

What really happened to Davies & Metcalfe No.2?

Great Western Railway records maintain that in 1924 No.1213, formerly Vale of Rheidol Railway No.2 (Davies & Metcalfe 2 of 1902), was given a Heavy General repair, in the course of which it was modified to conform with two locomotives, Nos.7 & 8, which Swindon had built the previous year for the Vale of Rheidol branch. However in 1986, in his book, "The Vale of Rheidol Light Railway", C.C. Green claimed it was a totally new locomotive to such a different design that no part of one would fit the other. Since then that view has become generally accepted. It is the purpose of this article to test that claim against contemporary documentation, GWR locomotive policy and the accounting laws and procedures which applied in the 1920s.

Although the Vale of Rheidol Railway locomotives did not become Great Western Railway stock until it acquired the Cambrian Railways as part of the Grouping in 1922, the GWR was already familiar with the Vale of Rheidol branch. It had had a joint station with the Cambrian at Aberystwyth since 1906, and gave the (at that time independent) Vale of Rheidol Railway some free publicity in the GWR Magazine, September 1907, describing the Davies & Metcalfe locomotives as "of a peculiar design" but "strong, powerful, and specially built with the view of coping with the heavy passenger traffic during the summer months". The rapidly expanding tourist market after World War One added to that traffic and the GWR was quick to plan extra capacity even before the acquisition of the Cambrian Railways, under the terms of the 1921 Railways Act, was formally completed in July 1922. The intention was to add two carriages to the summer peak trains, but that extra weight was beyond the capacity of the existing locomotives so the GWR's recently appointed Chief Mechanical Engineer, Charles Collett, was instructed to produce a solution. Some Directors and the General Manager, Felix Pole (also recently appointed), wanted this to be done in time for the 1922 summer season, but given the workload imposed on the Swindon Drawing Office by the Grouping that was unrealistic. A tetchy exchange of correspondence between Viscount Churchill (the GWR Chairman) and Felix Pole on the one hand, and Collett on the other, led to a revised target date of the 1923 summer peak^[1].

The Rheidol branch motive power inherited by the GWR in 1922 consisted of the two Davies & Metcalfe locomotives and a Bagnall 2-4-0 tank. That was inadequate for the summer peak, resulting in the periodic hire of a locomotive from the Ffestiniog Railway. The GWR would have had to do something to improve the situation even without the decision to add an extra two carriages to the summer peak trains, but to guarantee the summer timetable that decision imposed a requirement for three locomotives of greater power than the Davies & Metcalfe design. However, for the rest of the year the older design was sufficient. As the minimum requirement was for three 2-6-2Ts building at least one new loco was unavoidable, but two were required if the revised summer loadings were to be introduced in 1923. Had only one been authorised the two existing locos could not have been taken out of service for rebuilding to the same standard until the winter of 1923/24. After the failure to meet the 1922 target delaying the improvement for yet another year to 1924, with the inevitable resulting criticism of the GWR from passengers about overcrowding in the 1923 summer peak, it is hardly surprising that in January 1923 the Board opted to approve two new locos^[2]. As an interim measure 1212 (Davies & Metcalfe 1) was given a General Repair at Swindon early in 1923, remaining largely in original condition, to help maintain the existing service until the two new locomotives, Nos.7 & 8, were completed at Swindon in July 1923. The full Board, and certainly its Traffic Subcommittee, would have been aware that, whilst two were acceptable as a short-term measure for the 1923 season, three of that design were necessary to guarantee the projected service level in future years, and

also that once the two were in traffic one of the D&M locos would be surplus to requirements. It would either have to be rebuilt to the same specification as the new design or scrapped and replaced by a third new locomotive. Given the extent of the design changes rebuilding would not save a great deal of money, probably only a few hundred pounds, but for a branch which itself was only marginally profitable it may still have been considered worthwhile. The GWR was prepared to spend significantly more on the Rheidol branch than the impecunious Cambrian and VofR had, but they still tried to economise where they could, e.g. using second-hand equipment such as the “new” water tanks installed at Aberystwyth and Devils Bridge. Therefore designing the new locos so that some parts were common with the existing design and could be re-used was in line with that policy, and indeed also with Collett’s general preference to avoid totally new designs. However, Green maintained that the 1213 which returned to Aberystwyth from Swindon in July 1924, and which was certainly mechanically identical to Nos.7 & 8, was a brand new locomotive, constructed on Collett’s orders without authorisation from the GWR Board, this accomplished by disguising the new locomotive as a set of spare part orders rather than raising a new Swindon Lot order (which would have required Board approval). It has also been suggested that it was presented as a rebuild because shareholders would object to capital being raised to pay for a further new locomotive operating on such a minor branch.

To consider the validity of Green’s claims in detail:

“The Power of a Great CME”

Green used that term to explain how Collett was able to build a completely new locomotive without authorisation. He did not give a reason why Collett should want to act in that way but the implication was that Collett thought it was necessary to provide a third locomotive of similar power for the Rheidol branch but didn’t believe he would get Board approval. If so, Green clearly didn’t understand the role of a Chief Mechanical Engineer, who he seemed to regard as a kind of oriental potentate, surrounded by flunkies ready to do his bidding without question. Actually, in normal circumstances a CME did not determine motive power requirements – that was done by the Traffic Committee or the full Board. It was the CME’s job to provide the motive power to meet those requirements within the financial limits imposed by the Board and any weight/route restrictions imposed by the Civil Engineer. If a CME didn’t agree with that policy he had either had to accept the Board’s decision or resign, as, for instance, Deeley did, in part because the Midland Railway Board insisted on maintaining the “small engine” policy with which he disagreed. There were indeed a few exceptions where the initiative for new construction came from the CME, perhaps the best-known example being the small steam railmotor (“The Bug”) built at the request of Dugald Drummond of the LSWR, but that was with the approval of the LSWR Locomotive Committee, on the grounds that because Drummond, in his dual role as Locomotive and Running Superintendent, spent much of his time touring the system The Bug was cheaper than providing special trains to ferry him around. What a CME couldn’t do, and certainly not Collett in 1924, was to act just as he pleased in the way Green claimed, ignoring the Board, the Locomotive Committee (which was a sub-committee of the Board) and the Chief Accountant. Collett’s position within the GWR management structure was actually inferior to that of his predecessor, G.J. Churchward. He had reported directly to the Board whereas Collett reported to the General Manager, Felix Pole. Pole had regular meetings with Collett to discuss current work in progress. The Chairman of the Locomotive Committee also met with Pole in advance of the monthly Locomotive Committee meetings to brief him on the agenda, so Pole was well-informed of developments at Swindon. Moreover, he was one of those who had advocated increasing capacity on the Rheidol branch as early as 1922, so he would have taken a particular interest in its motive power. However, as he pointed out in his memoirs, even Pole could not instruct the CME to build a new locomotive on his authority – had he tried to do so the CME, although his subordinate, would have been obliged to reply “I cannot do this unless you obtain the specific authority of the Board”^[3]. Even if Collett (or Pole) had wanted to build a new loco surreptitiously there was no method by which it could have been done undetected. There would have been hundreds working at Swindon, from the Works Manager down to gangs on the shop floor, who would have been aware of the true nature of the work.

It is also fallacious to believe that the Chief Accountants Office at Paddington could be kept in the dark. They would have been aware of key components ordered for the job. There were two groups of accountants based at Swindon. One set were in the Cost Office, as part of the CME’s Department. They dealt with the routine costs of running Swindon works (wages, consumables etc) and it included the team who estimated the costs of projected repairs, new construction and the accounting costs of work done. However, also based in the CME’s building at Swindon was a section of the Chief Accountant’s Department, who did the purchase ordering for stores and handled the Goods Received paperwork^[4]. The resulting purchase invoices went to the Accounts Office at Paddington for approval - the CME’s Cost Office at Swindon had to wait until the details were sent to them before they could complete their material costings. Swindon could not produce steel plate, including that for frames. It was bought in from steelworks to the specification required for a particular job, and the cost was charged to that job. Churchward’s reports to the Board confirm that in his day plate was only ordered for the current year’s building programme; that policy had been tightened by Felix Pole in his attempts to reduce costs. Steel prices had reached a peak just after the First World War and then fell steadily during the 1920s, therefore there was no financial advantage to ordering plate in advance of when it was required. New frame plates for a narrow gauge engine would have been particularly noticeable because of their different dimensions compared to standard gauge – e.g. they were just $\frac{3}{4}$ “ thick compared to $1\frac{1}{8}$ “ or $1\frac{1}{4}$ “ on the standard gauge locos being built at that time. If new frames were made for 1213 it could only have been with the knowledge and approval of the Accounts Office at Paddington. Wheels, axles and tyres were also bought in, so needed approval. Even the issuing of ordinary stores was strictly monitored^[12]. Not only Felix Pole but also the Chief Accountant, Ralph Cope, exercised tight control over

expenditure. When he retired in 1938, after twenty-two years in office, there was this poetic tribute to him in the Great Western Railway Magazine (May 1938):

*If some department did dispose
To dissipate the treasure,
Sir Ralph with righteous wrath arose,
And dire was his displeasure.
Such miscreants were made to feel
His sword-thrust swift and bold*

Summary: Even if Collett had wanted to behave in the way Green claimed he could never have got away with it. It would have been a direct challenge to the authority of the Board and would have led to his dismissal and the end of his career, at least as far as mainline companies are concerned. There is no valid basis for Green's assertion that the work on 1213, whatever its true nature, was unauthorised. Green misunderstands the role of a CME, shows no understanding of the GWR's management structure or the controls that existed to prevent unauthorised expenditure of company funds, and he didn't even mention the dispute between Pole and Collett over providing the improved motive power as early as 1922. Collett's reaction to that request indicates that personally he regarded the Rheidol branch as a low priority and was hardly likely to risk his career for it.

The alleged Accounting Scam

The more usual motive suggested for disguising 1213 as a rebuild was that the shareholders would object to spending capital on a new locomotive. However, the costs incurred on 1213, and in fact on the entire Rheidol branch, in 1923/24 hardly justified such concern. A few figures from the 1924 GWR published accounts held at the National Archive (RAIL1110/187) help put matters in perspective:

Authorised share capital	£152,863,626 (of which £146,442,493 created)
Gross receipts	£36,408,335 18s 2d
Expenditure	£30,339,505 7s 4d
<i>Of which</i>	
Capital expenditure on rolling stock	£522,263 10s 0d (£49,873 13s 9d on locomotives)
Expenditure on the renewal account	£4,276,739 2s 5d (£2,153,224 8s 5d on locomotives)

For comparison, the total extra expenditure accounted for on Vale of Rheidol rolling stock in 1923/24 (a heavy overhaul of 1212, the work done on 1213, the construction of Nos.7 & 8 and four extra carriages) was less than £12,000, spread over two financial years. That may have been a lot compared to what the impecunious Cambrian Railways had been prepared to invest, but in GWR terms it was chicken-feed. Why would shareholders care about such a small amount - how would they even know about it. The Rheidol Branch wasn't itemised separately in the published Accounts (nor is there any reason why it should have been). A significant proportion of the 125,000 shareholders had probably never heard of the Rheidol. Therefore it is hard to see why shareholders would have been shouting "Resign, Resign" at the 1925 AGM because of what was spent on 1213. Certainly shareholders did raise objections to proposals for capital expenditure, particularly as the dividend level declined in the 1930s, but those objections were about much bigger schemes, like mainline electrification. When Collett was appointed CME the Board asked him to find ways of reducing the cost of running Swindon Works by £500,000^[5] – that is the sort of action the shareholders would have been following. To put this further in perspective, in June 1923 the Traffic Committee recommended for Board approval expenditure of £94,500 on improving the standard gauge facilities around Aberystwyth including "extension of platforms and coverings, improvement and more convenient arrangement of station buildings, doubling of the single line between Llanbadarn and Aberystwyth, provision of sidings for carriage cleaning and extension of locomotive depot and moving the turntable to a more convenient site" (RAIL250/354). That was about eight times as much as was being spent on the narrow gauge improvements. The expenditure was considered justified because of "the increasing popularity" of Aberystwyth in the rapidly expanding tourist market in the 1920s (although some of that expenditure was deferred – it would be 1938 before a new locomotive shed was built).

Green claimed that the cost of 1213 was "cooked out of the Repairs & Renewals fund". There were laws governing the accounting practices of public railway companies which were different from other businesses, based on a determination to avoid the overstatement of capital assets and a repetition of the share collapse following the Railway Mania of the 1840s. The railways were legally bound to charge fixed assets, including locomotives, to the Capital Account at first cost, and also design improvements at first cost (known as betterment), but all repairs and replacements had to be charged to Revenue. There was also an obligation to maintain locomotives and rolling stock in perfect working order, in effect as good as new, based on the assumption that, in theory, its working life could be extended indefinitely. Accordingly, rolling stock assets did not depreciate – they retained their book value throughout their lives. If a locomotive was replaced the replacement inherited its book value, with the actual costs charged to the Renewal Fund. An obvious flaw was that this did not take into account that rising train weights, particularly by the turn of the 20th century, or technical advances could render existing locomotives obsolete. This led to growing concern that insufficient provision was being

made for rolling stock replacement. Accordingly, the 1911 Railway Companies (Accounts and Returns) Act defined two types of renewal – Partial Renewals, where an item of stock was repaired or rebuilt, and Complete Renewals, which was intended for new items replacing older ones, possibly including some second-hand parts but nothing likely to affect its anticipated financial life (although that would be a matter of judgement by the railway's engineers). Complete Renewals had the accounting date set to the current year and were given a book value based on the accounting cost (or the invoice value for those purchased from outside contractors). Partial Renewals retained their original accounting date and book value, although if a rebuild represented a sufficient enhancement the extra “betterment” cost could be charged to capital. The GWR used betterment primarily for the authorisation of building programmes – the Locomotive Committee could only authorise expenditure on a like-for-like replacement basis. If design improvements increased the estimated replacement cost the Traffic Committee had to authorise that betterment, on the basis that they had to justify the need for the improvements. A rare example of the GWR applying betterment at the level of individual locomotives were the first forty 72xx, rebuilds from 52xx with low mileages, which were given a betterment of £200 each for the extended bunker and trailing axle which had significantly increased their operating range. Although not officially stated as such, betterment in all but name was also applied to the eighty ex-ROD 2-8-0s purchased by the GWR in 1925. Normally the book value should have been the purchase cost (£1500 each) but because they all needed extensive repairs before they could perform useful service the cost of those repairs was added to the book value.

In fact, the charging of new locomotives to the Capital Account had been in decline for some years even before the Grouping. In 1901 the GWR charged 73 new locomotives to Capital, taking the capital locomotive stock total to 2061. That same year 18 completely new locomotives were built on the Renewal Account, being direct replacements for withdrawn capital stock locomotives; another 215 existing locomotives were either fitted with new boilers or more extensively “reconstructed”. Further construction on the Capital Account took to the stock total to 2596 by the end of 1909 but the total then remained static until the Grouping. The last Swindon Lot for new locomotives to be charged entirely to Capital was Lot 175, for ten ‘County tanks’ completed in 1909. Between then and the Grouping 572 completely new locomotives were charged to the Renewal Account and 1330 fitted with new boilers or extensively reconstructed^[6]. The Grouping in 1922 resulted in a big influx of absorbed locomotives to capital stock, but thereafter the stock total was stable, in fact shrank slightly through the Grouping era. That had implications for costing, because the book value which had been allocated to locomotives scrapped or sold created a pool of unallocated capital which had to be reallocated to new locomotives before any could be charged directly to capital. Those new locomotives were implicitly regarded as replacements for the withdrawn stock, even if they were a completely different type. It was, of course, a paper transaction - the actual costs of the new locos were charged to the Renewal Fund^[7]. As a result very few new GWR locomotives after the Grouping were charged to capital, so Lot 227, under which the two undoubtedly new Rheidol locomotives, Nos. 7 & 8, were built, was charged to the Renewal Fund, as stated in Locomotive Stock Book 2 and which can also be deduced from the 1923 Accounts. Those show the only locomotives charged to capital that year were fourteen Swansea Harbour Trust tank locos. They had to be charged to capital because the purchase of the SHT was a capital transaction.

As new locomotives increasing the stock totals, 7 and 8 were accounted for as “Complete Renewals in the Company's Shops”, with an accounting date of 1923 and a book value of £2737 each, the same as the accounting cost calculated by the Swindon Cost Office. But, whereas if there hadn't been unallocated capital, 7 & 8 could have been charged to the Capital Account, 1213 was a different case. Even if it was a completely new locomotive, because it would have been a direct replacement for the original 1213, of similar size and performing the same duties, under the railway accounting laws it would have been illegal to have ordered it on the Capital Account. Therefore when Green says the accounting for 1213 was “cooked” because it wasn't charged to capital he is showing that, not only has he not realised that most new locomotives were charged to the Renewal Account but also he hasn't studied the laws under which the mainline railways had to operate until 1948. The only choice open to the accountants was whether to class 1213 as a Partial Renewal or as a Complete Renewal. They did the former, which meant it retained the accounting date of 1902 and the book value (assigned to it when the Cambrian Railways was absorbed in 1922) of £1750. Had they classed it as a Complete Renewal the date would have been changed to 1924 and the book value to, at most, something in the region of £2500, but probably significantly less - perhaps no increase at all, depending on what allowance was made for the scrap value of the original 1213. That would have meant a transfer from the Capital Account to the Renewal Fund of at most a few hundred pounds to re-imburse the Renewal Fund for the extra capital element. Such a small increase in the book value of the locomotive stock would hardly have been a problem and would certainly not have justified the risk of having the accounts qualified by the auditors, not to mention the GWR being prosecuted for fraudulent accounting. Claims that 1213 was accounted for as a rebuild as an accounting trick ignore the fact that to do so would have been a criminal offence under Section 1, Sub-section 5 of the 1911 Act, punishable by up to a year in prison or a £100 fine (equivalent to over £7,000 in 2025). Furthermore, the Locomotive Committee was chaired not by Collett (who reported to it but wasn't a member) but by a member of the Board, who had he behaved in that way would at the very least have risked being disqualified as a Director. Also, and understandably, the Chief Accountant and his staff were very careful to ensure that the letter of the accounting laws was adhered to, even if not always in spirit. The accountants' professional reputations (and careers) depended on it. A few examples:

- Because of pressure of work at Swindon a number of absorbed engines were sent to outside contractors (Yorkshire Engine Co., Kitson and Kerr Stuart) for repair in 1925. The tender document issued by the GWR was “for the renewal of the locomotives, utilising such parts of the existing engines as may be suitable for this purpose”. Because there was no control over which original parts were retained the locomotives concerned

were withdrawn and then returned to stock after the repairs as if new (i.e. in the "Complete Renewals by Contractors" category) with a book value of the invoiced repair cost and an accounting date of 1925.

- The former Whitland & Cardigan Railway 0-6-0ST, Fox Walker 340 of 1877, GWR No.1387, which in 1902 had been transferred to Service Stock for shunting Reading Signal Depot. In 1926, displaced there by Motor Rail 3820, it was returned to Capital Stock as No.1331. This had been agreed by the Locomotive Committee meeting in December 1925 for use on the Weymouth Quay branch (*RAIL250/276*). The Committee was advised that it required considerable repair and should "be renewed, such parts of the existing engine as may be suitable being utilised for the purpose", so a similar situation to the locos sent to outside contractors for repair. In the event, although the same boiler number was retained, it had a new barrel and new firebox, including the foundation ring (but some of the tubes were probably re-used). Slightly smaller wheels were fitted and, although the wheelbase remained the same, the frames were slightly longer, so were probably new. Not surprisingly, for accounting purposes it was classed as a "Complete Renewal in the Company Shops", with a date of 1927 and a book value of £1669, only some £80 less than the book value of 1213. If there were no objections to treating 1331 as a Complete Renewal it does raise the question as to what accounting reason there would have been to justify concealing 1213 as a Partial Renewal.
- The prototype Dukedog took the running number and name of the 'Duke' element, 3265, although that contributed little more than its cab. Accounts, fully aware of the true nature of the work, correctly treated it as a Partial Renewal of the Bulldog, 3365, which contributed the frames. Like 1213, and unlike the production series of Dukedogs, the work was regarded a Heavy General repair rather than a reconstruction
- The two versions of 5400. When, in 1930, Collett was planning to introduce two new classes of auto-tank (54xx and 64xx) he wanted to gain experience from a prototype. Accordingly, the frames of 0-6-0PT No.2062 were fitted with a spare Standard No.11 boiler (No.7000, built by Kitson in 1924) which was very similar to the Standard No.21 boiler intended for the new classes, plus new cylinders and pannier tanks. Accounts wanted the costs to be included with the production series, so the rebuild was charged to Lot 277 which covered the thirty new engines. Therefore, although it incorporated the thirty year old frames of 2062, it was accounted for as a Complete Renewal and renumbered 5400, the book value was increased from £1160 to £2635 and 2062 officially withdrawn. After this first 5400 had run over 43,000 miles its purpose as a prototype had been served and it returned to Swindon for another complete rebuild, retaining only the new tanks and cylinders from the first rebuild. That made it largely a new locomotive but it still came within the category of a General Repair and was accounted for as a Partial Renewal rather than a Complete Renewal. By then nothing remained of the original 2062. However the same History Sheet was used for all three versions, providing an audit trail for the accounting transactions that linked them. Although it was done in a rather unusual way, viewed as a total transaction covering both rebuilds, the accounting seems correct.
- In 1933 when an ex-demo diesel shunter (John Fowler 19451) was purchased for Swindon Works the book value was initially set to the invoice value of £1575, as was customary for "Complete Renewals by Outside Contractors", but then it was realised that the invoice included some oil lamps which could not be classed as a capital asset so the book value was reduced by £3 to £1572 to exclude the lamps.

If the accountants were so careful to comply with accounting law in all these cases it is hard to see why they would be so careless as to incorrectly classify the work done on 1213 as a Partial Renewal when they would have been aware, through their control of the Stores ordering process, of the extent of that work if it had been a completely new loco. It is true that the policy followed by Accounts did change over time. By the 1930s there was a greater tendency to class reconstructions as Complete Renewals rather than Partial. Whereas the Stars rebuilt as Castles in the 1920s, and the prototype Dukedog in 1929, were accounted for as Partial Renewals, the production series of Dukedogs and the Star/Castle rebuilds in the late 1930s were accounted for as Complete Renewals, even though the nature of the rebuilds was exactly the same. In fact, in 1932 the Stars rebuilt as Castles in the 1920s were retrospectively reclassified as Complete Renewals, with both the accounting date and their mileages reset to the rebuild date (but the book value was not altered). The justification may have been that the projected lifespan of the parts retained, notably the frames, had been re-assessed and they were now assumed to last for another 30 years. What there seems to be no evidence of is the reverse process, classing a completely new locomotive as a Partial Renewal, as is alleged happened to 1213. Furthermore, to have done so would have reduced the financial life of the asset by nearly half. The Rheidol tanks were accounted for on the same basis as shunting locomotives, i.e. given a financial life of fifty years. D&M 2 was built in 1902, so in 1924 it was almost halfway through its financial life. Because of the peculiar nature of accounting for railway fixed assets, so they did not depreciate, it could be argued that not only was there no accounting advantage to shortening the financial life of an asset, there could be an advantage in prolonging it. The "Dukedogs" are an example. As previously mentioned, the prototype, 3265, was treated as a Heavy Repair, the same as 1213, but when in the mid-1930s general reconstruction of the remaining Dukes began Accounts decided these should be classed as Complete Renewals, in spite of the fact that most of the components, including all the frames and the majority of the boilers, were salvaged from the Dukes and Bulldogs. The combined book value of a Duke and a Bulldog was about £3500. The production Dukedogs had book values between about £2400 and £2750, so in effect on each one capital of around £750 to £1000 was freed for allocation to genuinely new locomotives and, because the Dukes and Bulldogs were reaching the end of their financial lives, the life of the rest of the capital was increased by another 30-35 years, doubling it. A similar effect resulted from retrospectively reclassifying the 1920s Star/Castle rebuilds as Complete Renewals. Therefore, on the basis of contemporary evidence, rather than colourful conspiracy theories formulated half a century or more later, far

from there being an accounting advantage in disguising a new locomotive as a rebuild, the reverse would seem to have been the case, at least as far as the Accountants at Paddington were concerned.

Even if, as has been suggested, the GWR wanted to deceive its shareholders into believing that 1213 was a rebuild rather than a new locomotive it could still have been accounted for as a Complete Renewal. The parallel here is with the LMS Patriots. When the first two were rebuilt from Claughtons it was intended to retain their driving wheels and the frames but Derby found that the work required to modify the frames from a 4-cylinder to a 3-cylinder arrangement, coupled with the fact that the Claughton frames were prone to cracking (and one set was damaged), meant that it made more sense to cut new frames^[9]. The driving wheels were still retained (albeit rebalanced and with new crank axles), which was sufficient for the two locos to qualify as Partial Renewals, retaining their original book value but with a betterment of £1404 to reflect the improved design. Further design changes meant that the next forty Patriots, although officially described as rebuilds, could not reuse even the driving wheels, so in spite of the “rebuild” tag they were accounted for as “Complete Renewals in the Company Shops”. It may be that one of the reasons for calling them rebuilds was to avoid the embarrassment of admitting to shareholders that forty Claughtons, with a book value of over £200,000, had been scrapped less than halfway through their working lives. Scrapping one narrow gauge locomotive working on a remote branch was hardly in the same league but it does show that if the GWR had wanted to disguise the original 1213's fate they could have done so but still complied with the accounting laws.

Summary: There is no credible basis for the claim that 1213 was deliberately disguised as a rebuild for accounting purposes. A multimillion-pound business like the GWR was unlikely to consider committing the crime of fraudulent accounting for the sake of putting nett expenditure of a few hundred pounds under a different heading in the company accounts. In any case the new locos 7 & 8 were funded from the same source as 1213, i.e. revenue. There does remain the possibility that the rebuild of 1213 was inadvertently classed as a Partial Renewal rather than a Complete Renewal, because, when the condition of the items of the original 1213 that it had been intended to reuse was assessed, it was decided that it would be more economical to replace them all with new, but the implied change from Partial Renewal to Complete Renewal was not appreciated. However, given their control of materials ordering the Accounts Office should have had sufficient information to avoid such an error so it seems unlikely, and it was certainly not done deliberately.

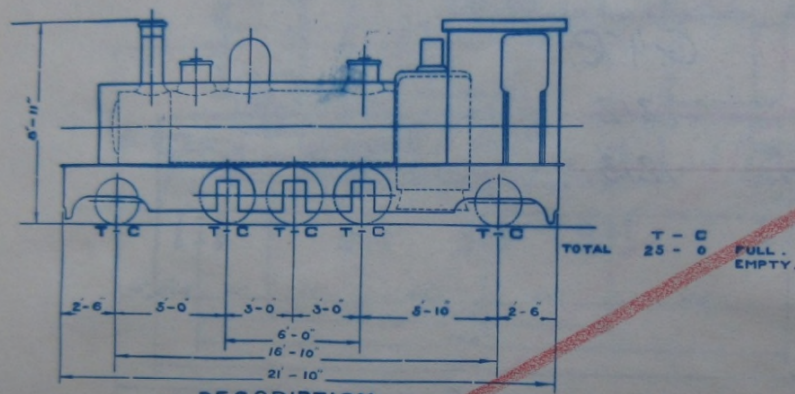
“No part from one could possibly fit the other”

Green claimed that “*if the working drawings of the original Davies & Metcalfe engines are compared with those for Lot 227, it becomes quite clear that no part from the one could possibly fit the other*”. However he didn't quote any drawing numbers, and, together with his use of the conditional tense in that statement, that casts doubt on whether he had seen any drawings himself. Swindon Drawing Register No.7, held at the NRM, lists all the drawings prepared at Swindon in the relevant period (1922-1924), including those copied from the Cambrian Railways' records. When they were researching their history of GWR Locomotives in the 1950s and early 1960s the RCTS had the advantage that all those drawings were in one place, at Swindon Works. Today they are scattered, with the NRM only having a few of them. Not surprisingly, the Vale of Rheidol archive at Aberystwyth has the most comprehensive collection and they formed the basis for the drawings in their book “The Vale of Rheidol Railway In Detail” (2021). Davies & Metcalfe no longer hold any records; Richard Metcalfe may have items in his personal archive but the details are not known. The only known drawings are those which were previously at Swindon and have survived, many of them copies of Cambrian Railways or Davies & Metcalfe drawings, plus those prepared by W.G.Bagnall in 1912, when the fitting of Walschaerts valve gear was first considered. Nevertheless, there is sufficient available in the public domain to make a meaningful comparison.

The GWR boiler (drawing 65449) shows 109 tubes of 1 $\frac{5}{8}$ “ diameter, the D&M boiler (drawing 65191, copied from the D&M original) shows 84 tubes of 1 $\frac{3}{4}$ “ diameter. However, the external proportions of the boilers, except over the top of the firebox, are all but identical. The outside diameter of the front ring is 2' 9 $\frac{3}{4}$ “ on both, the rear ring 2' 10 $\frac{1}{2}$ “ on the D&M and 2' 10 $\frac{5}{8}$ “ on the GWR, a difference of just an eighth of an inch on the rear ring only. The barrel of the GWR version, at 9' 9 $\frac{5}{16}$ “ is slightly shorter, but the casing was extended so it exactly matched the length of the D&M barrel, 10' 2 $\frac{1}{8}$ “. The base of the firebox is 3'2” long and 4'1” wide in both cases. Although the GWR boiler has a greater heating surface that of the firebox is identical (40 sq.ft.) and the grate area almost so (9 sq.ft. for the D&M and 9.04 sq.ft. for the GWR). Those identical measurements cannot be a coincidence. The GWR boiler was clearly designed to fit within the frames of the D&M design. In fact, it was the policy of the GWR Board, concerned by the number of boiler types acquired at the Grouping, to replace absorbed company boilers with a GWR equivalent. Although the GWR boiler for the Rheidol locos (prefix YL) was regarded as non-standard, there was in 1923 no intention of withdrawing either of the original D&M locos, so even if only one of them remained largely in original condition it would have made sense to have a compatible boiler type for both the GWR and D&M versions. Of course, it also meant that the frames of the GWR version must have the same basic proportions as the D&M, and the drawings prove that to be so.

The equivalent of a General Arrangement for the GWR version is the frame plan, drawing 70560. There is a GA of the D&M version, prepared in 1901, but it is not an accurate representation of the locomotives as built. It retains some features of its Manning Wardle antecedents on the Lynton & Barnstaple, later dropped, most obviously the two sandboxes mounted on top of the boiler, whereas when built the D&M locos instead had four sandboxes bolted to the side tanks. It also probably explains why the Locomotive Magazine, August 1902, in describing the new locomotives, quoted the weight, grate area and water capacity of the Lynton & Barnstaple design instead of the D&M. Therefore, that GA cannot be used for comparison purposes.

X



— DESCRIPTION —

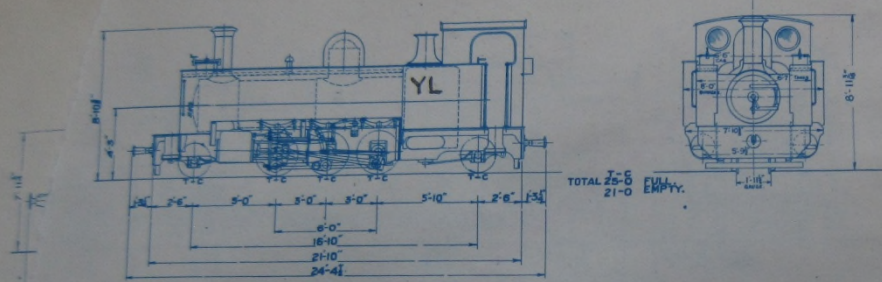
CYLINDERS	DIAR. 11". STROKE 17". STEAM PORTS 9" X 1 1/2" EXHAUST 9" X 3"
BOILER	BARREL 10'-2 1/2" DIAR. OUTS. 2'-10 1/2" & 2'-9 3/4"
FIREBOX	OUTS. 3'-2" X 4'-1" INS. 2'-7 1/8" X 3'-6 1/8" HEIGHT 3'-5 1/2"
TUBES	Nº 84 DIAR. 1 1/2". LENGTH 10'-0"
HEATING SURFACE	TUBES 365 SQ. FT. FIREBOX 40 SQ. FT. TOTAL 425 SQ. FT.
AREA OF FIREGRATE	9 SQ. FT.
WHEELS	LEADING 2'-0" COUPLED 2'-6" TRAILING 2'-0"
WATER CAPACITY OF TANKS	384 GALLONS.
WORKING PRESSURE	150 LBS.
TRACTIVE EFFORT	6740 LBS.

— VALE OF RHEIDOL ENG^s N^{os} 1 & 2—
 — CAMBRIAN DIAGRAM N^o 14—
 — TYPE 2-6T-2 —
 — 1'-11 1/2" GAUGE —

GWR diagram 2-6-2T X (above) shows an outline sketch of the D&M design made by a draughtsman at Oswestry Works, based on the inaccurate D&M General Arrangement drawing prepared in 1901, but the dimensions table, added by Swindon, is correct. GWR diagram 2-6-2T A1 (below) shows a more accurate depiction of the GWR design. The diagrams confirm that many of the leading dimensions were identical, and the writing at the top of diagram A1 show that the GWR/Western Region regarded them as two variants of the same class.

The original two engines Nos 1 & 2. (G.W.R. Nos 1212 & 1213 were built by Davies & Metcalfe in 1902. Nos 7 & 8 were built at Swindon by G.W.R. in 1923.

A 1



— DESCRIPTION —

CYLINDERS	DIAR. 11 1/2". STROKE 17". STEAM PORTS 9" X 1 1/2". EXHAUST 9" X 5"
BOILER	BARREL 9'-9 3/8". DIAR. OUTS. 2'-10 1/2" & 2'-9 3/4"
FIREBOX	OUTS. 3'-2" X 4'-1". INS. 2'-7" X 3'-6". HEIGHT 3'-3 1/4"
TUBES	Nº 109. DIAR. 1 1/2". LENGTH 9'-11 1/8"
HEATING SURFACE	TUBES 463.25 SQ. FT. FIREBOX 40.0 SQ. FT. TOTAL 503.25 SQ. FT.
AREA OF FIREGRATE	9.04 SQ. FT.
WHEELS	LEADING 2'-0". COUPLED 2'-6". TRAILING 2'-0"
WATER CAPACITY OF TANKS	520 GALLONS.
WORKING PRESSURE	165 LBS.
TRACTIVE EFFORT	10510 LBS.

— SCALE 1" = 1 FOOT —

— VALE OF RHEIDOL ENGINES 7 & 8 & 9.
 — TYPE 2-6T2 —
 — 1'-11 1/2" GAUGE —

Fortunately there are other more accurate drawings, especially those prepared at Oswestry by the Cambrian when they were trying to resolve the valve gear problems. These show that the cut and structure of the frames are essentially the same between the GWR and D&M versions. The overall length between the buffer plates on both is 21'10", the wheelbase spacings are identical, the depth of the frames at the various points also, and the frames in both cases are 4'2" apart, with the spacers in the same positions. The GWR spacers are even riveted steel, like the D&M, whereas Swindon might have been expected to use castings. It seems clear that the Swindon Drawing Office directly copied the basic frame structure. The Vale of Rheidol drawings held by Oswestry Works were brought to Swindon and copied in December 1922 (GWR drawing numbers 65183 to 65215). 1212 (D&M 1) also arrived at Swindon for a Heavy General repair in the same month and was stripped down, allowing the real thing to be studied. As no "Swindonisation" was done at that stage, the overhaul could have been done at Oswestry which would have avoided it occupying a bay at Swindon for several months. That it nevertheless came to Swindon, in spite of the fact that both the Drawing Office and the Works were heavily loaded at this period, indicates that the GWR version was not designed from a blank sheet but incorporated elements of the D&M design studied at Swindon. There are three good reasons why Collett would have wanted to copy the D&M frames:

- To save time in the Drawing Office, which was heavily overloaded with post-grouping work at the time
- To ensure their weight remained unchanged
- To at least leave open the option of rebuilding one of the existing locos, as was implicit in the Board sanctioning only two new locos when they (and the Traffic Committee) must have known that three were required to guarantee the peak summer timetable

The differences between the GWR and D&M frames were mainly in the position of some (but not all) bolt/rivet holes, notably those securing the cylinders and the top of the horn guides, plus of course the different arrangement of the outside Walschaerts valve gear, brake gear and a different fixing of the cabside bunkers (which were not an original D&M feature anyway). The wheel centres were of the same pattern between both versions, even sharing a drawing in common (67323), although the History Card for 1213 (RAIL254/433) is somewhat ambiguous about what was done with the wheels:

WHEELBASE				OVER BUFFERS	
New Tyres.	New Axles.	Wheels Changed.	Wheels ex.	Mileage of Engine.	Reference to Axle Register.
		New Complete L I & D P&R		18424	14.5.24 10 don

The entry for wheel changes on the History Card for 1213 certainly could imply that a full new set of wheels was made in 1924, but the way in which it has been completed is unusual. The 'Wheels ex' column, which should state New, Spare or the number of the locomotive from which they came, instead contains P&R (pony and rear). It is not clear why those were not entered in the 'Wheels Changed' column below 'L, I & D' (Leading, Intermediate and Drive driving wheels), or simply state 'All', as in the example below from Armstrong Goods No.1205, when its entire wheelset was replaced with those previously carried by classmate 782. The Swindon Axle Register for 1924 might clarify matters but that may no longer exist.

WHEELBASE				OVER BUFFERS	
New Tyres.	New Axles.	Wheels Changed.	Wheels ex.	Mileage of Engine.	Reference to Axle Register.
		All	782	556,922	14.12.24 16536

Several engineers who became familiar with these locos in later years have commented that 1213 is the same as 7 and 8 and could not have been rebuilt from the original 1213. The problem with that statement is that the drawings show that, structurally, the frames and wheels were the same as the D&M version and the engineers concerned are commenting on the situation at least fifty years after the 1924 rebuild, so what they were looking at is not necessarily as it was in 1924. Furthermore, it implies that they know more about this issue than the engineers who were directly involved in 1924. That is not just Collett. Following the death of his wife in March 1923 Collett was largely absent from Swindon for several months, just at the time when most of the design and construction work on Nos.7 & 8 was taking place. Day to day supervision of that fell to his Principal Assistant, William Stanier, who would have been thoroughly familiar with the design. Then there was the Works Manager, Robert Hannington, his assistant (and future Works Manager) Kenneth Cook, and Frederick Hawksworth, at the time a Senior Draughtsman whose initials FWH appear against a number of the drawings and who would in 1941 succeed Collett as CME. If it really was the case that “no part from one could fit the other”, as Green claimed, surely these highly qualified engineers, for a design in which they were directly involved and all of whom would have seen 1212, and 1213 in its original form, at Swindon in 1923, would have been aware of that and known that it should be regarded as a completely new locomotive. To imply that they, along with much of the workforce in 'A' Shop, 'V' Shop and 'W' Shop, may have been part of some Great Subterfuge to conceal the true origins of this minor narrow gauge locomotive, like some illegitimate child whose paternity had to be kept a secret, does seem rather implausible.

It was almost always Collett's policy to incorporate elements of an existing design in a new one – e.g. Star to Castle, Castle to King, Saint to Hall, 27xx to 57xx, 517 to 48xx, etc. etc. The only case during Collett's tenure of office where a totally new design was produced at Swindon was the 56xx, and that was forced on him. It was intended primarily for use on the Welsh absorbed lines, where the 0-6-2T concept was well established. Swindon had not previously built an 0-6-2T and the preference might otherwise have been for further 2-6-2Ts of the 31xx range but clearances on many of the Welsh lines were tighter than on the GWR and their cylinder covers would have been out of gauge. In the case of the Rheidol tanks the only totally new aspect of the GWR version was the boiler. The cylinders and steam chests designed for 7 & 8 were loosely based on those of the steam railmotors which were, until then, the only time the GWR had used outside Walschaerts gear. The later batches of railmotors had cylinders 12"x16". Had these been fitted to the Vale of Rheidol engines it would have given a similar tractive effort (10,771 lbs instead of 10,510 lbs). The cross sectional drawing 72301 shows that there was clearance within the VofR loading gauge to accommodate the marginal extra width of cylinders and steam chests, and if the railmotor cylinders had been adopted it would have allowed the use of cylinders already held in stock. Instead Collett opted to increase the stroke to 17", the same as the D&M design, compensating by reducing the diameter to 11½", but with steam passages in line with those of the D&M arrangement – steam ports 9" x 1¼", exhaust 9" x 3". The arrangement of mounting the cylinders on the frames was different from the original D&M design but the centre point of the cylinders was in the same position relative to both the front of the frame and the rail level, and in both the GWR and D&M cases the cylinders were inclined at 1 in 45 (against GWR practice – Churchward disapproved of inclined cylinders). This suggests that Collett may have been trying to ensure that the new cylinders were compatible with the existing frames and considered that worth the cost of casting new cylinders rather than use railmotor spares.

Summary: The drawings prove that the external dimensions of the boiler and the frames were consistent between both the GWR and D&M versions, contradicting Green's claim that no part from one would fit the other. However, that does not mean that 1213's original frame was retained, merely that it was a possibility that it could have been, although to do so would have involved a considerable amount of drilling and filling. The boiler fitted to 1213 in 1924 was, of course, newly constructed to a different design but its external dimensions would have allowed it to be fitted in the D&M frames.

The “new” 1213 was disguised as a set of spare parts

Green claimed that “*when the success of Nos. 7 & 8 was known, a third set of parts was put in hand. By July 1924 these parts had become No.1213*”. Actually, it was GWR policy to maintain a stock of key spare parts to reduce the time locomotives spent in works, so the ordering of those parts does not necessarily mean they were intended to surreptitiously build another locomotive. According to the Boiler Lot Book (RAIL254/281) the boilers for Nos.7 & 8 were ordered on 25th Jan 1923, lot K362. They were completed in May 1923 as boiler Nos 145 & 146 (because these boilers, although of GWR design, were regarded as constituent company boilers they were given numbers vacated by scrapped 19th century boilers). On 8th March 1923, well before the other two boilers were complete, let alone proved a success, a third boiler was ordered, lot K367, described as a “spare boiler for 2-6-2T engines on lot 227, Vale of Rheidol branch”. This complied with the policy of having spare boilers for every class, a policy re-affirmed by the Locomotive Committee in May 1927: “*to expedite the repair of locomotives it has been necessary for many years past to keep a large number of spare boilers in stock, and ... the Committee approved the continuance of this practice*”. However, because of pressure of work in the Boiler Shop nothing was done about building the third boiler at that stage. Then, on 30th November 1923 Collett reported, in the agenda for the next Locomotive Committee meeting, that “*in July two engines for the Vale of Rheidol Narrow Gauge Railway were completed and put into service. Of unique design, they are more powerful than the engines previously in use and have proved very successful*” (RAIL250/276). Unique design is Collett's way of saying they were non-standard (apart from the 1366 class the only non-standard design that would be built at Swindon during his tenure as CME). The minutes for that Locomotive Committee meeting on 7th December do not mention this item but the day before a fourth YL boiler was ordered (lot K379), described, like lot K367, as “*boiler (spare) for 2-6-2T engines*”.

on lot 227, Vale of Rheidol branch". It was customary for the agenda to have been discussed prior to the formal meeting, including with Felix Pole, and it is not unreasonable to assume the way was cleared to rebuild 1213 along the same lines as Nos. 7 & 8. Accordingly, the original spare boiler was allocated to 1213 and so a fourth boiler had to be ordered to maintain the spare boiler policy. The third boiler was completed in April 1924 as No.204 and fitted to 1213 that May, but the fourth boiler was not built until September 1926, as No.172. It then spent the next twenty years in store until March 1947, when it was taken back to the Boiler Shop for examination, found to be in good condition and fitted to No.7.

Summary: Research for this article has failed to trace any surviving stores orders for 1924 and Green seldom quotes sources, so it is not known what parts he included in "the third set of parts" but it was policy to stock some parts, including a spare boiler. Therefore the ordering of parts cannot be assumed to be a secret plot to build a new loco without authority. However, that policy would not have included a spare set of frames (and certainly not for a class of just two), and the ordering of frame plates for 1213 would have been noted by Accounts, so could not have been done without their authority. They would also have been aware of the order for a fourth boiler.

The "rebuild" of 1213 cost the same as a new locomotive

Green based much of his "new locomotive" claim on the £2589 shown as the cost of the 1924 work on 1213's first GWR Record Card (*RAIL254/433*). However, that is not actual cash but an accounting cost. In fact, it was almost impossible to calculate a precise actual cost for any overhaul carried out at Swindon, or at least the labour element of it, which, following steep rises during the World War 1 period, was significant (the 1924 accounts show labour accounted for a third of new locomotive construction costs and half of repairs). In his memoirs Felix Pole commented that the Chief Accountant could not produce a Profit & Loss Account at Division level^[8]. If the data wasn't good enough to do that there was no chance of accurately costing the repair or construction of an individual locomotive. Swindon could process over a thousand locos a year. 'A' Shop had 96 pits and in the 1920s there was additional repair capacity for smaller engines in 'B' Shop – at any one time there would likely be at least seventy progressing through the works and could be over a hundred. Jobs shared a common workforce in each of the various shops, 1500 employed in 'A' Shop alone. With the technology of the time it was impractical to monitor the actual labour costs on every part of every loco. Instead, the Cost Office prepared a set of average costs for every operation on standard classes. Inevitably, because these were average estimates, at the end of each financial period the total calculated direct labour cost would not match exactly the actual wages bill paid that period. Sometimes costs were not even calculated until well after the work was done. The extensive repairs to the boiler of 1212, including a re-tube, new tubeplates and firebox casing, completed in March 1923 were not costed until January 1924 (*RAIL254/477*), by which time the Cost Office would have known the total expenditure at Swindon in 1923 that had to be apportioned over the various jobs. The Cost Office may have been reluctant to re-cost any work on standard classes because that would have cast doubt on the entire estimated costs. It was more likely that any differences would be spread over non-standard designs, so a job like 1213 would have been a welcome way to "lose" some of that difference. Allowing for the drawing and pattern costs, and falling prices in 1923/24, that cost of £2589 is indeed the cost of a new locomotive, and for that very reason it is suspect. Under the accounting laws the value of material recovered as scrap had to be credited to the Renewal Fund. Swindon usually did this by netting it off against the cost of the job. So when King class 6007 was wrecked in the Shrivenham accident in January 1936 and the Board agreed a replacement should be constructed they only approved an expenditure of £2000, barely a third of what a new King should cost. The reason was that almost the entire material cost of the original 6007 was credited to the replacement. Some components, including the boiler and the mainframes, were repaired and included in the new 6007 or added to the spares pool, and the scrap value of the rest was credited to the job. Accordingly the expenditure the Board approved was, in effect, just the labour cost. Applying that policy to 1213, if that were a new loco in 1924, what happened to the twenty-one tons of scrap recovered from the old 1213? And even if wasn't a new loco the boiler at least was definitely scrapped (in May 1924, according to its history card (*RAIL254/475*)), so the value of the copper and steel recovered from that should have reduced the cost of the job. The most likely explanation is that the Swindon Cost Office manipulated the job cost to help balance the books. The accountants at Paddington wouldn't have been particularly interested in the apportionment of costs over individual locomotives. The main use of that for them was to compare repair costs between classes, which was meaningless in the case of the Rheidol locos where there was nothing to compare to, so it was an ideal candidate on which to dump some of the unallocated costs, provided the total remained plausible by not exceeding the cost of an entirely new locomotive.

The repair costs quoted on history sheets (and not just those from the GWR) should always be treated with a degree of scepticism. Further proof of how misleading they could be is provided by the final ten rebuilds of Stars to Castles between 1937 and 1940. The history sheets for all ten show the same cost - £5165. In spite of including the mainframes of the Stars that is more than the completely new Castles built in 1937 (£4848) but less than those built new in 1939 (£5375). The actual cost of the ten Star rebuilds cannot have stayed constant for three years (over which the Bank of England price index rose by 20%), confirming that the "official" cost is a nominal value rather than real money.

Summary: The costs shown on engine histories cannot be treated as real money. The actual expenditure is buried in the £2 million+ spent on the Renewal Fund for locomotive work every year at that time. In the GWR Locomotive History compiled by the RCTS those costs are not cited because the RCTS team knew how misleading they could be – Green did not. That is the difference between research and speculation.

Other Errors

A few other errors in Green's book, illustrating a lack of attention to detail or insufficient research:

- He states the completion date of Nos.7 & 8 was 19th October 1923. The History Sheets for 7 & 8 (*RAIL254/204*), Locomotive Stock Book No.2 (*RAIL254/149*) and every other GWR source consulted for this article gives their completion date as July 1923. BRDatabase.info gives the ex-works date of 7 as 23rd July and 8 as 20th July. The source of those dates isn't known (the first record cards for both locos appear to be missing from those held at the National Archive - they should be in *RAIL254/418*) but it would make sense that No.8 was completed before No.7 because it was used for the official photographs. Those were published in the September 1923 issue of the GWR Magazine, so they can't have been taken later than early August. There are also photos in the Locomotive Publishing Co collection of No.7 at Aberystwyth dated 17th September 1923. Green even included a copy of one in his book (p.29) but dates it as c.1924. No.7 was almost certainly at Aberystwyth by early August 1923 (simultaneously with the first of the additional carriages, for whose extra weight it was required) and No.8 would have followed soon after, once its photographic grey paint had been replaced by green (although it might have been held at Swindon for a week or two, in case there were any modifications required following the initial trials with No.7 – that was normal practice for a new class).
- Green gives the official withdrawal date of 1212 as 9th March 1935. In fact, that was the scrapping date, and it was the *week-ending* 9th March 1935. The withdrawal date, stated in the Condemned Engines Register (*RAIL254/151*), was in the 4 weeks ending 17th Dec 1932, signed off by Collett as "Redundant" (which it would have been, following the cessation of winter services on the Rheidol branch). It was evidently still in good enough condition to be kept on the Sales List until 1935. The History Sheet (*RAIL254/477*) for its boiler, No.127, gives more precise dates – withdrawn on 16th Dec 1932, scrapped on 4th March 1935, so those are probably the dates of the loco as well. Green says 1212 was "virtually unused" after its 1925 overhaul but the History Sheet shows a mileage of 9,429 between then and withdrawal, equivalent to about 380 round trips to Devils Bridge, so on average about fifty a year. Those would have been almost entirely in the winter months as it was not powerful enough for the heavier summer trains introduced from 1923.
- "*Nos 7 & 8 started life as like as two peas in a pod*". Actually there were several differences between the two, the most obvious being the absence of a grab rail at the front of the side tanks on No.7 (it didn't receive them until about 1959). This is another example of Green's lack of attention to detail.
- Green says the GWR version weighed 3 tons more than the Davies & Metcalfe, although he doesn't state the actual weights. The GWR diagrams show both versions weighing the same – 21 tons empty, 25 tons full. Those seem to be calculated weights to the nearest ton, based on the drawings. They may never have been weighed by the GWR. The Weigh House at Swindon had a six-part (twelve pan) table capable of recording individual axle loads but that was only for standard gauge locos. A narrow gauge loco would have to be weighed on a wagon. With 25 extra tubes in the boiler the GWR version should have weighed slightly more than the D&M, although the difference (in working order) was partly offset by reducing the water capacity by 70 gallons (a third of a ton), and it certainly wouldn't have weighed an extra three tons.
- Green states that when 1212 was taken to Swindon in December 1922 for a General Repair it had had an overhaul "only 1,959 miles ago" but that is just the mileage since it was absorbed into GWR stock in August 1922. Records of Cambrian Railways mileage don't appear to survive, but it may well have been in the tens of thousands since 1212's last visit to Oswestry – certainly far more than 2,000.
- Green says that No.7 was repainted with G.W.R. in large letters in 1948 – why would that have been done after nationalisation? That livery was in fact applied at Swindon in June 1947, after a General Repair. He is also vague about the date of the re-numbering of 1213 to 9 – "during the winter of 1948/49". It was done at Swindon, 30th March 1949, as stated on its BR History Sheet (*AN7/116*).
- In a caption to a photo of 1213 (prior to its rebuild) and the five open carriages (p.227) Green says that the photo was taken to "justify scrapping the lot" but there seems to be no proof for that statement. Those new carriages were primarily intended to increase capacity, although it did allow the two V of R timber trucks, which had been fitted with temporary seating, to revert to being timber trucks. That still left a nett increase in the total seating of 152 and even the timber trucks weren't scrapped – they lasted until 1938. If, as Green states, the photo was taken in 1922 it might have been to help the Drawing Office in preparing plans for the four new summer carriages built in 1923 but there is evidence that the photo was taken about a year later (*see the "GWR Official Photographs" box below*), in which case the most likely reason would be to record the stock the GWR had inherited for comparison with the improvements they had made.
- Several of the other photo captions are wrong. On p.54 the loco is stated to be 1213 but it has no grab rails on the side tank so it must be No.7. On p.193 the two locos in Swindon 'A' Shop are said to be 7 & 8 – they are actually 8 & 9. On p.194 the photo showing all three locos is said to be in 1954, but all carry names which they did not in 1954 – the correct date for that (well-known) photo is July 1956.



Green mentioned the photo of 1213 heading all the ex-VofR open carriages. That was one of a small group of official photos taken on the Rheidol branch early in GWR days, which also included this broadside shot of 1213 (reference E3/711, although it originally had a different reference (G2-4?) which has been crossed out on the negative). That they were all taken on the same day is indicated by the broken side window of 1213's cab, the same as in the photos of it heading the carriages, and the identical appearance of the state of the paintwork. It is also unlikely that the GWR would have gone to the expense of multiple visits by its photographer to such a minor branch. Green dated the photo as 1922, although the errors in some of his other photo dates suggest that may not be reliable. The "Vale of Rheidol in Detail" widened that to the winter of 1922/23, but didn't state the basis for that date. It also includes a copy of this photo (but doesn't attribute it to the GWR) and dates this as c.1922, which is self-evident because it has its GWR numberplate but is still in original condition so the photo must have been taken no later than about 18 months after the GWR takeover. However, the glass negative of this photo still exists, in the archive of the Railway Museum, York, and written on the label is the date 14/12/23, about a year later than Green's date. Of course, that may be the date it was logged in the photo register rather than the date it was actually taken (bearing in mind the photo was taken off-site) but a discrepancy of a year does seem unlikely. The photo must have been taken in the winter period because the bushes behind are devoid of leaves, so a December date is plausible, and if it was 1923 rather than 1922 then clearly these photos were not related to the planning for the four new carriages, which had already been delivered by then. A more likely reason might be that the GWR was recording the state of what it inherited for possible publicity use to show how much they had invested in improving the line. Support for that theory is that no attempt has been made to smarten 1213 up for this posed photo by replacing the broken cab window. It is also standing on trackwork of dubious quality. Much of the VofR trackwork inherited by the GWR in 1922 was in a poor state, prompting them to renew the entire branch over the next few years. To pose an obviously work-worn locomotive in that situation would seem to be a good basis for a "before and after" comparison should the GWR had decided to do so, if only to justify any, even moderate, additional expenditure on the branch. Also, if that was the reason for taking these photos it provides further proof, if any were needed, that Green's claim that the work done to 1213 was concealed from higher authority has no foundation. Collett would hardly have been likely to furnish photographic proof of the extent of the changes to 1213.

The date on which 1213 was sent to Swindon is not stated on the locomotive's record card – movements to Swindon weren't recorded on the history sheets until the later 1920s. For the 1924 visit just the date of its return to traffic (3rd July 1924), and the number of weeks out of traffic (34 weeks, 4 days), were recorded. That implies it was out of traffic from about 4th November 1923, but it doesn't follow that it was dispatched to Swindon from Aberystwyth immediately. Indeed, given the pressure of work at Swindon in late 1923, they may not yet have been in a position to receive it. If this photo was taken on or just before 14th December, then 1213 couldn't have been taken to Swindon before mid-December 1923. For these official photos it was in steam, and so that would have been after it was taken out of traffic. However, if it was set aside to send it away for overhaul, rather than because of mechanical failure, it would still have been possible to steam it as a one-off for the benefit of the photographer.

Conclusions



1213 in its current form, Aberystwyth, October 2025

The strength of Green's book is his knowledge of the Rheidol branch, based on his many visits there, but in the context of what happened to 1213 in 1924 it is also its greatest flaw, because he views everything from the perspective of Aberystwyth. He shows no understanding of the GWR management structure - key players like Pole, Stanier, Hannington and Cope are not mentioned, and the Board is dismissed as "Mount Olympus" although some Directors had an extensive knowledge of railways, including Aubrey Brocklebank, owner of the Ravenglass & Eskdale Railway. Green also shows no real knowledge of the GWR's accounting policies and cost controls, the role of the CME or the administration of Swindon works. As a result, he failed to put the development of motive power on the Rheidol branch after the Grouping in the wider context of GWR policy. There is nothing special about what happened to 1213 in 1924. Fitting a belpaire boiler, new tanks and cab mirrors hundreds of 0-6-0 saddle tanks rebuilt as pannier tanks. Similarly there are many cases of the fitting of new cylinders of a larger diameter, but retaining the same stroke, with or without revised steam pipes – Stars, Saints, 28xx, 517 rebuilds etc. All of these changes were made as part of a Heavy General repair, just as with 1213. The only modification to 1213 which was out of the ordinary was the replacement of the Gooch/Stephenson gear with Walschaerts, but even that wasn't unique, e.g. when 4000 NORTH STAR was rebuilt as a Castle its Scissors gear was replaced by inside Walschaerts. To base the new Rheidol design around the wheels and chassis of the D&M design, even with some detail differences, was exactly what was to be expected of Collett and mirrored what he was doing with the Castle class, the major project of 1923, which put a larger boiler and cylinders on the mainframe of a Star, extended by one foot at the rear to accommodate a longer firebox and more generous cab. 1213's frames, exactly the same length as those on Nos.7 & 8, didn't even require that. It would have needed some drilling and filling but that shouldn't have been beyond the capabilities of what was at the time arguably the best equipped railway workshop in the country. Whether it would have been worth doing is another matter. When in 1936 it was decided to reconstruct one hundred 43xx as Granges and Manors consideration was given to incorporating the original mainframes but in the event only the wheels and tenders were re-used. It was felt that the effort involved in drilling and filling the frames was a false economy (as mentioned previously, the LMS came to the same conclusion about re-using Claughton frames in the first two Patriots)⁹¹. 1213's frames today are certainly not the original and 1924 remains the most likely date when they were replaced, but conclusive documentary or photographic proof is lacking.

Contrary to the belief that the frame is the "real" locomotive, in mainline practice frames did sometimes get replaced during overhauls. The primary objective was to get a loco back in service and earning its keep as fast as possible, and if that could be done by swapping or renewing the frames it would be. There is the example of 4037, a Star rebuilt as a Castle in 1926 retaining the original mainframe, but a few years later the frame was found to be beyond economic repair.

Rather than write off the investment in the rebuild, new frames were made for 4037. Thereafter it contained nothing of the original Star, but it remained officially a rebuild. The locomotive History Sheets do not usually record new frames being made, perhaps because that would be covered by the Frame Shop records. Examples of locos that still exist today but do not have their original frames include FLYING SCOTSMAN, ROYAL SCOT, SCOTS GUARDSMAN and the Midland Compound 1000, but historically there are plenty of others, and the list is still growing. The four rack locos built in the 1990s for the Brienz Rothorn Bahn, amongst the most modern steam locos in the world, are currently receiving new frames as the thirty-year old originals are no longer considered fit for purpose. Furthermore, in 2025 new frames were ordered for J21 class No.65033. When returned to steam it will doubtless continue to be described as dating from 1889, although perhaps with an additional rebuild date. To redesignate it as built in 2025 just because it has new frames would be absurd. In fact it had already been rebuilt in 1908 from compound to simple, so with new cylinders of a different diameter and different steam passages, and with Joy valve gear replaced by Stephenson's, just as extensive as what was required for 1213, but the changes were less visible because 65033 has inside cylinders. Furthermore, any Heavy General repair can be a near complete rebuild anyway. The LMS publicity film "General Repair", following Jubilee 5605 through an overhaul, commented that at the end "she was almost a new locomotive". A locomotive entering Swindon Works would be stripped down to frame, cylinders and cab sheets. On standard classes there was no guarantee that any of the parts removed would be returned to the same loco. Instead they would often be replaced from the spare parts pool – the parts replaced, if not beyond repair, would in turn go to the spares pool, continuing the cycle. That is much less common on industrial locos but it does sometimes happen – e.g. the swapping of frames between Hunslets in the North Wales slate industry or the MOD repair contract with Hunslet for Austerities in the 1950s. Don Townsley, in "The Hunslet Engine Works" (ISBN 9781871980387) commented that those were generally treated as a kit of parts and that in some cases the loco returned to the MOD after overhaul had no part of the original other than the worksplate, a policy which he quite correctly described as "showing the benefits of standardisation in action".

Even if new frames were cut in 1924 it doesn't follow that all the other parts compatible between the GWR and D&M designs were discarded. Three factors point to 1213 retaining some significant component from the original locomotive for a time after 1924:

1. The accountants classed it as a Partial Renewal, which should mean that it retained some component that would reduce its expected lifespan. A minor item like the number plate wouldn't count. Bearing in mind that everything above the footplate was new, as were the cylinders and running gear, the only items which could have qualified were the frames, the wheels or the pony/rear trucks.
2. All the engineers at Swindon at the time accepted that the work done on 1213 met the criteria for a Heavy General repair. It wasn't until some sixty years later that there was any serious suggestion that a completely new locomotive had been built, by which time almost everyone who had been working at Swindon in 1924 and had direct knowledge was dead.
3. 1213 returned to Swindon in 1935 for what was described as an Intermediate Repair, entering the Factory on 28th December 1935, arriving back at Aberystwyth on 11th March 1936. Whilst at Swindon the boiler was retubed but that was a minor part of the work, done in February 1936. The boiler must still have been in reasonable condition – it wasn't swapped with the spare boiler 172, nor does it seem to have been taken into the Boiler Shop (neither 'V' nor 'AV' Shops) – there is no record of that in the register of Swindon repairs (*RAIL254/558*). Instead the work would have been done in 'A' Shop. The boiler was tested in the frames on 13th February, after which re-assembly of the loco was completed and it was repainted, receiving the GWR shirt-button totem. The bulk of the work done in that Swindon visit, during January/early February, was on the bottom end of the loco. The History Sheet doesn't record any details, which means the cylinders weren't replaced (the History Sheet would have stated that), so the work must have been on the running gear, the wheels or the frame, and of sufficient complexity to justify the cost of sending 1213 to Swindon. The Locomotive History Sheets (*RAIL254/204*) show No.7 received light repairs at Aberystwyth in 1938 and again in 1939, and No.8 was sent to Machynlleth for repair in 1937 but apart from 1213 the only other of the trio that returned to Swindon in GWR days after 1924 was No.7, and that wasn't until April 1947 for a General Repair (and even then, it was sent initially to Oswestry before being forwarded to Swindon a week later). Therefore 1213 seems to have developed some significant issue by 1935 that did not affect the other two, even though they would have run similar mileages, and required the expense of sending 1213 to Swindon.

Combined with the drawings, these points at least leave open the possibility that 1213 was not completely new in 1924 but that some major component(s), common to both designs, were retained but which had to be replaced in 1936 (or later). Furthermore, given that the sums involved were far too small to justify the risk of fraudulent accounting and that Green's claim that Collett was secretly pursuing his own locomotive policy is implausible (in fact, career suicide and potentially criminal fraud), what motive would there be for deliberately mis-representing a new 1213 as a rebuild? In any case, because 1213 was not withdrawn in 1924 the starting point of the process had to be a Heavy General repair rather than a completely new locomotive built from scratch, even if the parts that were intended to be retained were subsequently found to be unsuitable and had to be replaced. It is possible that, because the frames and wheels were so similar to the D&M version, they were treated as like for like replacements as would happen in any heavy overhaul, so it would still meet the criteria for a Partial Renewal. It is unlikely that Swindon would have discarded parts which were still serviceable but the condition of 1213 when it arrived at Swindon is not known. There is reason to believe it was

probably quite rundown. The date of its last overhaul at Oswestry under Cambrian ownership is also not known, although it can be deduced from Hopwood's article in the "Railway Magazine", June 1921, that it may have been in the winter of 1919/20^[10]. If so, it would have gone to Swindon some four later years, probably with a relatively high mileage (it had accumulated nearly 19,000 in just the fifteen months since August 1922).

Ever since Green's book was published the discussion about 1213 has been marked by statements of opinion unsupported by documentary proof. The correct term for that is "theory", which should not be confused with proven fact, and as this article has shown some of those theories have no basis. For the Vale of Rheidol Railway on their website (January 2026) to repeat the claim that it was part of a plot to "fool the GWR board and accountants" shows how ill-informed and superficial discussion on this issue has become:

No.7 and No.8 were built together by the Great Western Railway's Swindon Works in 1923 to replace the ageing No.1 "Edward VII" and No.2 "Prince of Wales". Upon delivery Nos.1 & 2, by now renumbered No.1212 and No.1213 respectively were withdrawn, ostensibly for heavy overhauls. No.1212 was overhauled and returned to Aberystwyth, where it was used as a spare engine until being withdrawn for scrap in 1932. Meanwhile, No.1213 was quietly scrapped and an all new engine, almost identical to Nos.7 & 8 returned to Aberystwyth, masquerading as a heavily overhauled No.1213 to fool the GWR Board and accountants. Upon nationalisation in 1948, British Railways renumbered No.1213 as No.9, bringing her into the same numbering sequence as her sisters, Nos.7 & 8.

Furthermore 1212 was sent to Swindon for its first overhaul and returned to Aberystwyth *before* 7 & 8 were delivered. Its second visit to Swindon wasn't until nearly two years after 7 & 8 had been delivered. Such distortion and oversimplification of the facts mirrors Green's book, in which he formulated his conspiracy theories in just a couple of paragraphs, whereas it has taken fifteen pages for this article to consider the underlying evidence for his claims.

The dispute seems to be whether 1213 was completely rebuilt in one stage or multiple stages. The end result is the same - it doesn't retain any of the original components – but the GWR version of the D&M design incorporates a near identical rolling chassis, and the GWR regarded 1213 as a rebuild. Why should there be a problem in continuing, as the GWR did, to acknowledge its link to D&M 2, considering all the numerous (and justifiable) cases where the origins of a locomotive are credited, supplemented by rebuild details, even though nothing remains of the original? Examples include the George England locos on the Ffestiniog, Robert Stephenson 491 on the Lambton colliery system, and the most famous of them all, FLYING SCOTSMAN, whose hundredth birthday was celebrated in 2023 in spite of the fact it retains no significant component from 1923, certainly not the frames, which were replaced in the 1930s (separate to its rebuilding from an A1 to an A3). It cannot be ruled out that there may also be an element of locomotive engineer "snobbery" against the original D&M locos, derided for having been built by an "injector manufacturer" rather than a "proper" locomotive builder, a prejudice reinforced by the problems soon found with the valve gear. However that should be a fault attributed to the designer, Szlumper, rather than Davies & Metcalfe, who acted on his instructions. At the time that Nos.1 & 2 were built there was a shortage of locomotive manufacturing capacity in the UK so it was an ideal time for Davies & Metcalfe to consider expanding into locomotive construction and repair. That they proceeded no further is more likely due to a rational analysis of what it would cost to develop that business area and what the likely profit margins would be, compared to what they were already achieving in their core business. If so, that was a sensible decision because Davies & Metcalfe are still in business today whereas all the "proper" UK locomotive builders from that period have long since been consigned to history. Suggestions that Swindon was not impressed by the Davies & Metcalfe design are contradicted by the fact that they incorporated significant elements of it in their own version and that 1212 remained in service largely in original condition under GWR ownership for ten years, and would have lasted longer had it not been for the cessation of winter services in 1931. Even then, it was kept on the Sales List for several years.

No matter how many times the mantra "A new locomotive built at Swindon is 1924" is repeated it doesn't change the fact that, so far, there is no documentary evidence to prove that claim. That doesn't mean that it wasn't a completely new locomotive, but it doesn't prove that it was either. The documentary proof, in the form of the 1924 Swindon Works purchase orders, or at least the axle register and the Frame ('W') Shop records, are lacking. If Industrial Railway Society records are to be based on opinions, rather than research, that would reduce them to the same level of accuracy as the colourful claims churned out daily by Social Media or, to put it in the context of the period when Green's book was published, claims that "Freddie Starr ate my hamster". The title of this article was chosen as a reminder of the "Whatever Happened To Steam" series of booklets recording the disposal of BR steam locomotives, based on reported personal observations which proved, in particular from one source, to contain numerous errors. The resulting controversy highlighted the importance of accurate information based on primary sources. That is not to imply that such sources should be accepted without question. 1213 again provides an example of an error in a primary record. The fitting of new cylinders of 11½" diameter in 1924 was recorded on its first GWR History Card, but the clerk omitted to change the cylinder diameter on the heading as well. When, a few years later, the History Card was replaced by a History Sheet the heading information was copied across, perpetuating the error and so for the rest of the GWR period it was officially stated that 1213 differed from 7 & 8 in having 11" diameter cylinders. The error was not corrected until October 1954 (following a query from the Works to the Drawing Office)^[11], and the Ian Allan ABCs never got it right! So yes, primary sources can be wrong, but evidence has to be produced to prove that – they cannot just be ignored because you don't want to believe them. The consequence of doing so was shown by the Hetton Colliery locomotive now preserved at Locomotion, Shildon. There was contemporary evidence that it was a new locomotive built in the Hetton colliery workshops the late 1840s (there was even an eye-witness to its construction), but by the 1890s it had become confused by some with the George Stephenson locos which preceded it, including by the Editor of the Railway Magazine. He

claimed it was a rebuild of an 1822 George Stephenson loco, a claim related to his campaign for a National Railway Museum. That claim was then generally accepted as fact for over a century in spite of there being no documentary proof. This is why this apparently trivial issue of 1213 matters, because it goes to the very basis of maintaining historically accurate records. Locomotives are items of machinery subject to wear-and-tear and requiring regular maintenance. Any locomotive which has been in near continuous service for over 120 years is likely to contain little, if anything, of the original. That particularly applies to those in the ownership of mainline companies with well-equipped workshops and which were under a legal obligation to maintain their stock in the best condition. The answer to the question “Whatever Happened to Davies & Metcalfe No.2” is, of course, that all its original components have long since been scrapped, but precisely when is less clear. By all means question whether 1213 retained any original parts after 1924, but do so on the basis of documentary evidence which can be checked. In the absence of such evidence an open mind should be maintained, something sadly lacking in the case of 1213 since Green’s book was published.

Martin Shill, January 2026.

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Notes:

^[1] Chacksfield p.47 and Cook p.81

^[2] National Archive, RAIL250/53

^[3] Pole, p.46

^[4] Timms, Chapter 5 for the CME Accounts and Chapter 10 for the Stores Accounting

^[5] Chacksfield, pp51/2

^[6] GWR Locomotive Stock Book 2 (RAIL254/149)

^[7] For a discussion of how the Renewal Fund was administered by the GWR see Cook, Chapter 13, although he does tend to confuse matters by referring to Complete Renewals as Capital Renewals. Except for betterment (hardly ever used by the GWR for individual locomotives), there was no capital expenditure involved, even though in most case Complete Renewals were entirely new locomotives.

^[8] Pole, p.80

^[9] For the considerations which led to new frames being made for the Granges and Manors rather than reusing those from the 43xx, see Cook, p.118. For the reasons for making new frames for the first two Patriot rebuilds see “The LMS Patriot 4-6-0s” (RCTS 2018, ISBN 9780993490811).

^[10] Hopwood, Railway Magazine p.366: “At the time of the last visit, No.2 engine had just been returned from Oswestry Works, where it had been altered by having the footplate widened 12in”. This must refer to the fitting of cabside bunkers. The date of the visit is not given but as the article was published in the June 1921 issue it would probably have been prepared by March 1921. On the assumption that the visit would have been the previous summer rather than in the winter, and heavy repairs to Nos.1 & 2 were made in the winter, that suggests No.2

was probably modified at Oswestry in the winter of 1919/20. Unfortunately the absence of Oswestry Works records for that period means that supposition can't be verified.

^[11] Engine Data (*RAIL254/178*) entry for 1213 (9) – ‘Cyls 11½“ x 17” per D.O. 4/10/54’

^[12] See Williams p.200 “The storekeeper is another who, by reason of his extreme officiousness and parsimonious manner in dealing out the stores, is not beloved of the toilers in the shed. He [examines] the foreman’s slip half a dozen times or more... until the exasperated workman can stand it no longer... ‘We got some work to do. Anybody would think thee hast to buy it out of thy own pocket!’”.

Swindon Drawings

These are the drawings listed in Swindon Drawing Register No.7 that directly relate to either the Vale of Rheidol Davies & Metcalfe locomotives or the GWR version. The initials are those of the draughtsman who checked the drawing, but they are not always easily legible!. FWH is Frederick Hawksworth, later the CME, and SJS is Sidney Smith, later Chief Draughtsman.

No.	Description	First Completed	Last Shop Copy date	Register Initials
62784	Welshpool & Llanfair + Vale of Rheidol Rlys, Std profile of tyres	10/08/1922		JAC
62787	Vale of Rheidol bogie wheels and axles	11/08/1922		JAC
65183	V of R – alteration to eccentric rods, Engines 1 & 2	22/12/1922		JAC
65184	V of R – Detail of motion, Engines 1 & 2	22/12/1922		JAC
65185	V of R – Pony truck wheel, Engines 1 & 2	22/12/1922		JAC
65186	V of R – Valve rod, Engines 1 & 2	22/12/1922		JAC
65187	V of R – Proposed motion arrangement, Engines 1 & 2	22/12/1922		JAC
65188	V of R – Proposed motion arrangement, Engines 1 & 2	22/12/1922		JAC
65189	V of R – Proposed motion arrangement, Engines 1 & 2	22/12/1922		JAC
65190	V of R – Cylinders, Engines 1 & 2	22/12/1922		JAC
65191	V of R - Boiler & firebox, Engines 1 & 2	22/12/1922		JAC
65192	V of R – Details of slide valves + motion, Engines 1 & 2	22/12/1922		JAC
65193	V of R – Steam pipe, Engines 1 & 2	22/12/1922		JAC
65194	V of R – Frames, Engines 1 & 2	22/12/1922		JAC
65195	V of R – Bogie control springs, Engines 1 & 2	22/12/1922	13/04/1923	JAC
65196	V of R – Injector, Engines 1 & 2	22/12/1922		JAC
65197	V of R – Suspension link + bracket, Engines 1 & 2	22/12/1922	20/02/1923	JAC
65198	V of R – Rocking lever + bracket, Engines 1 & 2	22/12/1922		JAC
65199	V of R – Suspension link bracket, Engines 1 & 2	22/12/1922		JAC
65200	V of R – Valve gear bracket, Engines 1 & 2	22/12/1922		JAC
65201	V of R – Axlebox, Engines 1 & 2	22/12/1922		JAC
65202	V of R – Eccentric + strap, Engines 1 & 2	22/12/1922		JAC
65203	V of R – Diagram of valve motion, Engines 1 & 2	22/12/1922		JAC
65265	Diagram of Vale of Rheidol loco	02/01/1923		FWH
65368	Copper tube plate, Vale of Rheidol 2-6-2T class	11/01/1923		SJS
65401	Belpaire boiler for Vale of Rheidol 2-6-2T class engines	18/01/1923		SJS
65449	Belpaire boiler for Vale of Rheidol 2-6-2T class	26/01/1923	22/02/1923	FMZ
65598	Regulator guide, Vale of Rheidol 2-6-2T class	14/02/1923	23/04/1923	FMZ
65599	Regulator + steam pipe, Vale of Rheidol 2-6-2T class	14/02/1923	24/04/1923	FMZ
65600	Arrangement of top feed, Vale of Rheidol 2-6-2T class	14/02/1923	13/04/1923	FMZ
65601	Steam fountain, Vale of Rheidol 2-6-2T class	14/02/1923	29/03/1923	FMZ
67323	Wheels, Vale of Rheidol Engines 1, 7 & 8	07/03/1923	31/12/1965	SJS
67336	Wheels + axles, Vale of Rheidol engines 7 & 8	08/03/1923	25/05/1923	SJS
67337	Horns + ties, Vale of Rheidol engines 7 & 8	08/03/1923	16/03/1923	SJS
67610	11½ x 17 Cylinders, Vale of Rheidol engines 7 & 8	18/03/1923	20/03/1923	FWH

67894	Cylinder covers, pistons etc Vale of Rheidol eng 7 & 8	26/03/1923	29/03/1923	SJS
67967	Steam chest cover, slide valve + spindle, Vale of Rheidol Eng 7&8	28/03/1923	10/04/1923	FWH
68271	Slide bars, crosshead etc, Vale of Rheidol engines 7 & 8	10/04/1923	16/04/1923	SJS
68590	Coupling rod, Vale of Rheidol Eng 7 & 8	19/04/1923	22/04/1923	SJS
68591	Connecting rod, Vale of Rheidol Eng 7 & 8	19/04/1923	27/04/1923	SJS
68814	Arrangement of tanks & bunkers, Vale of Rheidol Nos 7 & 8	25/04/1923	28/04/1923	FMZ
68818	Angle irons, Vale of Rheidol Eng Nos. 7 & 8	25/04/1923	27/04/1923	SJS
68819	Spring gear, Vale of Rheidol Eng Nos. 7 & 8	25/04/1923	30/06/1961	SJS
68926	Details of valve gear, Vale of Rheidol Eng 7 & 8	26/04/1923	10/05/1923	FWH
69092	Exhaust Pipe Casting + Blast Pipe, Vale of Rheidol Nos 7 & 8	03/05/1923	04/05/1923	FWH
69093	Erecting plan, Vale of Rheidol Nos. 7 & 8	03/05/1923	07/05/1923	SJS
69113	Central coupling, Vale of Rheidol engines 7 & 8	04/05/1923	30/05/1923	SJS
69400	Cast iron steam elbows, Vale of Rheidol engines 7 & 8	14/05/1923	15/05/1923	FWH
69572	Arrangement of smokebox, Vale of Rheidol engines 1 & 2	16/05/1923	06/06/1923	FMZ
69995	Arrangement of smokebox for Vale of Rheidol engs 7 & 8	28/05/1923	06/06/1923	FMZ
70127	Brake cylinders + reservoirs, Vale of Rheidol Eng 7 & 8	30/05/1923	19/06/1923	SJS
70238	Sand gear, Vale of Rheidol Eng 7 & 8	02/06/1923	06/06/1923	SJS
70239	Draw + buffing gear, Vale of Rheidol Eng 7 & 8	02/06/1923	13/06/1923	SJS
70240	Arrangement of cyl cock gear, Vale of Rheidol Eng 7 & 8	02/06/1923	25/06/1923	SJS
70353	Cast details for Pony Trucks, Vale of Rheidol Eng 7 & 8	05/06/1923	09/06/1923	FWH
70354	Forged details for Pony Trucks, Vale of Rheidol Eng 7 & 8	05/06/1923	09/06/1923	FWH
70525	Spring for Pony Truck, Vale of Rheidol Eng 7 & 8	09/06/1923	13/06/1923	SJS
70533	Arrangement of ashpan for Vale of Rheidol Engines 7 & 8	12/06/1923	20/06/1923	FMZ
70545	Engines 7,8,1212,1213 on 2 chain curve	15/06/1923		AB
70555	Arrangement of pipes, Vale of Rheidol Engines 7 & 8	15/06/1923	25/06/1923	FWH
70556	Arrangement of Pony Truck, Vale of Rheidol Eng 7 & 8	15/06/1923	25/06/1923	FWH
70560	Frame Plan, Vale of Rheidol Eng 7 & 8	18/06/1923	16/10/1923	SJS
70684	Balance Weights, Vale of Rheidol Eng 7 & 8	29/06/1923	02/07/1923	FWH
70797	Cambrian Rly, Vale of Rheidol engs 1 & 2, animation of valve motion	04/07/1923		HE
72301	Maximum cross section, Vale of Rheidol 7 & 8 2-6-2T A1	16/11/1923		SJS
72591	Vale of Rheidol, Checking on curve	27/12/1923		AB