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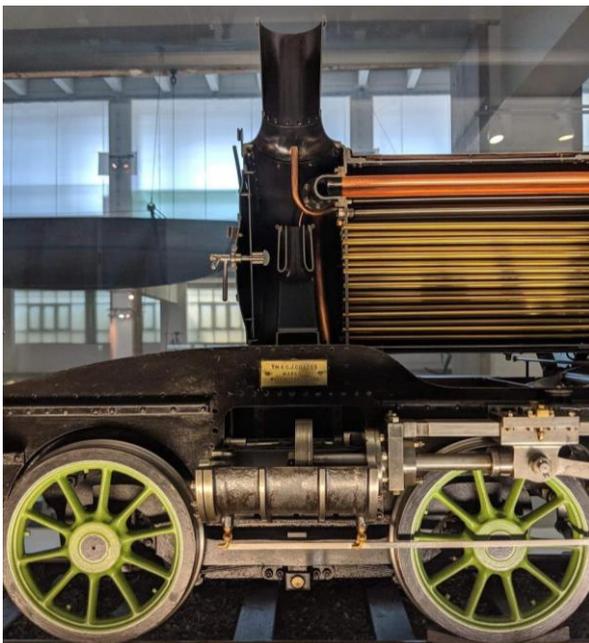
Dear 563 Supporter,

Welcome to another packed issue of the 'T3 Times'. As you will see progress continues to move quite rapidly at the Flour Mill thanks to your hard work and generous support. Thanks to all our supporters who joined us on the 26th! It was great to be able to speak to you (virtually, for now) and answer your many questions about 563 and her ongoing restoration. If you didn't get a chance to make it, you can watch the video here: www.youtube.com/watch?v=H3MPILWbIjY&t=3449s

T3NDER Club Launch

Those of you who attended our 563 Online conference will already be aware that we are formally launching our 'T3nder Club' to help restore 563's tender to operational condition. We are looking for 100 supporters to each donate £500 by either £50 or £100 standing orders. This will enable us to restore the tender at Swanage Railway's Herston Works, ensuring it is ready at the same time as the rest of 563 when it comes back from the Flour Mill. Thank you to those who have already signed up!

For more information on the T3nder club, head to www.563locomotivegroup.co.uk or email 563locomotivegroup@swanagerailway.co.uk for details.



Adams Vortex Blast Pipe

A few months ago, a supporter Peter Swift contacted us about which blast pipe the locomotive had fitted, a later Drummond one, or an earlier Adams 'vortex' blast pipe. We quickly confirmed that 563 is fitted with a later cast Drummond blast pipe, nevertheless, we thought it worth explaining more about the vortex blast pipe to our supporters.

The cutaway of the front end of a model of an Adams X2, viewable at the Science Museum, shows the vortex blast pipe. Colonel H.C.B Rogers in *Steam from Waterloo* describes the construction of the blast pipe, which was made of "an outer annular orifice for the steam and an internal circular funnel for the gasses; the latter formed the upper portion of the bell mouthed scoop which was open to and faced the bottom rows of boiler tubes."¹

¹ Rogers, Colonel H.C.B (1985), *Steam from Waterloo*, London, David & Charles, p.g. 46

The principle advantage of the vortex was that the: *arrangement allowed the exhaust steam to be emitted at a lower velocity than with the ordinary blast pipe, and the area of its [the exhaust's] escape was so proportioned as to reduce to a minimum the back pressure on the pistons. The reduction of the velocity resulted in a more uniform flow of air through the fire, so that no holes were formed in it even when it was thin, and no large cinders were expelled from the chimney, thus allowing spark arrestors to be dispensed with.*²

The impressive performance runs of X2 class locomotives published by Adams and Pettigrew in 1896 (which will be subject to their own article in the T3 Times in the future), have been attributed to the vortex blast pipe. Furthermore, the famous French engineer, Andre Chapelon, who did much to advance steam locomotive efficiency, held a high opinion of the vortex blast pipe, writing that “The fouling of the annular blast pipe [by carbon and solidified oil] seems to have been the sole reason this excellent arrangement was, rather prematurely, moreover, abandoned”.³

It seems that the extra maintenance needed on the vortex blast pipes was the principle reason for their replacement with a simple cast variety, along with a cast chimney and removal of the piston tail rods, measures which crews stated “ruined the performance”⁴. Whether this was the case is debatable, and, Bradley takes a more balanced approach on assessing the benefits of the vortex:

*“There is no doubt that the vortex blast pipe with its greater surface area to entertain gasses materially assisted steaming, but to retain this ability regular attention was necessary to remove the heavy deposits of carbon and solidified oil, attention that became the next man's job after relegation to secondary services. As a result steaming deteriorated quickly between shed days and the less susceptible Drummond plain blast pipe probably gave equal, if not superior, service.”*⁵

At present, we aren't planning to get a vortex blast pipe re-made for 563, believing that performance with the existing blast pipe should prove sufficient for hauling 5 to 6 coaches at 25mph on the Swanage Branch. That said, we aren't ruling it out, it certainly would be interesting to see if the claims made against the vortex stacked up, any improvement of performance and fuel consumption is always to be welcomed.

² *Ibid*, p.g. 46

³ *Ibid*, p.g. 46

⁴ Bradley, DL (1985) *An Illustrated History of LSWR Locomotives: The Adams Classes*, London, Wild Swan, p.g. 124

⁵ *Ibid*, p.g. 124

Engineering Update



Since our last update, work has continued on the inner firebox of 563. This has included the team marking and drilling out countless holes in the inner firebox for the stays.

Alongside this, they have offered up the new foundation ring to the inner firebox. This is a substantial solid section of steel. In the photo below the inner firebox can be seen alongside the upturned boiler barrel in the Flour Mill.

The angle ring for the front of the boiler barrel arrived at the London Gateway on the Santa Vanessa from South Africa on 10th April. Thankfully it didn't need to go via the Suez Canal, so it should be at the Flour Mill very soon.

The Flour Mill has also taken delivery of the girder stays which are currently being machined ahead of eventual fitment to the top of the firebox.



Tender

Following concerns raised last month about the possible state of the axles on the tender, one of our group went on to take a look at the tender to see if we could establish the likely state of play.

The axles themselves appear to be in good condition with no undue corrosion, however, the construction of the axle boxes means that it's not possible to ultrasonically test these without lifting the chassis away from the wheelsets. This is because the axle boxes are a cast assembly with no removable front as is the case on lots of other, later, locomotives, see the picture below. Our current thinking is that the tender was taken on

a wagon to York because the axle boxes prevented the axles from being inspected on the move, however, we won't know for sure until we get the wheelsets out for ourselves.

We are awaiting confirmation about when space in Herston Works will become available, but expect progress on this to proceed quite rapidly, funds permitting.



Lubricator

We're relatively lucky compared to many restorations because we haven't had to source or re-make hundreds of missing parts for the locomotive, as is the case with many Barry Scrapyard restorations. One of the items we were missing was a displacement lubricator, this is an essential component and we were committed to trying to find something that looked appropriate in the cab. After two years of searching, we've finally managed to source a two feed lubricator, in the form of a Detroit twin 5A. This will be sent to the Flour Mill for fitment when the time comes.



Standing Order Stays!

Fancy a unique piece of 563? Anyone donating a significant amount (at least £100 a month in standing order for 12 months, or equivalent, will receive your own extremely rare piece of pre 1940s copper from 563 itself shown below. Once we get the rest into a lathe we'll be sending these out in batches to our supporters.

Please do get in touch with us if you have any questions, comments or suggestions about the T3 or what you would like to see in the 'T3 Times'. We'd love to hear from you. Please email to 563locomotivegroup@swanagerailway.co.uk or by post to 563 Locomotive Group, Swanage Railway, Station House, Swanage, DORSET, BH19 1HB.