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הרכבת

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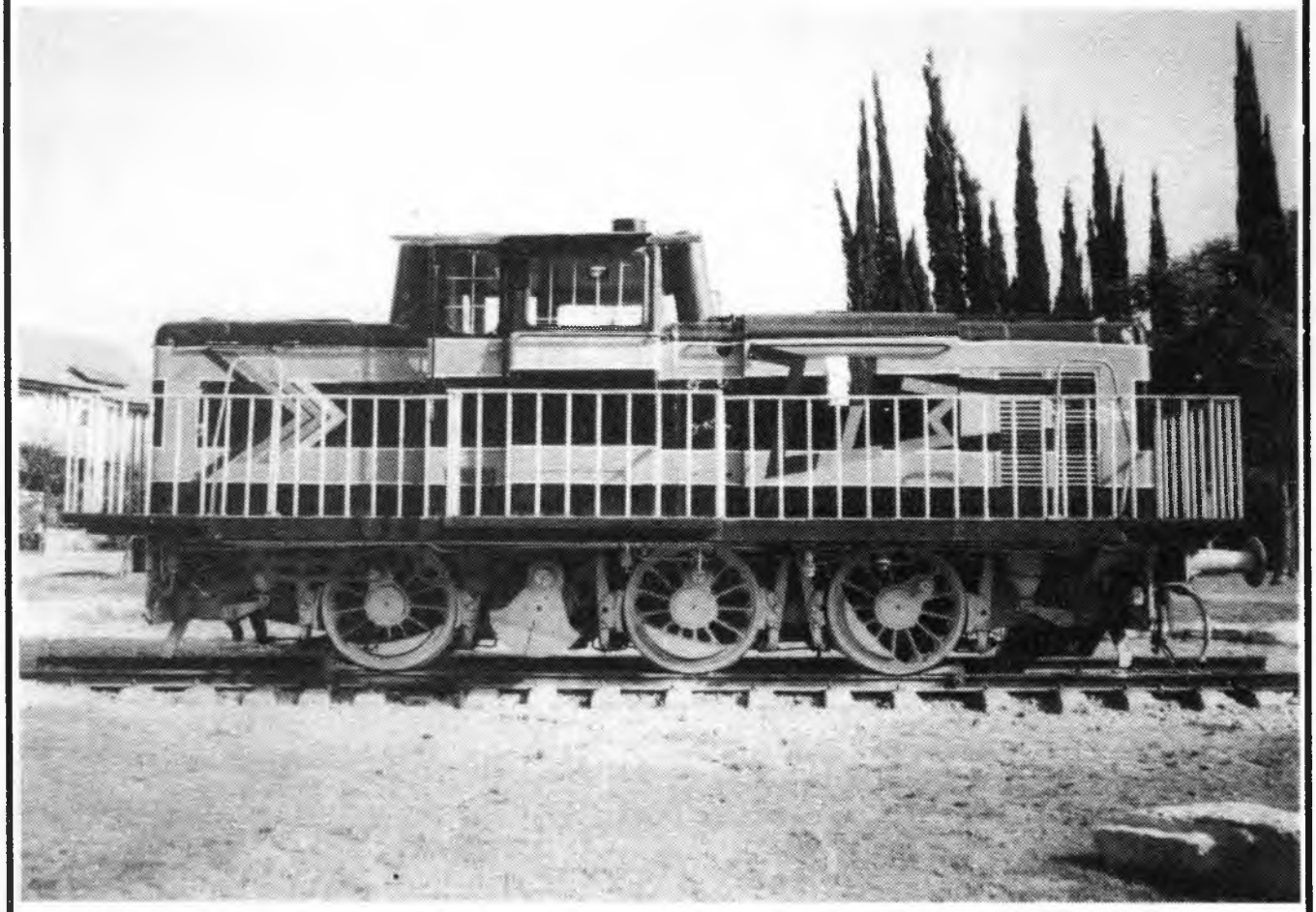

38:1 A semi-caged beast: former IR Esslingen-built 0-6-0D shunter No 223 in a park at Kfar Saba, 25/11/96. The loco has been repainted very smartly in black and light green stripes, with red and yellow "flashes" and carries railings around the running board to prevent children either getting on or, more likely, falling off. (Photo: Evyatar Reiter)

38:2: Editorial.

This first issue produced from the new address in Aruba represents another composite of work from different hands. At the time of writing this I have been settled for just over two months in the new home and new job, and - as everything here takes a pretty long time - am working with only incomplete facilities. But, bit by bit we are acclimatising to the pace, the climate, the way of doing things here, and who knows ? In another three months or so I might have a fax, a printer that works, a filing cabinet..... In the meantime, it is time to bring another issue into the world. And please note the new e-mail number, as access to Compuserve is not made easy by the local (monopoly) server and telecoms provider. Thanks also to Jacqueline (my wife), we have even managed to produce some printed labels for the regular subscribers and recipients. Material flows in; please keep it coming ! Rabbi Walter Rothschild.

38:3: Two views of Kiryat Motzkin station, 28/5/97. Unit 7009 enters on a northbound service, and a view of the old green wooden hut (which contained the mechanical frame) incorporated in the new station furniture. (Photos: Steve Tish.) (See 38:4:(h)).

38:4: News From The Line.

a). Sparks Flying ?

Services on the Jerusalem line were to be suspended from June 29th. to July 4th. because of road works at the Derech Beit Lechem level crossing in connection with the laying of new electricity cables. (Work on the project is due to last a whole year !). Since July 5th. was a Sabbath, services were to resume on July 6th., but in the event did not run until the 7th. It is not clear whether any alternative arrangements for passengers were to be made.

b). More Doubling. Double track was brought into use between Haifa Bat Galim and Hof Carmel on 2nd. July 1997.

c). **Movement at the Museum**. From Paul Cotterell comes this lengthy report on recent developments: "For a long time hardly anything has been happening at the Israel Railways Museum at Haifa East, even though there was much that needed to be done. The appointment of Ya'akov Shalom as curator of the museum has changed all that. While freely admitting that he knows little about the history of local railways, Ya'akov has got things moving again, putting special emphasis on involving the public - and children in particular - with simple hands-on projects rather than subjecting them to a dry litany of history. Response to this initiative has been enthusiastic, and the new curator's lack of detailed knowledge can easily be made good by reference to others with the necessary know-how. Exhibits have been re-arranged and added to. A screening room for films has been set up. Another room has been reserved for a large display of railway philately. Potted plants and shrubs enhance the museum's exterior. A small stone building near the entrance, formerly a store, has been turned into a Station Master's office from the Mandate period, (complete with dummy SM.) and has received many accolades. More wide-ranging changes are due to take place in the near future. The building which houses most of the large exhibits is slated for demolition to make way for a road bridge which will span the main line and eliminate the particularly awkward Hiram level crossing [traversed by all shunting as well as traffic moves. Ed.] The large exhibits are to be moved across the tracks into the former Hedjaz Railway loco shed, presently in use by the IR Engineering Department. The area around the ex-HR engine shed, along with some small contemporary outbuildings, would also be put at the museum's disposal; though the present Small Exhibits Building should survive. A footbridge will be needed over the tracks to provide safe public access to the two separate parts of the museum. Other alterations are planned but, until a scheme is formally accepted and executed, it would be wide not to go into too much detail. One major development which can be noted more fully here is the establishment of a Library, reading room and archive. It was known that a large quantity of old documents had been hoarded away in that former store, now the station master's office (see above). Nobody was allowed access to these documents for some obscure reason, not even bona fide researchers, but Ya'akov Shalom has opened them up for public scrutiny at long last. The documents are now housed in the two-storey building, alongside the HR loco shed, where the library and archives are being set up. More documents, books, magazines, maps and detailed diagrams have been rounded up at Qishon Works and also deposited in the embryo archives. Work has begun on sorting everything out. This is a mammoth task though, and it will be years before proper access to this invaluable archive material can be provided - certainly at the present rate of progress. Chen Melling and I have made a start on sorting this material but we can only do so for a few hours each week, and Chen will be called up for army service soon. The title of Archivist is, for now anyway, entirely honorary. There is no such full- or even part-time position. Volunteers are required. If anyone would like to participate in this work, be it only for a couple of hours or so, then he or she is invited to contact me in advance at 04-8532021 so that

arrangements can be made." ["Harakevet" wishes these workers well in sorting out and rediscovering so much of what has been lost to view for so long; veritably another set of "Dead Sea Caves" ! Ed.]

d). **Fly the Flag !** According to "City Lights" of 25/7/97, Yisrael Orbach, a sculptor living in Zichron Ya'acov, has come up with an original idea for celebrating Israel's Jubilee in 1998. He suggests that a train work its way from north of Haifa to Jerusalem, with the vehicles adapted to spray the Israeli flag (presumably he means just the blue and white stripes, not the star as well !) on the tracks behind it as it traverses the country, thus creating The Biggest Flag in the World and (of course) forming an entry into the Guinness Book of Records. "The painting of the blue and white flag will be done by a team of experts operating a controlled spraying system adjusted to the train's speed. Spectators will witness a unique picture as the longest flag in the world is produced before their eyes; Orbach suggests filming the event from helicopters for direct television transmission throughout the world." The technology, derived from weed-killing sprays, is certainly there !

d). **New Timetable**. I must be getting old..... I recall when the IR timetable consisted of a single sheet of folded paper. From 19/7/97 "and until further notice" a well-produced glossy booklet of 36 pages has been produced, price N.I.S. 1, the cover bearing pictures of a 4-unit (i.e. 12-car) IC train in the Ayalon, and a 5-coach push-pull set in service. The centre (pages 18, 19) again incorporates a schematic map, indicating passenger lines in red (this included Lod - Be'er Sheva !) and freight-only in blue (Nahariyya to Betzet, Remez Junc. to Hadera East, Tel Baruch through Bnei Beraq to Kfar Saba, Rosh Ha'Ayin and Lod, Ashdod via Heletz line to Qiryat Gat, and Be'er Sheva southwards.) Pages 4 & 5 show (basic daily timetable) 23 Haifa-Tel Aviv trains, pp.6 & 7 the Tel Aviv-Haifa trains; pp.8-11 and pp.12-15 the respective fuller services and stopping patterns, through to/from Nahariyya. Pages 16 & 17 are for Nahariyya-Haifa suburban trains, and pp.20 & 21 for Haifa - Nahariyya, in each case with the 15 new suburban services to/from Qiryat Motzkin supplementing the 9 Haifa-Nahariyya through trains, most of which are through to/from Tel Aviv and some through from/to Rehovot and Beer Sheva. Pages 22-23 and 24-25 are devoted to the Tel Aviv - Netanya - Binyamina suburban services, pp.26-27 show 14 Tel Aviv - Rehovot trains with two extended to Ashdod, and page 28 shows the daily Jerusalem return whereas p.29 shows that the Beer-Sheva service comprises one daily return service, plus one Thursdays Only and one Sundays Only. The last six pages are occupied with notes in Hebrew only.

e). **Timetable Booklets**. In addition to the above, I have received from Hans Kohut a series of seven wallet-size folded leaflets giving information on the trains (red stripe one side, blue stripe the other) for the services: Nahariyya - Qiryat Motzkin - Haifa; Nahariyya - Haifa - Tel Aviv; Haifa - Tel Aviv; Binyamina - Netanya - Tel Aviv; Tel Aviv - Rehovot - Ashdod; Tel Aviv - Be'er Sheva; Tel Aviv - Jerusalem. All are beautifully produced, in Hebrew and English, on glossy paper, of uniform folded size though, when folded out, some are longer as they have more information to display ! All bear the legend "Effective 19.7.97 & until further notice."

f). **Campaign** "New Railway" was the title for an advertising campaign in July 1997, comprising four posters, two showing executive types at work in air-conditioned comfort, the interior of a clean and shiny Hashalom Station, and an IC3 in the Ayalon purring past snarled traffic.

g). **Internet Gadol Hayah Sham**..... Israel Railways news can now be obtained (even quicker than via "Harakevet") on: < http://www.israrail.org.il/ >. It has been put together by "Globes" Services. When your intrepid Editor tried to access this - he is a very inexperienced "net surfer" - it appeared at first to be unobtainable, and he went through < http://www.israports.org.il/ > - this has several pages on the Ports and Railways Authority, and a little box for Railways which, when clicked, turned out to be the above address anyway. There are very nice pictures - though, for some reason, an IR IC3 is flanked by a Czech 4-8-2 steam loco and an American

engine in one of them ! An IC3 set at the bottom of the page forms a key to different sub-topics - management structure, statistics, a diagrammatic map (showing the Inland Line still in use) and so forth; on the screen the text is Hebrew, but when the cursor is pointed it is 'tagged' in English. However, the Editor's screen produced Hebrew headlines but gibberish contents when he attempted to access the individual topics. Maybe some software problem ? Zvika Rechnitz suggests one needs a Hebrew/English version of Win95 or Win 3.11. In the meantime, I'll stick to "Harakevet" !

h). **Haifa Suburban.** Photos from Steve Tish show IC3's reversing in the new north-end bay at Haifa Bat Galim, the new Qiryat Haim station having platform shelters and railings painted in black and yellow, that at Qiryat Motzkin being painted in black and red and - amazingly - incorporating still the old green wooden shed on what is now the southbound platform. (Trains are all pictured running on the left-hand track). (See 38:3).

i). **Derailments** ! On 27th. August the Jerusalem - Tel Aviv train was derailed "in the middle of nowhere" between Na'an and Ramle. According to a newspaper report in "Ma'ariv" the train comprised a loco and 12 coaches, carrying 800 passengers ! According to the local police chief Meir Algrisi no terrorist activity is suspected - instead the culprit is more likely to have been a heavy lorry spreading the rails at a level crossing. The driver was north of the Nesher junction when he noticed a "bump" in the tracks about a hundred metres ahead, and applied the emergency brake. Passengers noted a bump and sudden stop, and assumed (naturally) the worst, a terrorist hijacking or attack; however, they were told to disembark (into a field of thistles !) and IR laid on a fleet of buses to transport them on to Tel Aviv. Police inquiries indicate that the errant lorry driver probably noticed that he had caused some damage to the tracks but "preferred not to report it" ! Paul Cotterell adds that the train was in fact formed of two locos and eleven coaches, forming a through Jerusalem - Nahariyya service and crowded due to the holiday season (the Editor recalls when 800 passengers was more than the line saw in a month !); several coaches were derailed but fortunately nothing overturned. The lorry driver had dragged the rails at least 40cm. out of alignment. From Tel Aviv a "scratch train" of three coaches was formed to convey passengers northwards. On Thursday 11/9/97 the morning Tel Aviv - Jerusalem train derailed at Battir. No injuries were reported. Is this the beginning of a revival of an ancient tradition ?

j). **Cable subscribers** ? Contractor's men working on doubling the track cut an underground cable on 20th. August at about 13.00, causing massive disruption to traffic at the height of the summer holiday when most trains are running fully loaded. The stations at Zikhron Ya'akov, Dor and Atlit disappeared from the signalling panel at Binyamina and, until they could be individually manned, trains were stranded or running under written Line Clear Orders. The cable was repaired only some five hours later. In the meantime passenger trains arrived at their destinations up to an hour late, and two freight trains were sidelined until repairs could be completed. Such incidents have been noted before in "Harakevet". Basic lack of care/caution by the contractor and failure of supervision by he railway are the causes. But try explaining that to hundreds of passengers in murderous mood.....

k). Door LeDoor. On Friday 28th. August, train 6052 from Tel Aviv to Nahariyya, made up of a push-pull set, was 30 minutes late into Bat Galim. The semi-automatic doors were almost entirely inoperable, with just one coach having working doors. Station stops were grossly extended to allow passengers on and off the train via this one coach. Two IC3 sets were sent empty to Bat Galim to substitute for the push-pull set onwards to Nahariyya. Sticking doors are a recurring problem with the push-pull sets. (You cannot push and pull at the doors !)

l). It's all Relative. Nigel Grizzard sends a report of a video film entitled "Fusion", produced in 1996 by SHAMIR, the Association of Religious Professionals from the Former Soviet Union. The theme is about how Modern Science is converging with Torah, and was made by Prof.

Herman Branover, the head of the centre for Magnetohydrodynamics at Beer Sheba University. The film features a discussion on Relativity, filmed on the train from Jerusalem to Tel Aviv!

38:5: Rolling Stock Notes.

a). Liveries. From Evyatar Reiter comes the photo below, showing "Jumbo" No. 610 newly-repainted in the "Inter-City" livery - involving a cab almost entirely in bright red, a bodyside blue and white stripe which slopes up to cab roof level, and darker bodyside. Photo taken 20/11/96, at Lod.

b). **Dem Bones, dem Bones, dem ol' dry Bones....** Evyatar has been researching the origins and identity of the bits of twisted metal standing around in various parts of the diesel depot area at Haifa and Qishon Works, formerly GM "G-12" type Bo-Bos. Here is his report, in full, on his investigations on the Hulk. "After years of collecting photographs and extensive investigation among I.R. employees, (all fruitless), I decided to answer the question myself since - as with so many matters connected with I.R. and its history - it is usually better to go out personally and physically search for the solution. I decided first to try a process of elimination: No. 105. This loco was taken out of service after the accident at Bet Yehoshua on 26/12/63. (For a comprehensive report see Harakevet 23, pp. 7-11). It was damaged on the chassis furthest away from the cab after colliding with loco no. 118. The body of the mysterious loco is in one piece and cannot therefore be No. 105. Yet further indications are that a photo of 105 taken in 1963 (See below) shows that the end headstocks are shorter than the complete width of the loco running plate angles, whereas on the remains at Qishon the ends of the running plate angles are of normal width.

No. 106. This loco was taken out of service following a collision on 6/3/74 at the junction with road No. 41 (from Hulda to Qiryat Ekron), on the line from Lod to Beersheva at Km. 3.951, where is an automatic barrier crossing, 12 km. east of Mazkeret Batya. It was then painted in the second style of these locomotives, (blue with red and yellow stripes), and was the first loco to be treated in this way, in the 1970's. However, our mysterious loco is still painted in the first

phase livery, the original grey-red livery used upon delivery when new. This therefore rules this loco out too. No. 118. It will be remembered that this loco was involved in the accident at Bet Yehoshua and was it was painted slightly differently from all the remaining locos from this period, inasmuch as it was originally destined for Mexico. The roof of the cab on this loco was painted red. The roof of our mystery loco is painted in the original white/grey, and has never been painted red. It is possible to decipher from photos taken on the day of the accident that the roof of loco 118 was painted red. Another difference from the other locos was that the railing covered the complete length of the side running-board - a feature unique to this loco. In view of the above, one comes to the conclusion that our mystery loco cannot be No. 118. No. 119. This loco was sidelined after a collision involving a truck at Km. 45.103 at the crossing on road No. 651 between Pardes Hannah and the "Itong" works in 1973. It was only damaged in the front section, and the driver's cab remained complete and intact. In addition, the wide red stripe on the side was painted differently to that found on the remains in Qishon Yard. The red paint around the window frames on loco 119 reached only three-quarters of the height of the window, whereas on the remains the red paint reaches right up to the height of the windows, and even continues in a thin red line above them. The driver's cab is compressed in half, and incomplete. In view of these two facts, it is again concluded that the remains at Qishon cannot be of this locomotive. In addition, the manufacturer's plates on loco 119 were reversed, i.e. affixed the opposite way around, whereas the remains show the holes in normal places. No. 130. No. 130 was an Egyptian "war booty" loco of type G-12, and was damaged by an air strike on one of its bogies on 12/9/67 in the Refidim area, when it was working on loan to the Israeli Air Force. It was transporting aircraft spare parts for building new bases in the Sinai, that had been taken over in the Six-Day War. Parts of this loco stand in Qishon Yard in their original livery bearing the number 130, that was given to the loco by I.R. It is clear that it is certainly not this loco. (See 38:11 below). Note - all the remainder of the G-12 type locos are still working, and it is easily possible to follow their movements. Conclusion: In view of all the above, the remains on the wagon at Qishon are those of loco No. 123." (My congratulations on this painstaking research ! Ed.)

c). An Egyptian In Israel. (by Paul Cotterell). "Practically nothing is known of the Egyptian coaches captured by Israel in 1956 and 1967. I don't know how many of these vehicles were involved, never mind their individual identifications. I was particularly pleased, therefore, when Aharon Gazit came up with an I.R. diagram of one of these coaches and kindly let me have a photocopy. The accompanying drawing is taken from that photocopy. Aaron found the original in the offices at Qishon Workshops, and I have the feeling that more goodies await discovery there by anyone prepared to hunt around diligently. As can be seen this particular coach was built by "Cammell'. (The I.R. draughtsman or woman got into difficulties with the Hebrew transliteration of the name, rendering it "Cammammell" !) The diagram is dated 18.12.57 which means that this coach was one of those captured in the Sinai Campaign of 1956. It is numbered in the IR service vehicle series - at least, I think it is; could 1498 be its ESR number though? These all-steel coaches were once extremely common in Egypt. They were built over a long period of time by, I believe, different manufacturers, which makes individual identification that much more difficult unless, as in our present example, confirmation of identity is happily provided by such conclusive evidence as an official drawing. I remember seeing a few of these ex-ESR coaches lying around at various locations in Israel [one lay in the bushes at the south end of Lod for a long time, Ed.] but none of those I inspected closely bore any sort of number or other clue as to their identity. It will be recalled that Plate 35 on p. 43 of "The Railways of Palestine and Israel" includes one of these Egyptian carriages and this appears

identical to that in the drawing. This does not mean much, though, in light of my previous comments on the multiplicity of this type of coach in Egypt, and it is possible that the example in my photos was captured in the Six Day war of 1967 rather than in 1956. Aharon is firmly of the opinion that at least one ex-ESR coach saw public passenger service in Israel. I have never come across anything to support this, but cannot contradict it either. Does anyone know of a photo showing such a working ? The few shots I have of these coaches, whether taken by myself or someone else, only show them standing around doing nothing or in a derelict state." See 38:7(a) for an article on the "standard" IR passenger coaches.

d). Former LMS / WD 0-6-0DE shunters. In "Today's Railways" No. 20, August 1997, pp. 19-21 is an illustrated article by David Haydock on how he tracked down two of the four former Middle East Forces diesel shunters believed to be still in existence in Italy. For fuller details refer also to Tourret's "Allied Military Locomotives of the Second World War" p. 40. WD 49-64 were used in North Africa and on the Western Desert Extension Railway, later in parts of Egypt, before being transferred to Italy. MEF 134 became FS 700.01 and is now in yellow livery, with blue stripe and red frames, owned by Cariboni of Colico, a permanent-way contractor; WD 55, later MEF 16, became FS 700.03 and in 1991 sold to the private railway L.F.I. and is used on a regular basis at Stia, terminus of a line from Arezzo (between Rome and Florence).

38:6: **Other Middle East Railways.**

a). Egypt. Not "news", but from the Austrian magazine "Eisenbahn" 4/1966, p.70, in an article on "news from Hungarian railways", is a report : (My translation): "From Ganz-Mavag has come an order for twenty luxurious standard-gauge multiple unit trains, of which five were already delivered in 1965. Each train unit comprises 6 coaches, of which two are 2nd. Class Power Cars at each end, with two 1st. Class and two 2nd. Class trailers between them - one of the 2nd. Class cars has a bar and Kitchen built in. Dimensions are: Length of Power Car: 23,000 mm. Length of Trailer Car : 22,750 mm. Weight of Power Car: 69.4 tonnes. Weight of 1st. Class trailer: 37.2 tonnes. Weight of 2nd. Class trailer: 37.2 tonnes. Weight of 2nd. Class trailer with Kitchen and Bar: 38.2 tonnes. Total seats: 258. Driving Motor system: Ganz-Jendrasik 12 VFE 17/24. Power: 750 hp. Transmission: Hydraulic Voith St. Pölten(!)[Exclamation mark in original]. L306rb. Highest Speed: 120 km./h. Scharfenberg couplings, normal buffing and coupling gear on the outer ends. show at their ends to rounding which is typical also for contemporary DB coaches. The bogie suspension comprises screw-type springs amd shock absorbers. The coaches were delivered with bellows gangways connectors, but have since been fitted with rubber corridor connections. They carry the numbers 51 - 58 and have 96 seats (10 x 5, minus the seats which are omitted at each end of the saloons because of the symmetrical ordering of the doors.) This German series was delivered with both Vacuum and Air braking, the next series came fitted only with air brakes. The next delivery came from France from Carel et Fouché. The French coaches can be distinguished from the German ones mainly through the roof profile which remains straight to the coach ends. The bogies have rubber suspension without shock absorbers. These coaches too were delivered with folding bellow-type gangways, but have now received rubber ones. The numbers are 21-80 [sic], to which are added 81-82 and 83-84 with Service compartment or Buffet area respectively, and only 50 seats. The third and newest series came from Boris Kidric in Yugoslavia. These coaches were delivered from the beginning with rubber gangway connections. The bogie suspension is once again with screw springs and shock absorbers. The roof ends are flattened, the doors are set inwards and are reminiscent of the Swiss light steel coaches. To the ordinary coaches with the numbers 601-612 and 616-630 come two additional types with buffet compartment, Nos. 613-615 and 631-635. These "Half-Buffet Cars" have only single doors at the Buffet end. Apart from the coaches here described, the Israel Railways also employ former railcars of West

The following three photos show these "departed friends": The first is of 105 at Ashdod Port in 1963 on a VIP special to inspect the future port area; photo by Hans Kohut; The second shows on the left No. 119, on the Right No. 112 at Tel Aviv South (the old station) in 1968, also by Hans Kohut. The third - a rare shot - is by Paul Cotterell, and shows No. 123 at Tel Aviv South

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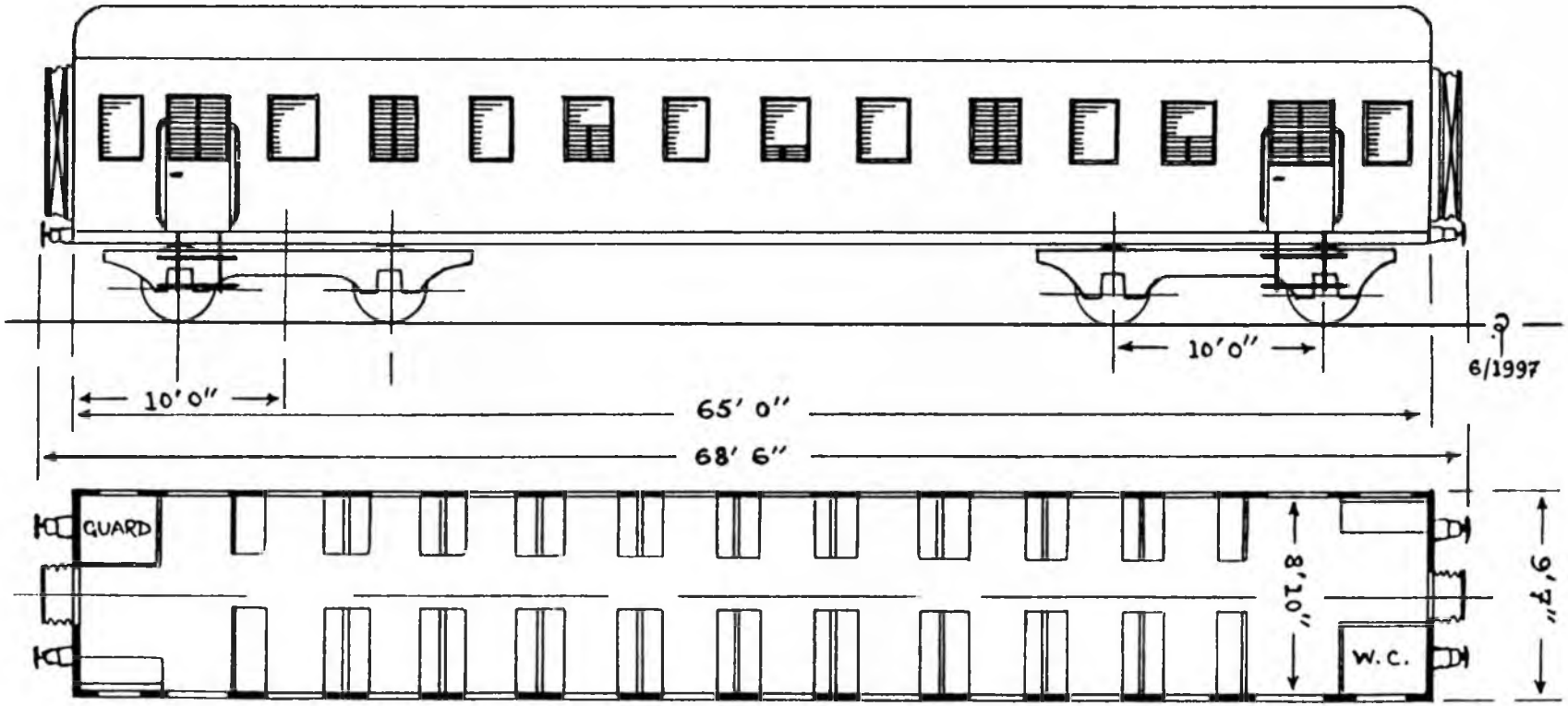
E.S.R. PASSENGER COACH קרון נוסעים מצרי

TYPE: CAMMELL סוג: קממל

Nº 1498 מס׳



AMOUNT 1
Nº OF SEATS . . . 106
LIGHTING . . . . . ELECTRIC
TARE . . . . . 39 TONS
BUILDING DATE . 1949
BRAKE . . . . . VACUUM

18-12-57

German origin, which having had their motors and transmissions removed are now hauled by locomotives; however, these do not belong within the framework of this article." So - each builder seems to have employed a certain degree of flexibility, and none seems to have provided an "off-the-shelf" standard model, whether of German, French or Yugoslav origin. The strange numbering schemes, the rebuilding of corridor connections in the light of experience, and the different door arrangements all make the story very complex.

b). The Leeds Forge Company. So far as is known, no wagons were supplied to Palestine Railways by the Leeds Forge Co., but its builder's plates can still be found on odd remnants of former E.S.R. rolling stock that found its way onto the system in 1948, 1956 or 1967.... So it seems relevant to bring here some details, taken from an article in "Old Run", the Journal of the Middleton Railway Trust in Leeds, No. 157, pp. 21-22; this was itself taken from an article in "The Railway Magazine", and attention is drawn to two papers published by George A. Newby in the Proceedings of the Newcomen Society, Vol. 64 pp. 143-166 & Vol. 66, pp. 225-239. The Company archives have been deposited in the Birmingham Reference Library. "The Leeds Forge Company was set up in 1874 by Samson Fox, born at Bowling, near Bradford, in 1838. Financial backing was provided by John Scott, of Greenock, and other Scottish shipbuilding interests. The firm acquired a site of 1812 acres at Castleton Fields, Armley, Leeds, and the first sod for the works was cut on 14th. June 1874; Production started on 18th. August 1875, and the first products were high grade 'Yorkshire' wrought iron sections and boiler plates, and railway cranked and straight axles.... In 1877, Fox patented his corrugated flue boiler, which was particularly suited to producing high pressure steam for the triple expansion marine engines then under development. Fox sold his first small boiler in June 1877. Initially, business was slow, but leading shipbuilders adopted his new boiler, and in 1879 the Admiralty also accepted the Fox design. In 1878 steel was first purchased for boiler construction, and in 1883 two Siemens-Martin open hearth steel furnaces were installed. The demand for marine boilers increased rapidly and by 1903 the firm was employing over 1500 men. In 1887, with the business prospering, Fox turned his attention to another project. He later took out several patents for the production of railway bogies from steel plates formed in a hydraulic press, after experimental work carried out in secret. Fox produced his first successful pressing on 7th. April 1877, and took out his first patent in 1888. In order to raise further capital, the Company was restructured as a Public Company in 1889, under the title of the New Leeds Forge Co. Ltd. Further development led to the production of complete wagon frames. Sensing that the vast American market was waiting to be tapped, Fox visited the United States to spy out the land. He found that the bogies then in use were massive assemblies with timber frames, and in 1889 he set up a plant for the Fox Solid Pressed Steel Co. at Joliet, thirty miles south-west of Chicago. By 1893, Fox was employing 400 men, and had the largest hydraulic press in America, of 3,000 tons capacity, which was sent over from Leeds. By 1896, the demand had increased so much that a larger plant was et up at Pittsburgh, with a press capable of pressing freight car frames up to fifty feet long. By 1897 Fox was employing 3,000 men. Quite independently, in 1888, Charles T. Schoen had set up a small plant at Philadelphia, with the ultimate aim of producing all steel freight box cars and gondolas,. and in 1897 he received his first bulk order for 600 cars. In 1899 these two firms amalgamated to form the Pressed Steel Car Company. Schoen became President, and Fox returned to Leeds to develop a world-wide export trade in pressed steel rolling stock, described in an eighty-five page catalogue. Schoen had taken out a patent for a pressed steel wheel, and a works was set up at Newlay, on the western outskirts of Leeds, to produce wheels for export. Poor trading conditions in the 1920's led to Leeds Forge being taken over by Metro-Cammell, but the depression led to the closure of both works in 1929." PR did import some all-steel vans in the 1930's - a few bodies are still lying around - were they perhaps associated with these techniques ? Certainly all-steel stock, though very hot

to the touch, made a lot of sense in certain countries where wood didn't last long, for a variety of reasons.... Bowling, Fox's birthplace, was world-famous as the site of a major iron works in the 19th. century.

c). On 37:9: An "In" Word. From Paul Cotterell: "The article reproduced in 37:9 repeats an irritatingly common mistake of an Arabic word in English transliteration - namely Beduins. The Arabic singular is Bedu; the plural is Beduin. It is, therefore, wrong and redundant to add an English plural 's' to the Arabic plural 'in', thereby producing a word with a double plural ending; no doubt this linguistic abomination will be as difficult to eradicate as are so many others in ongoing (ugh !) popular usage."

d). On 37:17: Middle East 2-8-2's. Also from Paul: "Not all enginemen reacted so negatively to the 'Middle East' 2-8-2s as recalled by Bert Dyke. Max Seidenberg remembered them with admiration for their sheer pulling power. The 2-8-2s were, however, feared and detested when any shunting was necessary with them. They were fitted with a screw-type reverser rather than with the Johnson Bar-type reverser which could hardly have been easier to operate; this was simply (usually anyway, unless it was stiff) thrown forwards or backwards to alter direction. The wheel of the screw reverser had to be wound through many revolutions to change the direction of travel, and this had to be repeated innumerable times whenever shunting was being carried out. This caused complaints in locos so fitted in Britain. How much worse for the crew having to sweat through shunting operations in the Middle East climate !" [Ed: Note, however, the comments on these locos and their reversers below, in 38:13]

38:8: THE 1997 TEFS HEDJAZ RAILWAY TRIP.

Mention has been made before of this tour - what is still likely to remain the last comprehensive visit to the "old" Hedjaz network, if current development and modernisation schemes come to pass.... However, like some famous opera singers, the farewells can be a drawn-out process, and a 45-strong German group will be making another tour in September, guided by Bill Alborough. ("Meester Bill" is now famous for having established such good relations with local staff, both those first encountered in 1979 and their younger successors, that he can get things done where other Tour operators cannot. It must be his personal charm !) [Also - see the next Item !] From Bill I have received a full and exciting report of the journey, reproduced here almost verbatim. In addition he has sent me the "rushes" of a three-hour video of this trip - for which my personal thanks. This is commercially available from TEFS, it can be very highly recommended indeed, with some wonderful runpasts and so much detail that one feels almost there. No soundtrack apart from the natural noises of the events, and (twice) Bill's voice-over explaining what is being shown. Contact Bill for details - prices are: £7 incl. p.& p. in the UK, £10 in Europe, £12 elsewhere; VHS/PAL version only available. Incidentally, the Nick Lera video mentioned in 37:12 is also available from TEFS with a professional ENGLISH commentary - priced around £20. (TEFS: 77, Frederick St., Loughborough, LE11 3TL.)

"June 1st. Jung 2-8-2 No. 51, with Fourgon and three carriages performed well during the morning, running to Qasir um el Heeran, though quite an amount of water was seen to be seeping from the firebox area. Next morning a fitter with several welding sticks attended to this matter ! The coaches comprised No. 48, a small ex-PR vehicle, and two long-distance-type coaches, nos. 221 (brown both sides) & 231, brown on one side and brown lower and green upper panels on the other side. 221 & 231 were used on the International Train the next day. In the afternoon HSP 2-8-2 No. 71 on a "demonstration freight" of four bogie flatbed wagons and coach 48 also performed well to Qasir; there was more stoning than during the morning trip as the local children were now out of school. Nearing Amman on the return journey, a tube in the smokebox burst, so water flooded out through the well-perforated (corroded) door, the

cab was evacuated as it filled with steam, and diesel 40210 came to rescue us. June 2nd. We were astonished to see No. 71 awaiting us with Fourgon and four carriages (2 ex-PR including No. 48 again, two long-distance types 66 & 432), for our charter to Mafraq. The International Train left with three carriages and Fourgon, all Jordanian stock as the previous evening the Jordanians had sent their loco to Dera'a to find only four passengers, who were accommodated in the Fourgon only to Amman. There were around 50 passengers today from Amman for Damascus. We made tender-first runpasts to Mafraq, the injectors were a bit dodgy, and after picking up the water gin at Samra we made two stops to fill the boiler whilst stationary. Attention to this problem at Mafraq was not guaranteed, so diesel 40212 hauled 71, the water gin, the four carriages and two Fourgons (one from the International set) to Amman, with photostops en route. June 3rd. Nippon Pacific 82 was under repair at Amman for an Amman - Aqaba special train to celebrate the King's Birthday on Nov. 14th. !! A new main steam pipe had been obtained from sister No. 85, and was today fitted making use of the manual stationary goods crane. (This had been removed from the static loco at Ma'an at the suggestion of the TEFS group - 82 had been stopped for several years on the basis that there were no spare parts available ! It should be working before November.) Loco 51 with four carriages and Fourgon ran to Qatrana - the train comprised coach 432, now an open, rebuilt with big, soft seating; 66 likewise, plus the addition of a toilet; 81, a four-compartment coach with small, soft, re-upholstered seats, decorated internally with wall-mounted pictures and logos, and 48, an open coach with five window bays, small soft seats, and a toilet. [Bill did not report whether the toilet had a comfortable seat ! I understand it is in fact of "Oriental" type, with raised foot pedestals only. However, he is upset to see how unsympathetic some of the rebuilding (not restoration) work has been. Ed.]. Diesel 40211 took a water gin to Jiza, which was picked up by 51 and dropped in the loop at Khan Zibib for local use. It was reported there had been a fight amongst the station staff regarding a fair division of the "tips kitty" - even an official police report was produced ! At Ma'an Nippon 4-6-2 No. 85 was now here; the wagon workshops were visited, where a warm welcome was experienced with mint tea. The museum at Ma'an station is now open, and staffed by academics. The "Government Rest House" at Petra was now declared to be "Five Star", and the prices had been increased accordingly; however, there were only six guests there tonight, and the atmosphere was like a morgue ! Conversely, the "Sela Hotel" and others were packed out. June 4th. - the day was spent on a visit to Petra, where the local horsemen were positively GREEDY for tips. June 5th. The day was spent travelling via Shobak Castle to Amman. June 6th. Via Jerash to Dera'a. 161 was noted there in the shed with its rods off, and No. 66 was derelict. Hartmann 2-8-2 No. 260 was in light steam, and brought newly-overhauled Borsig 2-8-0 No.162 from Damascus with its paint still wet ! 162 then hauled carriages 231, and the newly-reconditioned 234 - with balcony, soft seats well-trimmed, a toilet, curtains, repanelled - to Bosra. There was a lot of work going on at Bosra main station with landscaping, and at Citadel the area had been paved and tidied up. June 7th. The town was being cleared of residents in the old Roman ruins, so that tourists wouldn't see them. A pity. The Castle etc. had been renovated, with paved courtyards and so forth. There was the usual operational stupidity here of making an initial unsuccessful attempt at "the hole" and stalling before deciding on a run at the grade. We also filmed Lawrence's "last arch" on the Damascus line [i.e. the last bridge he blew up in 1918]. The Zezoun line turned out to be blocked beyond the tunnel, but the stop block at Muzeirib was removed for the TEFS group, the line was cleared, several rails replaced, and we ran as far as the tunnel and had some runpasts - the converted P-Way Land Rover on wheels was in the tunnel. It was clear there have been several massive earth slips onto the line. The Lakeside area at Muzeirib now has Jung 2-6-0T No. 61 and four 4-wheel carriages being developed as a Restaurant. The old station remains were discovered BEFORE the arrival/alighting point. 260 & 162 (in

light steam) and three coaches then worked Dera'a - Deir Ali. As it was by now getting dark, we summoned our coach to be taken back to the hotel. (162 was in light steam only, because a large charge was demanded for it to be crewed and worked properly.) There was some stoning at Mahaje. June 8th. We were surprised to find SLM 0-6-2T No. 805 on the train to Serghaya. Jung 62 was plinthed outside Qanawat, emblazoned with a text regarding the Hedjaz Railway headquarters. The strong loco literally toyed with its train of three light four-wheelers, Nos. 452 - renovated with high-backed plastic seating, piped for brakes; 358 semi-renovated with wooden seats, piped; and 251 with very tatty high-backed plastic seats. The International Train was running as a Mixed, hauled by a Romanian diesel; (These locos are now mainly very tatty, with their green lower body sides spattered with odd patches.) soldiers now occupy the wagons at the station. {The video shows two armed policeman standing adjacent to a line of parked box vans, with what looks, at freeze-frame, remarkably like a blood-spattered corpse lying on the ground between them..... Is this the penalty for train-spotting ? Ed.] The scheduled train was due to depart at 08.30, so we set off at 07.35 to El Fijeh (taking water at Hemme) from 09.00 to 09.25, and then derailed in the woods five minutes later on a right-hand curve - the leading coupled wheelset dropping off the rails to the left, and a spring and retainer slipped. We re-railed the loco, pulled back a bit, then derailed again at the same spot. The train was therefore terminated, and ran to El-Fijeh, the diesel failed behind us, so the line was blocked. Late that evening 805 reached Qanawat, having preceded the scheduled train (the block needs 11/2 hours to traverse, so this length of gap is required between departures !) and derailed again towards Cadem ! Instead we paid a visit to Cadem. 2-6-0T No. 755 was noted with green bunker, blue side-tanks, yellow smokebox and red chimney; 754 had its wheels out. 260 was ready for use, 162 ready, 263 undergoing minor repairs, work had started on 91 for a November working date, otherwise stock stood around as usual. A repaint of 755 was promised. June 9th. At Rayak station (in Lebanon) we were escorted around the place by a General, and talked with former staff aged around 90. We were able to walk within around 20 yards of the stored locos at Rayak Workshops - including a standard gauge 2-6-0, 2-8-0, narrow gauge 0-10-0RT, 0-8-2RT, and lots of others - around 20 in all. We also walked around the rear of the Works, where there was a dual-gauge turntable. We continued via Baalbek, getting some good views of the route of the former railway to Beirut. The trackbed is intact, a green strip through the hills marked by many snow shelters..... June 10th. The narrow-gauge locos at St. Michel were now totally surrounded by greenery, full-grown trees etc. There are still 200 staff employed on the narrow-gauge site, though what they do is unclear, and another 130 at the standard-gauge depot. The old s.g. yard had been lifted, rail panels on concrete sleepers stacked up, and is used as a dump for buses, though participants were assured the line "would re-open" once road-widening works had been completed. The three diesel locos in the shed were being run up every day to keep them in working order, and on arrival it was seen that one of the Uerdingen railbuses was being worked on. The group visited Jounieh, then returned to Beirut observing the railway route. June 11th. A freight left at 07.25 on the main line south towards Dera'a. No. 755 (fully repainted !) left for Serghaya. and hit a parked vehicle above Tequieh, and made an emergency stop to avoid a bus parked on the tracks at Zebadani, which caused a blow-back onto the footplate as the blower was not on, and the fireman's right arm was singed hairless. A part in the smokebox was damaged in the incident, and TEFS paid for the emergency repair or the train would have had to be terminated. The loco was turned at Serghaya and ran to En-Fijeh, meeting the daily local there, formed of totally-refurbished diesel No. 300 and two Ganz railcar trailers. 755 watered standing before the diesel, the diesel left first, but 25 minutes later we departed, like the wind ! Approaching the Sheraton on a steeply-uphill section, at full throttle, we rounded the corner to find the diesel stalled - we approached at full speed and had to make an emergency stop ! They had

heard us coming ! We followed it at around 10 - 30 metres distance as far as Qanawat - very hazardous, especially at roundabouts, as cars expected only one train, and sneaked behind the diesel local, and CARAMBA ! There is an old man whose job is to wait all day to switch the points between trains (normally there is 1 1/2 hours between them) - his face when we came past, no more than 10 metres apart, was a real picture ! A Dmu formed the Qatana train. June 12th. 260 and two carriages (231 & 461) worked to Dera'a, where 66 was lit up by wood kindling, and proved very strong when performing demonstration freight shunting. June 13th. - a day spent by the Dead Sea. June 14th. At Amman, No. 23 failed with smokebox leaking-tube trouble again. No. 61 had no brakes, so some demonstration shunting was carried out with Brakesmen perched on the tops of the grey box vans frantically winding the handbrakes on and off." The video shows almost all of the above, and more, with useful shots of buildings, coach interiors and suchlike as well.

38:9. HERE WE GO AGAIN !

After typing up the above I received another fax from Bill Alborough outlining - wait for it, wait for it ! - ANOTHER Hedjaz Tour in 1998. Dates are Saturday July 18th. to Sunday August 2nd., a full itinerary has been provisionally booked very similar to what has been described above, and prices are around £2,000 (depending on size of group - a smaller group would require another £170 each to cover the costs) including return flights from Heathrow, and a reduction of £250 for those just joining the tour itself from Amman. There are small additional fees for group visas, insurance etc.

38:10: MORE MODELLING NOTES:

Further to 36:8 and 37:16 - it never rains, but it pours. After years of waiting for some USATC stock to come onto the market, suddenly two firms start producing it at the same time. Now, after "Branch Lines" announce an HO kit for a USATC 0-6-0T - I note in "Continental Modeller", July 1997, p. 316 an announcement that another firm is about to do the same thing ! "Alexander Models" of 37, Glanton Road, Billy Mill, North Shields, Tyne & Wear, NE29 8LJ have demonstrated an advance "mock up"; further details are awaited, but the kit will be of white-metal with a nickel-silver chassis. However, the bad news is that, as of July 1997, the "Sachsenmodelle" USATC items had yet to appear, and two dealers in Vienna considered it likely that, due to recent difficult trading conditions and mergers, they might not appear at all.....

38:11 "OPERATING THE SINAI LINE".

Thanks to Samuel Rachdi for a copy of the "Railway Gazette" for June 20th. 1969, p. 458, in which this illustrated article appears. "As a result of the six-day war in June 1967, Israel Railways was faced with the task of operating some 300 km. of lines taken over from Egypt. These comprised the Sinai Line, from Gaza south-westwards along the coast to Kantara East, where a swing bridge provided a link with lines in the rest of Egypt, and the secondary line southwards along the east bank of the Suez Canal to Port Tewfiq. A gap of 19 km. initially separated the Israel system at Erez border and the railhead at Gaza. Although the lines had until 1956 been connected, after the hostilities in that year the Egyptians had not only removed the track, but the earthworks as well. Between June 9 and 20, 1967, these were restored by Israeli civilian workers, volunteers and soldiers, an operation described in our issue of August 4, 1967. On the Sinai line Israel Railways took over eight General Motors diesel locomotives, seven of which were in good order, some 570 freight wagons and a few coaches. The line was at first operated right through to Kantara East and Port Tewfiq for the Israel Defence Forces

and for UNWRA consignments, mainly of foodstuffs. As in 1956, considerable quantities of captured war material were taken north by train. Beyond El Arish, 90 km. from Gaza, there has always been great difficulty in operating the line because of drifting sand, which sometimes covers the line to a depth of 4 feet. Egyptian Railways had kept the line open by maintaining a large labour force, but this was, in the main, no longer available. Israel Railways engineers studied the problem of chemical and mechanical stabilisation of the sand, but eventually it was decided to close the section beyond El Arish, and this has recently been partly dismantled. Traffic on the remaining El Arish - Gaza line is now operated by the General Motors diesel locomotives taken over from Egypt, four of which are standard with those of Israel Railways. Of the 570 captured wagons, only about 200 were in good condition; all were without continuous brakes and many were useable only as scrap. Track improvement was also taken in hand to enable the average speed of freight trains to be raised from 24 km/h to the 34 km/h which is normal in Israel".

Thus far the article. The Editor has heard that at least one IR train was shelled by the Egyptians while running to Port Tewfiq, with crew casualties; (See also the notes on Loco 130 above.) Previous references have been to tank wagons left behind at the terminus there and used as part of the fortifications of the "Bar-Lev Line". which also incorporated many P-Way materials. During a cab-ride at Dimona in one of the former ER G-16 Co-Cos many years ago, the Editor noted that the cab instructions were still in English and Arabic ! Does anyone have photos or more details of IR trains on the old Sinai line in this period ? The article is accompanied by some illustrations of track work at Gaza, a train of captured half-tracks being hauled north, and the first El Arish - Gaza train hauled by a G16 with a banner reading "HaKesher HaRishon...[illegible]", i.e. "The First Link to..."..Some former ESR wagons were still lying in various sidings a few years ago - see above, the notes on "Leeds Forge Co."

38:12 HICAZ DEMIRYOLU. A brief notice by Paul Cotterell.

Not long ago I had a visit from a Dr. Klaus Kreiser who is Professor of Turkish Language, History and Culture at Bamberg University in Germany. He was in Israel doing field research on surviving Ottoman monuments, buildings and other artefacts. While sitting over a beer one evening it transpired that he lived in Turkey and spoke Turkish fluently. Now here was an opportunity not to be wasted ! An historian and academic who was familiar with an had access to Turkish and German archives which could shed much light on previously little-understood or unknown aspects of Middle Eastern railways up to and including the First World War. I immediately enlisted his help. He soon came good on his promise when he sent me photocopied extracts from a Turkish book entitled "Hicas Demiryolu" (i.e. "Hedjaz Railway".) This book is by Dr. Ifuk Gülsoy, published in 1994 by Eren Yayincilik ve Kitapcihk Ltd., Sti., Tünel, Istiklal Cad. Sofyali Sokak No: 34, 80050 Beyoglu - Istanbul, Turkey. The ISBN number is 975-7622-37-0. Price is unknown. It is an obviously scholarly work, with extensive footnotes etc. The pictorial section of the book contains 56 photos, very few of which were familiar to me. Most showed early construction stages of the HR. Several were taken in Palestine, including some really interesting views of Haifa (e.g. shots of a Krauss tank at Haifa East station with some coaches that I could not identify but which looked like something that might have easily run on the narrow-gauge Ashover Light Railway in England !) Another view showed what appeared to be a St. Léonard 0-6-0T at an unknown location, bearing one of those large florid plates on its side tank, surrounded by crew and Turkish officers in impressive uniforms. There was a shot at Beirut with more military lined up on parade and with two portable steam engines sporting chimneys even longer than is normally associated with portables. The majority of views (evidently taken by an official photographer on glass-plate negatives) showed more general scenes, with numerous shots of groups standing in a semi-circle squinting at the camera. (A certain

elderly gentleman in a white beard who appears in at least one of these group portraits might be Meissner Pasha himself). There were a couple of views of Medina; particularly rare considering the prohibition on non-Moslems visiting there. And so on and so forth. Also included are illustrations of medallions and certificates, one of the latter being for the 'Chemin de Fer Hodeidah - Sanaa et Embranchements' in the Yemen. (See 33:7:(h) and 34:5:(d).) Captions are generally short, presumably indicating a lack of information. My own knowledge of Turkish is more or less limited to "yok" and "evet", so I would have been little the wiser, even if the captions were more informative. The book has an extensive "Bibliyografya" but I only recognised a handful of names (e.g. Ochsenwald, Lawrence and, rather surprisingly, Pick, W. Pinhas.), the great majority of authors listed being obviously Turkish. This only serves to underline how ignorant we in the West are about Turkish source material. I am hoping that Dr. Gülsoy's book may provide an entrée into an historical world but briefly and imperfectly glimpsed by most of us. While still on my soapbox - Klaus mentioned that there is a fine German Militär-Archiv in Freiburg and he feels sure that it has a collection of photos relating to the Middle East in World War 1, the inference being that a proportion of such views would show railway scenes. It seems to me that here again is another vital area of research which has largely escaped English-speaking writers on the subject; and I'm by no means certain how well acquainted are German authors and historians of Middle East railways of archives in their own country. Undoubtedly there is still much to be discovered in both Turkey and Germany."

[Ed. adds: Paul is right - there is a magnificent archive on railway matters in Vienna, in the basement of the ÖBB School on the site of the (former) Wien Nord station, presided over by Dr. Manfred Schuh. Thanks to Keith Chester I was introduced to this, alas almost at the end of my time in Vienna, and thanks to Dr. Schuh I was able to make copies of many notes and comments on the Hedjaz and other lines in German and Austrian journals of the 1890's, which I intend to translate and publish here in due course. But I shall be happy to receive any and every item that readers discover in their various sources.]

38:13 "THE LOCOMOTIVE IN PERSIA".

This two-part article appeared anonymously in "The Locomotive" for January 15th. 1946 (pp. 8-11) and February 15th. 1946 (pages 21-25). From the content it appears to have been written by an experienced railwayman who had served with the Royal Engineers 199 Railway Operating Company there. It is reproduced here in full, apart from the solitary small map that appeared on p. 9 and a side view of a Henschel-built 2-8-0 on p.22.

"Until fairly recent times, Persia has been a barren hunting ground for the railway enthusiast. It is true that in 1887 the metre gauge Teheran - Rey line was opened, and is, incidentally, still functioning with the original three Belgian 0-6-0 tank engines and primitive coaches, but the rigours of a journey to Persia would have been hardly rewarded by a sight of the activities of this five-mile line. Later a short line was built between Resht and Enzeli on the Caspian, but nothing further was attempted until the Russian sponsored Julfa - Tabriz route was opened during the war of 1914-18. This was followed by a military extension of the Indian railways to Zahidan on the S. E. border. During the early years of this century the Anglo-Persian Oil Company also constructed some miles of private line, but until the advent to power of His Imperial Majesty Shah Reza Khan Pahlevi, no action was taken to provide a route of any material internal significance, although no doubt, as is the custom in Persia, many plans had been airily discussed over the inevitable glass of milkless tea. Reza Khan was a man accustomed to implement thought by deed, and without undue delay proceeded to raise by taxation the funds necessary to create his conception of the Trans-Iranian Railway. The construction of this route commenced simultaneously from the Northern and Southern terminals in 1929, and was completed in 1938. Branches from Teheran to Tabriz, Garmsar to Meshed, and Qum to

Zahidan were also projected and commenced after the main line had been finished. The Trans-Iranian railway is of 4 ft. 81/2 in. gauge and contains much civil engineering of an extremely high standard. The track is single throughout, except at stations, and is well laid and ballasted, although the rails, varying from 67 to 75 lb. per yard, are somewhat light by British standards. The main line curvature is generally limited to 11 chains radius, but somewhat sharper curves are employed in restricted situations. Commencing at the Southern end, the main line starts at the wooden jetty at Bandar Shahpur on the Persian Gulf. The first 156 miles through Ahwaz to Andimeshk are over level desert country, but from there to the shores of the Caspian Sea the line may fairly be described as either difficult or extremely difficult. Leaving Andimeshk, there is a succession of severe switchbacks among the foothills of the Luristan Mountains. Then follows the climb to Nurabad summit, 7,250 ft. high, totalling 140 miles of continuous up-grade apart from level patches at the various stations. The average gradient throughout this climb is 1 in 123. It contains many portions as steep as 1 in 67 and no less than 119 tunnels aggregating 311/2 miles in length. From Nurabad the tendency of the line is to fall towards Teheran, 4,000 ft. altitude, but the profile is still one of considerable severity, containing many lengthy grades of 1 in 67 or easier. Teheran is 575 miles from the Persian Gulf, and thence follows a relatively easy portion of slightly falling grade to Garmsar junction. From here northbound trains immediately encounter the climb over the Elburz mountains, the average gradient over the 65 miles to the summit in Gaduk tunnel being 1 in 83. The descent on the northern side is even more precipitous, the first 41 miles down to Pole Sefid being almost entirely at 1 in 36. From this point the grades are progressively less severe until the level of the Caspian Sea is reached at Bandar Shah, 860 miles from the start. By comparison the branch lines are much less severe and generally devoid of interest. During the war the Tabriz branch progressed as far as Mianeh, and the Meshed branch as far as Shahrud, while in the South the British Army constructed the branches linking Ahwaz with Khorramshah and Tanooma. Running sheds are placed at Bandar Shahpur, Ahwaz, Andimeshk, Dorus, Arak, Qum, Teheran, Bonekuh, Pole Sefid and Bandar Shah. The main repair shops are at Teheran, with another of less capacity at Ahwaz and a very small one at Bandar Shah. At all sheds fuel oil and water can be obtained, while additional watering points occur at intervals varying from 20 to 40 miles. Stations are usually primitive but sufficient, although that at Teheran is minor triumph of railway architecture and in many ways worthy of emulation. While on this subject it may be as well to mention that the station building at Teheran contains an all-electric signal cabin complete with signal repeaters and an illuminated track diagram. The points, although interlocked with the signals, are operated from the ground as in the most elementary of sidings. This cabin is situated on the inner side of a large office remote from the tracks so that no view is possible, and is presided over by a gentleman known officially as "Director of Locking Frame". This worthy adheres strictly to clerical office hours, and during his daily turn of duty is not likely to encounter more than a couple of passenger trains, which he signals with due solemnity. Freight trains are counted unworthy of a signal, but are ushered past the home semaphores by the head shunter. Outside office hours no signalling is possible, but it must be conceded that the trains still continue to run without apparent disability from this omission. The climate of Persia, apart from the strip bordering the Caspian Sea, is very dry, while the temperatures along the railway vary from a maximum of 135 deg. F. in the shade to a minimum of minus 40 deg. F. Over much of the route any sort of wind produces clouds of penetrating dust, while at altitudes over 4,000 ft. winter brings a snowfall which increases with the altitude, but only rarely interferes with railway traffic. The greatest trouble is that connected with supplies of locomotive water. This commodity is nowhere really plentiful all the year round, and is generally very hard or, in the South, saline. In the autumn supplies in certain districts fail almost entirely and restrict the use of the ordinary steam locomotive very considerably. Fuel oil

is, of course, in abundant supply, and this is the normal fuel. Persia, in spite of the notable efforts of Shah Reza Khan, is still a very primitive country and produces no such thing as a skilled craftsman in the sense in which this applies in Great Britain. Technical workmanship, traffic operation and locomotive driving and maintenance are therefore discovered at a very low level unless closely guided by the best quality of foreign supervision, which is not always present. The average Persian, however, has possibilities, including the saving grace of a brand of not un-English humour, and will no doubt improve in the course of time as regards the gentle art of railroad operating. It will be appreciated from the references already made to gradients, climate and the class of labour available, that the railway locomotive in Persia is subjected to the severest tests during the course of the day's run. As a result of experience during the war, it appears that any locomotive introduced into Persia for general main-line duty must conform to the following specifications: To be capable of continuous haulage up a grade of 1 in 67 with 500 tons at 20 m.p.h. To be simple, robust and accessible in all details - these features to take priority over fractional economies in fuel and water. To be capable of using, with a minimum of resultant trouble, bad qualities of feed water, whether due to hardness, salinity, over-softening or the occasional inclusion of a proportion of fuel oil. To be oil fired. To be equipped to work Knorr-Bremse (or Westinghouse) braked stock. The engine and tender brakes to be steam operated, of ample stopping power and capable of separate application or combined and graduated with that of the train at will. To be able to use feed water at temperatures up to 135 deg. F. Axle load not to exceed 18 tons. To be able to traverse 11-chain curves at 40 m.p.h. To have electric headlight and cowcatcher. To be equipped for working steam-heated trains. To have compressed air sanding with sand-boxes of extra large capacity. To have water level indicators of the clearest and most accurate pattern. If more that 2,500 gross tons daily are required to be lifted North of Andimeshk during the autumn months, it is necessary to employ motive power which does not require a supply of feed water for traffic in excess of that figure. In compiling the above it has been assumed that the motive power used would be the normal type of steam locomotive, but that is not meant to imply necessarily that some other form of motive power would not be equally suitable. Some comments on the above list will perhaps help to give a clearer picture of the problem. Proviso number (1) does not appear by British standards to be particularly onerous. An oil-fired locomotive, however, is not invariably as good a steam-raiser as its coal-fired counterpart, the standard of maintenance will probably not be too good, and the size and weight of locomotive, unless of Garratt or other special type, is a limiting factor. A diesel locomotive of permitted weight might find difficulty in meeting the conditions of drawbar pull combined with the necessary speed. As most of the uphill sections are ten to fifteen miles long, line capacity is very much curtailed unless the locomotive is completely master of its work. Simple, robust and accessible details are desirable features the world over, but in many countries fuel economy is felt to be of even greater importance. In countries where rough treatment is the rule it is most advisable to relegate fuel economy to second place and to concentrate on availability for traffic. Boiler feed water is likely to be a perennial problem, even if the correct functioning of water-softening plants could be assured. In certain areas where supplies are scarce the flow of water used by local villagers has been partly diverted to railway uses. In some cases this water is carried in open canals over considerable distances, and in the driest period of the year is not unnaturally re-diverted back to its traditional paths by the local populace. In such a case the unfortunate locomotive may well take up to an hour to refill the tender tank at a standpipe from which emerges the merest trickle. This happened on many occasions during the autumn of 1942. Considerable expenditure may produce more water, but probably the best solution is the condensing locomotive or the diesel engine. The locomotive which performs well when fired by coal will not necessarily pull a train when fitted with an oil burner and a haphazard assortment of air-holes in the

ashpan, although if oil firing is properly applied to either narrow or wide fireboxes there is no reason why the results should not be entirely satisfactory. It may be mentioned that there is some coal available in North Persia, but it is of inferior quality, and in any case the extreme summer temperatures render hand-firing almost impossible even to native footplate staff. The usual Mexican trough type of oil burner will give good results, and the art in its application lies in introducing the air at the correct places so that cold air is not allowed to enter the tubes. With a coal fire, under normally skilled conditions of firing, the air must perforce pass through the fire and take part in the process of combustion. With oil firing, on the other hand, the flame commences at the burner as a narrow strip and gradually widens in its path to the tubeplate, and therefore all air must be persuaded to enter the actual combustion volume. The "dead" areas should as far as possible be filled up with firebrick, the air being admitted in three stages, viz., round the burner, towards the back of the ashpan, and through the firehole door. In addition, a locomotive designed with a view to coal economy usually requires an increase of smokebox vacuum if sufficient air is to be introduced when working hard. The usual injector, whether live steam or exhaust, of British usage will not operate with feed water over approximately 105 deg. F., and either hot water cones must be fitted or, preferably, a special hot water injector. The exhaust water, incidentally, requires a degree of maintenance which is not readily available in Persia, and its fuel economy is thereby discounted. Experience during the war indicated that dry sanding was superior to steam sanding, probably due to the oil film encountered on the metals in some of the most difficult sections, and compressed air sanding was shown to be the best solution. An engine which runs out of sand is at a considerable disadvantage and is likely to stall completely on a steep grade. Hence sandboxes must be much larger than in common British practice. As regards water gauges, the Klinger pattern can be relied upon to give a clear indication of the water level even with the scum and impurities inseparable from Trans-Iranian operation, and proved much superior to the common round glass tube type. The slight extra first cost which presumably is involved is extremely likely to yield adequate dividends in the shape of the reduced occurrence of fused plugs and dropped crowns (which will still be far too common even so !). While the water problem, from the point of view of volume, may not be so serious under the relatively light conditions of peacetime loading, there is a lot to be said in favour of locomotives which do not require to take water at all except perhaps for a slight amount of make-up, and the ordinary reciprocating engine with condensing tender would seem to be a very good solution. The simple form of the traditional locomotive, generally amenable to rough standards of maintenance, would be retained, while boiler and feed-water troubles should be considerably reduced. It is understood that many engines of this type are functioning satisfactorily in the Soviet Union, while in Iraq a metre-gauge 4-6-0 fitted with a Henschel condensing tender has proved successful, apart from a simple mechanical defect connected with the smokebox fan bearings. Although the added complication of condensing gear is to be deplored, the alternative of diesel traction would introduce the necessity of a standard of maintenance which is not likely to become available in the near future." [Thus far Jan. 15 1946.] "At the outbreak of war the locomotive stock of the Persian Railways comprised approximately 120 units - no more precise figure was obtainable in this land where records are not treated with the respect which is accorded to them in some other parts. This figure is made up as follows:

4-8-2+2-8-4	4	Beyer-Garratt
2-8-0	5	Beyer-Peacock
2-8-2	12	Nohab
2-10-0	16	Henschel
2-8-0	49	Krupp, Henschel and Esslingen

Miscellaneous 34
120

The Miscellaneous heading covers a very mixed assortment of locomotives, some fairly new, some second or third-hand, and all unfit for main-line service. The most interesting were some 0-10-0 two-cylinder Gölsdorf compounds built at Wiener-Neustadt for Turkey in 1912. The Garratt engines, weighing 201 tons, were intended to tackle the 1 in 36 grades from Pole Sefid up to Gaduk and the rather less severe ascent on the southern side, but after covering only about 60,00 miles each on this service they were all withdrawn because of cracked firebox crown plates. This failure was in no way due to faulty design or construction, but to lack of washing out, to the rapid fluctuation of temperature which is always possible with oil firing and the very excessive use of the tube expander. During the British occupation one of these engines was given a new firebox and is known to have run at least 18 months subsequently on this extremely severe section without further repair apart from the usual shed maintenance, which had, incidentally, by that time been taken over by the Russian forces. The Garratt locomotive appears to be very suitable for Persian service, since it combines ample steaming capacity with moderate track loading. The added complication is, of course, a disadvantage and, in fact, when the British troops arrived in Teheran in 1942, appeared to have been regarded as an insuperable difficulty, since one of these engines was in the erecting shop with the boiler lifted, but for the last six months no one had been able to think of a way of proceeding further. When a number of L.M.S. Rly. fitters appeared on the scene, however, the monster capitulated, and was soon resolved into its component parts ! The other Beyer-Peacock product, the 2-8-0, is rather too small for serious main-line work except south of Andimeshk, and tends, consequently, to be relegated to shunting service. At the end of 1941 they were all in traffic and had never been shopped. It seems therefore that they possess some quality which is more resistant to the "charm" of Persia than is the case with other classes in service in that country. These locomotives weigh 70 tons each. The 80-ton three-cylinder 2-8-2 built by the Swedish Nohab concern has a nominal tractive effort of 38,000 lb., and on paper, therefore, appears likely to put up a good performance on the Trans-Iranian route. In practice, however, these engines are unable to keep their 191/2 in. cylinders supplied with steam and must be written down as failures. One of them has been rebuilt with smaller cylinders, but initial trial results were disappointing. Some research and experiment anent the oil-firing system would probably yield improved results, but when the British forces left the Persian Railways in 1943 eleven of the twelve engines were in storage and the remaining one was used only for shunting and local freight trips. Up to 1942 almost all the heavy main-line work was in the hands of the German built 2-10-0 and 2-8-0 engines. These locomotives are of standard German pattern, apart from the oil-firing equipment, which has been applied in a successful manner. Their chief defect is that frame stretchers, saddle and motion plates are of light fabricated construction, these details being presumably incorporated in place of steel castings owing to the demands of German re-armament. The carrying axle and the leading coupled axle are combined in an arrangement known as the Krauss truck, forming in effect a distant relation of the four-wheeled bogie. This device, however, did not prevent heavy flange wear on the leading coupled wheels. The leading wheels of the tender bogies were also very prone to flange wear, the bogie wheelbase being short in relation to the gauge. A most successful feature of the design is the single bar crosshead, which is provided with mechanical lubrication via a drilled slidebar. The wear on the sliding faces of both bar and crosshead was negligible. A further most attractive feature, if perhaps somewhat superficial, is the chime whistle, the melodious yet powerful notes of which echo from hill to hill in a manner most pleasing to the enthusiast's ear. British railways please copy ! Both these classes, when in good condition, steam very freely and perform

excellently on the Teheran-Ahwaz mail train, being able to maintain 30 m.p.h. up the 1 in 67 grades with 300 tons. The 2-10-0, which weighs 98 tons by comparison with the 80 tons of the 2-8-0, is naturally the more powerful and is an excellent all-round performer under Persian conditions if reasonably maintained. In spite of the ten-coupled wheelbase, no trouble was experienced in rounding the sharp curves encountered so frequently while on the 1 in 36 grades this class was invaluable in handling war-time traffic. The 2-8-0 although a fairly large engine, is really somewhat on the small side when standards of maintenance are taken into consideration, and of all the locomotives so far seen in Persia the 2-10-0 Henschel would probably on average take pride of place. When, during the latter half of 1941, it was decided to use the Trans-Iranian route as a means of transport to Russia, barely half the locomotive stock was fit to handle main-line traffic, and so heavy were the repairs required that it was obviously essential to import a large number of locomotives. The choice fell upon the L.M.S. designed 2-8-0, a locomotive of good repute and generally substantial construction. Unfortunately no thought had been given to the operation of these engines in countries where coal cannot readily be obtained, and so the first 43 engines were supplied in coal fired condition and mostly without Westinghouse brake. As a result, this batch was confined to the level, south of Andimeshk, where coal stacks were instituted, apart from three engines which were handed to the Russians for use between Pole Sefid and Bandar Shah. The Soviet authorities expressed themselves as well pleased with these engines. The remaining 140 engines which followed were fitted with oil firing and Westinghouse brake. They were immediately put into main line service between the Persian Gulf and Bonekuh, the section from Teheran to Bonekuh being under Soviet administration. The 2-10-0 Henschels were at the same time concentrated on the steepest section north of Bonekuh, and the British engines operated the whole of the remainder together with assistance from such of the German 2-8-0 engines as could be maintained in reasonable condition. It will be seen, therefore, that the mainstay of Persian motive power during 1942 was the L.M.S. 2-8-0, without which the task could not have been approached, At the same time this locomotive by no means came fully up to expectations, for the following reasons: (1) This engine is basically too small for a route of such severity, even if it functioned perfectly in all respects. (2) The oil firing arrangement was inefficient and prevented results comparable with those obtainable with coal fuel. The burner was satisfactory, but too much air was admitted towards the front of the ashpan and none was admitted at the firehole door. As a result, cold air was drawn directly into the lower tubes, while there was insufficient air in the upper part of the firebox to ensure complete combustion at high rates of firing. In addition the smokebox was too weak. Thus when working hard the engines emitted dense black smoke and would hardly steam against one injector, whereas it was necessary for them to steam against both on long inclines. The firehole doors became almost red hot and rapidly warped and cracked. The original L.M.S. pattern of hollow door with air slots would have been very much better. Several of the coal-fired engines were converted to oil at Teheran with the aid of fittings recovered from disabled Persian engines, and gave rather better if not entirely satisfactory results. (3) Superheater elements, after a few months' service, gave considerable trouble by burning out at the firebox end. Only one spare set of elements was provided for these 143 engines, but by cutting a length of 15 inches from the existing elements and welding on locally-improvised return bends the trouble was eventually overcome. These elements are of rather light gauge material British practice, and certainly too thin for use in oil-fired locomotives. Two engines were experimentally fitted at Teheran with snifting valves on header, the cylinder air relief valves being removed, but no improvement was noted. (4) These engines were fitted with one live steam injector and one exhaust steam injector. These functioned well enough in cool weather, but on the advent of summer to Southern Persia injector failures became frequent. The exhaustinjector manufacturers, when apprised of the predica-

ment, manufactured and rushed out hot-water cones and fittings with commendable rapidity, and these enabled feed water at 135 deg. F. to be dealt with. New live injectors of hot water pattern were obtained from India and a large proportion of engines so fitted with good results. (5) Top feed clacks gave some trouble with sticking, a fault traditionally dealt with by means of a large hammer, but recalcitrant engines had to be temporarily withdrawn from traffic. The later engines of "Austerity" have the luxury of shut-off valves, a fitting which should be standard practice. (6) Water gauge drain cocks gave continuous trouble by blowing through, andthe gauge itself is by no means easy to read under certain conditions, especially at night. As stated previously, the Klinger type is very much better in all respects except perhaps first cost. (7) Cylinder drain cocks, as in home service, were prone to blow. In British practice a halfpenny is often inserted to effect a temporary cure; in Persia the half Rial piece was used with equal efficacy although at twice the expense ! (8) The L.M.S. hooter whistle is temperamental. A more reliable signal is desirable, in Persian practice at least, although this is a minor point by comparison. (9) Electric headlights were supplied only on a few engines. A number were transferred from unusable stock. In such an uninhabited and wild country it is difficult at night always to be sure of one's position, and it may also prevent head-on collision in certain circumstances. (10) As stated already, sand-boxes should be ample and the sand supplied through the medium of compressed air. As these desiderata were lacking, on the worst section Southern goods brake vans were propelled at the head of freight trains to perform the necessary sanding, and proved a valuable palliative, although reminiscent of the use of a steam-hammer to crack a nut. The above catalogue of misdemeanours may appear somewhat formidable, but they serve to show that a locomotive which gives every satisfaction in British service is not necessarily just as reliable when operating in a country of completely different type. It is to be regretted that sufficient previous though was not applied to the problem, since the transportation task in Persia was made unnecessarily difficult and the prestige of the British locomotive in that country, and perhaps others, has suffered by comparison with American and German products. At the same time these engines did in fact literally deliver the goods to Soviet territory, and it is only fair to point out some of the good features in which they excelled, and which enabled them to keep the wheels revolving, albeit rather slowly at times. (1) Frames and frame details stood up very well indeed, and were much superior to the German engines in this respect. In the event of collision they were easier to repair than the American 2-8-2. Only one case of a cracked frame is known, this being at the usual; place at the rear corner of the driving horn gap. (2) The L.M.S cast steel axlebox, originally imported from Swindon, is well knownto be an excellent product, and it well maintained this reputation in Persia. Only one hot box occurred, and this was due to a fractured oil-pipe. (3) Cylinders, pistons, valves and motion generally stood up very well, the wear being no more than is usual in British practice. (4) All boilers were in very good condition when sent to Persia, and gave excellent service (from a mechanical, as distinct from a steam-raising) point of view. It should be noted that these boilers are not fitted with any of the flexible stays usually considered essential in such circumstances. The screwed flue tubes were very reliable in service, but difficult to replace, especially at running sheds. The engines converted to oil firing at Teheran had the original roof and side stay nuts left in position. Contrary to general opinion, no trouble was experienced with the burning off of these nuts by the oil flame. (5) On a line containing so many sharp curves it was anticipated that pony truck tyre wear would be rapid, but in practice the wear was found to be very small indeed. Possibly this was due to the well-lubricated rails ! (6) Separate suspension of all wheels was a considerable advantage when dealingwith derailed engines. (7) The engines rode very steadily on the somewhat light permanent way. (8) The capacity to run freely at high speed was outstanding. In Persia, however, this is an advantage only in the hands of an experienced crew, and even then the track is too light to admit of full utilisation. On one

occasion the Teheran - Ahwaz mail was observed to reach 62 m.p.h. on a straight and fairly level stretch. Five miles of track were badly damaged as a result. As in the war of 1914-18, the aid of the United States was sought with a view to the supply of additional railway equipment. Consequently there appeared in Persia towards the end of 1942 the first of a large order of 2-8-2 locomotives. These engines were designed, constructed and shipped with commendable urgency. The principal dimensions are: Cylinders: 21 in. by 28 in. Driving wheels: 5 ft. 0 in. dia. Pressure: 200 lb. per sq. in. Weight of engine: 89 tons. The builders were Baldwin, Alco and Lima, and the detail work and minor dimensions varied slightly according to the maker. In particular the reversing gear had three distinct variations according to origin. On some engines the nut was at the front in fore gear, in others at the back. It is not, therefore, surprising that one of the class went through the shed wall at Bonekuh during its second day in Russian territory. A feature which immediately became apparent was the ability to maintain full steam pressure under almost any condition of load and gradient. Although the firebox was of the wide pattern, and thus, nominally, not quite so suitable for use with oil firing as the narrow type used on the L.M.S. engines, the design and application of the oil fuel components had evidently been founded upon the best American practice. The fireboxes were of steel, some of them having circulating or arch tubes. The firehole door as a massive hollow casting which, when shut, registered with a vertical air flue designed to take air from below the cab flooring. The design of the big-end bearings (said to be of British derivation) was interesting in that it presupposed the ability of lubricating oil to penetrate the oilholes in a floating bush in defiance of the laws of centrifugal force. This arrangement was tolerable on level ground, although it resulted in rapid wear, but on long inclines where the engine was kept punching away for upwards of half an hour at a time, the bushes became red hot and even the surrounding parts of the rod began to assume a red glow which could be distinctly seen at night. It was clear that such a thing could not be allowed even on the Trans-Iranian, and a complete cure was effected by the provision of grease lubrication. These engines were provided with screw couplings which were much less robust than the British pattern, and a lot of trouble was experienced on this account. The steam sanding gave unsatisfactory results, like that on the L.M.S. engines, and was altered to air sanding. When their various minor, though important, troubles had been rectified, the full tractive effort of these locomotives was realised. The writer has known one of them to maintain 45 m.p.h. up a continuous grade on 1 in 67 with a train of 310 tons and to blow off violently the whole time. Speed would probably have gone higher but for the severity of the curves. It may be said that the basic design of these locomotives was adequate, with a capacity for steam generation which must be termed outstanding. While the importation of these 2-8-2 locomotives gave much-needed relief to the motive power situation, the problem of feed-water supply became no less acute and was now the limiting factor. The decision was taken to import diesel locomotives for use on the southern portions of the route, where the shortage was most intense. The type selected was the standard Alco 1,000 h.p. diesel-electric, but owing to the loading six-wheel bogies were substituted for the normal four-wheel pattern. The engines thus modified weighed 112 tons. A further modification consisted in providing a motor on all six axles, thus giving a nominal motor h.p. of 1,500. At starting these engines give a tractive effort of 54,700 lb., but this drops to 28,000 lb. at 10 m.p.h., 14,000 lb. at 20 m.p.h., and 6,500 lb. at 30 m.p.h. The maximum speed is 60 m.p.h. These engines were handled from the start by American crews and quickly ousted steam locomotives from all main-line work south of Andimeshk. This arrangement somewhat upset the established practice of the natives in this arid region where water had hitherto been obtainable in buckets supplied from the injector overflow pipe, provided the footplate staff were in benevolent mood, as the Tommy usually is. The natives were quite unable to understand why this type of engine could not be similarly "milked", and many touching scenes were daily

enacted for weeks after this innovation became established. North of Andimeshk the class gradually took on a larger share of the working, and on this section double-heading was the rule, only one footplate crew being necessary. At the outset these engines gave every promise of a successful reign, but the writer is unaware as to what troubles, if any, were developed subsequent to the Americans assuming complete control of the railway south of Teheran. A further interesting importation was a batch of Krupp 2-10-2 engines originally built for a Chinese line, but diverted by the Allies to India, where they were fitted with oil fuel apparatus. As supplied they could scarcely steam themselves along level track, but were taken in hand by the U.S.A. authorities, who finally handed them over to the Russians for use on the 1 in 36 grades, where they are reported to have behaved well. The following locomotives were erected by British troops in Persia, mainly by personnel of the 155th. Railway Workshop Company Royal Engineers, a unit which had served with the B.E.F. [British Expeditionary Force. Ed.] in France in 1940 and was later to serve in Iraq, France, Belgium and Holland, and Germany. Locomotive erection was carried out at Ahwaz. It was in no sense a complete building, but usually necessitated lifting to examine journals and axleboxes in order to rectify damage caused by sea water. The motion had also to be checked over and fitted up, the cab unpacked, and so on. Finally came coupling up and steam test.

2-8-0 W.D. (L.M.S.)	143.
2-8-2 U.S.A.	64
2-10-2 Krupp	6
4-6-4 tank, ex Hong Kong	2
4-6-2 tank, ex Hong Kong	1
0-4-0 American diesel	22
0-6-0 Henschel tank	3
	241

The three Henschel tank engines were discovered in packing cases lying at an uncompleted steel works near Teheran and erected in the workshops at the latter place. The 0-4-0 diesel engines were deliveries on a Persian contract, but were too small for effective war-time service except in isolated cases. The above account is by no means a complete story of the Trans-Iranian Railway and its locomotives, but it is hoped that enough has been said to suggest the conditions which are likely to be encountered by the railwayman who goes, whether as soldier or civilian, to such a venue, and who can hardly fail to return as wiser and, perhaps, in some respects, a sadder person !"

Thus far this extensive but fascinating contemporary account. The 15/1/46 issue also by coincidence includes a picture of F.C. de M. No. 111, a 2-6-2T as used on the HBT (see Hughes), as part of an advertisement for Hudswell Clarke & Co. But elsewhere in these issues are articles on gas-turbine locomotives in Switzerland, electrically-heated steam locos. and classified adverts for diesel and electrical locomotive draughtsmen - the world was changing. Those Garratts, so proudly publicised (see Harakevet 37:11), had turned out to be useless white-elephants, because no-one in those days seemed to think of sending an instruction manual with a complex piece of machinery sent to a third-world outpost..... and it was German-built locos that helped the Allied supplies get through to the Russians. Strange ironies indeed.

38:14 "AMERIKANISCHE LOKOMOTIVEN".

Keith Chester sends this note from the fascinating publication "Stahl und Eisen" (Steel and Iron) for December 1890, p.1088. Translation (from the German) by Ed.:

"Henry Gillmann, Consul of the United States in Jerusalem, reported to his government on the

22nd. September, that three locomotives built in Philadelphia and intended for the new railway from Jaffa to Jerusalem have arrived. The Consul says that it should interest the American citizens that the first locomotives for this old land were prepared in the New World."

38:15: "FROM THEN TILL NOW". Part 8.

Noted in reading by Paul Cotterell from Baruch Katinke's book "Me'az v'ad Henah" ("From Then Till Now"; (See earlier instalments in 11:22, 13:17. 16:15, 19:19, 20:15, 24:11a and 30:21).This is the chapter entitled "A Parabellum brings down a Plane" on pp. 175-8 of that book.

"Since the railway in my area was under constant aerial attack I demanded special treatment for the people under my command. I repeated my request several times but the management did not reply. One day I was informed by telephone that a special train [see note 1] would arrive shortly with Very Important Passengers, among them Anwar Pasha (then Prime Minister and son-in-law of the Sultan), for a visit to the front. I was to receive them at Samakh and accompany them to their destination. I was to do everything to ensure a safe and comfortable journey. I wore my official uniform, something I did not usually do as it was a pity to get it dirty on the train, and set off on my mission. The train arrived at Samakh in the middle of the night. As quietly as possible we uncoupled the loco which had come from Damascus and coupled up our own. We continued to Afula with me on the engine alongside the driver, dressed in my official uniform covered over with work clothes. Dawn was breaking as we arrived at Wadi Surar. We stopped to fill up the loco with water and our important visitors got down onto the platform ["Rachavah" - "broad area" ?] and approached the engine. At their head strode the railway General Manager with Anwar Pasha alongside him. When they came up to the engine I got down and saluted them as required and then the General Manager said to Anwar Pasha (who had received his military education in Germany and knew the German language well): "This is one of my senior officials; He is Chief Superintendent and his hands are dirty with oil and soot. This shows that he works not only with his head but also with his hands." With a courtesy that I was unused to, the General Manager invited me to eat breakfast with them in the fine dining car. The train then continued to Irak el Manshiya. [See Note 2.] I washed my face and hands well, took off my work jacket, and in clean and shining military dress entered the dining car for breakfast. It was a splendid coach with flowerpots and large upholstered armchairs. While sitting around the table and feasting with all these dignitaries, we suddenly heard knocking sounds. General Manager Dieckman turned to me with an angry look and demanded: "Did you not check the coaches of this important train to make sure they wouldn't knock on the journey ?" I looked out of the window and saw twenty planes circling above the train. I realised that the sounds we heard were made by a machine gun. I told Dieckman that I thought the planes were firing at us. "You and your aeroplanes", he replied. The visitors went to the windows on both sides of the coach and saw the planes approaching us from all directions. There was no need for argument - bullets began to pierce the coach. The honoured guests lay on the floor and sought shelter behind the flowerpots. Despite my fear I decided to remain standing. I went from one window to another and called out as the planes neared us or flew away. Suddenly Dieckman found rare courage. He got up and came across to me at the window. We saw one plane flying almost at the height of the train. A Frenchman with a small beard pointed his machine gun towards us. As usual on all my travels I had a rifle with me but, as a guest in exalted society, had left it on the engine. I had with me just my long-barrelled Parabellum pistol. I drew the gun and aimed at the Frenchman. Dieckman also pulled out a small pistol and fired with me. After a few minutes we saw him go up in heavy smoke and the whole group veered to the south and flew off. When we arrived at Irak el Manshiya we were told that one of the enemy planes had fallen and burnt not far from the station. I was ordered

to reverse the loco and one coach to see what had happened there. We returned and saw, about 200 metres from the track, a large crowd of Arab fellahin standing around the skeleton of a smoking plane. They told us that they had seen the plane come down and a second plane landing to collect the pilot and fly away. The General Manager could not resist declaring to all our distinguished visitors that it was, of course, a hit from my Parabellum which had downed the plane. I, of course, said that it was as a result of the General Manager's shooting. I stripped a part from the plane (the magneto) and took it home as a souvenir. Upon return to the station the passengers decided that it would be best to continue after dark for fear of another aerial attack. This I got my revenge on the General Manager Dieckman who always ridiculed me for being afraid, and for making him afraid, by talking about attack from planes.

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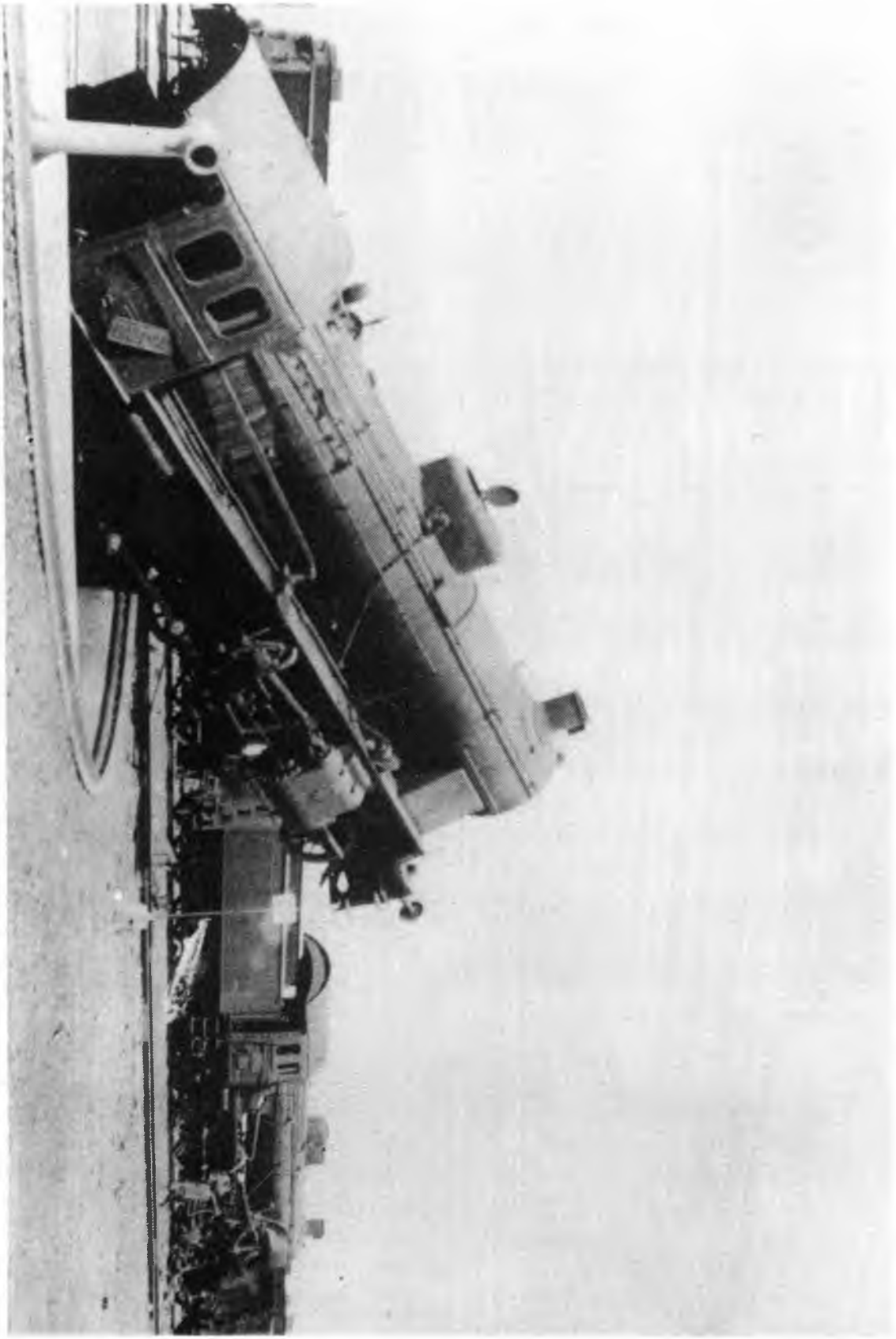
One winter night in 1916 I left Auja el Hafir by train for Be'er Sheva. As a senior official I had a special coach with office, bedroom, small kitchen and toilet. In Auja el Hafir an officer that I knew came up to me, a Christian Lebanese doctor, and asked to travel in my coach so that he could relax on the journey and would not have to sit on the freight wagons which were the only vehicles that made up military trains so close to the front. Of course, after I had invited him aboard my coach and my batman had prepared us coffee and cold drinks and we had begun to converse on this and that, the Lebanese doctor, knowing that I am a Jew, did not hesitate to severely criticise the Turks and their bad treatment of the Jews and Lebanese Christians. I knew that he came from a respected family in Lebanon and that they had suffered much at Turkish hands. During the journey I heard a strange ringing from the direction of the locomotive. I decided to board the engine to check the reason for this ringing. At one of the small wayside stations I left the coach and climbed on the loco. The doctor remained in the coach and lay down to relax on the couch. We had not gone far before we were surrounded by planes which dropped bombs at us and fired on the coaches. The darkened train continued, and it was only after a quarter of an hour that the planes departed. The train stopped at the next station. I got down from the loco to see if the train had been hit by the bombs but did not find any serious damage. I returned to my coach and there found the batman standing by the sofa on which lay the doctor injured and bleeding. Shrapnel from a bomb which had exploded close to the coach had wounded him in both knees, while a piece of shrapnel had blinded him in both eyes and cut off his nose. It was terrible to see the young and handsome doctor thus. He asked me to give him my pistol so that he could end his life. I comforted and encouraged him as much as it is possible to comfort and encourage someone in that condition. I gave him first aid and sent him to hospital on our arrival at Be'er Sheva. He asked me to telegraph his mother in Lebanon that she should come to his funeral. He said: "I'm sure I shall not live long and I want my mother to come and arrange my funeral and perhaps she will manage to take me back for burial in my forefather's grave in Lebanon." I telegraphed his mother and after two days she arrived, noble and dignified, and together we went to the hospital. We found her son in his last dying moments. He died with us standing by his bed and his mother flinging herself on his face. The mother divided his clothes and belongings among the hospital personnel, and to me she gave as a remembrance his beloved dog which had followed him everywhere."

Note 1: "Rakevet Hay'at". The word 'Hay'at' appears to be Turkish, but I do not know its meaning. Note 2: Irak el Manshiya is now Qiryat Gat - more or less anyway. For comparison see then-and-now photos on p.. 54 & 55 of "Looking Twice at the Land of Israel".

38:16. SABOTAGE !



When the British forces invaded Mesopotamia in 1917/8 the retreating German forces sabotaged what they could of the stock of the Baghdad-Samarra railway; this photo, by Brig. T. C. Catty, from the National Army Museum (neg ref. 75463) shows a 2-8-0 driven into the turntable pit and in the background at least one more with its right-hand cylinders blown up.

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