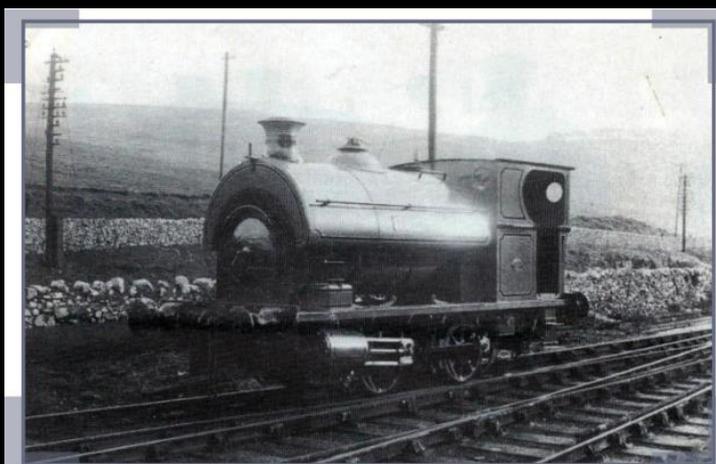


## Excerpt from Bahamas Locomotive Society Newsletter (July 1979)

This article from the Bahamas Locomotive Society was kindly donated by Mr Peter Flitcroft



### RS8 and the other BLF (ICI) Locomotives: An introduction by Mike Bentley

In response to many enquiries regarding our rather unique diesel loco RS6, I have drawn upon the vast knowledge of Mr. Harry Townley, now retired Chief Draughtsman, ICI, Buxton. Mr. Townley was responsible for the conversion of RS9 from steam to diesel and he produced the following article for the Historical Model Railway Society some time ago. I will precede this article with a brief history of the stock of B.L.F. and I.C.I. steam locomotives. I have many memories of these locomotives shunting at Tunstead, Peak Dale, Great Rocks, yet like many others, I did not take a real interest in them until it was nearly too late.

As a child I spent many hours at my grandparents at Peak Dale and my grandfather was in charge of the tipping operations above Peak Forest station. The usual locos on the job were RS5 and 8, propelling one wagon at a time up the zig-zag incline to the top of the tip high above the B.R. sidings. Each of the ICI locos was fitted with a bell, and I well remember the sound of these small locos as they climbed the gradient to the top, bell ringing and exhaust echoing from the valley sides.

All these workings are now abandoned and the only locomotive worked system is in and around Tunstead Quarry. RS16 was saved from the scrap heap and is now preserved.

Mechanical & Historical Notes on ICI Locos. All Locos were standard gauge, i.e. 4'8 1/2" except RS21, which was 2' 1" & RS28, 2' 11". R.S.= Rolling Stock.

RS No.	Maker.	Works No.	Date Built	Type	Cyls.	Boiler Press.	Wheels	Weight W/O Tons	T.E.	Disposed of.
1	A	1866	1921	0-6-OST	14 1/2"	160	3'3"	33	13.600	
2	M/W	1240	1894	0-4-0	12"x18"	-	3'0"	21	-	Sep.1945
3	M/W	1971	1918	0-4-OST	12"x18"	140	-	21	-	Dec.1932
4	A	1843	1919	0-4-OST	12"x18"	160	2'11"	23 1/2	9.500	circa 1964
5	M/W	1810	1913	0-4-OST	14"x20"	-	3'1"	27	13.600	" "
6	B	14/83	1882	-	12"x20"	120	-	18	-	Dec.1933
7	B	21/86	1886	-	12"x20"	130	-	-	-	Dec.1933
8	A	1913	1923	0-4-OST	12"x18"	160	2'11"	23 1/2	9.500	Converted to D/H.3/1960
15	A	1931	1924	0-4-OST	12"x18"	160	2'11"	23 1/2	9.500	
16	A	1908	6/1925	0-4-OST	14 1/2"x20"	160	3'3"	32	13.800	1966
21	H	291	15/9/1882	-	-	-	1'6 1/2"	7	-	3/3/50
28	S	6901	-	-	-	-	-	-	3.600	Sold

A = Avonside; M/W = Manning Wardle; B = E. Burrows & Son; H = Hunslet; S = Sentinel.

The RS numbers did not cease with RS28; they went up to RS89, the rest being diesels and petrol locomotives, many of them narrow gauge quarry engines, etc. and interesting as they were, too numerous to list; I have therefore dealt with the more important steam locos.

**Notes on individual locos:**

**RS2** was bought from the Greasborough Coal Co. about 1909 and carried the name "Greasborough".

**RS3** was broken up by Twigg (Matlock)

**RS6** carried the name "Davy" and was ex Brunner Mond 1923; reboilered in 1901. Name now on diesel loco.

**RS7** carried the name "James Watt" and was ex Brunner Mond 1923.

**RS21** carried the name "Peep o' Day" and worked the narrow gauge system in the "Bold Venture" quarry behind Peak Forest station; on withdrawal attempts were made to pre-serve this unique narrow gauge loco but little interest was shown by the authorities and she was broken up and sold for scrap to Messrs Narple & Gilliat for 57/6d per ton 3rd March 1950.



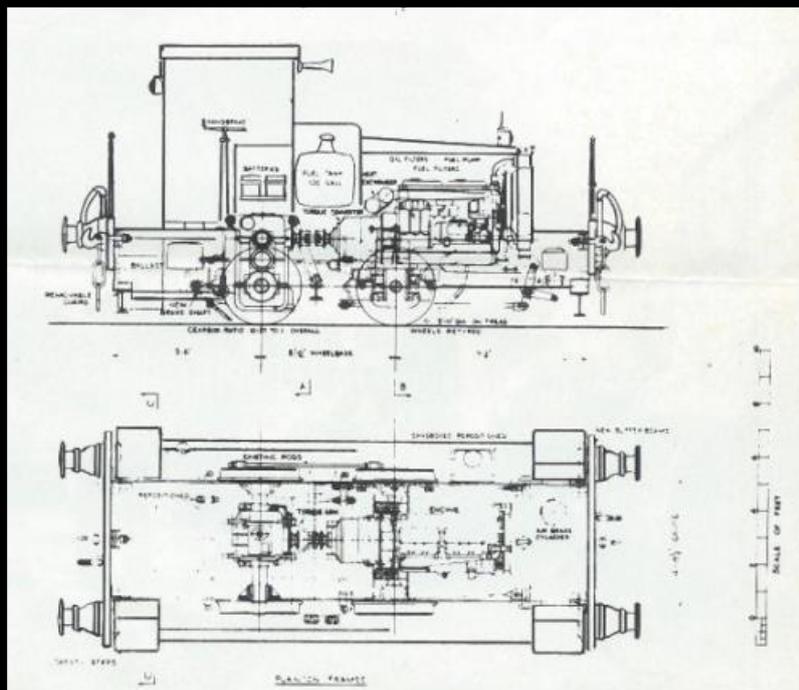
## The conversion of R.S.8 from Steam to Diesel Hydraulic - by Harry Townley

In the early years of quarrying, horses were used for quarry haulage and siding shunting; indeed, the horse was so important an asset that the Buxton Lime Firms Co. Ltd. had its own farm for breeding suitable animals. By the end of the 1914-18 war a few small second hand industrial steam locos had been acquired for shunting standard gauge wagons, and tentative trials were carried out with a petrol/mechanical "Simplex" made by the Motor Rail & Tramcar Co. of Bedford.

Although quarry tracks in general were about 2'-0" gauge, the installation of a large Buchanan Jaw Crusher at Long Sidings in 1922 with a feed of shovel loaded stone resulted in the adoption of 10 ton side tip wagons running on standard gauge tracks, for which additional Avonside locos were purchased. When shovel loading was abandoned a few years later these locos were available for siding shunting, and generally eased the duties so that the supply of locos was adequate for another 30 years in spite of developments at Tunstead, where advantage was taken to match the slope of the Midland Railway line and arrange the sidings to be operated mainly by gravitation.

Although a Buchanan Crusher was installed at Tunstead, the quarry haulage reverted to 2'-0" gauge but with specially designed tubs to be unloaded by tippler to give a high input rate. Then in 1945 a shortage of labour forced the introduction of shovel loading for which the tubs were too small. Pneumatic-tired articulated end tip trucks of 10 ton capacity were designed to feed the plant and successful shovel loading resulted since by then a highly efficient scrubber and washer had been developed to clean the stone. The large Gyratory Crusher of No.2 unit 0941 was fed by 20 ton side tip artics, which were gradually up-graded (and overloaded to some 30 tons., A new generation of trucks was needed and a 50 ton payload type was produced in 1957. Amongst several novelties this vehicle had a hydraulic torque converter directly mounted to the 200 hp Rolls Royce engine in place of the usual mechanical gearbox (it saved some 400 gear changes per shift).

During this time several attempts had been made to introduce a diesel loco for siding shunting, but all these failed because of the high cost of the machine. However, suitable labour to service and maintain steam locos was becoming scarce and serious thoughts were being given to the use of something like the Rushton 165 Diesel Mechanical when it was suggested that if the power unit of the 50 ton truck was mounted on the chassis of an abandoned steam loco an effective diesel hydraulic would result. Its duties would comprise (a) shunting sidings up to about 7 or 8 mph; (b) control of 1000 ton hopper trains whilst loading on a 1 in 90 down gradient, and (c) take loaded wagons to the quarry up a gradient as steep as 1 in 20 locally.



Preliminary checks indicated that these duties could be accomplished, but for (b);-adequate exhaust capacity was necessary, while for (c) special care re brakes should be taken to prevent a runaway down the incline. Reviewing the general loco requirements in the light of new conditions, it was decided that those could best be met by converting the three similar Avonsides, RS 4/8/15, to Diesel Hydraulic and retain the two larger Avonsides RS1/16 as (steam) standbys. The three smaller Avonside locos were 4 wheel saddle tanks with two outside cylinders 12" x 18" driving 2'11" dia. wheels set at 5'0" wheelbase. At 850 of the 160 lbs/sq.in. boiler pressure the nominal tractive effort was 9500 lb. while the weight in working order was 23-1- tons.

That we should attempt to design and construct our own locos brought comment from colleagues in other divisions, but our workshops had been developed to maintain heavy steam scrubber and crusher parts so that it was a job well within our scope, and a useful standby when repair work was slack. Moreover, a loco "off the shelf" would have much we didn't want and omit a lot we did.

The North British had a Voith trans-mission with a torque converter and 2 gear stages with fluid couplings; since these two gear stages did not operate until a speed of some 10 mph was reached, they would never be used in our duties.

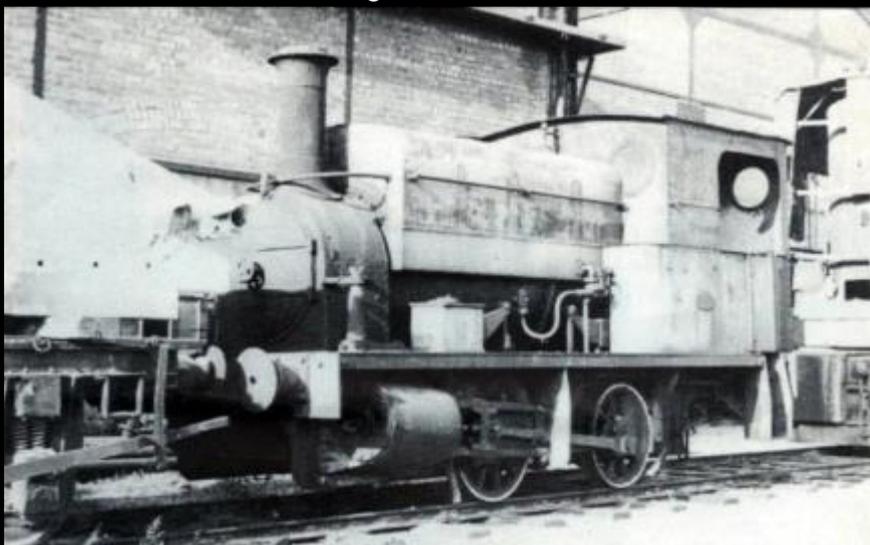
The Yorkshire Engine Co. came close to our design, but to provide the 20 mph required by BR a lock-up clutch was included in the converter. Both these locos were short on exhaust capacity. In one, a 275 hp engine was run light at 904 full speed, just to provide adequate vacuum, whereas RS8 will do this with the engine at tick-over speed. In view of the quarry incline special attention was paid to loco braking, for, in addition to the normal system, hydraulic and engine exhaust brakes were provided.

The original scheme was for nearly a scratch built job with specially made bevel reversing gear-box for the final drive, with a chain reduction to the driving axle, but as work developed it became more like a "kit" job, with bits and pieces "off the shelf", albeit in some cases slightly modified.

The most difficult was the final drive for which the standard railcar unit would have served had it not been too high a final speed. Then a similar box but with an additional reduction Was found, but it was intended for use with a jackshaft. However, the makers, Self Changing Gear Co., were prepared to float it on the driving axle as a simplification, which proved successful. The coupling between the converter and the gear box was very short to cope with the angularity involved, but a special propeller shaft was used.

A large radiator was included since the losses in the converter result in heating the oil also to be cooled. Overheating does not occur even when starting heavy loads. with the wheels increased to 3' 0" dia. and a final gear reduction of 10.37 to 1 the tractive effort was greater than that of the Avonside at speeds below about 13 mph, and might reach 12,500 lbs. below 2 mph when its value would be limited by slipping due to rail condition.

When the rebuilding of the chassis was completed: the top works were arranged on site to the directions of Mr.C.W.Talbot, and the unusual appearance provided shelter and protection for the shunter within the outline of the loco as well as giving enormous improvement to the



driver's view. The loco fulfilled expectations and was popular with the operators, but no more were converted owing to one of those quirks of fate.

About this time the Lime & Alkali Division were merged into the Mond Division, and it so happened that a realignment of the sidings at Northwich to enable more use to be made of their larger diesels had, consequently, made redundant several smaller diesels which were thus available for use at Buxton. Since the cost of improving visibility on these locos was much less than a conversion job, the original programme was no longer justified.

By 1973, the question of maintenance had to be reviewed and the question of spares for a one-off machine. If the loco was to continue its full duty it would soon require a major overhaul, although still adequate for a lighter duty. Since this was exactly the type of loco needed to handle "dead" locos at the Dinting Railway Centre it seemed appropriate that the RS8 as a unique loco in its own right might actually do useful work as a preserved loco. Successful negotiations with ICI Ltd. resulted in its being delivered to the Centre in May 1974. There had been some delay while it continued its normal work longer than planned, owing to one of the other locos running away down the quarry incline, an incident which justified the concern with braking on the converted RS8.

It is nice to know that the loco is still giving satisfactory service in its new home.

#### Features of the body shapes

1. Extreme visibility for the driver in all directions
2. Upper portion of narrow width to permit the driver to look outside the cab without risk of danger from adjacent columns to overhead bunkers.
3. Availability of shunter to pass to opposite side of train without danger.
4. Safety steps to allow shunter to travel with the loco.

