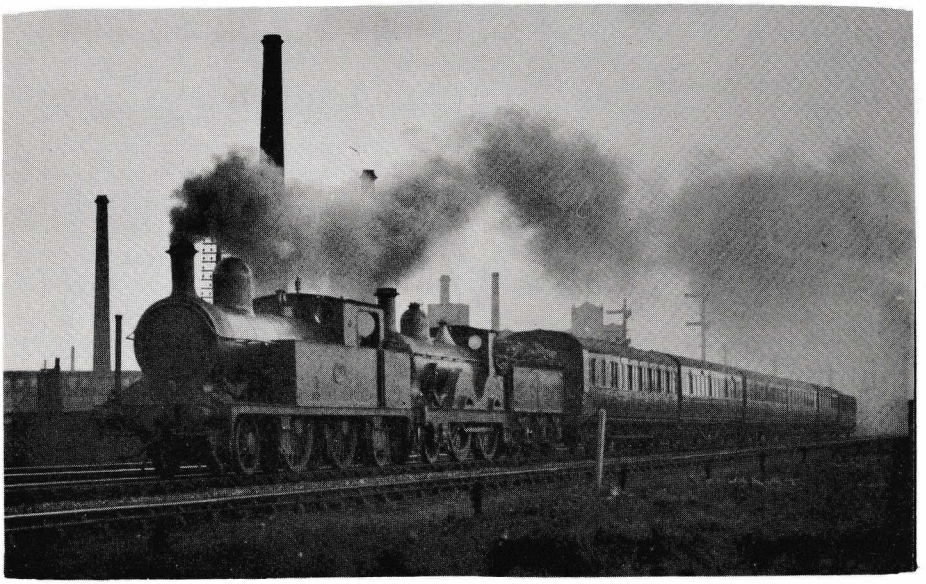
ISSN 0143 - 8875

PLATFORM 26



THE JOURNAL
OF THE
Lancashire & Yorkshire
Railway Society

Platform 26 is the Summer 1988 edition of the Lancashire & Yorkshire Railway Society Journal. Up to four editions of the journal are published each year with six illustrated Newsletters at regular intervals. For further details of the Society, please contact the Honorary Secretary, Mr Tom Wray, 17 Chale Drive, Manchester M24 2BZ.

COVER PHOTOGRAPH:

The first LMS years threw up some strange and unusual locomotive workings. A Kirtley 2-4-0 heading an eastbound express from Manchester Victoria is the strangest working one could imagine and if this is the same train as seen in many other photographs taken by George Smith at this location, the leading engine is working back eastward as pilot to save track occupation with light engine workings. Many photographs taken by George at this period have been published and the combination of different loco types is most interesting .... see also page 13 of Platform 19.

The train includes some unusual vehicles. The second vehicle is a newly-built 56ft side-corridor composite that had been part of one of the ambulance trains. Only three of this type were built in 1924 and little more than the underframe was utilised so they were not strictly rebuilds and certainly did not replace the type of vehicle originally taken for Ambulance train use.

As the Aspinall 2-4-2 tank engine had a tractive effort of half as much again as the old Midland engine and appears to be doing all the work, one can only assume that the radial tank is not only pulling six bogie coaches up the steep gradient but a Midland engine as well!

ISSN 0143 - 8875

Published on behalf of the Lancashire and Yorkshire Railway Society by the Editor, Barry C. Lane, 26 the Hawthorns, Sutton-in-Craven, Nr Keighley, West Yorkshire BD20 8BP

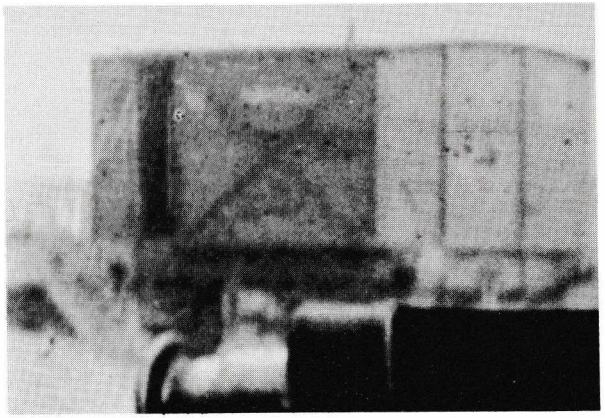
Attock's 4-Wheel Break Vans
The Prequel

NOEL COATES

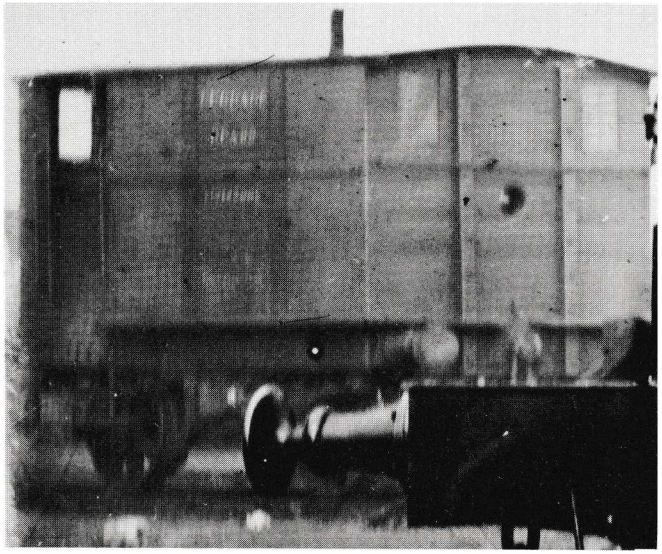
I began the article in Platform 25 with a summary of the main events surrounding Attock's centre door iron-bodied vans. However, space prevented the telling of the complete tale and the part omitted was the earlier history. This has presented the opportunity to delve even further back in time towards the origins of the vans. Such information as exists is haphazard and not categoric and I must acknowledge that this account may err in some way, it remains my opinion based on the available evidence.

The only official records are the 1895 and 1920 Accounts which, when coupled with unofficial notes in a Diagram Book are confusing. The orders listed in the table are a reasonable match between the two sources especially after I decided to ignore all vehicles costed in round pounds. I am of the opinion that the Company wanted more detailed costs to be kept on newly designed and constructed vehicles. The opening of Newton Heath carriage & Wagon Works was coincidental with the introduction of the new order system starting at A1 .

The progression of design refinement has already been touched on in *Platform 25* and I now turn to the two verandah types built before the 'Birdcages' (Drawing 1829), the two drawings of these have not survived. There was something in the nature of 350 break vans in stock when the first built under Attock's regime took the rails. These comprised 24 vehicles in two lots built to Drawing 232 which the diagram book and costing records agree upon. Subsequent orders are more complicated but Drawing 758 seems to have been a cheaper development, the Diagram Book detailing 59 vehicles built whilst the Accounts suggest 73 (as listed in the table). I tend to believe the latter which gives a total of 97 early Attock breaks. These were added to stock to cope with increased traffic demand and it was probably only the very high building totals of the early 1890s c.240 vehicles which allowed the scrapping of about 140 of the oldest, worn-out stock, from the Miles Platting/Fay period.

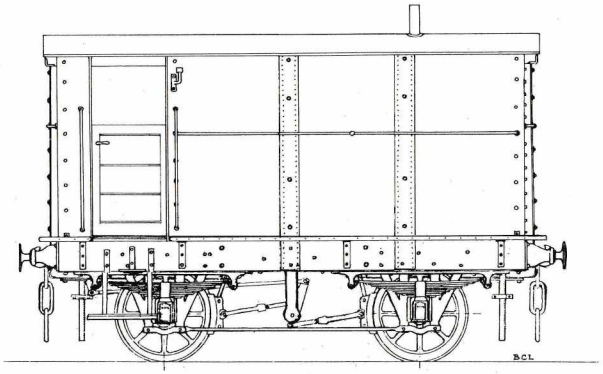


The best known view of the earliest 'Attock' style Break with cross-braced sides. The engine in the foreground is a Hawkshaw 0-4-2 and the complete view will be found on page 7 of 'L.&Y Album' (Ian Allan 1971). Another van can be seen at the back of the goods train on page 23 of 'Platform 25'.



This is the best of five known views of the earliest iron-sided break but the perspective has been distorted through being on the edge of the photograph behind a Barton Wright 0-6-0. The tall chimney seems to be a feature of these early vans, all later ones having much shorter ones.

The appearance of the early Attock breaks seems to fall into two main types. One type is pictured in the left background of a Hawkshaw 0-4-2 photograph, whilst the second type is in the left background of a Barton Wright 0-6-0 photograph. Both vans have identical ends comprising full end stanchions, wide planks, hole for the lamp, small rectangular windows, footboards, full-width handrail and a very flat curve to the roof. This style (the 'Attock End') was carried forward to the 'Birdcages' and subsequent 'Tin Tabs' (see drawing 2309, p.6 Platform 25). What makes the types different is the layout of the sides. Again, both have a door or verandah at one end (photographic evidence does not confirm which) which is most likely a design continuation of the ends of the heavy wooden outside-framed breaks, the so-called 'Cravens' type (Platform 12), the rest of the side shows no commonality at all. The 'Hawkshaw' picture shows a cross-brace over wooden planking (St. Andrew's cross). The 'Barton Wright' picture has three iron plates connected with the familiar multi-rivetted iron strips.



The drawing is based on known dimensions of the Birdcage van for which drawings exist but the brake hanger is drawn bolted behind the solebar as shown in photographs.

4mm scale

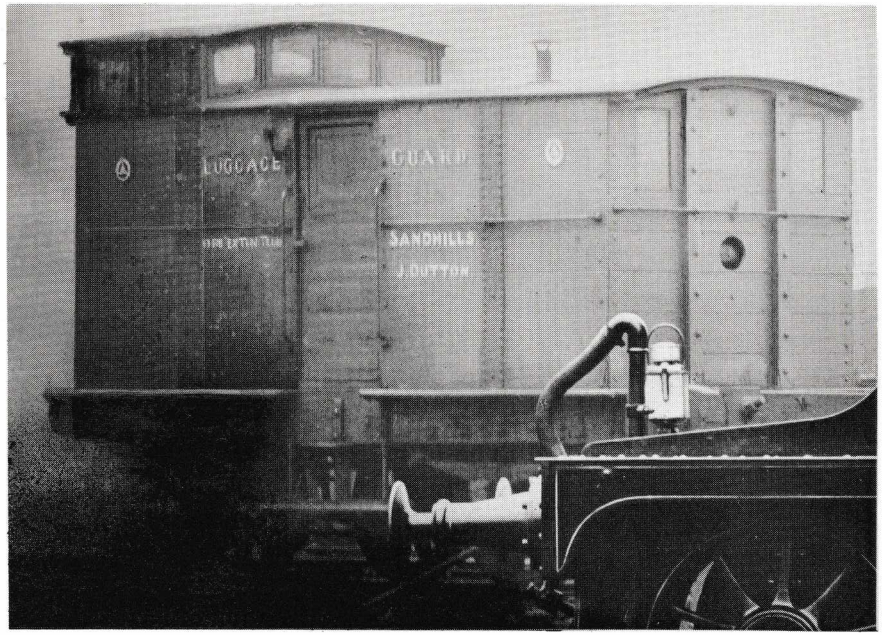
Two questions need consideration now, firstly, did Attock design two types of break van (with a common end), evaluate performance and then decide on the iron plate type as a standard or did he design the cross-brace first, quickly discover its weakness and then totally revamp his design and introduce the ironplate system? With orders very closely bunched in 1877/78 and then a three year gap before orders to an identical drawing appear, the former would seem to be the solution. However, when the drawing numbers are considered the answer is not so simple. Drawing numbers in the 200s represent the 1875 period and are thought to be re-drawn items to substitute those lost in the Miles Platting fire of 1873, those in the 700s seem to be dated around 1880. The answer to all these problems would seem to be thus:—

1. Orders C1 and N1 (24 vehicles), whilst built in Attock's reign, were the last breaks ordered by Fay and their appearance cannot be substantiated. They were included in Diagram 21 for accounting purposes but are closer to their 175 surviving predecessors (extant Dec 1895 that is) and probably have no Attock features.
2. Orders G1, J1 and E2 (27 vehicles) are the first to Attock's own design and feature the cross-braced ironwork. The compiler of the notes in the Diagram Book has wrongly ascribed them to Drawing 758 which had yet to be drawn. The performance of these vans could have been monitored and a redesign undertaken.
3. Orders Y2 to M5 (46 vehicles) represent the real Drawing 758 and are the first iron-bodied breaks. They were designed in 1880 and built from 1881 to 1885. For some time it has been suggested that the iron plating was put on to increase the tare of the vans rather than other forms of weighting but the redesign actually lends credence to the alternative theory that the plates were introduced to make the vehicles more rigid, indeed Drawing 1829 shows space in the underframe for weighting in the conventional manner.

If the above points are true the number of Attock-designed breaks built before the 'Birdcages' is 73.

The design of the side of the 1880 type was an alteration of existing practice by fitting three iron plates to brace the side and keeping the doorway to one end. Vertical joining-straps were rivetted to the iron plates. Undoubtedly wooden cladding was fitted to the inside and this sandwich construction allowed thinner frame members to be used as opposed to the massive outside framing in vogue elsewhere. The physical features of the end from the previous design with wide planks, full handrail, small windows, hole for lamp, footboards and low arc to the roof were all used and carried forward to the next design. Other fitments thought to be common are the underframe construction; W-irons, springs, grease axleboxes and wheels; brake gear including 'T' hanger; drawgear and buffers. There is sufficient detail in the photograph of the first iron-bodied type to create a reasonable drawing; the suggestion is that these vehicles were only about 15 feet long on a 8-foot 6-inch wheelbase. As so many of the fitments subsequently appeared on the 'Birdcages' these have been 'pushed back' in time from Drawing 1829 to appear on the new version of Drawing 758.

What the internal arrangements were can never positively be established (e.g. where the partition was and did it enclose or expose the brake wheel?) but there must have been some fault or problem for another design was created in 1885 and built in 1886. Perhaps access to the brake was too awkward, or it was very

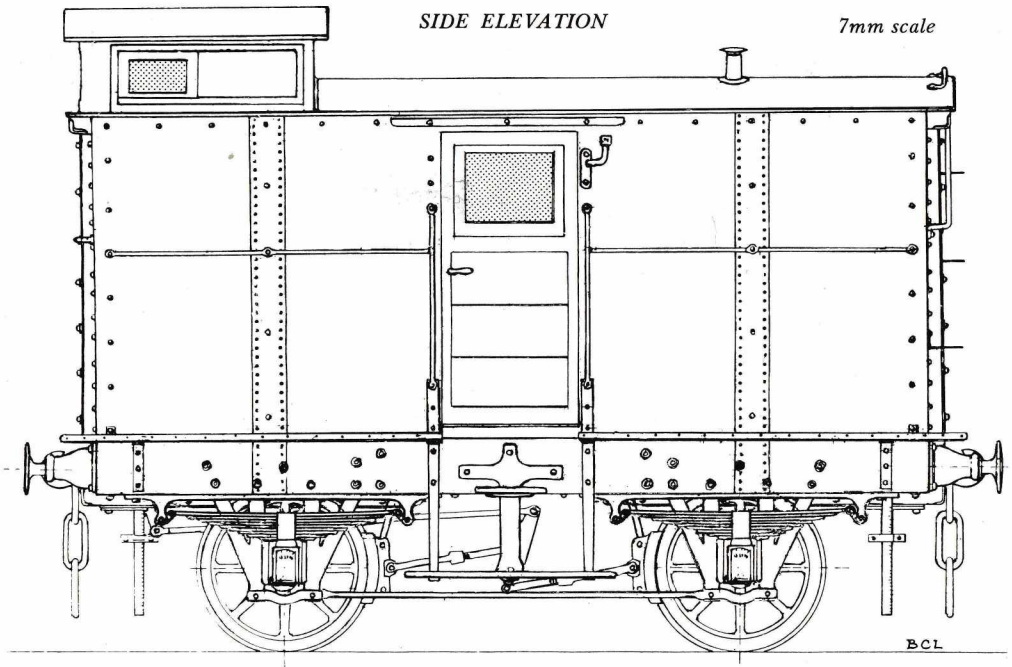


Comparison of this view of a Birdcage Break with the official drawing shows many differences. *The steps and handrail are not fitted to the end, the 'Maltese cross'-type brake hanger is bolted behind the solebars, the lamp bracket is on the left of the door and the door planking is narrower than planned giving four and a half planks instead of three. The location is Sandhills shed and the loco is 6 ft. 4-4-0 No. 831.*

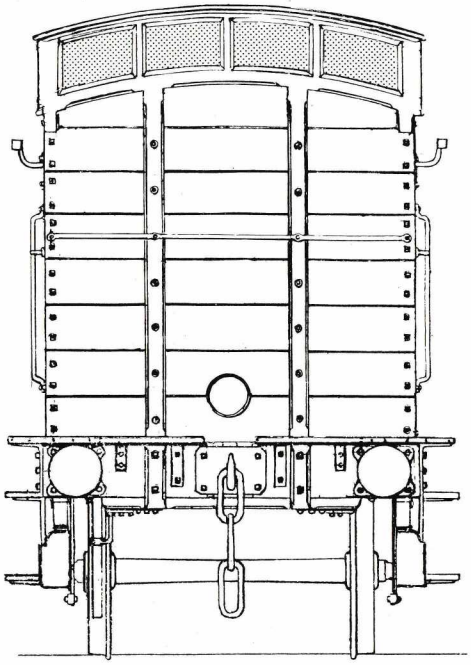
dark inside the van or too difficult to interpret when the brake was to be applied because the view along the train was restricted. Whatever, the outcome was the vastly different 'Birdcage' type.

Two major developments were encompassed in creating this 1885 design. The first, and what really made this second iron-bodied van type distinctive, was the provision for the guard. His problems were solved with an extension of current carriage stock practice by installing a separate platform, brake wheel and guard's seat positioned underneath a lantern light lookout which projected above the low arc roof (nicknamed a 'Birdcage'). This forced the second design development, that of resiting the door which was placed amid the centre of the side and two iron plates either side of it. Internally the van was cut into two 'halves'—an 'office' portion which included stowage lockers, desk, space for documents and the stove and the larger 'open' section. The external doors were fitted with droplights and were hinged to fall back against the internal partition and give easy access to the brake wheel. This end of the van was devoid of the rectangular windows, only those in the lantern afforded the necessary view and a shutter-cum-fresh air vent extended the sides between the two curved glass lights. 47 vehicles appeared to this design and the table repeats the details of the 'Birdcages' given in Platform 25. The reproduction of Drawing 1829 shows the main details, the original has end-steps and handrails which photographic evidence discloses were not fitted.

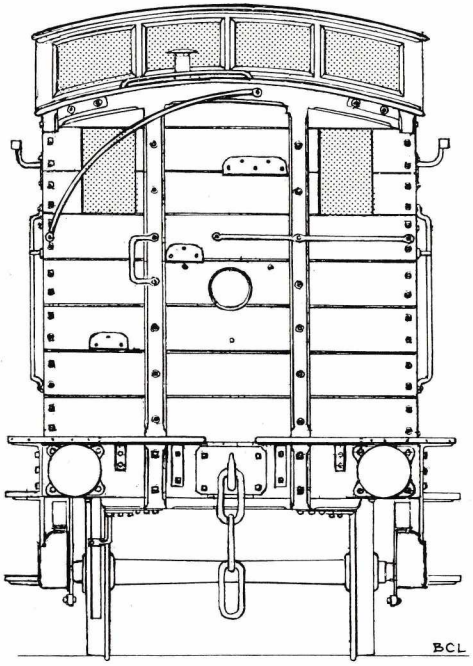
SIDE ELEVATION *7mm scale*



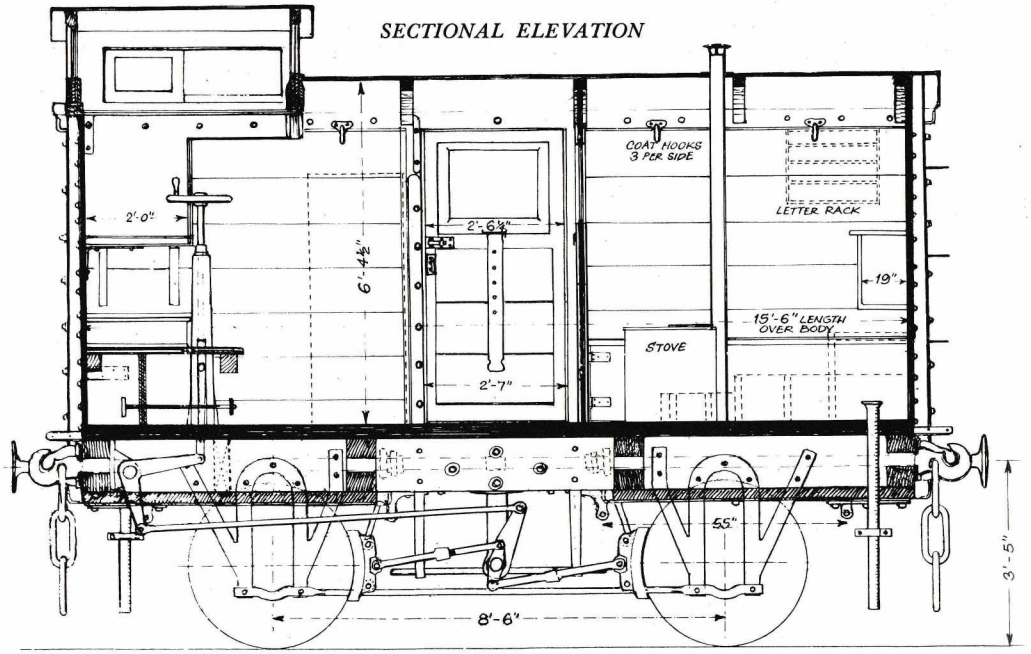
END VIEW (BIRDCAGE)



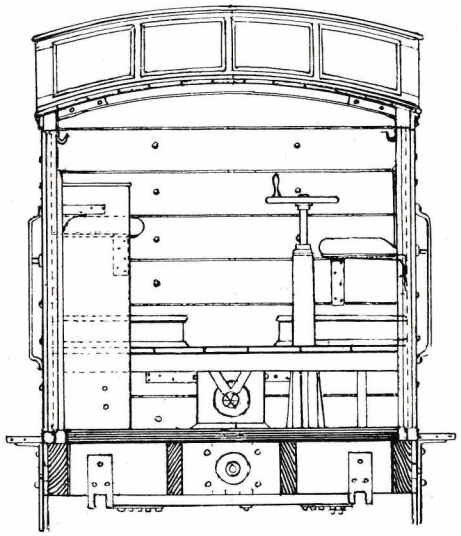
END VIEW (VAN END)



SECTIONAL ELEVATION



7mm scale



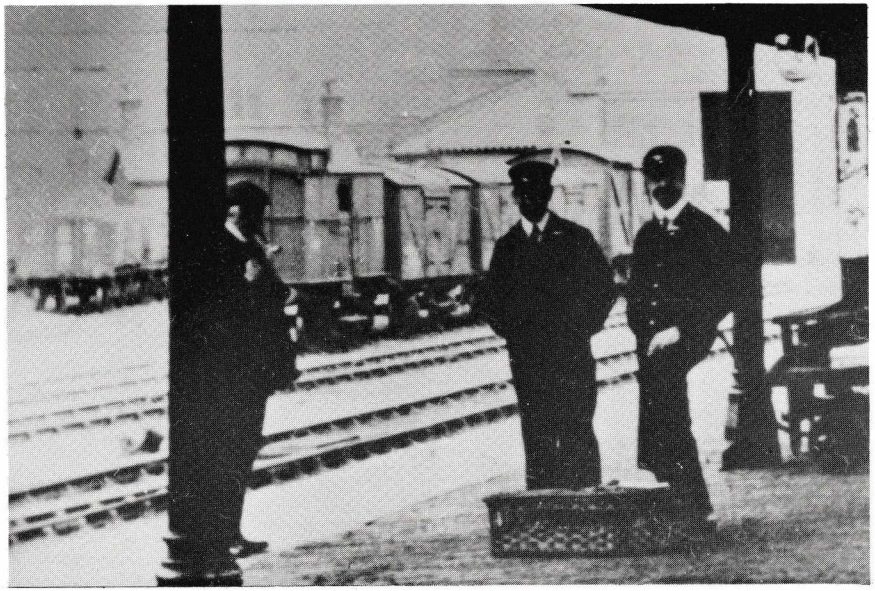
SECTION THROUGH BODY

The drawings are traced from the official G.A. drawing No. 1829 and have been left as the drawing office made them, without correction to details that we know took place.

This generation of vans was nearly four inches lower in body height than subsequent 'Tin-Tabs' and the roof arc was struck from rail-top level. The low rectangular droplight in the door is obvious evidence of a low-sided van.

Although the width of planks vary, the interior arrangement was very similar to that shown in the diagrams on page 8 of the last 'Platform'. Instead of a lamp bracket on the end, early vans had a small box within the van in which the tail lamp was housed. A circular hole in the end allowed the lamp to shine through.

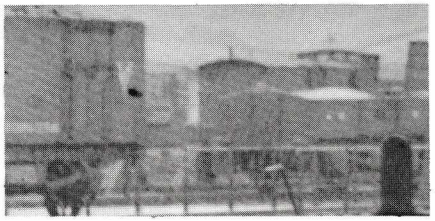
It appears that no end steps were fitted and that the brake hangers were fitted to the inside of the timber sole-bars which were faced with ½"-thick wrought iron plate .... hence the absence of crownplates.



This rare view of a 'birdcage' brake at Millhill (Blackburn) proves the end to be plain, without windows or steps. Such gems of interesting rolling stock can often be found in the background of old photographs and this much enlarged section of the station view is such an example.

The general improvements in this second iron-bodied type were recognized but access to the brake could be improved further. Relocating this on the van floor made the 'Birdcage' superfluous so the rectangular windows were reinstated in the end. Full details of this third generation of the iron-bodied van and all later historical developments were discussed in Platform 25.

Of the types which have been discussed in this article, all had survivors on the accountants' lists at the 31st of December 1920. The oldest Fay type had 15 examples extant out of the 24 built; the cross-brace type mustered 13 out of 27; the first iron-bodied type (three panels) had 27 out of 46 and the 'Birdcages' 32 out of 47. There is surprise among some that so many of these 'archaic' types survived so long but the oldest of those above is only 43 and there were 27 older still (up to the age of 56). Twenty-ton brakes were only just beginning to be turned out in large numbers once again after the Great War which had probably prolonged the life of all 10-Ton vans a little but they were accepted as out of date and due for replacement as fast as possible.



Both subjects of this article are seen together in this enlarged corner of Low Moor shed yard taken in July 1905 by J. H. Wright of Bingley. A modern 20T loco wagon and a sand wagon complete the assortment.

There is enough detail decipherable on the photograph of the first iron-bodied type to disclose that its colour was a dark grey all over and the white lettering was on the centre of the three metal panels. To the top was 'LUGGAGE' with 'GUARD' underneath and below the handrail was the yard allocation. Strangely, there is no evidence of an illiterate symbol. The 'Birdcages' followed a similar pattern except that the information was either side of the door and lettering and illiterate symbol were white shaded black to right and below. Different scripts were used for the different bits of information. Sometime in the 1890s break vans began to be painted black and from 1903 the large letters 'L' and 'Y' were added. All types would gain these features including reporting-numbers (Birdcages definitely proven). The likelihood of any gaining grey and the letters 'LMS' is very slim indeed, any of the vans covered by this article surviving much beyond 1925 is hard to believe.

I have deliberately not used the term 'Tin Tab' within this section of the break van history because I believe it refers to their much more common successors, opting for iron-bodied instead. Also there is a second nickname to consider: 'dolly breaks'. Is this a reference to the dolly tub of 19th Century washing?

If you are wondering about the word prequel, it was coined about 1972 as 'the first part of a story or film written, published or made after the main part'.

Corrigenda:— In the Table in the Platform 25 article, the line with the question mark in the Order column is for the West Lancashire Railway-absorbed stock and the whole line should have been omitted.

The end of a break van in a smash at Lockwood 28th October 1913. The vehicle is an early type with the cross-shaped break hanger but has tie rods to brace the 'W' irons of the underframe .... a feature not seen elsewhere. All other details agree with Drg. 2309 of 1890.

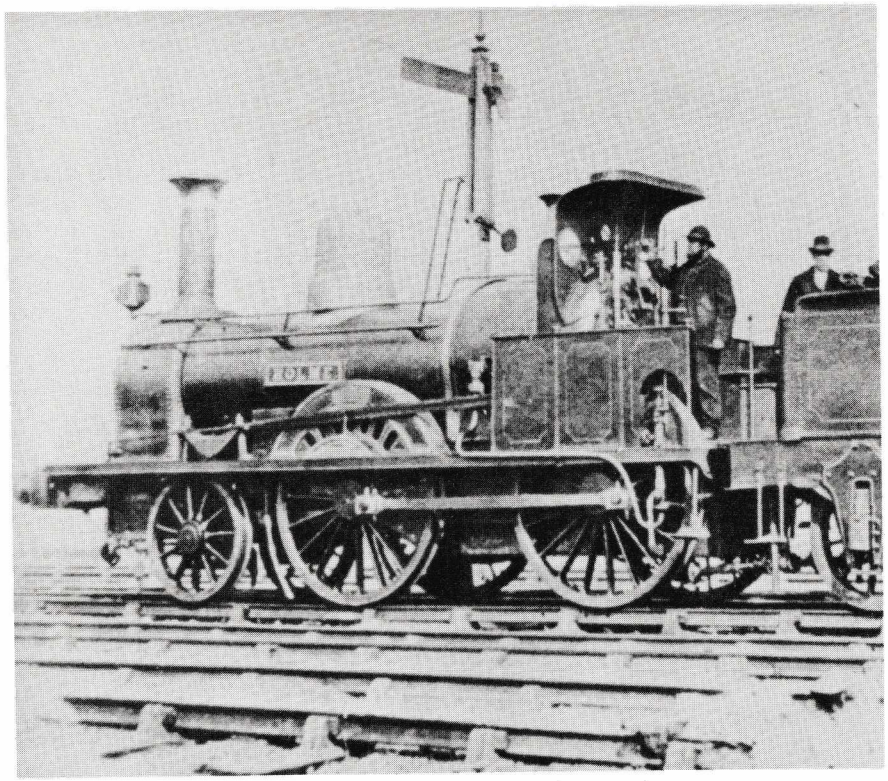
Alan Lewis collection

Diagram Book Page	Description	Order No.	Quantity	Drawing Nos.	Cost £ s. d.	Delivery	Notes
21	Goods Brake Van	C1	20	232	172 13 0	1877	11 in service December 1920
"	" " "	G1	25	758 [4]	139 15 11	1878	[1] 13 in service December 1920
"	" " "	N1	4	232	169 11 9	1878	All in service December 1920
"	" " "	J1	1	758 [4]	122 1 1	1878	Not in service
"	" " "	E2	1	758 [4]	121 12 9	1878	Not in service
"	" " "	Y2	10	758	148 2 8	1881/2	[2] 3 of 1881 build only in service Dec 1920
"	" " "	D4	20	758	145 9 0	1882	14 in service December 1920
"	" " "	E5	6	758	123 9 8	1883	4 in service December 1920
"	" " "	M5	10	758	136 13 6	1884/5	[3] 2 of the 1884 stock and 4 of the 1885 stock in service December 1920
"	Goods Brake Van Birdcage type	M6	6	1829	138 18 2	1886	4 in service December 1920
"	" "	S6	6	1829	138 18 2	1887	none in service
"	" "	B7	13	1829	135 1 5	1887	10 in service December 1920
"	" "	G7	12	1829	130 4 3	1887	All in service December 1920
"	" "	M7	6	1829	124 9 5	1888	2 in service December 1920
"	" "	T7	4	1829	135 13 8	1888	All in service

All orders listed in delivery sequence

NOTES:

1 — *Diagram Book lists only 20 vehicles*
2 — *Accounts detail 4 built in 1881 and a further 6 in 1882, Diagram Book says 6 only.*
3 — *A further 5 vehicles were built in 1885 for the same cost per vehicle, Diagram book says only 5.*
4 — *These drawing numbers listed in the Diagram Book could be wrongly ascribed (see Text).*



'HARE' or 'HOLME'

J. GIBSON N. COATES

Having recently returned from jobs overseas, I happened upon *L&Y Miscellany* just a few months ago. Plate 33 of that publication shows the engine *Holme* in which Noel states that the exact number of the engine has never been proven. This fired remembrance of some documents in my possession (as I have always been interested in early L&Y locos and been collecting material for many years), I was sure I had the name recorded against an engine number somewhere. It turned out I had the information recorded twice. One is a pencil list of L&Y loco names compiled by an enthusiast on the back of a book advert about 1907- or so I think. He gives each engine its L&Y running-number, name and date of origin. Here the list says:—

302 *Holme* 1861

The second is slightly more tangible and can be found on p.7 of the Railway Club Journal for January 1910. In the Addenda concluding a series of articles describing "practically every class of engine possessed by the L&YR from 1839

to the present time" which they think has "shown that what is known of the early engines is more than ordinary interest to the locomotive historian." is a list of named engines supplied by Mr. G. Milne of Liverpool. He gives

286	*Marshall*	300	*Wickham*
288	*Stuart*	301	*Barnes*
289	*Anderton*	302	*Holme*
290	*Atkinson*	321	*Hatton*

leaving out 287 *Audus,* 291 *Wilson* and 334 *Pilkington.* From these records I believe that *Holme* is No. 302 and might have become *Hare* upon rebuilding, or, more likely, retained its name until withdrawal.

Noel writes: I am indebted to Mr. Gibson for lending his records to show that 'Holme' was No.302 but now I'm going to throw a spanner in the works. Although Baxter, Marshall and Rush all give No.302 the name 'Hare' and similar rebuilding dates I don't believe there is any proof that 302 was ever anything other than 'Holme'. 'Hare' is recorded by Ahrons but his 'first XI' never have numbers matched to names. Could it be that Ahrons misread his notes or was confused by his own handwriting and inadvertently altered the name? It's easily done, I know, I've done it! I would welcome any comments, further theories or categoric proof from anyone who can offer original source material or similar evidence to chase the 'Hare'.

L&YR Signalling
SOWERBY BRIDGE TUNNEL END

by T. T. SUTCLIFFE & F. COLLINGE

PART 4

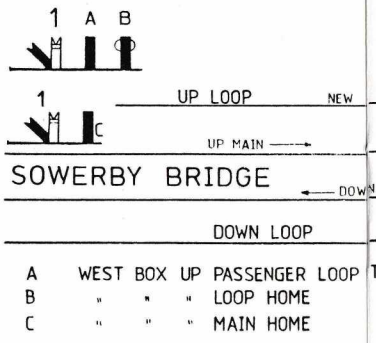
SOWERBY BRIDGE TUNNEL-END SIGNAL BOX

There was no Board of Trade Inspector's report in the pack containing this diagram at the Public Record Office. The frame was relocked in 1894 to suit the new connections. The box and frame were the old Smith & Yardley ones dating from 1878 and the architectural design of the box would be similar to the existing cabin at Milner Royd Junction, except the base would be of stone, and this box would have been considerably longer. The box was replaced in 1922 by the present box on the opposite side of the line, which box has now been removed.

654 /14

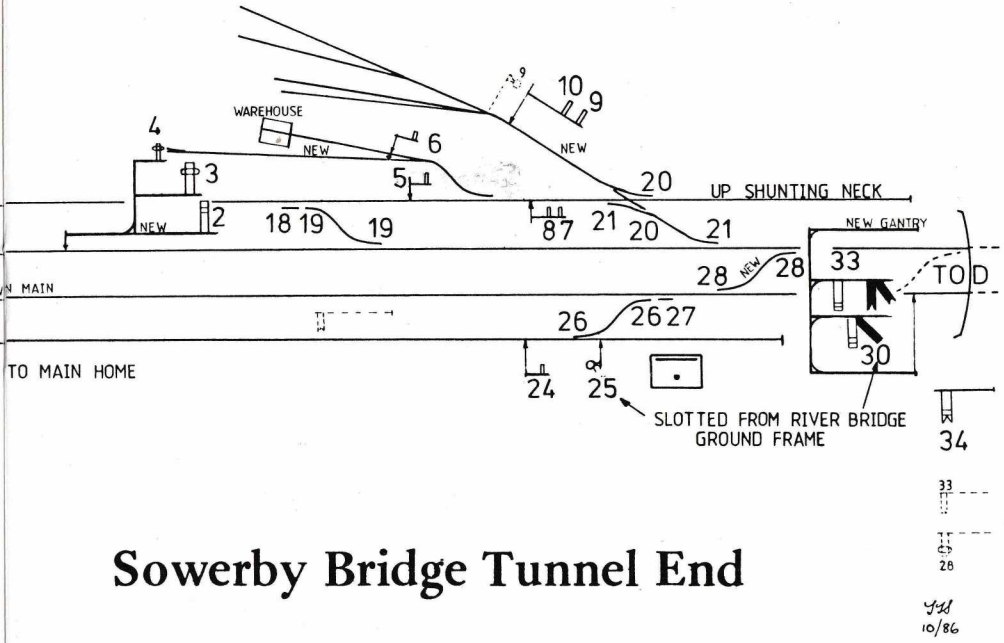
CABIN
STONE, SMITH, 1878.
FRAME: " " RELOCKED.
34 LEVERS,
11 GONG IN TUNNEL

SPARE: 12 to 17, 22, 23, 29, 31, 32



Here we have up and down loops in addition to sidings. Lever No.1 (as is often the case) controls the distant signal, or in this case actually two distant signal arms, both of which apply to movements along the up-main from Sowerby Bridge West box. One of the distant arms was below West box's up-main home, and the other was below that box's up-passenger loop to main home. The ringed arm at the top of the same post was West's home to up-loop. Notice that the other running-signals applying to the up-loop also have ringed arms. Lever No.1 was, of course, locked until No.2 lever had first been pulled. At the other end of the frame, lever No.34 controlled the down-distant which could only be pulled when the home signal 33 was first pulled off. The distant arm below signal 33 would have been slotted by that signal, and was also controlled by the next two signal boxes to the east, viz Sowerby Bridge West and Sowerby Bridge East, on account of the short distances between them.

The signals applying to the down-loop, 30 and 25, are slotted with River Bridge, a ground frame of 9 levers. On the up-side, signals 3 and 4 are the loop home signals. No.3 controlled access to the up-main via points 19, therefore pulling lever 19 would lock lever 2 at danger and release lever 3. Signal 4 allows a train to continue along the up-loop line straight ahead towards ground signal No.5 which protects the siding entering from the left controlled by ground signal No.6. The exit from the up-loop is controlled by signals 7 and 8. Lever 7 pulls off the top signal which reads into the up-shunting neck, and No.8 works the lower arm giving access to the up-main line via the double slip controlled by lever 21. This section would only be used by goods trains and engines as there is no facing point lock on the facing end of No.21 points. Passenger trains approaching along the up-loop would therefore have to regain the main line via points 19 which are equipped with a facing point lock worked by No.18 lever. The exit from the up-sidings is similarly controlled by signal 9/10. The top arm (9) reading to the neck (pull 20 first), and the lower arm (10) reading to the up-main (pull both 20 and 21).



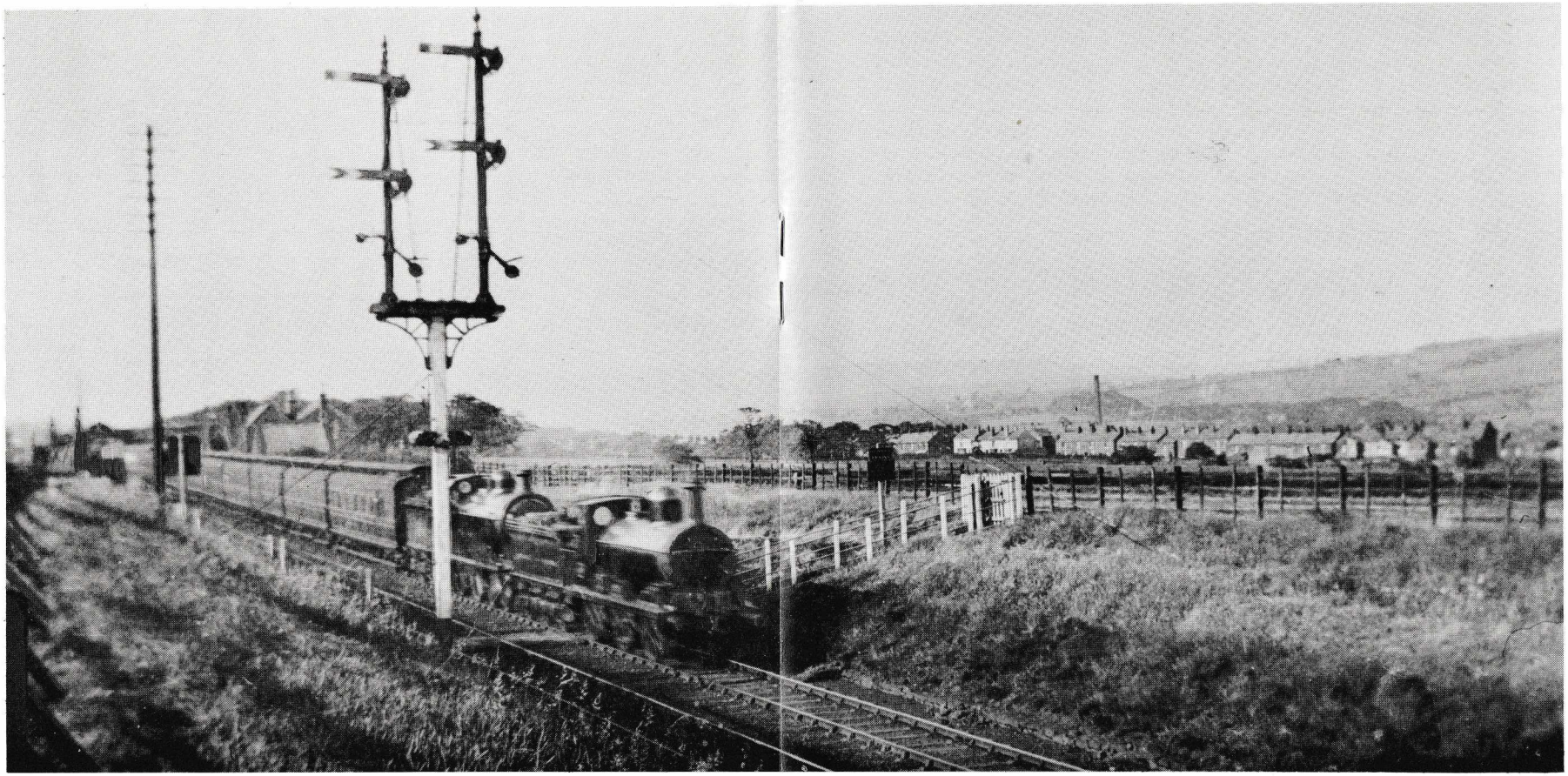
Sowerby Bridge Tunnel End

Lever No.24 works a ground signal which allows goods trains and engines from the engine shed to run out onto the up-main line via points 26 and 28. There is no signal giving access to the down-neck, therefore one must assume that the ground signal 24 could be passed at danger for access to the neck.

The signals shown by dotted lines (28 and 33) are old signals at the west end of the tunnel which were dispensed with on the erection of the new gantry. Compare this diagram with that for Astley Bridge Junction where the slotting is on the home signals acting as distants for the adjacent box. Here separate distants are placed below the home and starter arms as in modern practice.

The available sectional appendices do not throw any light on the purpose of the tunnel gong worked by lever No.11, but it could have been used as an audible signal to instruct drivers to set back from the up-line in the tunnel into the up-sidings or to the down lines. Dwarf shunting signals were not provided for these movements probably because they would not be visible to the driver of a train standing in steam and smoke in the tunnel. The appendices did contain a list of engine whistle codes requesting such setting-back movements, and it seems likely that when the signalman had set the points as required, he would repeat the same code on the gong to inform the driver it was in order to set back.

The signal box would look similar to type F as shown in the 'Traffic Control Maps' except that the base would be of stone instead of brick shown in the photograph, or the same photograph is shown as plate 132 in the signal box.



Photograph courtesy E. Johnson

We have all read about the graceful Midland Railway trains that effortlessly glided in crimson splendour between Hellifield and Manchester. Perhaps that was only half the story.

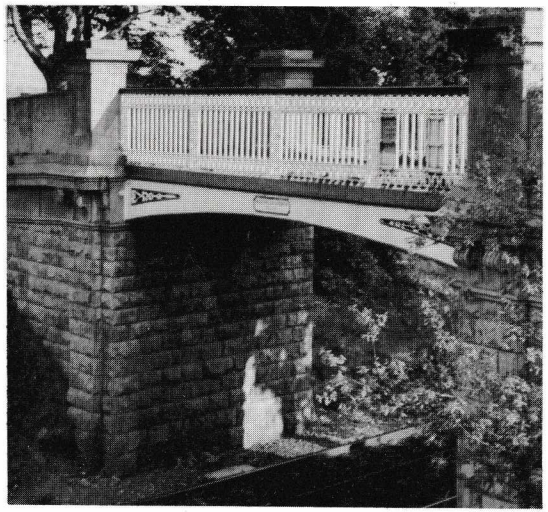
If a MR passenger train exceeded six bogies, the driver could summon assistance out of Blackburn where the gradient was at least 1 in 100 and 1 in 75 at worst. Goods trains took a banker but it has never been well recorded that the passenger trains had a pilot loco. On the LYR, a perfectly suitable engine for the task was an Aspinall 0-6-0 but the Midland might not have approved of such a combination on their own system.

The train is here seen descending the long stretch of 1 in 74 from Sough Tunnel to Bolton and so the hard work for the pair of engines is over. The train has just passed through The Oaks station whose twin gables can just be seen in the left background. Indeed, the location of the photograph was something of a mystery until earlier this year when David Tee, that expert on things Midland, suggested that it might be The Oaks. All who had seen it were misled by the tall junction signal so prominent in the view. The LYR was particularly inclined to signal a loop line in this way and The Oaks was such an example.

Through the Victorian period, the line was just double track but a series of improvements effected widening at several stations on the climb up to Sough tunnel from the southerly direction. At The Oaks, new loops were built on either side of the main line and the platforms were relocated on the loops. The signal therefore is for the main and loop line at the station where the original 20-lever Smith & Yardley box of 1875 remained.

The train would be the summer timetable Glasgow St.Enoch to Manchester Victoria and Liverpool Exchange. In 1912, this train left Carlisle at 1-45pm with a restaurant car from Glasgow to Manchester and through carriages from Edinburgh Waverley for both Manchester and Liverpool. The train was divided at Blackburn and the Liverpool section went forward to arrive there at 5pm. The Manchester portion was substantial enough with the restaurant car to warrant a pilot locomotive from the LYR. The MR engine is a Johnson 4-4-0 rebuilt with an 'H' boiler which was limited to 170 tons over this line. The train would be in excess of six bogies therefore to require the additional pilot locomotive but the full view of the train is obscured by the trespass notice for the right-of-way across the line. The LYR engine is a standard 0-6-0 as built from 1889 and continued to 1918 with detail variations. This one is from the Hughes 1909 lot which were built with 'dogged' smokebox doors having a straight handrail and tenders with coal rails. The new design of smokebox door was later applied to other engines but at the date of this view, only this batch of 0-6-0s had it.

The photograph has been taken from the bridge to a one time private estate which was described at the time of building as 'in the Grecian style'. The footpath across the line joins footpaths on either side of the railway and its reason for being suggests that the decorative overbridge was private access to the estate in days gone by. Today, the crossing has gone and the pathway is routed across the bridge which necessitated those tall signals. The station has long been closed having lasted for just a century and so the other railway fixtures have gone too. Apart from that (and dense shrubbery on each embankment) nothing much has changed in the seventy and more years since the photograph was taken. The Midland through services were withdrawn in 1917 but the picture is thought to date from the few years immediately before the outbreak of the Great War.



The bridge still carries the plate 'Musgrave Son & Heaton, Bolton' 140 years after erection.

George Smith records that two MR 4-4-0s worked the Hellifield expresses out of Victoria. No. 383 was rebuilt with G7 Belpaire boiler in Dec. 1909 and here is passing Aspinall 7'-3" 4-4-0 No. 344 acting as 'West end pilot'. Exchange station is in the background.

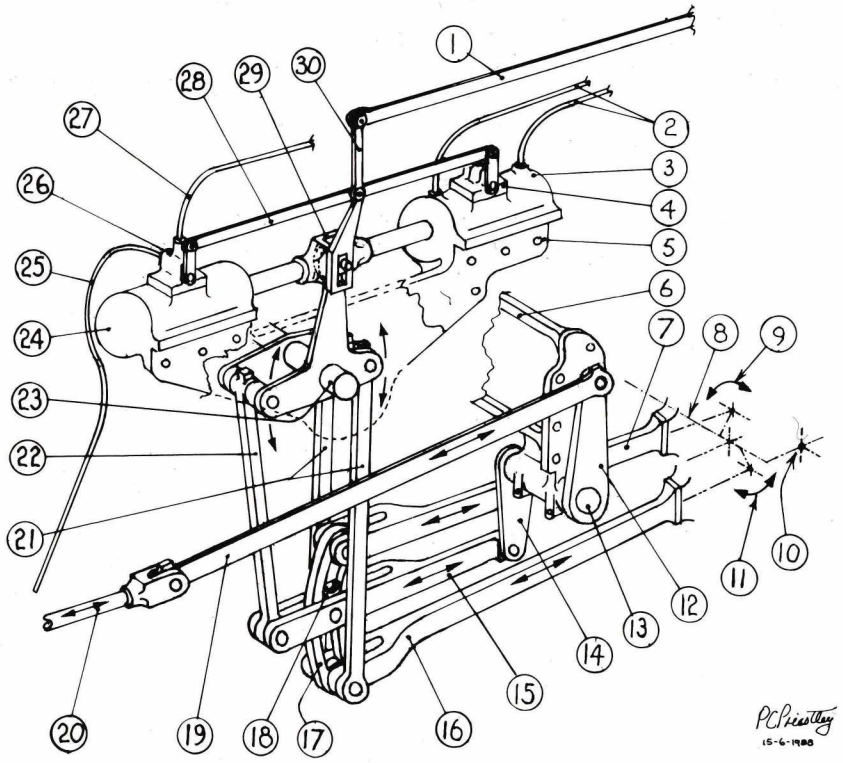
'RAPID' SHUNTER HYBRID VALVE GEAR

P. C. Priestley

In the late Eric Mason's book, *The L&YR in the Twentieth Century*, he mentions that the Dock Tanks were fitted with ALLAN motion having a curved reversing link. In various books on Valve Gears consulted by the writer, it stated that the ALLAN reversing link was straight. This contradiction was mentioned to one of the Society's Elder Brethren who had done valve motion design in his younger days, his reply was emphatic, "Mason was in error, no ALLAN motion ever had a curved link, the Law of Geometry on which it was based compelled it to be straight, even Euclid, who established the Laws of Geometry couldn't alter it. If the Dock Tanks had a curved reversing link it was probably a Stephenson link". At that time neither of us had seen any drawings of the Dock Tanks. Our Editor then produced a small copy of the General Arrangement, it was seen that the valve motion was not ALLAN, basically, it was STEPHENSON'S, but instead of Stephenson's principle of the curved reversing link moving over the die in the link slot when put into position for either forward or backward running, the ALLAN principle of moving both link and die in opposite directions simultaneously had been incorporated. This was quite an ingenious arrangement, but it was never used on any subsequent class of L&Y locomotive. It would appear that 'someone' at Horwich chose to ignore that the laws of geometry are immutable, the result was the ill-conceived valve motion.

To enable members to see the arrangement the writer made the perspective sketch shown in Figure 1 of the left-hand valve motion. The outside cylinders had the valve chests on top, all the motion was inside the frames with the exception of Nos 12, 19 & 20, these were outside the frames. No 13 was a shaft passing through the frames with the inside swinging crank No. 14 at one end and No. 12 swinging crank at the other end outside but set directly opposite at 180°. It must be noted that the direction and amplitude of movement of all the components would be determined and proportioned so that as the eccentrics imparted twice their throw to the reversing link and die, the slide valve would receive the required valve travel in one direction for one half revolution of the wheels, and in the opposite direction for the second half revolution. From mid-gear position, to put the motion in position for forward running the procedure would be as follows:—

The reversing shaft No. 23 turns anticlockwise, thus lifting suspension links No. 21, this in turn lifts the reversing link No. 17 and both the forward running eccentric rod No. 16 and backward rod No. 7. Simultaneously suspension link No. 22 lowers the inside radius rod No. 15 to which the die No. 18 in the link slot is pinned. As the die No. 18 has to follow the curvature of the reversing link slot during this combined movement, it causes the radius rod No. 15 to move the inside swinging crank No. 14 a determined amount. This in turn causes the outside crank No. 12 to move in the same direction. One end of the outside radius rod No. 19 couples to the outside swinging crank No. 12, the other end couples to the valve spindle No. 20. Thus the movement generated by the combined lifting and lowering of the reversing link and die is transmitted through to the slide

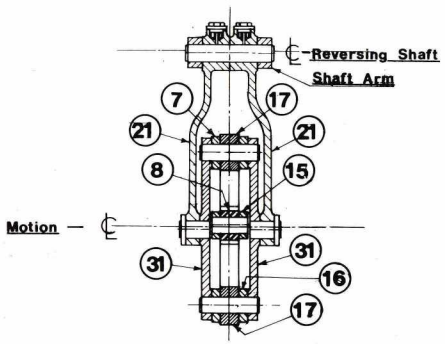


L & Y 0-6-0 (RAPID) DOCK TANK SHUNTER HYBRID VALVE GEAR

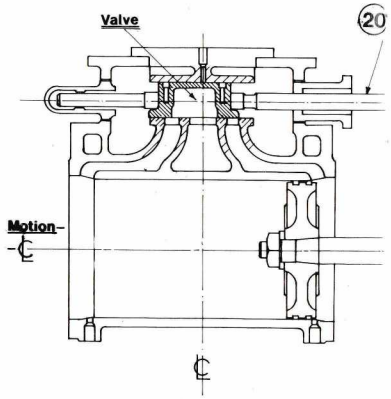
1. *Reversing control rod*
2. *Water pipes to taps on left-hand tank*
3. *Water cylinder — 5-inch diameter*
4. *Control valve for water cylinder*
5. *Support bracket for reversing-shaft and cylinders.*
6. *Frame spacer & rocking-shaft bracket*
7. *Eccentric rod — backward gear*
8. *Center driving-axle*
9. *Centre of backward eccentric, behind driving axle, showing motion*
10. *Center of driving-wheel crank in mid-gear position on horizontal center line*
11. *Center of forward eccentric, behind driving axle, showing motion*
12. *Outside crank lever*
13. *Rocking-shaft, for indirect valve drive*
14. *Inside crank lever*
15. *Inside valve radius rod*
16. *Eccentric rod—forward gear*
17. *Reversing-link—Stephenson's, set concave to eccentrics*
18. *Die block—slides in curved reversing-link slot*
19. *Outside valve radius rod*
20. *Valve spindle on top of outside cylinders*
21. *Rear suspension links—two*
22. *Front suspension link—one*
23. *Reversing shaft with lever—long arms to front showing motion*
24. *Steam cylinder—7 inch diameter*
25. *Steam exhaust pipe*
26. *Control valve for high pressure steam*
27. *Pipe for high pressure steam*
28. *Connecting link, couples control valves and reversing-control lever*
29. *Coupling—slotted to accept end of reversing-shaft lever, also connects steam & water cylinder piston rods*
30. *Reversing control lever*
31. *Curved link suspension plate—two per reversing-link*

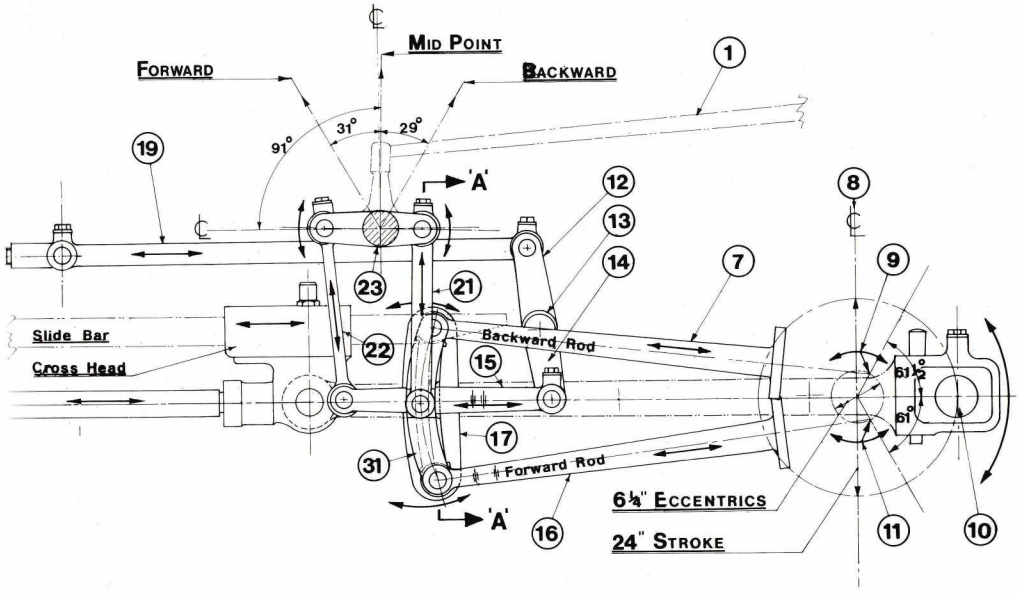
L&Y R.0-6-0. (RAPID) DOCK TANK SHUNTER.

MODIFIED HYBRID VALVE GEAR-R.H. SIDE SHOWN.



Sectional View Through 'AA'





valve and positions this ready to admit steam to the cylinder. Since the die and forward-running eccentric rod are now nearly in line, the die is under the influence of the forward-running eccentric.

For backward running, the reversing-shaft turns clockwise, thus lowering the suspension links No. 21, the reversing-link No. 17 and both forward and backward eccentric rods, thus bringing the die under the influence of the backward eccentric rod. The movements are as for forward running but in the opposite direction. It must be noted that the inside and outside cranks No. 14 and No. 12 do not rotate in a circle, but swing in an arc only, for either direction of running.

These locomotives were built to work within the confines of dock and marshalling yards, moving forwards and backwards, pulling and pushing wagons varying distances at low shunting speeds. To expect the Driver to 'Notch Up' under these conditions would be ridiculous, at all times they would be in full gear, exactly like shunting-locomotives at work in Industry. Therefore, one would expect that when the regulator was opened the cylinders would produce a surge of power to overcome the inertia of both the locomotive and wagons and get them on the move without delay: this didn't happen, Eric Mason said they were sluggish. This would indicate that not enough steam was reaching the pistons to produce a surge of power. Instead, there was a delay until sufficient steam had built up in the cylinders to get the locomotive and wagons on the move. It would therefore appear that the Outside Lap of the slide valve was not moving far enough to allow a full-port opening for the inlet steam; there could have been back-pressure in the cylinders when running because the edge of the valve exhaust cavity was obstructing the flow of exhaust steam to the exhaust port. It is considered that the cause of the restricted valve travel could have been as the result of considerable die slip, whereby the reversing-link was slipping over the die without moving it fully: this would result in the slide valve being denied its full travel. Whether this statement is near the truth as to the sluggishness may be judged from a drawing located at a later date by the Writer, which showed that a modification had been done to the valve motion as in Figure 2. The reversing-link assembly now had a curved plate No. 31 on both sides of the forward and backward eccentric rod jaws. The suspension links No. 21 had been shortened and now suspended the link assembly just below the horizontal center line of the motion. It was well known by both Locomotive and Stationary Engine designers that by suspending the reversing-link at this point, die slip was reduced. Even so, we are told that when some of the Dock Tanks were transferred to the L.N.W. section after the amalgamation, nobody on the L&Y raised any objections, possibly the L&Y would have been glad to get rid of the lot of them.

From the MINUTE BOOK

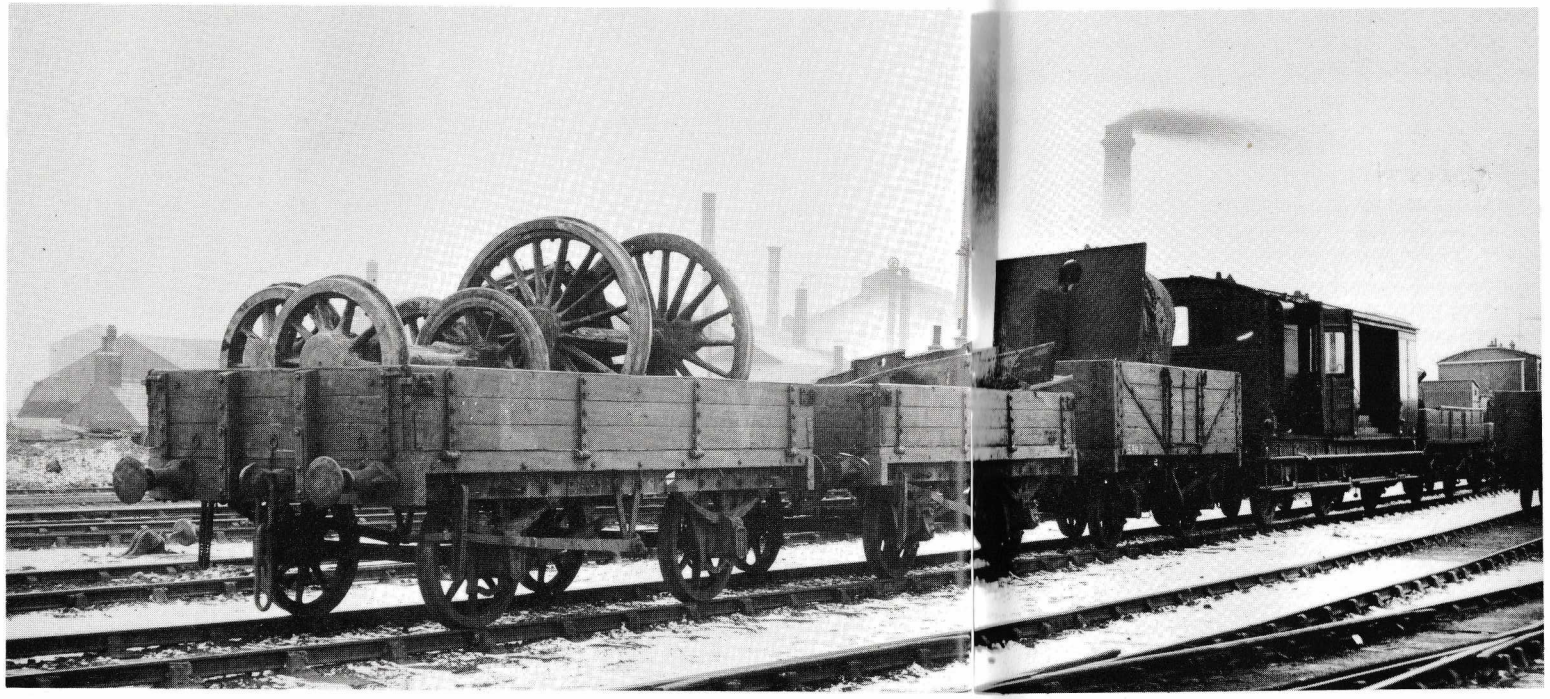
27.4.1881 *Mr Wright authorised to attend sale of contractors plant at Gisburn and try to purchase, for not more than £700 each, three small engines suitable for the Company's purposes at Fleetwood, Oldham Road, and Salford and which Mr Wright could alter so as to be worked by one man.*
Mr Attock to inspect 15 ballast wagons offered at the same sale.

11.5.1881 *The ballast wagons were sold at £37.10.0 to £38 apiece and the locomotives too went above the Company's limit.*

A COMPLETE RECOVERY
THE STORY OF No. 661

Alan Earnshaw M.Sc., Ph.D.

Following my article *The Trouble With Viaducts* in the last issue of *Platform*, the editor has persuaded me to follow up the story of the Penistone Viaduct collapse. The story of the plunge of 2-4-2 No. 661 from Penistone Viaduct down to the valley floor is well known, and the picture of the ruined engine has appeared in numerous publications, including a whole plate picture in Volume 1 of Marshall's History of the L&YR.



The wagons contain manageable pieces of the cut-up locomotive. The nearest wagon carries the two sets of carrying-wheels and the rear drivers while the second wagon has the left-hand water tanks. Both wagons are 3-plank dropside 10-ton types to Diagram 15 (numbers 7300 and 24641 respectively). The third wagon contains the firebox and part of the bunker water tank. This is a Diagram 16A 5-plank wagon which was a development from the earlier but similar 4-plank type built to Diagram 16. The tool van of the brakedown train stands in the background. Photograph taken 22 February 1916 at Penistone.

Photograph courtesy NRM F1864

It came as a surprise to me when checking the Horwich negatives at the NRM, that there was not a copy of this particular picture in the national collection. Fortunately I knew of the existence of an original print belonging to Mr. N. H. Lee, who at one time had been a relief signalman on the Penistone line. On calling to see the old gentleman I was loaned the picture, but also regaled with the story of the attempt to recover No. 661 from its precarious position alongside the River Don. It is that story I now relate, along with some additions of my own extracted from contemporary news reports of the time.

After the Aspinall loco's precipitous fall from the viaduct there was great consternation among the district superintendent's staff, as it was obvious that a major disruption would be caused to operations. Immediately all traffic from Huddersfield, Halifax and Bradford was diverted via Mirfield, Barnsley and Silkstone, to rejoin the GCR line at Penistone. This obviously involved a reversal of locomotives at Penistone, and as the turntable lay on the opposite side of the GCR main lines, extra signalling crew were required at both the GCR and L&Y boxes. Mr. Lee was one of the extra men drafted in, signing on at 4pm on February 3rd, having been moved from Clayton West. For most of the first week he was doing late afternoon shifts, and of course it was dark very shortly after he signed on, but his memory of the events and records in the train register are very precise.

On the evening of the 2nd a breakdown crew arrived from Wakefield, and this was followed that evening by a train of stone-masons which had been gathered from all over the district. At first light on the 3rd a jury fence was erected across

the ends of the viaduct, and a bosun's chair slung over the gap. Throughout the first day workmen concentrated in removing the loose rubble on the broken ends of the viaduct, thus clearing the way for recovery work below. Meanwhile a rail-mounted crane was run through from Huddersfield and stationed at the Denby Dale side of the breach, at the Penistone end a three-legged derrick was erected.

On the morning of the 4th (Friday) a team arrived from Horwich led by Mr M. P. Sells (Assistant to the Running Superintendent) to investigate the condition of the tank engine. It was proposed that the engine be righted with jacks and then hauled up a series of tracks laid down the hillside. In the meantime, all loose and damaged parts would be removed to reduce the weight of the locomotive. On that first day of operations, the left hand side tank was stripped off, the cab top removed and all motion work removed except the left hand connecting rod which was on 'dead centre'. Lighter brasswork was removed and locked away in the tool van of the breakdown train in the station.

On the following morning, the Low Moor gang arrived with oxy-acetylene gear. Although the weather was poor with frequent snow showers, dismantling continued. All heavy brass was taken off and the footplating was removed. Later in the day, the 'top brass' from Horwich arrived behind one of the huge Aspinall

TUESDAY 15th FEBRUARY—

Low Moor toolvan derailed owing to engine colliding with it at 8-30am. Driver discharged pending inquiry.

express engines (Mr Lee can not remember its class but recalls it to have been in ex-works condition which would suggest something rather unusual). The party included John A. F. Aspinall (General Manager), George Hughes (Chief Mechanical Engineer) and F. W. Attock (Outdoor Running Superintendent and son of the former C. & W. Superintendent).

As the ground was most unstable for righting the engine the first idea of recovery was dropped. Although the earth was ice-crusted on the surface, below it lay deep mud. It was therefore decided to haul the engine up the escarpment on its side. To do this a series of longitudinal baulks of timber were laid down the hillside in two lines about 12ft apart. These timbers were secured to posts driven as deep into the ground as possible and 12ft-long round timbers (possibly old telegraph posts) laid at right angles to the longitudinal baulks. Every sixth timber was made into a fixed roller by the use of a large spike driven through a large hole bored through the baulk and into the end of the pole. While this was being done, further cutting up was done on the engine. The third ring and dome ring of the boiler were badly dented in the fall so the boiler was cut up on the site and the firebox removed. By this time the engine was down to little more than frames and wheels. It was ready for being dragged up the system of rollers up the hillside.

In this way the crews attempted to emulate an early form of traction so successfully employed by the Vikings in moving their long-boats across land. A large donkey engine was placed on the crest of the hill, and this operated a winch from which hawsers were connected to the locomotive. This worked quite well until 661 reached the steeper part of the escarpment where the gradient was about 1 in 6. Then it would progress no further, for each time they tried to take the engine up the hillside the hawser either slipped or broke. On the second occasion it broke with such ferocity that the whiplash from it completely cut through a large block of masonry that had fallen from the viaduct. Additionally, when the engine was moved, the longitudinal baulks shifted allowing the rollers to escape. Nevertheless the attempt was repeated on three occasions but each time, as it neared the top, the engine slipped back and became damaged even further.

This recovery, prompted by the acute shortage of motive power during World War I, was a worthy attempt. It might have worked at any other time of year, but unfortunately the rocky terrain, and the frozen earth, had not allowed the support stakes to be driven deep enough into the ground. Coupled with the impossible location it had to be extricated from, the Locomotive Superintendent decided to call a halt and dismantle the engine on site. Further investigation of the NRM files revealed more pictures of the aftermath of the accident including the excellent view of the dismembered pieces of No. 661 awaiting return to Horwich.

For several months the clearing-up operations and the rebuilding work continued, and the last remaining piece of No. 661 (the chimney rim) found its way to Brockholes Station where it adorned a piece of drainpipe from the viaduct to make an attractive if not somewhat unusual platform flower pot.

Rolling Stock Committee Minute 22.1.1889

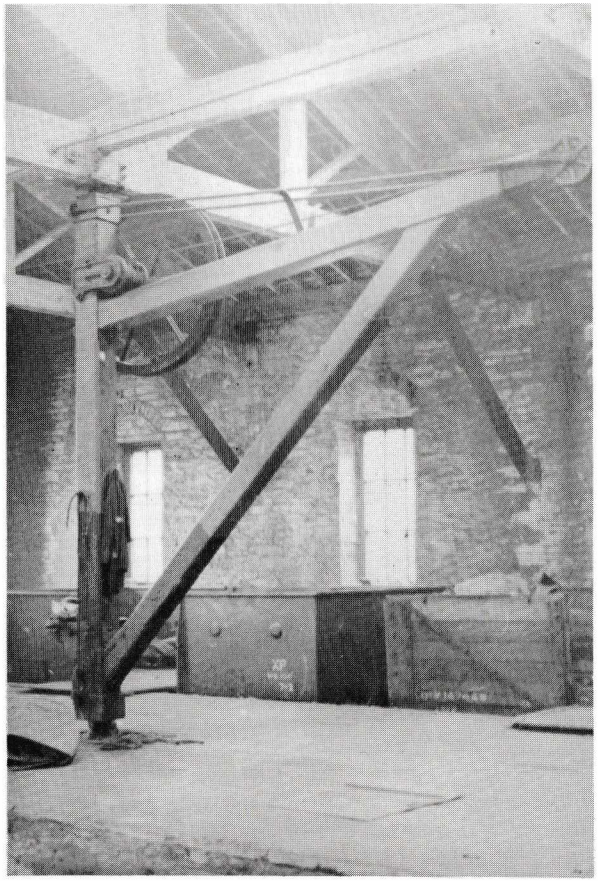
It was approved that 1,200 carriages "forming the most important trains" be fitted with sockets for destination boards.

Goliahs, Lifters & Jimmies

J. B. HODGSON

What we dismiss as 'cranes', was a very necessary part of almost every goods-yard, particularly those in the larger industrialised towns. Goods sheds of stone or brick construction had at least one internal means of lifting heavy or bulky loads.

These internal cranes, colloquially called 'jimmies', were of wooden construction—consisting of a vertical 12in square post mounted top and bottom into cast-iron pivots, below the working stage and beside or around the roof beams. The horizontal member, projecting from the vertical, with around 14 or 15-ft headroom, was generally about twelve feet long. Tenoned into the vertical, it was 'guyed' by a diagonal brace (9in. x 9in.) at six or eight feet from the vertical.



A typical internal crane inside the goods shed at Meltham. It was rated as three ton capacity and was one of a pair within the building.

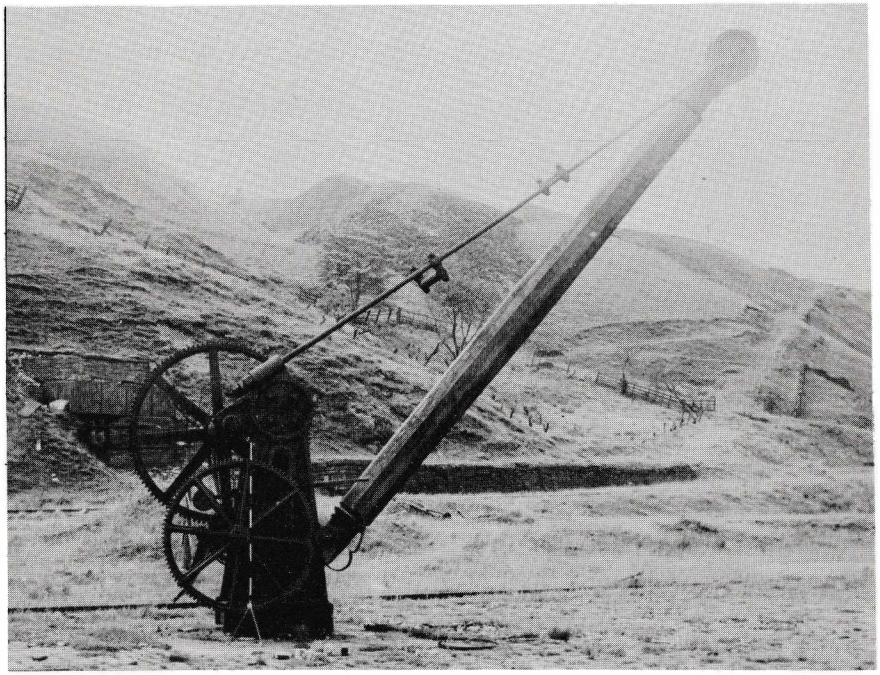
Photograph taken in 1951 by A. H. A. Bastable.

The iron strapping for the top joint also incorporated the bearings for the lifting mechanism. The drum for the lifting-rope incorporated an epicyclic gear train (similar to a bicycle 'three-speed' gear) which gave a 3-to-1 ratio to the input—a 5 ft-dia. wheel, carrying an endless rope, the power being manual. The only other control was also rope operated, being a ratchet which could be brought into use when lifting.

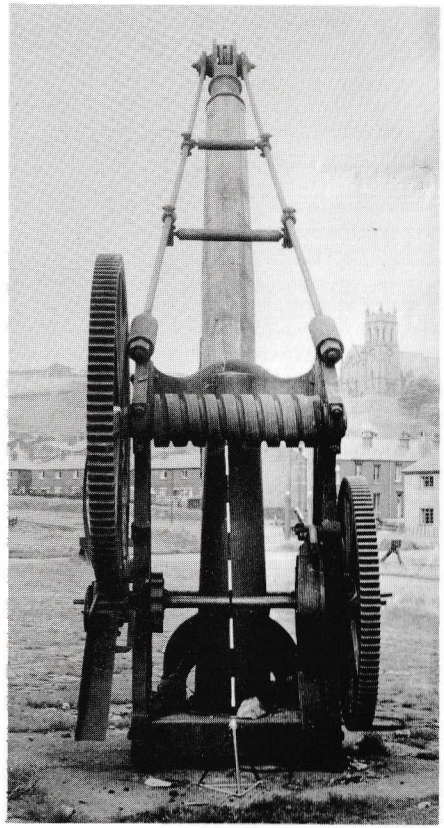
In the majority of examples, the load rope was generally looped around the load hook and anchored to the outboard end of the horizontal, giving a further reduction of lifting speed to 6-to-1. With the growth of safety consciousness but generally after 'Grouping', many of these 'Jimmies' were modified by the fitting of a geared windlass to the vertical column (generally three feet above the decking), the endless rope and ratchet removed, the former rope-drum becoming an idler, and the load rope leading down to the new winch.

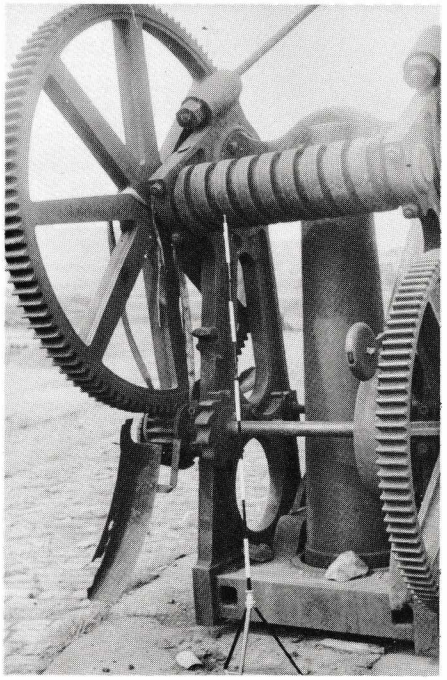
Finally, both the 'jimmy' and the wagon turntable were superseded by the fork-lift truck.

The fixed yard-crane was referred to simply as a 'lifter' in L.&Y. publications and existed in various capacities from 1½ to 10 ton. They all used link chain as a lifting method—again there were both single and double lift up to about six tons capacity, above this all known specimens are double-lift type.



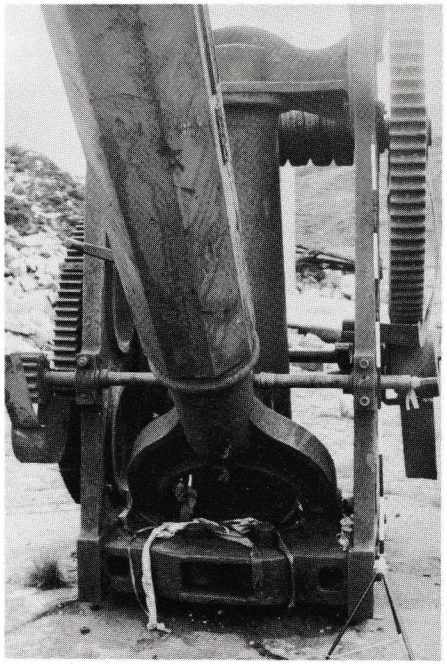
Eric Blakey photographed this crane at Facit and thoughtfully included a scale marker in all his pictures. It is divided into 3" sections of black and white. The 1-ton crane was typical of the LYR types found throughout the system. *(EB 14/5)*





When originally erected, all yard cranes were fitted with octagonal oak booms mounted into a lower pivotted base which extended up between the cast sides that anchored the guy rods.

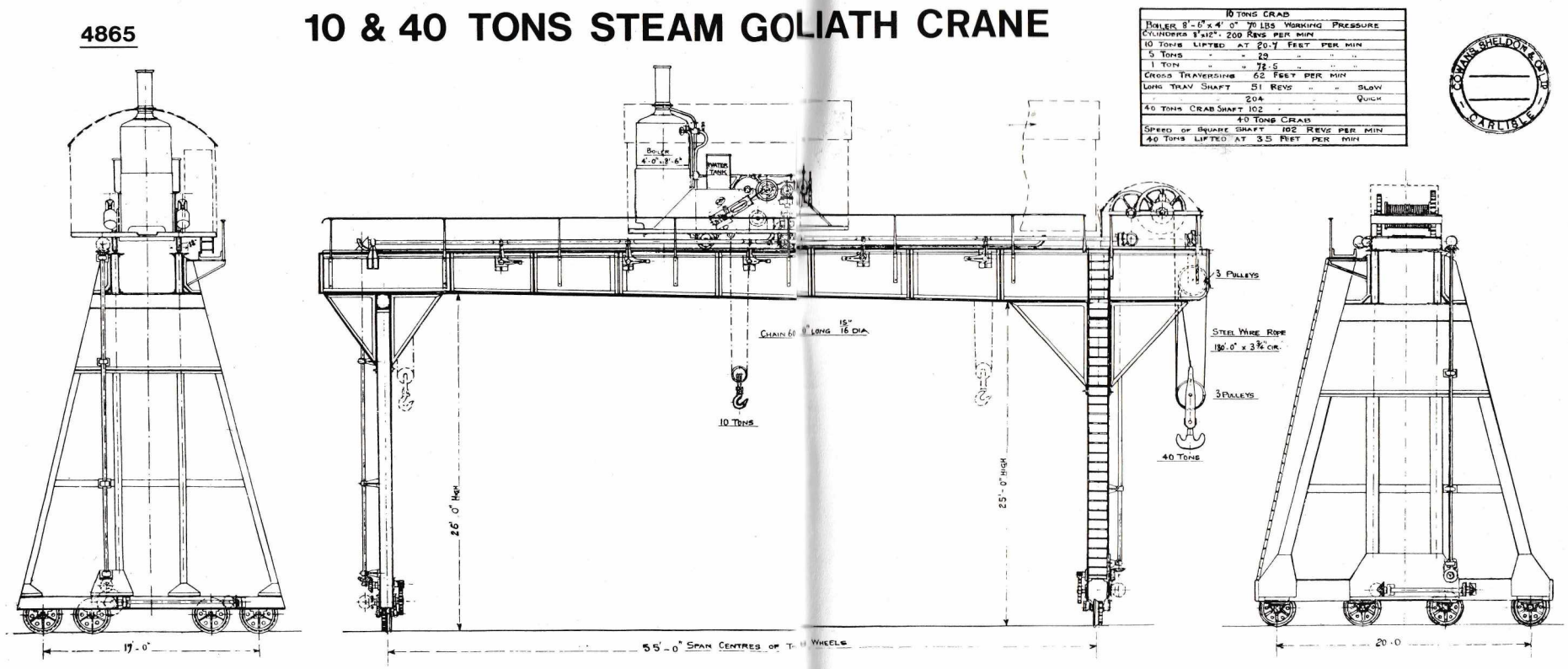
Up to 5 ton capacity, most cranes had double gearing while larger tonnage cranes sometimes had geared pivotting mechanism and iron jib.



Rear view (EB 14/6), front closeup view (EB 14/7) and rear view of gears (EB 14/4).

4865

10 & 40 TONS STEAM GOLIATH CRANE



L&Y RY. CO. ORDER Nº. 2560 19-2-02

4865

The pivot (cast in wrought-iron) was anchored well into the ground below yard level. For lower capacity cranes, generally no counter-balance (either fixed or adjustable) was fitted, although some in the higher capacities had counter-weights available.

Details of 'standard' cranes are very scarce, and it has been found impossible to document them, other than to take a census of the Clearing House *Facilities available at British Railway Stations* with the following results: Fixed cranes 10-ton cap. L&Y—68; 5-ton cap. L&Y—68, 8-ton cap.—9; 4-ton cap.—9, 3-ton cap.—17; up to 2-ton cap.—13.

It appears that the L.&Y. policy was that wherever there was a demand or regular use for a yard crane one was provided. Occasional or infrequent need was met by the supply to the yard of either a horse-drawn mobile crane, the nearest breakdown crane (5-8 ton capacity) or if the need was rather more long term there were available rail cranes of 8-ton capacity belonging to the Goods Dept. at Wakefield, Manchester (Oldham Road), and Liverpool.

After the grouping, there was a full inspection of all stations, and many of the wooden booms were found to be deteriorating—some were down-rated, whilst others were replaced by channel-fabricated ones.

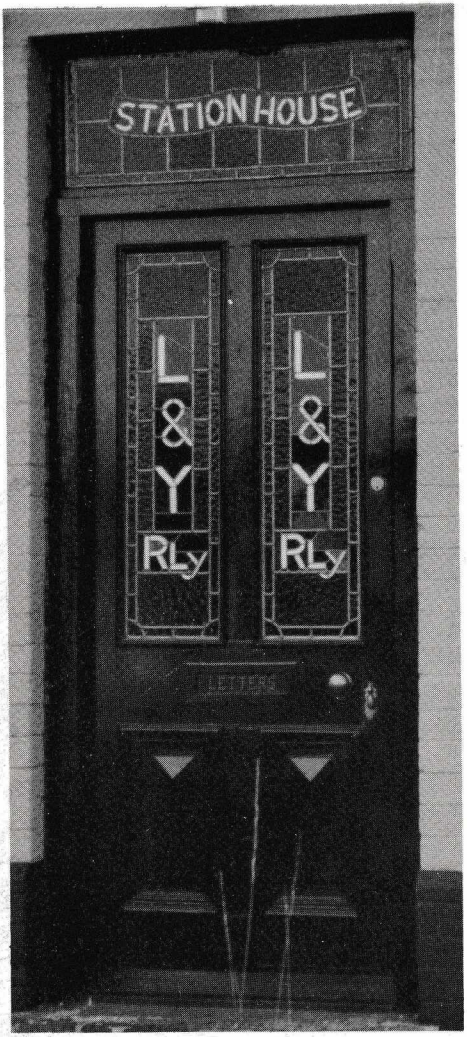
We now come to the part of the article which is the most difficult—and the least detailed: the L.&Y. called all cranes that were not 'fixed-pivot' by one name—Goliah. (No, it isn't mis-spelled, there never was a 't' in the old spelling!).

Generally, however, what is now known as an overhead crane was referred to by this name. Of the thirty-nine known examples, every one was different. Fourteen were of the moving gantry type whilst the others had a fixed overhead rail gantry along which moved the crane.

Capacities ranged from 8 ton to 40 ton, some were classified as 'manual', whilst the majority were 'steam'. Others were updated to 'electric' with hand-written additions such as 'shunting horse needed for long traverse'.

Also under this classification come the 'wagon-tippers'—the dockside cranes at Goole and Liverpool for dealing with the massive amounts of export coal—with capacities up to 50 tons.

To date no official lists of cranes, general layouts or detailed drawings of cranes or crane parts have been located, and it seems that this part of our railway is due to pass into obscurity.



HENSAL STATION

Front door and rear door of the LYR station house are quite unique.

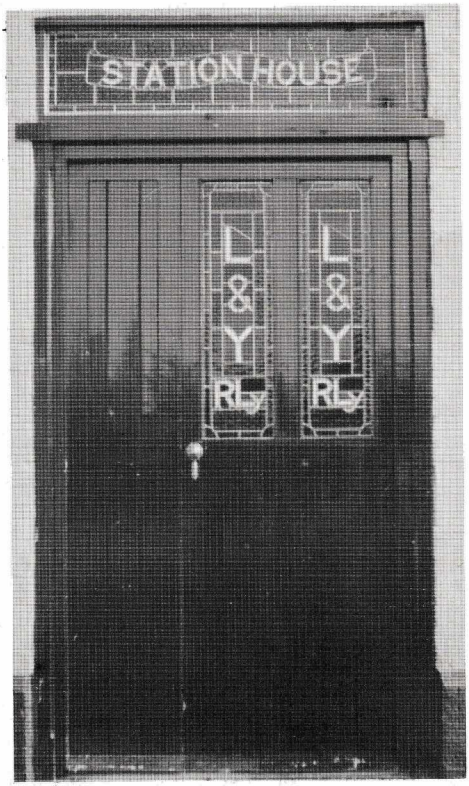


Photo – D. O. King

Typeset and Printed by
TRAINGLE PRINTING SERVICES
385 Bury & Rochdale Old Road, Heywood, Lancashire.
Telephone: Heywood 68843