. Rails 5,200	
Sleepers. 15,000	5,000
Fishplates 4,000	6,400
Dogspikes 45,000	35,000
Fishbolts ———	20,000.

"It would be advisable to hold at least 5000 or 6000 sleepers and 5000 fishbolts above the number required to complete this track."

[Evidently PR had decided to retain 13 kilometres of 60 cm. gauge track. This may simply have been a prudent precaution against possible future needs, though the figure of 13 kilometres rather suggests a particular use was in mind. Subsequent correspondence shows that 60 turnouts were included among this material.]

On 15/3/1922 the Chief Engineer wrote to the Stores Superinendent: "The quantities of fittings required to complete the track at Ludd are noted and will be retained. With regard to our verbal arrangement that all 60 c/m track to be retained should be railed to Tulkarem and stocked in your permanent way Yard there, I shall be glad to know when you will be in a position to receive the material. I suggest that a start on the transfer should be made as early as possible, say at the rate of two trucks per day....." [The transfer was completed by the end of May 1922. The numbers of fittings reported as having arrived at Tulkarem from Ludd were very different from those listed above, but this was only to be expected and not too much should be read into such discrepancies.]

b). Around this time the PR General Manager was on something of a crusade against all the redundant WW1 60cm. gauge equipment cluttering up his railway. On 15/5/1922 he addressed the Loco Supt. and Supt. of Stores:

"I am anxious that all surplus 60 cm. Rolling Stock be cleared from P.R. system and despatched to Kantara as early as possible The position as regards the retention of the above Stock and Plant will, in future, be as follows:

ROLLING STOCK.

50 of the best goods vehicles to be kept at Kantara. Instructions to this effect have already been issued.

3 petrol Locomotives and 30 goods vehicles to be kept at Jaffa for use between Station and Customs. [This was the "Little Terezina". Ed.]

2 (15 ton) Cranes, one of which is at present incomplete and lying at Ludd, and the other at Kantara. When a favourable opportunity occurs, the missing parts will be obtained and the Crane [sic] put into a serviceable condition."

[There weren't any 15-ton cranes on the 60cm. gauge. The GM was evidently referring to the two 6-ton Goliath cranes built by Ransomes & Rapier.]

PLANT.

All Permanent Way material now in Palestine to be retained in addition to what is present at Kantara. In connection with sidings at Ludd Junior, these should be picked up by the Chief Engineer after the rolling stock has been cleared away and the material to be disposed of under arrangements to be made with the Supt. of Stores.

It is observed that certain of the goods vehicles in service at Jaffa are in bad order, and steps should be taken to effect an exchange with others that

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ing the colonel I went to look at the abandoned battlefield. Thousands of bodies were still strewn around awaiting burial. Starving Arab women went among the dead looking for a piece of bread or tin of meat. But others had preceded them apparently. One of them came up to me with an English rifle, a camera, compass, and barometer in her hands which she had collected from the corpses. She asked for something to eat in return for everything she held. I gave her two pieces of hard tack [literally toast or rusk] from my pocket and received her booty in return.

Notes: 1) This is wrong, of course; no railway train ever went from Beersheba to Auja via Deir Suneid. It is one of those inexplicable, elementary mistakes which we all make from time to time and which cause us to wake up sweating in the middle of the night. A knowledgeable and alert editor could have avoided Katinke's nightmares. 2) I've never heard of this Graf Isolani guy before. Nor do I know who the German poet was. (And Katinke's Hebrew suddenly went very dense at this particular point in his narrative). Walter has dug around and found that there was a Johann Ludwig Graf von Isolani (Nicosia 1586-Vienna 1640), Kaiserliche General der Kavallerie who fought with a Croatian regiment, and he may be a candidate for the character mentioned here. 3) Whoever said the Germans have no sense of humour?!

are in good order. Loco Supt. to arrange accordingly with the Supt. of Stores.

All Rolling Stock selected for retention should be painted "P.R." and when this has been done the surplus vehicles can easily be picked out.

When on inspection recently, I noticed 60cm. stock lying at the following places:-

(1) Ludd Junior.

(2) Ludd Main Station, near Coach Sidings.

(3) Ludd Signal Box (North end.)

(4) Tel Aviv.

(5) Jaffa. In use between Customs and Station.

(6) Haifa Customs Yard.

The removal of the Rolling Stock is to be carried out under arrangements to be made between yourselves, and this office is to be advised when completed."

[The name 'Ludd Junior' has cropped up recently in conversations with Uri Yinon who is researching the history of Lod. Neither of us knew what was meant by the term. In light of the above I now think that it refers to that area between the loco shed yard and junction of the line to Tel Aviv and Jaffa which seems to have been used to dump 60cm. gauge equipment after WW1. This area, to the west of the main line, is now almost completely built-up.]

There follows a flurry of correspondence about who is going to pay for all this work. The GM finally ordered the work to be charged to the Revenue Budget. in the middle of this exchange of memos, the District Engineer queried the Chief Engineer on 8/6/1922: "Is the material at Kafr Jennis [sic] included?" Could this mean that dumped 2ft. 6in, gauge equipment remained here from the 1918 line to Lubban?

c). There is another intriguing reference from the District Engineer to the Chief Engineer dated 12/6/1922: "Mr. Fisher is loading at Tineh several tons of Narrow Gauge fishplates, bearing plates, bolts etc." Does this refer to the Tineh south of Wadi Surar/Nahal Sorek, junction for the Turkish 105cm. gauge WW1 line to Bet Hanun and El Huj? Or was it a spelling mistake for Tireh (Tirat Yehuda), terminus of the 2ft. 6 in gauge line from 'London Bridge'? Since 'bearing plates' are mentioned I rather think it might have been the heavier 105cm. gauge track at Tineh.

[Ed. notes - There has been earlier reference to disputes in the later 1920's between PR and the CFH over redundant HR track materials that were lying in Palestine.]

d). And what about this letter of 27/9/1926 from General Manager R.B.W. Holmes to the Superintendent of Stores:

"The General Manager agrees to the loan of three kilometres of this [60cm.Permanent Way] material at £10 per month to Mr. Abramovitz, subject to the deposit of £200 as a guarantee against possible shortage or damage. Mr. Abramovitz will, of course, pay all incidental charges in both directions between Tulkeram and the point at which he proposes to utilise it on the Jaffa-Petah Tikvah road." In October 1926 Abramovitz also received "3 sets of points & crossings."

Unfortunately Abramovitz (a contractor employed "on remaking" the road) soon got into financial difficulties and defaulted on hire charges. In April 1927 the Jaffa Public Works Department offered to take over the 60cm. gauge track in order to complete the work: this amounting to 3325 metres in total length. This was agreed to by PR and the necessary arrangements quickly concluded, leaving the wretched Abramovitz to face both Railway and PWD bureaucracy in hot pursuit of prey.

e). On 2/10/1926 the District Engineer, Lydda, sent a memo to the Engineer Ways & Works noting that "About 1000 60 c.m. fishbolts were drawn from Tulkarem Dump and distributed as follows:

500 for Jaffa 60 c.m. Tramway.

500 loaned to Contractor K.16 - K.17."

[I guess that the contracting work was being carried out along the main line a few kilometres north of Atlit, but have no idea what it involved. If the Kilo.16-17 mentioned was as per my guess, then it may be relevant that the PR main line here was very close to the seashore, unlike today.]

f). 30/12/1926, Engineer Ways & Works to Stores Superintendent: "It is requested that at least two kilometres of complete 60 cm. track should be retained by the Railway for use at Nour-Es-Shams quarry and any other works which may arise."

g). On 7/8/1927 the Superintendent of Stores received a letter from N. Muller & Son (Engineers-Contractors) of Haifa:

"In reference to the 5 kilometres of 60 C/m. rail which we are informed you have available for hire, now lying at Tulkeram, we have the opportunity to use this for our contract for drainage work to left bank of river Kishon.

We are prepared to take the line over at Tulkeram and pay transport etc. to site. At conclusion of hire period we are prepared to return it to Tulkeram if desired. To prevent deterioration we will coat the wood sleepers with 'Permolite' preservative.

The line will only be used for light Decoville [sic] Trucks each holding about 3/4 of a cubic metre. No locomotive will be used, only horses."

[Past mention of N. Muller has been made in the 'Industrial Railway Record' No. 152 in connection with the building of the Rutenberg Power Station of the Palestine Electric Corporation at Naharayim in the Jordan Valley. This letter would seem to clear up the correct spelling for Muller. I have a couple of clear photographs showing horses and the Decauville light railway used in drainage of the swamps along the Qishon River south of the present-day Haifa Oil Refineries.]

h). A curious memo of 16/5/1928 from the District Engineer, Lydda to the Engineer Ways & Works leaves us with some queries:

"SUBJECT:- 60cms. Gauge Track.

A possible allocation would be:

Description.	Quantity.	Head.
1).	60cms. Line Jaffa.	1144 PA.10/158.
2).	Decauville for earthworks, Sinai Military Railway.	1145. SA. 4/158.
3).	Nur es Shams Quarry.	1144. PA.10/158.
4).	Decauville for supply of sand for bridges.	1144. PA.21/158."

(I have no idea what material is being discussed here ! The Jaffa Harbour line was already closed by May 1928. I assume that item 4 was connected to item 2, but am unable to hazard a guess at what or where item 4 may be.)

[Ed. adds: PA" and "SA" may well refer to "Palestine" and "Sinai", in which case items 2 and 4 are kept distinct. The 'A'could even be 'Army'. Sinai was governed separately at this time. If wooden trestles were being replaced by new girder bridges on proper abutments, then cement would be delivered by rail but short lines to bring sand from local sources to mix the concrete would be logical.]

i). We now return to the subject of 60cm. gauge rolling stock. On 19/

8/1929 District Engineer F. H. Taylor wrote to the Stores Superintendent, Haifa, noting that "The greater part of the material at Tulkarem dump and the following materials at Kantara dump still remain uncollected.

Materials at Kantara.
50 Wagons.
1 Engine."

[I'd love to know what engine that was.]

j). For our final extracts from the file we return to remnants of 2ft. 6in gauge track. On 4/4/1936 the Chief Mechanical Engineer wrote to the Chief Engineer on the subject of:

"TROLLEY RAILS OF MOULD DRYING STOVE.

I should be grateful if you could supply me with 26 feet length of 2ft. 6in. gauge track complete with sleepers, or failing this 52 running feet of any light section rail (by this I mean in the region of 20lbs.) or possibly Decauville 60 cm. track to enable me to re-arrange the gauge to 2' 6"."

Five days later the Chief Engineer replied: "I can supply 26 feet of 2' 6" complete except for one steel sleeper being lacking. This will come from the S.M.R. and will herefore be the subject of a small charge."

[The mould drying stove was at Qishon Workshops. I wonder where this 2ft. 6in. gauge track had been kept/used on the Sinai Military Railway. I assume it to have been a leftover from WW1.]

[Editor notes: Readers should note the various different ways of abbreviating the term "sixty centimetres" that have been used in this file. This is indicative of the many problems of orthography to which we have referred in recent issues - it is not just a matter of place-names !]

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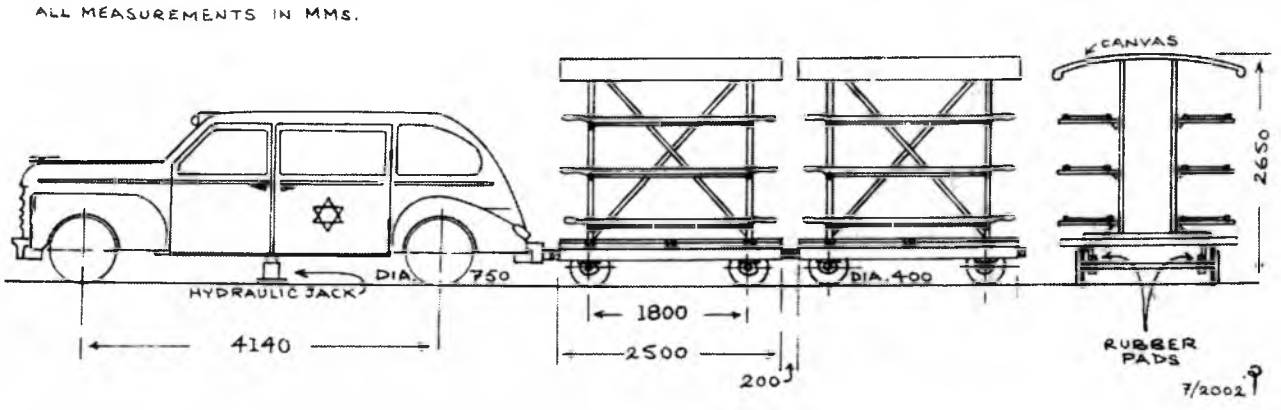
61:11.

BY AMBULANCE TRAIN TO JERUSALEM ?

By Paul Cotterell.

Chen Melling was suitably chuffed when he turned up some pretty bizarre diagrams at the RM Archives one day. They show different proposals for an Israel Railways ambulance train, and I have retraced one of the drawings to accompany these brief notes. The diagram (VH234) is dated 8th. November 1953 or 1955 (the last digit is none too clear) and is headed 'Proposal A'. It shows two trolleys being pulled by an 'ambulance car' on flanged steel wheels. The automobile is described as a "Cadillac" though it looks amazingly like London taxi-cab to me (but then, what do I know about cars?) It appears to be permanently fitted with a central hydraulic jack for turning purposes. Another diagram shows that a 'Caddy' at each end of the ambulance train was also under consideration - these being without jacks as the train could then simply operate in push-pull mode.

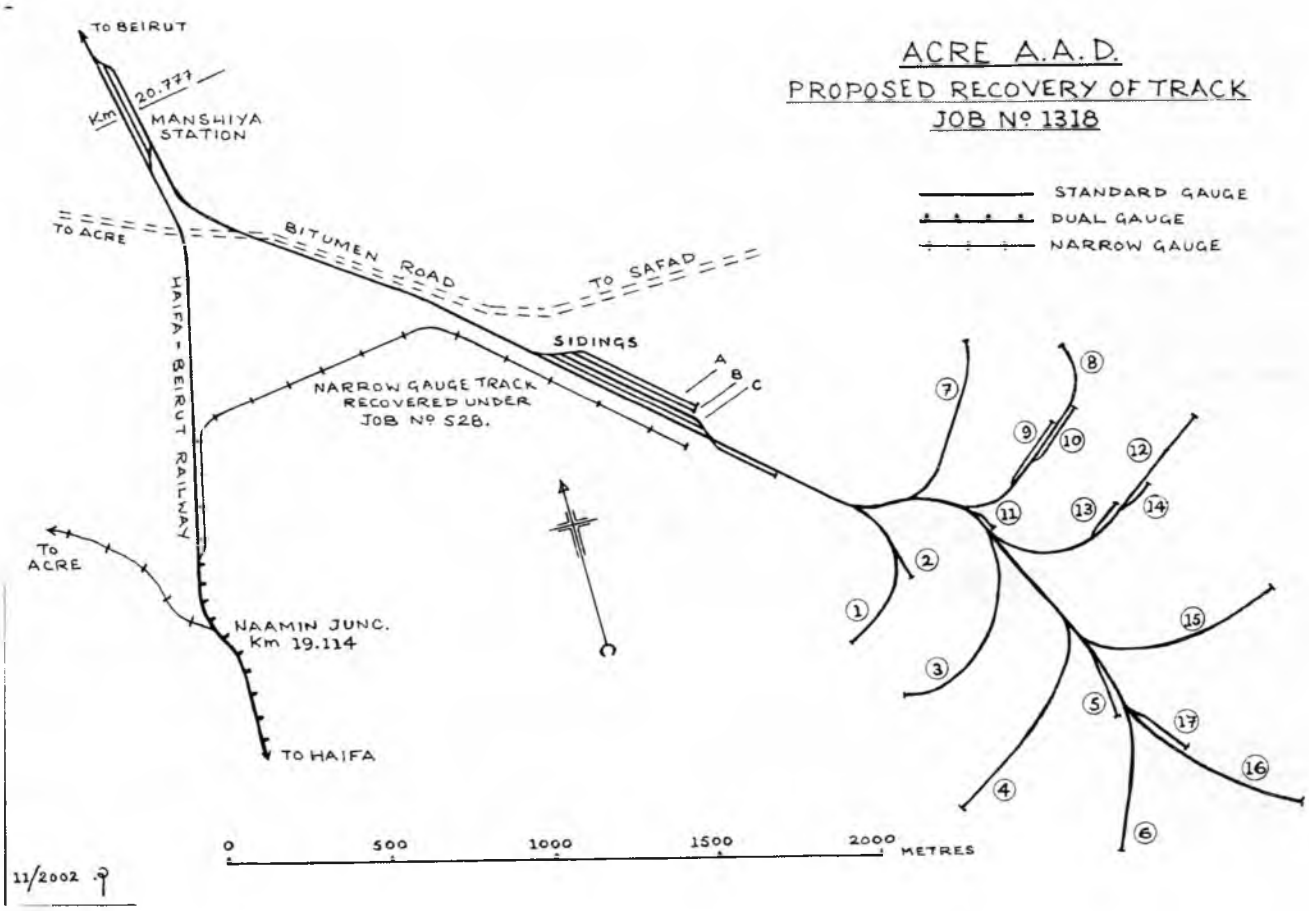


The two trolleys are fitted with three flimsy looking racks either side for carrying the dead, dying and wounded on stretchers. Suspension is shown as rubber pads rather than springs. It is evident that no thought had been given to providing suitable couplings. All things considered, I think I would prefer to be dead if taking a ride on this contraption.

From a notation on one of the diagrams it seems that this ambulance train may have been intended primarily, even exclusively, for the Jerusalem line. One may speculate on the reasoning behind the whole scheme, for the diagrams provide no clue."

[Eds. adds: Of course, there were constant minor battles and skirmishes with Fedayeen in this period, and much of the Jerusalem line is not accessible by road.]

WW2 AKKO / ACRE AGAIN.



By Paul Cotterell.

Back in 16:21 I presented a sketch map and notes dealing with a World War 2 triangle around Napoleon's Hill just outside the town of Acre. These have now to be revised in the light of a discovery at the IRM Archives.

The new finding comes from a thick, rather battered, and unnumbered file dealing with the Haifa - Beirut - Tripoli Railway. It is a much more accurate plan (No. TN/16371) of the locality than the two maps on which I based my previous sketch in 16:21, as can now be judged from the present drawing. I do not know what the initials A.A.D. stand for, but the fan of sidings numbered 1 - 17 strongly suggests an ammunition depot. [yes - an Area or Army Ammunition Depot ? Ed. check with Tony Adams.] The track proposed for recovery as in the exchange/sorting sidings; those identified as A, B and C. Other than Plan TN/16371 there was little else in the file which referred to this site, just a handful of memos. From these we learn that the track recovery operation was proposed in May 1945 and completed by the end of July 1945.

The main difference to note between the sketch in 16:21 and the one accompanying these brief notes is that the various lines did not actually form a closed triangle. It can be seen here, in fact, that the 105cm. gauge access track had already been taken up (under Job No. 528) before May 1945. From three short memos in the file it is evident that this narrow gauge access line was lifted in early November 1943, and there is the merest hint on one of the memos that the standard gauge line and sidings were only laid once the narrow gauge line had been removed. It was always believed that the dual gauge on the HBT extended only as far north as Na'amin Junction. This, too, now needs revision. As can be seen, we have to add on another two or three hundred metres to where the narrow gauge line formerly branched off eastwards.

HEDJAZ RAILWAY ARCHIVES IN BEIRUT.

Paul Cotterell.

While searching for something else in the IRM Archives, Chen Melling came across a rather intriguing plan (No. F/6/17). It is titled PLAN OF THE HOUSE OF MEISSNER PACHA [sic] CHIEF ENG. H.R. ERECTED AT MAAN & PURCHASED BY THE H.R. There is a neatly written notation on the plan: "Received from the archives of the C.F.H. at Beyrouth & forwarded with their letter No.2619 of 2.2.27".

A few questions spring to mind regarding this document, of which one seems particularly pertinent to researchers - why did the CFH have archives at Beirut? One may also wonder about the extent of these archives, why they were not located in Damascus (the obvious place for them) and, most importantly, what happened to them? Is it possible that the CFH archives might still be hidden away somewhere in Beirut? Letter No.2619 might serve to throw some light on these queries but, unfortunately, this letter has not been discovered.

Assuming this to have been an ammunition depot, steam locos would probably not have been allowed access beyond the exchange/sorting sidings - too much danger from flames and sparks. The obvious candidates for motive power on ammunition trains, therefore, are the Whitcomb diesels which began arriving in Palestine during 1942. I imagine that a shunting engine would have been stationed here for moving wagons in sidings 1 -17. If a Whitcomb was not assigned to such a task, I wonder if one or more of the captured Wehrmacht diesels might have put in a spell of shunting. Just a thought - no hard evidence is known to back up this very tentative suggestion.

[Ed. adds - there exist photos of Wehrmacht diesels in Beirut yard.....]

LYDDA DISTRICT ANNUAL REPORT 1938-39.

By Paul Cotterell.

I had not known that District Reports existed; certainly this is the first to surface at the IRM Archives. Happen others will turn up eventually. If they do, and they are anything like this one, then they should provide plenty of detailed information on local events. This Report of 1938-39 was most carefully compiled, neatly typewritten, and contains quite a number of very interesting and good quality photos pasted on to the pages. These were Interesting Times, as the Chinese curse has it, so there was plenty to write about. The following extracts will, I hope, give an idea of happenings, but can hardly do justice to all the information available.

Area covered by the District:

The district boundaries in the financial year 1938/39 remained the same as those of the previous year, the lines covered being the Main Line from Tulkarm (Km.67.200) southwards to El Kantara on the Suez Canal (Km.414.354), the Jaffa - Jerusalem Line (Km.0 - Km.86.850) and the short branch lines...to Petah Tiqva and Beit Nabala and...to Sarafand.

As in previous years, for estimating and accounting purposes, the district was divided into what may be described as two watertight compartments which were the Palestine Railways section from Tulkarm to the Sinai Frontier at Km.211.323 and the El Kantara - Rafa Railway, or Sinai Military Railway (S.M.R.), from the frontier to the Suez Canal. This division of the district into two entirely separate sections produces much extra work and reduces efficiency...

Staff:

...The disturbances had a generally demoralising effect upon the railway staff which was in no way the fault of the personnel concerned. It became impossible for Jewish staff to work anywhere except in completely Jewish areas and in stations which were protected by armed guards. The Arab, and even staff of other nationalities, were so threatened and intimidated as to become generally cowed. One Jewish foreman was brutally murdered and another was stabbed. One Egyptian ganger was kidnapped and murdered, two platelayers were kidnapped and murdered and one platelayer was kidnapped and so severely beaten that he died two days after his release. Large numbers of staff were taken before rebel "courts", fined, beaten and intimidated. Two workmen were accidentally shot by troops. One clerk was shot by terrorists. A number of workmen were injured through landmines etc.

Conditions were generally much worse in the Lydda District than in other parts of the country, which state may be attributed to the withdrawal of all police outside of Gaza - Jaffa - Er Ramle and Rehovot throughout the southern area for a period in the late summer and from Lydda Town for the last eight months.

A number of staff, who were threatened with death for giving information, for refusing to collect money for or to subscribe to the funds of terrorist gangs, or for merely carrying out their duties properly, and a number of Jewish staff had to be sent to work in Sinai. The result of all this intimidation, murder, and disorganization was that the general efficiency of Jewish staff was in many cases reduced by seventy five per cent and that of Arab staff by fifty per cent...

Survey etc:

...On the El Kantara - Rafa Railway between Km.337.700 and Km.374.500 seven deviations, 12.200 kilometres in length, were surveyed and pegged out in connection with the year's track renewal and curve improvement programme. Deviations amounting to 10 kilometres ready for curve improvement were surveyed...ready for the 1939/40 programme...

Permanent Way:

Sabotage and interference with the line in Palestine continued throughout the year and reached such intensity as to produce the closing of the Lydda - Jerusalem Line for nearly four months and of the Main Line to Egypt for six days. For reasons of economy a five day week was worked, resulting in a reduction of 17 per cent in maintenance work. Further, a great part of the platelayers' time was occupied in repairing damage caused by saboteurs, clearing wrecks and acting as watchmen. The result of the greatly reduced working time on maintenance was a very serious lowering of the standard of maintenance.

Rainfall was exceptionally heavy in the year 1938/39...Although there was much flooding and although extensive damage was caused in Tel Aviv and other places, there was, apart from the general effect of the softening of the ground, very little damage to the track...

There were the usual sandstorms in Sinai. Cautions had to be issued on eight occasions, but there were no serious delays to trains through sand. Planting which is now carried out every year throughout the 214 kilometres of sand from Khan Yunis to El Kantara has greatly reduced the sand movement in the immediate vicinity of the line.

Three falls of rock were reported on the Jerusalem line.

Formation:

The upkeep of the formation in the district presents a number of problems. The soil varies from soft sand and black cotton soil to hard limestone rock. The 214 kilometres of sand [in Sinai] provide a very imperfect roadbed which during sandstorms may rapidly become most unstable. A length of 90 kilometres of line is on black cotton soil which shrinks and cracks in summer and turns into mud and expands in winter. On this length only a great depth of ballast will support the track, and each year the annual wastage of ballast is high. Owing to the general lack of perennial vegetation, the bareness of the ground at the beginning of the rains, and bad methods of cultivation, soil erosion is excessively heavy.

Ballasting:

Owing to the very small output of the quarry through lack of security, through repair of sabotage occupying so much of the men's time, on account of economy and through lack of engine power, very little ballasting work was done.

Signalling & Interlocking:

The signalling and interlocking gear at Artuf, Deir esh Sheikh and Battir was destroyed by saboteurs, and bolt locks and rodding were broken up at Deir el Balah and Deir Suneid. Signals were also thrown down and broken at other stations...

To poor telephone facilities, which have always been a cause of much delay and hindrance to work, there was added the complete breakdown of telephone and telegraph communications for long periods over the whole of the Palestine Section of the district. Kilometres of telegraph route carrying both the block instrument and western electric telephone lines were destroyed again and again by armed bands so that on several sections [electric] staff working had to be given up altogether.

For communications with El Kantara a wireless set had to be installed at Rafa and messages from Haifa and Lydda had to be wirelessed through police sets to Rafa and thence relayed on the ordinary line.

Bridges:

As there are in the district 566 bridges and culverts under the line, and in station yards and under roads a further 152 culverts and pipes of large diameter, many of which are of considerable length, maintenance and renewal of bridges and culverts is a heavy item. This work was still further increased through damage by armed rebel bands. Nine bridges and a large number of culverts were badly damaged by explosions and a number of bridges and culverts were badly damaged by fire, quantities of sleepers being burnt underneath them so as to damage the masonry, girders and track above. Repairs which, in some cases, amounted to complete rebuilding, had to be carried out piecemeal under traffic. The work was made still more difficult by armed bands attacking the repair gangs, burning their camps, tools and plant and burning the timber supports and concrete shuttering...

In Sinai the Wadi El Arish Bridge, which consists of ten sixteen metres steel spans was cleaned and repainted.

Buildings:

New Works.

...For the accommodation of bridge guards concrete blockhouses were built on the bridges at Km.68.378, 75.150, 86.045, 90.880 and 184.957 on the Main Line and at Km.1.970 on the Petah Tiqva Branch Line.

Two steel pillboxes on high towers were erected in Lydda Station.

Three steel watchtowers from 10 to 14 metres in height were built at suitable vantage points...between Ras El Ein and Lydda. These were used for watching the line to prevent sabotage and were found to be most effective.

Four similar towers for signalling purposes were built in the camps of Railway Protection Troops at Yibna, Km.136, Km.145 and at Khan Yunis.

Maintenance.

Owing to lack of funds and owing to the heavy demands on labour to combat sabotage, very little real maintenance work was carried

out on buildings. Painting was completely stopped, and neither money nor labour could be found for many urgent jobs such as repair of roofs. Buildings were destroyed or damaged in seventeen out of a total of twenty seven stations and gangposts.

The only rebuilding or repair work taken in hand was at Qalqilya and on the Jaffa - Jerusalem line [following sabotage]...

Water Supply:

Palestine Section.

Owing to the fact that much of the piping is now old and in very bad condition water supplies gave considerable trouble during the year, there being extensive failures of pipes at Lydda and at other stations.

El Kantara - Rafa Railway.

Existing water supplies were satisfactorily maintained. Some heavy repairs had to be undertaken in two of the reservoirs at El Kantara, and work on one will have to be continued in the coming year...

Fencing:

...much fencing was destroyed [by sabotage].

At Lydda the fencing around the marshalling yard was strengthened so as to make it more difficult for saboteurs to enter...

Miscellaneous Works:

Disposal of H.M. Government's material from the El Kantara - Rafa Railway second line.

The dump of permanent way material which was the property of the Imperial Treasury and which had come from the salvaged Rafa - El Kantara second line was sold, loaded up and despatched to the buyers. 5926 tons were loaded at a cost of LP.277. The sale produced LP.22,655 for the Treasury.

Wagons handled:

Daily paid staff loaded and offloaded the numbers of wagons shown below:-

	Loaded.	Offloaded.
Palestine Section.	3700	6500
El Kantara - Rafa Railway.	950	1600
	4650	8100

The excess of offloading over loading is accounted for by wagons loaded by prison labour and by the Stores Branch.

Workshops Tools & Plant:

[A large number of various items, mostly relatively small, were made in the "Lydda Workshops". A long list of these is appended in the Report, far too long to repeat here, but materials used in the construction of these items included wood, steel, scrap metal and concrete.] The Report continued:-

As indicated...a great variety of work is carried on in the district workshops. It is efficient and cheap, scrap material being used for many items such as track signs, boundary posts, buffer stops etc. Better equipment is however urgently required...

Seven open coal wagons were bullet-proofed by means of concrete linings and floors. These were used on armoured and breakdown trains, on workmen's trains for conveyance of railway staff and were also taken off the line and used as temporary blockhouses.

Sabotage:

Although this item has been placed late in this report it came during the year to rank in importance before all ordinary work and operation, and combating sabotage came to occupy the greater part of the time and energy of the district staff. No railway outside of China has in recent years been subjected to such intensive attack and been presented with such a difficult problem in working.. Moreover most of this sabotage was in the Palestine Section of this District.

The sabotage took the form of wrecking trains, blowing up buildings, burning railway buildings, camps, tools, plant and materials, burning rolling stock, blowing up and tearing up and destroying track, destroying signalling gear, telephones and staff instruments, kidnapping, beating, intimidating and murdering railway staff, firing on stations, trains and repair parties, and blowing up trains and motor trolleys by means of landmines. Various counter measures were taken, but the saboteurs always had the initiative. Attacks began generally in a small and not very efficient way, but the saboteurs rapidly became bolder, and their attacks more destructive. For instance, first a pile of sleepers was burnt, then a ganghouse, and next a whole station; at first a rail was unbolted, then lengths of several rails were taken out, followed by a hundred metres of track coupled with burning of the sleepers, culminating in the complete destruction of seven kilometres of track in one operation; trains were at first merely derailed but soon they were derailed and burnt. Failure to institute firm measures at the beginning, lack of guards for trains and stations, the withdrawal of police from the greater part of the Southern District and the removal of all police for eight months from Lydda, a town of 12,500 inhabitants, encouraged the saboteurs and gave them for a time a free hand.

Some idea of the extent of the damage can be obtained from the following figures...Forty four trains were wrecked, and in some cases the amount of damage reached LP.5000 or LP.6000. Thirty three motor trolleys were blown up, wrecked or derailed. In seventeen out of a total of twenty seven stations and gangposts in the Palestine part of the district the buildings were burnt, the damage amounting to LP.14,710. In some cases the railway employees were able to extinguish the fires, but the attacks were repeated until everything was destroyed. Bridges and culverts were blown up, temporary repair work destroyed and the camps of the repair parties burnt. The damage to bridges amounted to about LP.4,300...

On the Lydda - Jerusalem Line attacks were made upon trains, mines were exploded under the line, and there was continual damage. Nevertheless the line

1. Bridge blown up at Km. 86.045 on the main line north of Ras El Ain (Rosh Ha'Ayin).

was kept open. However, on September 5th saboteurs seized an engine [Kitson 2-8-4T] and brakevan and wrecked these in a rock cutting, completely blocking the line. Sufficient armed escort for a breakdown party was not forthcoming, and the line had to be left closed for a time. Thereafter destructive attacks rapidly increased in number, the damage soon amounting to LP.10,355. Over five kilometres of track were torn up, and all the buildings between Er Ramle and Jerusalem were burnt, the four largest bridges blown up, the water supplies wrecked, and interlocking and signalling gear destroyed. This was particularly unfortunate, as it is probable that had the line continued in use the damage would not have been so great.

All this train wrecking and damage to buildings, etc., was not caused without some loss of life and injuries to railway staff and others. Amongst the armed forces protecting various parts of the line five soldiers and one policeman were killed and twenty three soldiers and seven policemen were injured or wounded. Ten railway men were killed and sixty five injured or wounded. Two civilians also were injured. Telephone communications were constantly attacked, and at one time these were out of action over almost the whole of the Palestine Section of the district. Wires were cut, poles uprooted and broken, and insulators smashed. Often many kilometres of route would be destroyed in a single night, and sometimes the wires were taken away.

The methods of attack used by the saboteurs and defence methods varied from time to time. At first small parties of saboteurs swooped down on the line from time to time and removed a rail or two and widened the gauge. This was first countered by extra platelayer patrols and by placing watchmen...but very soon armed men seized and removed the watchmen before damaging the line. The next defence measures consisted of providing pilot trolleys to run in the same section just ahead of the train and to detect damage. These trolleys at first mainly had civilian crews. Their usefulness was soon much reduced by armed bands holding them up and seizing the unarmed crews. Then military armed crews ran the trolleys. The next serious attack upon trolleys came through land mines fired by a pin projecting through the rail joint so as to be pressed down by the trolley wheels. This device was countered by running a small pusher trolley on an attachment in front of the motor trolley. The next move in the game made by the saboteurs was to place the landmines with the firing pin under the rail to be fired by a depression of the rail. These were more difficult to fix, and while derailing many trains, were not as effective against trolleys as the type with the projecting pin, the effect of which had been nullified by the pusher trolley.

After trying damage which could be easily seen, the saboteurs took to concealing the damage, replacing proper dogspikes by shortened ones, clipbolts by clay dummies, etc. Very effective measures combating this sabotage were military and police foot patrolling,

military patrols protecting platelayers and watchmen, the high steel watchtowers already described and military strong posts built along the line. All this however lagged behind the rate of attack, and only at the end of the year did any piece of line become comparatively safe, while much line even then remained unguarded.

ley working and got the traffic through quickly.

Attacks upon workmen's trains on the Lydda - Jaffa Line became very frequent. To counter these large police escorts were provided and bullet proof wagons placed on the trains...

and too light for the work. Ramps, slings and tackle are insufficient in both quantity and quality. The results are that excessive time is taken to clear the line, the workmen and officers called upon to undertake unnecessary and unjustified risks and there is excessive expenditure on wages, which falls especially heavily on the Engineering Branch

2. PR 12-ton high-sided open wagon No. 982 (ex-GWR?) bullet-proofed by addition of concrete lining and floor, in use with the breakdown train.

While it was found impossible to prevent derailments, the damage and time lost was much reduced by drastically cutting down train speeds to a maximum of 25 kilometres per hour for goods and mixed trains and 40 kilometres per hour for passenger trains, but for some time the Operating Branch was very unwilling to take this step. Repair gangs were also carried on trains.

Later to cope with increased traffic to overcome breakdown of communications and to get everything through while line guards were on duty, trains were run in convoys with a pilot trolley in front of the first of each convoy. This reduced trol-

Accidents:

Owing to the great increase in attacks by saboteurs and the consequent difficulties in operation making it necessary to adopt various forms of unorthodox working, the number of collisions and derailments greatly increased. Whereas in 1937/38 there were 41 ordinary derailments and 2 collisions, in 1938/39 there were 121 derailments and 15 collisions...

With such a large number of derailments and such a vast expenditure of time, labour and money on clearing wrecks it is unfortunate that the appliances available are so poor. The cranes are old

which has to find the bulk of the labour. Better and more tackle and a 35 ton crane are urgently required and would soon pay for themselves in reducing wages costs and reducing the time during which the line has to be closed.

During the year there were sixteen cases of accidents in connection with train and trolley running and shunting which involved injury and death of persons...

Four cases occurred on which trains ran into motor vehicles on level crossings and three in which motor trolleys ran into vehicles on level crossings...four persons were killed and seven injured.

There were three cases of motor trolleys running down push trolleys, two being in Palestine and one in Sinai...

There was one case of a collision between motor trolleys being narrowly avoided. On the 7.12.38 a trolley piloting a train left Ras El Ein for Kafr Jinis with a line clear ticket, but without order to start, when a second trolley had entered the section from the opposite end carrying the staff.

There were sixteen cases of points being run through - 14 in the Palestine Section and 2 in Sinai. This compares with 24 and 2 in 1937/38...

Signed (signature illegible)

District Engineer. Lydda. 15.4.1939.

3. (above)

Derailed Kitson 2-8-4T on the Jerusalem line, being recovered by a Cowans Sheldon 25-ton steam crane.

4. (below)

PR standard-gauge motor trolley No. 1 (Drewry?) fitted with mine detection extension.

All photos: IRM Archives.

61:15.

AGRICULTURAL RAILWAYS OF EGYPT.

From the "Railway Magazine" of November 1934, p. 369f.

"There are 1,110 miles of agricultural railways in Egypt, 875 miles of which are owned and worked by three companies - the Egyptian Delta Light Railways, the Chemins de Fer de la Basse Egypte, and the Fayoum Light Railways - and are all narrow gauge (2ft. 6 in.) systems. The remaining 235 miles of the country's agricultural railways are unique in that they are on the standard 4ft. 8 1/2 in. gauge, and are owned and worked by the Egyptian State Railways. They are referred to as the Upper Egypt Auxiliary Railways.

This latter system is in two separate sections; one, the southern section, extends for 40 miles along the Nile Valley between Luxor and Esna, and the other, the northern section, 195 miles long, lies in the valley between Beni-Suef and Deirout. These Government Auxiliary Railways, since their origin in or about 1870 under the then Khedive's Daira, and under the Daira Sugar Corporation, and, since 1902, under the State Railways, have contributed appreciably to the agricultural development of the Nile Valley. Although originally instituted purely for the transport of agricultural produce, the railways now carry every class of goods traffic and also run passenger traffic.

The locomotive, carriage and wagon stock is of a very different class from that of the State Railways. It is generally very old, no replacements in any category having been made for about thirty years. It is because of the present aged condition of its locomotives that attention is now being more forcibly drawn to the system; the present locomotive stock numbers 34 units, principally of the 2-4-0 type, with a maximum axle load of about 11 tons. It speaks well for the quality of the material, and the workmanship embodied in them, that 29 of these engines are 62 years old, having been built by Joihn Fowler & Co. (Leeds) Ltd., and by Beyer, Peacock & Co., in 1872 and 1873. With the exception that ten of these 29 engines were fitted with new cylinders some years ago, they are all running to-day precisely as supplied over 60 years ago and with their original boilers. The remaining five engines, making the total of 34, were variously built and supplied by Andrew Barclay, Henschel, and Gouillet (Belgium) between 1899 and 1903. .....

The busiest time of the year for the engines is during five months of the sugar season, and they then work continuously for 16 to 18 hours a day, remaining in steam for the rest of the 24 hours, and receive running shed attention very infrequently. Even the best built locomotive has a maximum useful life, and 62 years with very few renewals is exceptional, but, as might be expected, some of the engines have now reached the stage where they require new boilers, cylinders, and gear. As rebuilding would be expensive and uneconomical, the Egyptian Railway Board is being approached with a view to obtaining a grant for the purchase of fifteen new locomotives for this still useful auxiliary system."

61:16.

EARLY T.C.D.D. DIESELS.

(a). From "Modern Railways", February 1962, p. 126f.:

"**Three German 2,700 hp. diesel-hydraulics for The Turkish Railways**. by D.W. Beadle".

"The battle recently joined in the U.S. between German-built diesel-hydraulics and U.S.-designed or licensed diesel-electrics continues in the export market, which now forms a major part of both countries' railway-supply economy. Here the decisive issue, in all probability, will not be sheer power or size, but the performance of units specifically designed for the operating conditions found in places like India, Turkey, Persia and Africa, where higher horsepower locomotives are virtually unknown.

In this respect the encounter of diesel-electric and diesel-hydraulic just commencing in Turkey will be of absorbing interest. Five American 1,980/1800hp. General Electric U18C Co-Co road-switchers have beeen in service on the T.C.D.D. since early 1958, and under terms of a U.S. Development Loan Fund loan of ten million dollars the T.C.D.D. are to acquire another 32 units, presumably similar. Now Krauss-Maffei are supplying threee 2,700 hp. diesel-hydraulic C-C locomotives to the T.C.D.D. incorporating features basically similar to those of their 4,000 hp. machines for the U.S., but modified to suit the sort of conditions encountered on the heavier of the railways making up their export market. This has involved departure from the standard double-ended superstructure design to create a mixed-traffic centre-cab superstructure that allows maximum visibility for both main line service and local trip working, with long, rather low and narrow engine bonnets at either end, outside walkways and a cab offset slightly from the centre to accommodate a train-heating boiler under one hood, next to the cab. The American 'A'-unit outline of the Krauss-Maffei 4,000 hp. machines, described in our October 1961 issue. with a single cab at one end behind a short nose hood, has few admirers, even in the U.S.A.; Krauss-Maffei originally suggested a superstructure like that of the Turkish units but was overruled by the Southern Pacific designers. One reason given for this decision in not-too-specific terms during the Semmering trials was a claim for superior visibility in the 'A'-units arrangement - an argument which appears, after study of the Turkish locomotives, to hold little water. Visibility from the centre cab is excellent in both directions, particularly for shunting work, which the locomotives will be required to do at times.

Since the use of the hood-unit design with outside walkways obviates the possibility of the superstructure serving as frame element, the Turkish locomotives follow those by the same manufacturer for the U.S.A. in employing a heavy box-welded main frame. Superstructure elements are flexibly mounted on the frame and sectionalized with rubber jointing profiles, so that portions of the body can be easily lifted off for access to the interior.

The two disel engines are intercooled, 12-cylinder Vee-type Maybach MD655 units similar to those installed in the Brush "Falcon" and the new Swindon 2,700 hp diesel-hydraulics. They have a U.I.C. rating of 1,500 metric h.p. at 1,500 rpm. and under site conditions of 1,350 m.p.h. [sic.! - this must be h.p. Ed.] Voith's thee-stage

L6-30rU turbo-transmission is used and one of the locomotives has Voith hydrodynamic eddy brakes mounted on the torque converter output shafts. T.C.D.D. officials have not yet decided on the value of dynamic braking; if tests with the one unit so equipped prove encouraging, the brake can be installed in the other two locomotives with a minimum of modification. The radiators are installed on the forward left-hand side of each hood; hydrostatically-driven exhaust fans and outer adjustable louvres are automatically controlled in relation to engine cooling-water temperature.

Total locomotive weight is 109.25 tons, an 18.5 metric tons axle loading, well within the limitations of most of the world's large systems. Maximum starting tractive effort at the drawbar is 73,465 lb. and gradient-speed curves calculated on the basis of 30% adhesion factor (previous K-.M locomotives have developed quite consistently a factor of 33% or more in dynamometer tests) indicate that a single unit can start and handle a train of 800 tons on a gradient of 1 in 40, the practical operating limit encountered on the T.C.D.D. This is, in general, about the top limit of trailing load on such a gradient for rolling stock fitted with screw couplings conforming to U.I.C. specifications. The maximum gradient on which one of these units can tackle a train of 1,200 tons (the present T.C.D.D. maximum) is 1 in 54, at the minimum continuous full-load speed of 10.5 m.p.h.; it can work a 1,200-ton train on straight and level track at a top speed of 46.5 m.p.h., and maximum speed under lower loads is 62 m.p.h."

From the diagram it will be seen that the engine looks to all intents and purposes like an enlarged version of the V100 and V90 type Bo-Bos for the Deutche Bundesbahn. The article on the Krauss-Maffei diesels is also intriguing - it is also by David W. Beadle, and appeared on pp. 618-621 of the Oct. 1961 issue - mentioning that the Southern Pacific and the Denver & Rio Grande Western Railroads each ordered three 4,000 hp. C-C's from Krauss-Maffei, and in July 1961 the fourth loco (the first for the SP) was trialled on the Semmering line in Austria. After describing the trials in detail, commenting on differences between American and European wagon-weights etc., and different styles of railroading (including psychological factors affecting the enginemen), he notes (p.629):

"The effect of the diesel-hydraulics on the U.S. locomotive industry could be serious. The industry has fallen on evil days, its ranks thinned from nine firms immediately after the war to four today (and of the four one, Fairbanks-Morse, is a postwar newcomer whose locomotive-building career appears about at an end.) Two great names of the steam age have vanished from the locomotive business altogether - Baldwin and Lima. General Electric, still hunting buyers for its recent maiden entry into the big-power diesel locomotive stakes, continues to rely heavily on exports and electrics. Alco, the only one of the steam 'Big Three' to move successfully into diesel production - continues to hold a reasonable share of the market. General Motors, through its Electro-Motive Division, still holds the commanding position - a position so commanding that it is now under Federal indictment for violation of anti-trust statutes. All told, the industry booked orders for only 181 diesel units last year, and of these a good many were replacements with trade-in financing.

With business down, U.S. builders are not going to look kindly on any "Made in West Germany" trend. If the hydraulics do prove themselves sufficiently to generate a larger market, domestic production is almost a certainty. This may be in the form of a domestic design (there are, for example, persistent rumnours of a main line hydraulic being developed by G.M.) or a license by Krauss-Maffei (Alco had an interested observer at Semmering)..... More serious may be the implications for the export field. US locomotives have been strongest in countries where operating conditions most resemble those in the States. If K-M can build a locomotive that will compete with the U.S. diesel-electric on its home territory, some overseas roads are bound to show an interest."

This thoughtful analysis gives some background to the situation when IR was purchasing occasional G12's, and Egypt and Iran were also indulging in GM-EMD purchases.

(b). KRAUSS-MAFFEI DIESELS OF 1984.

"Eisenbahn Magazin" 1/84 p. 13 has an article "50 Krauss-Maffei Locos for Turkey". "Against fierce international competition and thanks to a mixed financing package with substantial German capital assistance, Krauss-Maffei of München has won a contract from the TCDD for 50 diesel-electric locomotives.

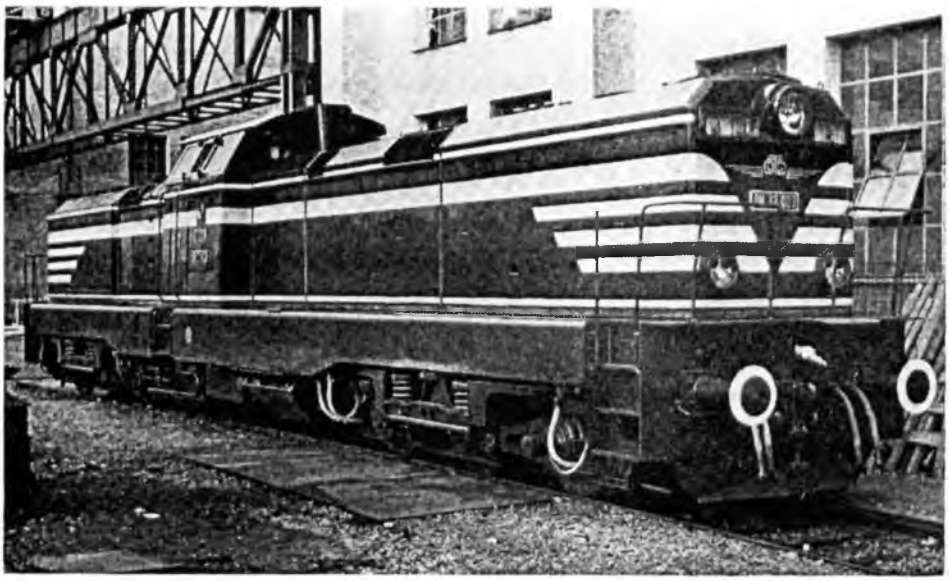
The four-axle, 68-ton machines have a tractive effort of 740 kW and are intended for shunting and light line service. They are therefore fitted with electrical train heating. The diesel motors are delivered by MTU of Friedrichshafen, the electrical equipment will be provided partly in three-phase transmission by BBC of Mannheim and partly in conventional manner by GEC of Manchester. Fifteen of the new locomotives will be fully completed in München-Allach, a further five will undergo final assembly by TCDD in their works at Eskisehir. The remaining engines will be built in Eskisehir with parts delivered from Germany but incorporating a 30% Turkish component share in the production.

The contract is worth 81M Deutschmarks for Krauss-Maffei, and in addition the TCDD has agreed a further License contract whereby this loco type can continue to be built in Turkey with a rising proportion of local manufacture."

Also in "Eisenbahn Magazin", 10/85 p.14 is a further article on these engines and a photo of four such engines outside the Maffei works in München-Allach awaiting delivery. Whilst a lot of the article repeats the technical information above, it transpires that a lot of the 81M Deutschmarks comprised German Development Aid. The 740 kW corresponds to 1000 hp. The top speed is given as 80 km/h and the weight per axle 17 tons, total weight therefore 68 tons.

(c). Second-Hand Sales. E.M. 10/85 adds: "Regarding the sale of further DB second-hand Class 211 diesels, the DB remains interested, but the financing of the sale - for which development aid would be relevant - is not yet clarified."

Regarding the sale of DB locos to Turkey, two further notes from "Eisenbahn Magazin" for Jan. 1989 are of relevance: An article on the development and history of the V100 type Bo-Bos (later Class 211) it is noted (p. 35) that "a total of 745 of the various sub-types were ordered...the first major break into the ranks came when 15 locos were hired to TCDD in 1982, to be subsequently bought in 1985 together with a further loco, where on the Bosphorus and Mediterranean they fulfilled the same function as here - making steam traction on local trains redundant." (There is a reference to EM on Dec. 1985). The same issue (p.36) has a colour photo of one of these engines in an attractive light blue livery with white stripe midway along the body.

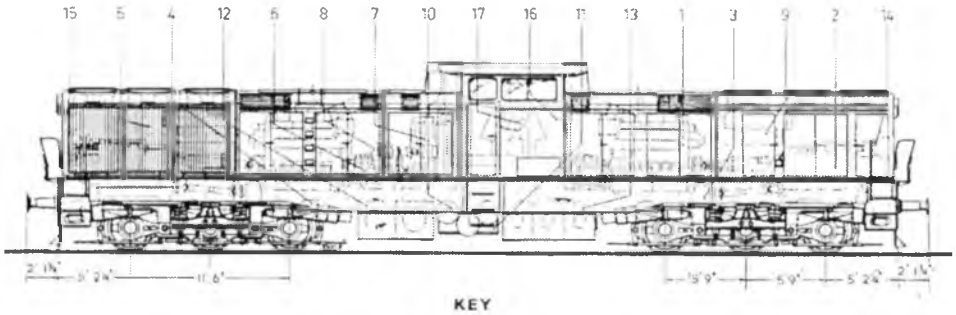


Three German 2,700 h.p. diesel—hydraulics for the Turkish Railways

by D. W. BEADLE

THE battle recently joined in the U.S. between German-built diesel-hydraulics and U.S.-designed or licensed diesel-electrics continues in the export market, which now forms a major part of both countries' railway-supply economy. Here the decisive issue, in all probability, will be not sheer power or size, but the performance of units specifically designed for the operating conditions found in places like India, Turkey, Persia and Africa, where higher horsepower locomotives are virtually unknown.

In this respect the encounter of diesel-electric and diesel-hydraulic just commencing in Turkey will be of absorbing interest. Five American 1,980/1,800 h.p. General Electric U18C Co-Co road-switchers have been in service on the T.C.D.D. since early 1958, and under terms of a U.S. Development Loan Fund loan of ten million dollars the T.C.D.D. are to acquire another 32 units, presumably similar. Now Krauss-Maffei are supplying three 2,700 h.p. diesel-hydraulic C-C locomotives to the T.C.D.D. incorporating features basically similar to those of their 4,000 h.p. machines for the U.S., but modified to suit the sort of conditions encountered on the heavier of the



KEY

1. Engine
2. Hydraulic transmission with hydraulic brake
3. Intermediate gear
4. Axle drive
5. Cooler
6. Brake air compressor
7. Steam generator
8. Auxiliary engine for steam generator
9. Heat exchanger
10. Brake air reservoirs
11. Battery
12. Water tank
13. Fuel tank
14. Oil pump for drive of cooling fan
15. Oil tank for hydraulic brake
16. Driver's desk
17. Driver's seat

p.13 of the same issue notes that the DB sold a total of 27 360-type (V60) 0-6-0DH to TCDD in 1988.

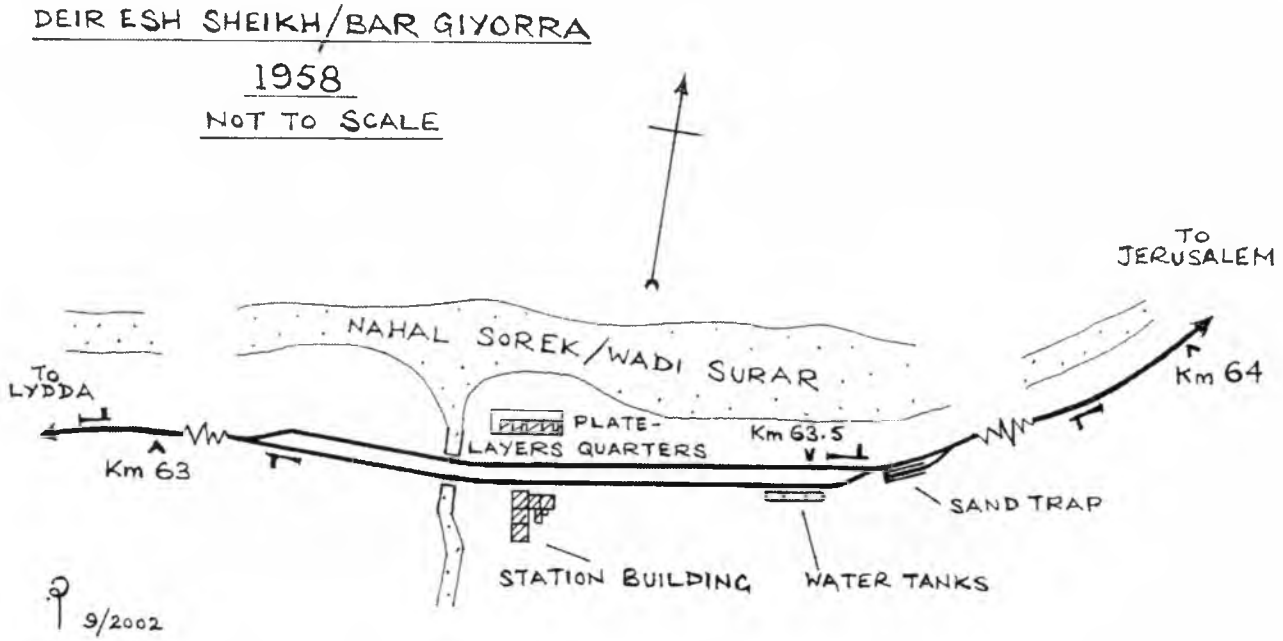
er Krauss-Maffei Loks für die Türkei
l der Ablieferung Foto: dpa

DEIR ESH SHEIKH / BAR GIYORRA STATION.

Paul Cotterell.

Tucked away in the heart of the rugged Judean Mountains and remote from a road, it is hardly surprising that this station is virtually unknown and rarely visited, though trains stopped there very occasionally for organised groups on walking tours (see photo in 24:1, and sketch map in 4:7). The station served no local community and was built for operational purposes as a crossing place for trains. The accompanying layout diagram shows it in 1958, and calls for little comment from me. Despite the attention of saboteurs on at least one occasion, the station appears to have changed almost not all down the years. But the question is: exactly (or even approximately) how many years?

Deir esh Sheikh, as it used to be named, was not an original Jaffa-Jerusalem Railway station. It does not appear in early maps or timetables or descriptions of the line, and I have never come across an opening date. It appeared in the first PR timetable of November 1920, so something in the way of added passenger facilties, however basic, must have been in place by then. There is a fairly thick file (unnumbered) on the station in the IRM Archives. This is made up of numerous diagrams, mostly from the early Israel Railways period, but also with

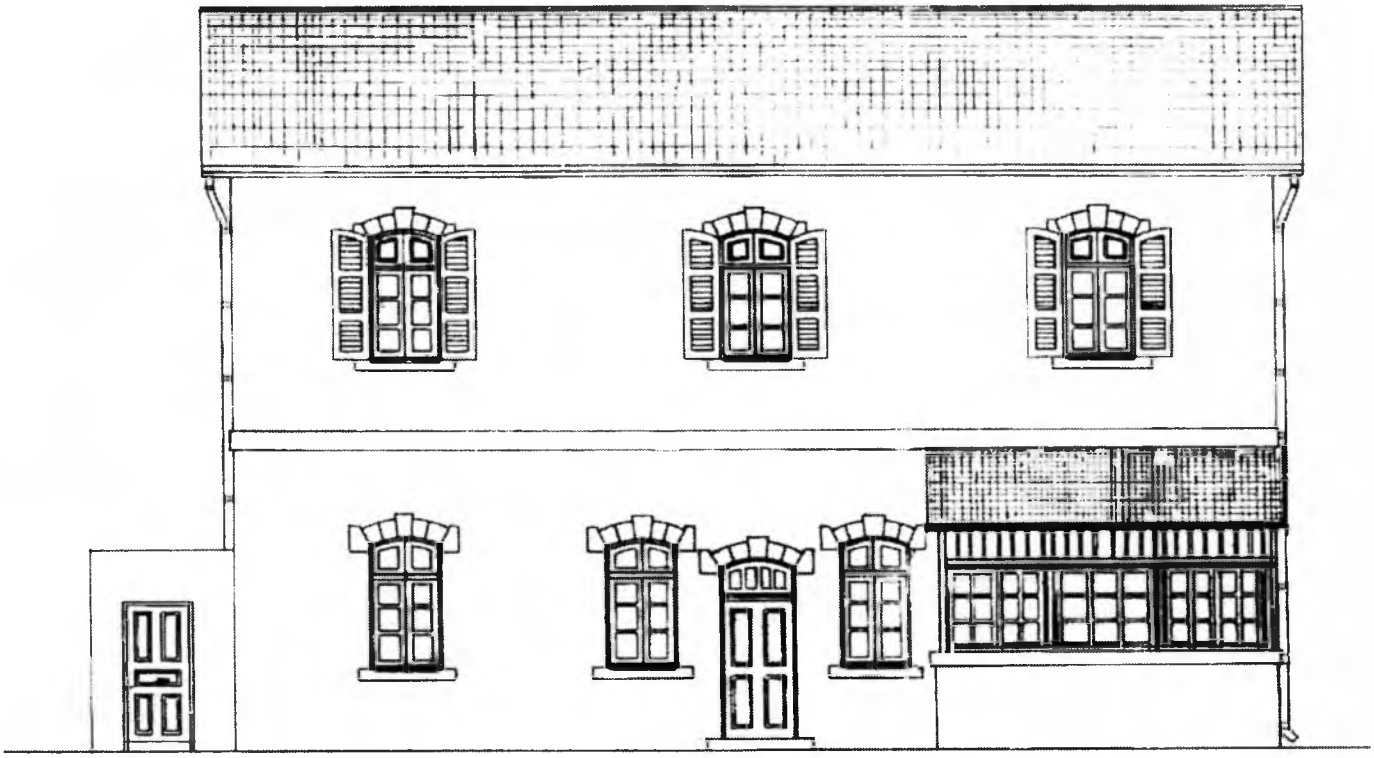


a large and detailed set of drawings from Mandate times (see accompanying extracts). These latter are architects' diagrams (No. F/3/23) showing various plans and elevations of the station building - and one wonders why such a relatively substantial establishment was considered necessary out in the wild and uninhabited boondocks. The drawings are titled "Proposed Station Building - Scale 1:100", and are dated 28/7/1926. Unfortunately for us, the word "Proposed" has been crossed out and the hand-written word "Existing" substituted. This alteration, of course, throws everything into doubt. Was Deir Esh Sheikh/Bar Giyorra station (the actual building anyway) constructed in 1926 or a little later or earlier? And was there a passing loop of some sort before then? Judging from the November 1920 timetable there must surely have been a loop, for two opposing trains are shown as departing from Deir es Sheikh [sic] within seven minutes of each other (at 11.21 from Jerusalem and 11.28 from Jaffa). The long section between Deir a-Ban/Bet Shemesh and Bittir would, I feel sure, have needed breaking down into two short sections by the time the British conquered Palestine in 1917-18, if not earlier.

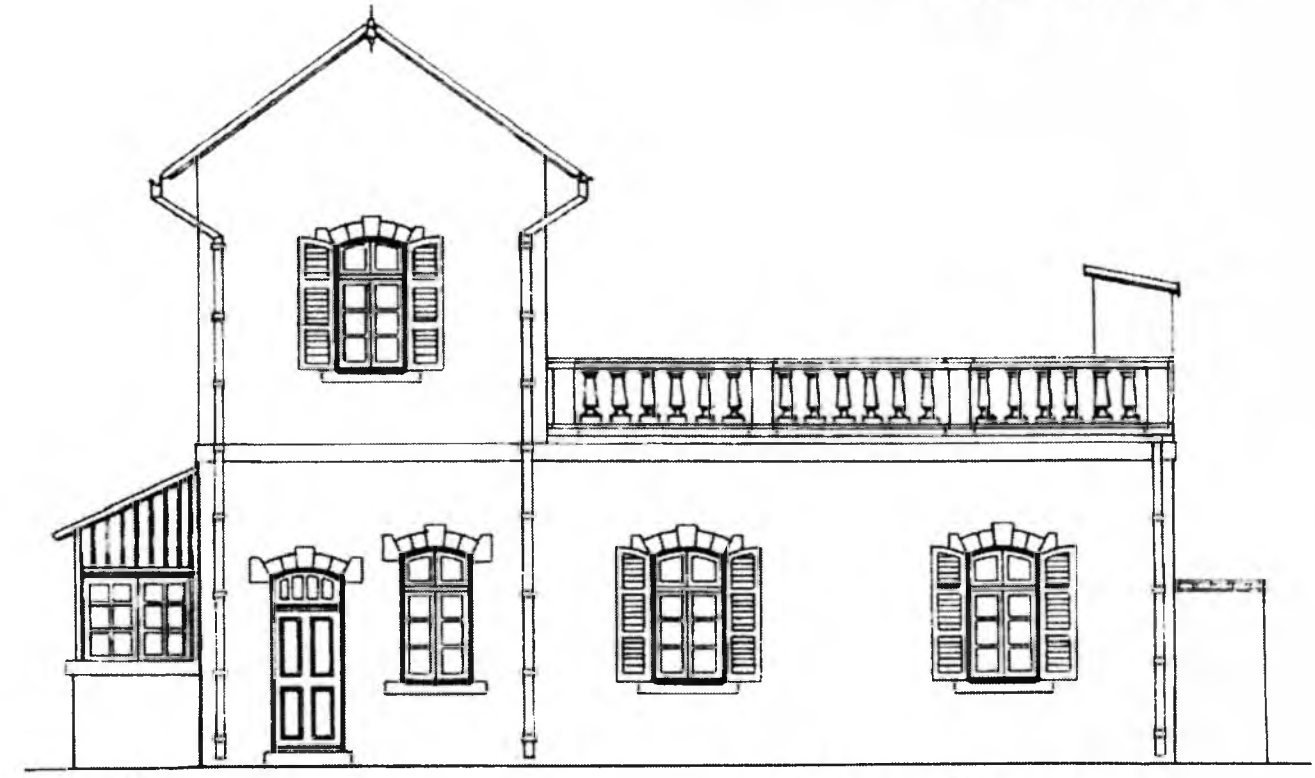
Rear Cover: Deir esh Sheikh (Bar Giyorra) station in the late 1930's with a Baldwin 4-6-0 leaving on a four-coach train from Jerusalem. Station building at left with workers' dwellings between the tracks and Nahal Sorek (Wadi Surar) at right. The white-domed tomb of the Sheikh is just visible below the crest of the hill in the background. (Photo: IRM Archives).

Deir Esh-Sheikh / Bar Giyorra Station

(As Per Drawing No. F/3/23 Dated 28.07.1926)



NORTH ELEVATION



WEST ELEVATION