

Volume I : The pre 1923 Grouping Railways

Preamble: J Pearson Pattinson

In 1893 the book “British Railways – their passenger services, rolling stock, locomotives, gradients and express speeds” written by J Pearson Pattinson was published by Cassell & Co. This excellent book gave details of all the United Kingdom railway Companies, specifically it included chapters on the London Chatham & Dover [LC&D], the South Eastern [SE], London Brighton & South Coast [LB&SC] and the London and South Western [L&SW]. Each essay [Chapter] gave a general description of the line, travelling facilities and locomotive work, which included a log [or logs] of actual performance. He subsequently wrote individual books [“monographs”] on the SE, LB&SC and the LC&D, published in 1895, 1896 and 1897.

The volume on the SE was based on observations made by Pattinson in July, August and December 1894. He recorded 151 runs during this period and travelled c. 4,500 miles. [A run is defined as from one stop to the next, so one train may be recorded as several runs]. It appears he regarded some running as not of sufficient quality to be included in his monograph e.g. on the Redhill-Reading line he restricted himself to comments referring to the attractiveness of some of the stations.

The LB&SC volume is based on travels by 138 trains; he covered 6,000 miles [He details 266 runs, runs being defined as for the SE]. Observations for this volume were carried out over several months during summer 1895 and for his final volume on the LC&D the following year. His LC&D travels involved some 271 runs [he only included details of 101] during which he travelled some 7,000 miles. Unfortunately he did not appraise the L&SW in 1897. The review of his efforts in the Locomotive Magazine for June 1897 expressed “the hope that the author will tackle running to the North of London”.

Pattinson’s observations appear to have been careful, his timings meticulous, none of the bravura and gay abandon exhibited by Charles Rous Marten. The only concern is that he apparently travelled with the knowledge of the senior Management of the Railway Companies and locomotive crews might have been encouraged to produce a good performance. However in mitigation the sheer number of journeys would presumably have made this difficult to manage.

Any book surveying steam locomotives in passenger service at the end of the 19th Century in South England inevitably relies heavily on Pattinson’s work. Previous authors, including D.L. Bradley, C.H. Ellis and O.S. Nock used his records extensively. Some acknowledged him others regrettably hid their indebtedness under expressions such as “fortunately logs exist”. The author has enjoyed leafing through his three monographs for many years and three of the pre 1900 Chapters are based on them.

Chapter 1: London and South Western Railway Pre-1900

The early afternoon express for Weymouth, Bournemouth and Stokes Bay, due to depart Waterloo at 14.15 hours somehow typified London and South Western Railway long distance trains of the 1880s. On Wednesday September 9th 1885 it left Waterloo two minutes late and consisted of 18 coaches [probably all six wheelers with a total weight of approximately 190 tons] apparently full of passengers.

There were two locomotives on the train; double heading was common on the L&SW Railway at this time. They were a Joseph Beattie designed 2-4-0 with seven feet diameter coupled wheels, probably built in 1868 at Nine Elms Works, and No.236, built by Beyer Peacock in 1866 and also a 2-4-0 albeit with six feet diameter coupled wheels.

The "Centaur" 2-4-0's, with seven feet diameter coupled wheels, were all built in 1868, they had two outside cylinders [17 inches diameter by 22 inches stroke]. The boiler working pressure was 130 pounds per square inch and the total heating surface 1,176 square feet [1,056 square feet in the boiler tubes and 120 square feet in the firebox]. The fire-grate area was 17.8 square feet. The locomotive weighed 36 tons, the tender another 22 tons.

The 231 Class were the only Beattie designed 2-4-0's not built at Nine Elms. The six members of the class were delivered from Gorton in 1866. They were usually employed on Waterloo to Reading or Waterloo to Southampton via Alton trains in the 1880's. Number 236 however is reported to have been used as Woking pilot in the mid-1880's, which may explain why it was on the 14.15 on that particular day. The "231" Class had outside cylinders [16½ inches diameter by 22 inches stroke]. The boiler working pressure was 130 pounds per square inch and the total heating surface 1,047 square feet [927 square feet in the boiler tubes and 120 in the firebox]. The fire grate area was 18 square feet, the locomotive weighed 34 tons, the tender another 20 tons.

The 14.15 ran non stop to Basingstoke, schedule 70 minutes and on this particular day arrived one minute early, having averaged slightly less than 40 miles per hour over the 47¾ miles from Waterloo. The Working Timetable [W.T.T.] shows the 14.15 allowed 8 minutes to pass Clapham Junction, 3.9 miles and 36 minutes to pass Woking, 24.4 miles. The 16.55 had a schedule two minutes faster to pass Woking and four minutes less to the Basingstoke stop.

The 18.8 miles from Basingstoke to Winchester the next stop were scheduled in 26 minutes, the fastest schedule of any train and bearing in mind the uphill nature of the first few miles to Wootton signal box, average gradients 1/249, can be considered good for the period. In practice, the two elderly 2-4-0s completed the section in 25 minutes, arriving one minute late.

L&SW 1885

The Basingstoke departure was two minutes late, six minutes spent there against a stop scheduled to last three minutes. The average speed was 45 miles per hour between Basingstoke and Winchester.

The Winchester departure was three minutes late, station time exceeded by two minutes. The seven and a quarter miles to Bishopstoke [now Eastleigh] were run to schedule, in ten minutes. The average speed start to stop was 43 miles per hour. Locomotives were changed at Bishopstoke and four coaches for Stokes Bay detached. These coaches left Eastleigh at 16.10 and with stops at Botley, Fareham and Gosport Road were due to arrive at Stokes Bay at 16.47, slightly over two hours and a half from Waterloo. This may not appear a very exciting journey but the quickest train on the rival route to the Isle of Wight via Portsmouth Harbour took four minutes over the two hours to the Harbour station and the next fastest, one minute inside two and a half hours.

The change of locomotives and detachment of the Stokes Bay portion occupied five minutes, the Weymouth and Bournemouth train left Bishopstoke four minutes late. It now consisted of 14 coaches, probably 160 tons Gross double headed by two "Centaur" Class locomotives, No.95 "Centaur" and No.96 "Castor". The 5.4 miles to Southampton West [now Southampton Central] were run to schedule in ten minutes, the average speed 32 miles per hour.

The W.T.T. allowed one minute for the Southampton stop and inevitably this was exceeded, by one minute, the departure was five minutes late. The next stop, Brockenhurst, 13.6 miles distant, was reached in 19 minutes. Considering the slow start out of Southampton through Redbridge and Totton and then the "ups and downs" through the New Forest, this with its average speed of 45 miles per hour was good, schedule was 20 minutes.

The allocated one minute at Brockenhurst was exceeded by a minute and the ten miles to Ringwood took 17 minutes, schedule 18 minutes, an average start to stop speed of 35 miles per hour, the arrival was four minutes late. The train was split at Ringwood, the leading locomotive detached and coupled to the back eight coaches. Number 96 departed for Weymouth at 17.06 with six coaches after achieving the apparently impossible, observing the scheduled station stop time of two minutes. Presumably the station staff were well prepared for the two uncouplings and the change of points to clear No.95.

The eight coaches for Bournemouth were scheduled to depart Ringwood at 17.07, [headed by No.95, with a stop at Christchurch] and reach Bournemouth East station at 17.41, three hours 26 minutes after leaving Waterloo. The journey from Ringwood to Bournemouth East involved single line track with a speed restriction of 25 miles per hour between Ringwood and Christchurch.

L&SW to Bournemouth

On this particular day the train would have arrived at the new Bournemouth East [later Bournemouth Central] station, opened some seven weeks previously, the opening of the second track from Christchurch to Bournemouth was still some eight months away.

The six coaches for Weymouth, with No.96, ran the 9.6 miles to Wimborne as scheduled in 14 minutes, an average speed of 41 miles per hour. The scheduled two minutes stop at Wimborne was exceeded by four; the departure was seven minutes late at 17.26. The train was due to reach Weymouth at 18.20 after stops at New Poole Junction, Wareham and Dorchester, four hours and five minutes after leaving Waterloo.

This description typifies train arrangements before the opening of the direct line from Brockenhurst to Bournemouth via Sway in 1888, which obviated both running over "Castleman's Corkscrew" to Ringwood and the 25 miles per hour restricted Ringwood to Christchurch line. The locomotives employed were all 1860's vintage and more than maintained schedule, albeit two were required. The actual running time from Waterloo to Wimborne was 161 minutes, schedule 168 minutes. The overall loss of time was attributable to delays at stations, not ironically at the two stations where diversion of the train and changing of locomotives occurred. The average overall running speed was 42 miles per hour, it will be noted that the average speed between stops lay between 40 and 45 miles per hour except for two exceptions; the short stage between Eastleigh and Southampton, which included the slow passage of Northam Curve and the difficult stage from Brockenhurst to Ringwood with its awkward start uphill to Lymington Junction.

It is also significant that 113 tons of locomotives and tenders hauled 190 tons of train to Bishopstoke and 118 tons hauled 160 tons to Ringwood [ratios of 1.68:1 and 1.36:1]. Similarly the steam locomotives ability to "boil water" i.e. 2,200 square feet of heating surface and 36 square feet of fire grate to haul 190 tons, 2,350 square feet and 33½ square feet of fire grate to haul 160 tons respectively at average speeds of 40-45 miles per hour.

The opening of the direct route to Bournemouth via Sway and the connecting line between Bournemouth East and West Stations revolutionised services to Bournemouth. Until 1893, when the line between Hamworthy Junction and Holes Bay Junction, near Poole was opened, the Weymouth trains continued to run via Ringwood. After this date many Bournemouth trains included portions for Weymouth detached at the East Station and run to Weymouth via Poole. "Castleman's Corkscrew" was still used by some Weymouth trains, summer extras and some specials continued to travel this way for the next 75 years. The new Bournemouth service represented the beginning of a process that was to lead to significant advances over the following 25 years.

L&SW to Bournemouth in the 1890's

The same traveller [Ref.1] who visited Bournemouth in 1885 returned in the early 1890's and his records are of interest. There is no reason to believe that his timings do not represent normal occurrences rather than train crews putting on a special effort, as undoubtedly was the case with some enthusiasts and commentators of the time.

The 14.20 ex Waterloo on Wednesday December 17th 1890, with a new Pullman car and 15 coaches, probably 200 tons left on time, headed by an Adam's Class 4-4-0 No.472 with a Beattie 2-4-0 No.31 "Leeds" as pilot. Number 472 was a member of the 460 Class designed by William Adams and constructed in 1884, one of a batch built by R. Stephenson & Co. The 460 Class were similar to Adam's previous 135 Class and represented a small but not insignificant increase in locomotive power over the Beattie designed locomotives. The 460 Class had six feet seven inches diameter driving wheels and outside cylinders [18 inches diameter by 24 inches stroke]. The boiler working pressure was 160 pounds per square inch and the total heating surface 1,163 square feet [1,051 square feet in the boiler tubes and 112 square feet in the firebox]. The locomotives weighed 46 tons, the tender another 27 tons. It was a member of this Class that worked the special train conveying the official guests when the new direct line between Brockenhurst and Bournemouth was opened in 1888.

Number 31 "Leeds" was a Volcano Class 2-4-0 built at Nine Elms in 1871. The Volcano Class were originally designed by James Beattie but constructed under the regime of his son, W G Beattie; six of the Class being built by Beyer Peacock as already noted.

The 14.20 took 69 minutes to Basingstoke, schedule 70, despite a stop at Farnborough and snow on the ground in London, 27 minutes from there to Winchester, schedule 27 minutes and 10 minutes to Eastleigh [Bishopstoke] as per schedule. The Eastleigh arrival was five minutes late due to over time spent at the Basingstoke and Winchester stops. After the detachment of five coaches, it left five minutes late at 16.10 and ran non stop to Bournemouth East in 48 minutes, schedule 55 minutes, arriving two minutes early. Six more coaches were removed at the East Station, the remaining four taken round to the West Station, arrived to schedule in three hours from Waterloo. Such timetable exactitude was not by all accounts the norm on the old South Western. Foxwell wrote in the Proceedings of the Statistical Society in 1885 "amid the distracting hurry of a restless age the South Western poses like the Church of Rome as champion of the grand old motto, *semper eadem*, always late".

The next visit to Bournemouth was on Monday March 23rd 1891 when the weather was fair and an Adams Class 4-4-0 No.451 headed the 12.30 consisting of 12 coaches including a Pullman Car, probably 160 tons Gross. Number 451 was a member of the "445" Class built by Robert Stephenson & Co in 1883.

L&SW Adams Class 4-4-0's

They had seven foot diameter driving wheels as opposed to the six feet seven inches of the 460 Class, otherwise they were very similar.

The 98 minutes non stop schedule to Southampton was exceeded by one minute and the 20 minutes to Brockenhurst maintained with departure from there four minutes late. The run to Bournemouth must have been lively, the 15.6 miles to the East Station, including the difficult start up to Sway, were covered in 20 minutes thereby regaining three minutes of lost time, one minute late on the two and a half hours schedule from Waterloo.

D.L.Bradley in Part II of the locomotives of the London and South Western Railway [Ref.2] gave details of a run, from Inspector Robin's notebook of a performance by No.454 on the 14.20 Waterloo-Weymouth Express in October 1888:- 15 coaches to Eastleigh and eight coaches to Bournemouth East – 67½ minutes to Basingstoke – 26½ minutes to Winchester, nine and a half minutes to Eastleigh and 58¾ minutes on to Bournemouth East, where it arrived two and three quarter minutes early. At this time there were speed restrictions on the Sway line, particularly over the embankment by Sway, to 20 miles per hour.

The 13.55 ex Bournemouth West on March 26th 1891 consisted of seven coaches, increased to 12 at the East Station, probably 140 tons Gross, the locomotive was Adam's X2 Class 4-4-0 No.582. Although it was Maundy Thursday, there was heavy snow at Fleet.

It was apparent in the late 1880's that schedules on certain expresses exceeded the reliable performance of existing locomotives, amongst those was the new accelerated Bournemouth service, introduced after the opening of the Sway direct line. Particularly, trains such as the 12.30 ex Waterloo, which combined its 98 minutes schedule to the Southampton stop with increased loadings. The first member of the X2 Class 4-4-0's was built at Nine Elms and was recorded as ex works in June 1890. They had seven feet one inch diameter coupled wheels, outside cylinders [19 inches diameter by 26 inches stroke], and a fire grate area of just over 18 square feet. Boiler pressure was 175 pounds per square inch and the total heating area 1,359 square feet [1,246 square feet in the boiler tubes and 113 square feet in the firebox]. The locomotives weighed 48½ tons, the tender another 33 tons. Number 582 is recorded as ex works March 1891 so was truly in ex works condition on Maundy Thursday.

The departure from Bournemouth West was on time, the seven minutes schedule to the East Station exceeded by one minute, station time there by another minute and the departure two minutes late. Sway was passed in 18 minutes at walking pace due to signals and further checks at Lymington Junction resulted in Brockenhurst being reached three minutes late. The 21 minutes schedule to Southampton West was cut to 19 minutes, arrival being one minute late at 14.54.

L&SW tests with No.582

Southampton was left two and a quarter minutes late, overtime at the station, Eastleigh passed in 10 minutes, Winchester in 20 minutes, average speed from Eastleigh 42 miles per hour and Micheldever in 32 minutes, average from Winchester 42.5. Unfortunately, the next passing time noted was Basingstoke in 43¼ minutes, so whether the train accelerated further cannot be ascertained, but the 1/252 gradient was clearly being climbed at 42-43 miles per hour at least. The train accelerated after Basingstoke down the gradient to Hook, the mile between Mile Posts [MP] 46 and 45 was run in 52 seconds, 69 miles per hour and the nine miles from MP47 to MP38 in 8 minutes 41 seconds. However there was a four minutes stop for signals at Fleet, 55¼ minutes from Southampton. From the restart the 17½ miles to a stop for signals at Weybridge lasting 45 seconds were run in 22½ minutes. Vauxhall was finally reached in 104¼ minutes from Southampton, schedule 92 minutes. It is difficult to assess the Net time without the two signal stops but it was probably c. 87-88 minutes. The final arrival at Waterloo was 16 minutes late.

Later in the year tests were carried out on an X2 Class locomotive, No.582 as it happened, between Waterloo and Bournemouth, followed by three further runs on the West of England line [Ref.3]. The Bournemouth trial took place on July 9th 1891 with the 05.50 Waterloo to Bournemouth East. Train weights were: 240 tons Net to Woking, 217 tons to Basingstoke, 167 tons to Eastleigh, 136 tons to Brockenhurst and 117 tons finally to Bournemouth. Initially the locomotive was worked hard, the maximum indicated horsepower [IHP] occurred at MP28, three and a half miles after the Woking stop. Here the cut off was 29.5%, boiler pressure maintained at 170 pounds per square inch and speed 40 miles per hour. The gradient at this point was 1/314, the IHP 684. The maximum speed recorded was 68.5 miles per hour, a mile and half before the Winchester stop. The overall running time from Waterloo to Bournemouth was 179½ minutes with nine intermediate stops.

The return was made on the 13.55 Bournemouth West to London, the load 90 tons to the East Station and 138 tons onwards. The overall journey time was 2 hours and 41 minutes, the actual running time two hours 27¼ minutes. On the climb up the 1/252 gradient from Southampton, the maximum IHP was 610 at MP60 when the speed was 43 miles per hour and the cut off 26%. [The maximum IHP on the trials between Salisbury and Exeter was 803.6, recorded at 31 miles per hour when climbing a 1/80 gradient, and 804.3 IHP at 27½ miles per hour with a cut off at 48% on the return.] The maximum speed between Basingstoke and Waterloo was 67 miles per hour on the London side of Woking. At the time these tests were considered extremely satisfactory, coal consumption was 30.5 lbs per train mile on the Down journey and 28.1 lbs per train mile Up. The coal consumption per IHP per hour figures were excellent, it has been suggested that they give the only credible instance of locomotives operating at two and a half pounds of coal per IHP in the 19th Century [Ref 4]

L&SW July 1897 timetable

The 14.15 Waterloo to Bournemouth, on December 17th 1892, was hauled by X2 Class 4-4-0 No.584 with nine coaches. It was by this time booked non stop to Christchurch in 134 minutes, although on this particular day a special stop was made at Southampton, reached in 100 minutes from Waterloo. This lasted two minutes and the Christchurch arrival was one minute late, 135 minutes from Waterloo. There was a delay at Christchurch whilst a search was made for some items of missing luggage, Bournemouth East was reached in eight minutes from Christchurch, four coaches were detached and the remaining five taken round to the West Station in eight minutes, reached four minutes late.

The train service to Bournemouth and Weymouth through the 1890's altered little in terms of speed although undoubtedly train weights increased. The principal trains in July 1897 were: in the Down direction from Waterloo for Weymouth via Ringwood at 07.55, 11.15, 14.25, and 15.10. The 14.25 was the only one with "express" pretensions, Weymouth in 4 hours 7 minutes for the 146 miles, the other three took nearly five hours or more. Departures from Waterloo via Sway were at; 05.50, with through coaches to Weymouth via Ringwood - 09.30 - 12.30, with coaches through to Weymouth via Poole in three and three quarters hours - 14.15 - 16.55 with connections to Weymouth in five minutes under four hours and through coaches to Hamworthy Junction via Wimborne, which connected with the 19.42 ex Bournemouth East via Poole, Bournemouth East was reached from Waterloo in 2 hours 34 minutes by the 12.30 with stops at Southampton and Brockenhurst, 2 hours 23 minutes by the 14.15 with a stop at Christchurch and 2 hours 40 minutes by the 16.55 with stops at Basingstoke, Southampton, Brockenhurst and Christchurch. The other trains with further stops took three hours or more. There were non stop Channel Islands boat trains to Southampton at 08.55 and 22.10.

The Up service was similar, one express from Weymouth to Waterloo at 10.10 via Ringwood, Waterloo reached in 12 minutes over the four hours. Departures from Bournemouth East were at; 08.09, 09.25, 11.10, 14.10, 16.00, 18.40 and 19.50. The fastest were the 08.09 and the 14.10, which with stops at Brockenhurst, Southampton and Vauxhall reached Waterloo in 2 hours 39 minutes and 2 hours 35 minutes respectively. All trains, except the 11.10, contained through coaches from Weymouth, best times included: 08.09 [06.53 ex Weymouth] to Waterloo in 3 hours 46 minutes - 09.02 [08.00 ex Weymouth] four hours and a quarter - 18.40 [17.30 ex Weymouth] 4 hours and 5 minutes.

The large Adams 4-4-0's appeared to have adequate power to normally time the service. Charles Rous Marten cites a run on the 12.30 to Bournemouth with an Adams X2 Class 4-4-0 No.593 with 16 coaches.

L&SW Performance in 1897

[He gave the train weight as 240 tons, although the 12.30 would have included a "Pullman Drawing Room Car" in the formation, this seems rather high, 220 tons would be more likely, Railway Magazine Volume XII gave the weight as 170 tons]. It passed Woking in slightly over 28 minutes, Basingstoke in 55½, with 74 miles per hour attained down the hill, Winchester in 76¼, Eastleigh in 82½ and reached Southampton in 90¼ from Waterloo. Rous Marten gave at various times brief details of runs where Adam's 4-4-0's kept schedule or even gained time with loads in excess of 200 tons. He observed that the 14.15 twice ran to Christchurch in five minutes under schedule although the Adam's 4-4-0's on occasions were prone to lose time heavily, particularly if over loaded or frequently checked. The 14.05 from Bournemouth was a bad timekeeper "the run of the 14.05 up summer train would be fairly credible if it kept time, but I have only once known it do so out of several trials, although the loads were always moderate" [Ref.5].

The 14.15 on another occasion reached Christchurch two and a quarter minutes early despite the loss of six minutes through signal checks. On this run No.683 had 160 tons, the minimum after Worting Junction was 37 miles per hour and 76 the maximum down the bank. In the up direction No.685 ran from Bournemouth to Vauxhall with 12 coaches in slightly less than 140 minutes, Rous Marten assessed the Net time as only 124 minutes. On another day an Adams 4-4-0 with 220 tons ran from Basingstoke pass to the Vauxhall stop in 48 minutes.

An X2 Class 4-4-0 No. 571 on the Portsmouth direct route, with 220 tons fell to 19 miles per hour up the 1/80 to Haslemere but then reached 80 descending past Liss. A rapid contrast for the passengers one imagines.

DL Bradley quoted [Ref.6] the locomotive committee minutes as follows "May-June-July 1897". 14.05 Bournemouth-Waterloo never more than three and a half minutes late, on 29 occasions it reached Waterloo on time. The average load was 293 tons and the motive-power an Adams T6 Class 4-4-0. They were very similar to the X2 Class, the main difference a longer coupled wheel base and a boiler with reduced heating surface, 1,264 square feet of which 1,142 square feet was contributed by the boiler tubes and a fire grate area of 19¾ square feet. The locomotive weighed 40 tons with another 33 tons for the tender.

The 293 tons presumably was locomotive plus carriages, indicating a train weight of c.210 tons. Thus one reaches the conclusion that either Rous Marten was unlucky when he travelled by this train or the locomotive committee minutes were written in such a way that they caused the "powers that be" minimum distress. Perhaps, the final word on the subject of L&SW Railway punctuality, should be left to the Bishop of Winchester who said in 1897 "my life has been from day to day, spent mainly on the L&SW Railway where the trains do not always run with that promptitude of arrangement which might be".[Ref.7].

L&SW Performance on the Portsmouth Direct

Travellers in the early 1890's on the Bournemouth line must have regarded the service as almost miraculous compared with that offered some ten years previously. Additionally, William Adams had designed locomotives that efficiently, very efficiently by the standards of the day if the tests on No.582 represented the norm "delivered the goods" or rather the passengers. However by the late 1890's complaints by the fare paying public were becoming commonplace. Before referring to this, a review of performance over other L&SW Railway routes in the 1890's is appropriate.

The Portsmouth direct line always had a tardy service. The only obvious criterion for the L&SW timetable planners apparently was not to allow the competing London Brighton and South Coast to offer a quicker one. Bearing in mind that the LB&SC was not itself enamoured of speed and its route to Portsmouth was some 17percent longer, the challenge was easily met. The fastest trains from Waterloo reached Portsmouth Town in the 1890's in two hours or slightly more. A run in November 1895 behind an A12 Jubilee Class 0-4-2 is revealing [Ref.8]. The Adams Jubilee's, of which 90 were built, the first as their nickname would imply in 1887 and the last in 1893, were inside cylinder 0-4-2's with 6 foot 1 inches coupled wheels, fire grate area was 17 square feet. The boiler pressure was 160 pounds per square inch and the total heating surface 1,248 square feet [1,131 square feet in the boiler tubes and 117 square feet in the firebox.] Cylinders were 18 inches diameter by 26 inches stroke and the locomotive weighed 43½ tons, the tender another 31½ tons. They were designed for mixed traffic duties including pickup and branch line freight workings. The train concerned, the 12.10 Waterloo to Portsmouth Harbour stopped only at Guildford between Waterloo and Havant, it consisted of six coaches, three eight wheelers and three six wheelers, probably 110 tons Gross.

Fog delayed the departure from Waterloo and it took 26¼ minutes to pass Surbiton, 12.1 miles, 25 minutes for the 17¾ miles from there to Guildford via Cobham. Total time to Guildford was 51 minutes 9 seconds, schedule 48 minutes, 43 minutes Net. Speed rose to the mid fifties before Effingham Junction, falling away to the low thirties with a final 60 miles per hour before the restriction for London Road, Guildford and the slow approach to Guildford Station. Two minutes were lost initially after Guildford through single line working in the tunnel under St Catherine's Hill. Speed picked up to the mid forties and then averaged 34 miles per hour up the 6.7 miles from Milford to Haslemere [five miles up at 1/80 and 1/82 with an intermittent mile down at 1/122 and 1/93]. The 23.3 miles on to Havant were run in 28¼ minutes with speed just exceeding 60 miles per hour before Liss and again before the stop at Havant. The minimum at Buriton Summit appears to have been in the mid-forties. Havant was reached in 51 minutes 39 seconds, schedule 55 minutes, 49¼ minutes Net. The log suggests the Jubilees could maintain schedule on the Portsmouth service, albeit with a light load. Net running to Havant was 92½ minutes, schedule 103 minutes.

L&SW Reading trains in the 1890's

Whether the schedules were suitable for a major town is another issue.

The Portsmouth trains were not the only ones frequently criticised for their sloth in the 1890's, and indeed afterwards, the Reading branch and associated lines shared equal approbation. This was another service where the Jubilees found regular employment, schedules were in practice, allowing for intensity and comparatively heavy loads on the "rush hour" trains, reasonably challenging. It has been stated that the L&SW "did not work its locomotives as hard in the suburban areas as the London and North Western Railway between Willesden and Watford for instance". Brief details of runs on the 17.45 Waterloo to Shepperton indicate considerable enterprise. This train ran non stop to Richmond, scheduled to depart there 18 minutes after leaving Waterloo [Ref. 9].

The Adams T1 Class 0-4-4 Tank's were introduced in 1888 to provide more suitable motive power for heavy Suburban trains than the 45 Class 4-4-2 Tank's. They were effectively a Tank engine version of the Jubilee Class 0-4-2. Driving wheels were five feet seven inches in diameter and the firegrate area 17 square feet. The boiler working pressure was 160 pounds per square inch and the total heating surface 1,231 square feet [1,121 square feet in the boiler tubes and 110 square feet in the firebox]. Coal and water capacity were two tons and 1,200 gallons respectively. Number 8 was from the batch built in 1894 which had some differences from the 1888 ones and weighed 55 tons. It ran, with four eight wheeled coaches and nine six wheelers, probably 215 tons full, to Richmond in 15¾ minutes. This would require passing Clapham Junction in about seven and a half minutes and 50 miles per hour between Putney and Barnes. The recorder admitted that at that time he was quite excited by the run, a few days later a Jubilee 0-4-2 ran the course in 15 minutes 12 seconds.

Some Outer Suburban Business services had comparatively long non stop runs i.e. Woking to Clapham Junction, the 415 Class 4-4-2 Tank's were reported running at 50-55 miles per hour for many miles on these trains. They were credited with some very "smart" work on the Aldershot and Farnham trains in the last few years of the century.

However, as noted, whilst the L&SW may not have received the same level of invective over its services as the three railways serving Kent and Sussex, it was under increasing pressure towards the end of the century to offer faster trains. Dugald Drummond in August 1895 assumed the reins at Nine Elms as Locomotive Superintendent, after the retirement of William Adams through ill health. Drummond is generally considered to have inherited from Adams locomotives that were well designed and generally "fit for purpose". Certainly, the Pettigrew tests on No.582 indicated a locomotive right at the forefront of efficiency for its time and, whilst of no benefit in hauling trains, his locomotives were aesthetically very pleasing.

L&SW Drummond designs

Drummond introduced four new passenger designs before the end of the century. The T7 Class 4-2-2-0, M7 Class 0-4-4 Tank, C8 Class 4-4-0 and T9 Class 4-4-0. The T7 double single with its four cylinders, had a large boiler [1,664 square feet total heating area] and fire grate [27½ square feet], but not large enough to supply four off 15 inches diameter by 24 inches stroke cylinders. It can probably be regarded with hindsight as an aberration, of great interest to enthusiasts but unlikely to have much relevance to the job of hauling passenger trains reliably and efficiently. The M7 Class design by contrast was based on solid previous Drummond experience at Brighton, Cowlairs and St Rollox Locomotive Works. They had inside cylinders, 18½ inches diameter by 26 inches stroke and 5 feet 7 inches diameter coupled wheels. Boiler pressure was 175 pounds per square inch, subsequently reduced, total heating area 1,192 square feet [1,068 in the boiler tubes and 124 in the firebox]. The firegrate area was 20¼ square feet, water capacity 1,300 gallons, coal three tons and weight in working order 60 tons. Although apparently designed to replace older express locomotives, in practice, they found their calling in handling commuter traffic.

The C8 Class 4-4-0 was effectively the M7 as a 4-4-0 tender locomotive with 6 feet 7 inches diameter wheels, it is difficult to decide why Drummond designed them. The cynical view is he didn't want the indignity of any more Adams 4-4-0's built under his jurisdiction [when he took command there were orders outstanding for 30 Adams 4-4-0s, 20 X6 Class and ten T6 Class]. He effectively replaced ten of the X6 batch with the C8 design]. The charitable view was that as much of the design was common with the M7 Class and the 700 Class 0-6-0 he was working towards some degree of standardisation.

The T9's were a very different issue. They were built as Express passenger locomotives, driving wheels 6 feet 7 inches in diameter, inside cylinders 18½ inches diameter by 26 inches stroke with a boiler pressure of 175 pounds per square inch. The total heating surface was 1,500 square feet [1,186 square feet in the boiler tubes, 148 square feet in the firebox and 165 square feet in the fire box water tubes], the firegrate area 24 square feet and the locomotive weighed 48 tons, the tender another 41 tons.

The ebullient Sam Fay returned to the L&SW in 1899 as Superintendent of the line after the death of G.T.White and with Drummond set about proving what a T9 could do for the Bournemouth service. One would like to think that they were spurred on by the Bishop of Winchester, but as their efforts led to a fast train which did not stop at Winchester, his Lord Bishop probably felt bypassed if not necessarily ignored! The intention was to introduce two fast Weymouth to Waterloo trains in each direction via Bournemouth. The Down journey was to include a schedule of 115 minutes to Bournemouth and the Up one a time of exactly two hours from Bournemouth to Waterloo.

L&SW to Bournemouth in 125 minutes

A preliminary trial run was made to Bournemouth in 110 minutes. The following day, after the trial, the Chairman of the Company sent for Fay and said "Don't do it again, Fay, not in my time, not in my time". Handbills announcing the service had already been printed dated June 15th. [Ref.10]

When the summer service was instigated, it consisted of expresses from Waterloo at 10.30 and 16.10 booked to Bournemouth Central [East] in 125 minutes. The W.T.T. gave Basingstoke in 52 minutes, Winchester in 73 and Southampton in 91. Further west the schedule required the 15 miles uphill, from Wareham to Dorchester to be run in 19 minutes start to stop and in the Up direction downhill in 15 minutes. Whether the latter was a mistake or not is still open to debate. The frequently quoted statement, that the W.T.T. gave 17 minutes and the public timetable 15 is illogical and not supported by the evidence. From Bournemouth the allowances to Waterloo were 126 and 125 minutes respectively. The passing times in the W.T.T. Eastleigh 40 minutes, Basingstoke 69, this required an average of 50 miles per hour up the 1/252 gradient from Eastleigh to north of Micheldever, Woking 92 and Clapham Junction 115 [one minute later on the afternoon train]. These schedules were to be short lived but for a few months in 1899 speed reigned supreme, when track conditions permitted.

The normal configuration was six bogie coaches, approximately 140 tons. In the Down direction, T9 Class 4-4-0 No.703 passed Clapham Junction in seven and three quarters minutes, suffering signal checks both before and through the station and Hampton Court Junction, 13.3 miles, in 19 minutes 20 seconds. The 34.5 miles from there to Basingstoke were run in five seconds under 36 minutes and the 18.8 miles to Winchester in 18 minutes 50 seconds. Winchester was passed in 74 minutes from Waterloo, after which there was a bad signal check. At Brockenhurst, the train was on time, in 107 minutes, and after another signal check before the station reached Bournemouth 126¼ minutes. Without the signal checks the run could have been completed in just over two hours, the best section was between Surbiton and Winchester and particularly between Basingstoke and Winchester, with its average of 60 miles per hour including the five miles up at 1/249 from before Basingstoke to Wootton signal box [Ref.11].

The recorder of the run returned on the 07.50 ex Weymouth at a later date [Ref.12]. The locomotive was again a T9, of the 701 Class, number not given. From the Bournemouth start, Brockenhurst, 15.6 miles, was passed in 18½ minutes, Southampton, 28.8 miles in 32¼ and Eastleigh in 40 minutes 23 seconds. The 17½ miles to the tunnel summit were run in 23 minutes 41 seconds, an average of 44 miles per hour, but a loss on schedule of three to four minutes. As a result of this the train was three and a quarter minutes late past Basingstoke, 72¼ minutes from Bournemouth. However time was easily recovered on to London.

L&SW high speeds in 1899

The average over the 23.4 miles to Woking was 66 miles per hour and 65 over the 11.1 miles on to Hampton Court Junction. Clapham Junction was passed two and a half minutes early in 113½ minutes and after a signal stop at Vauxhall, Waterloo was reached in 123¼ minutes from Bournemouth, c. 120 minutes Net.

Another run, behind No.703 started more quickly, Brockenhurst in 17½ minutes and Southampton in the very fast time of 30 minutes 20 seconds. There were permanent way restrictions [PWR] after Northam Junction and between Eastleigh and Winchester, despite which Basingstoke was still passed in 68 minutes 35 seconds from Bournemouth. The 17 miles from Winchester Junction to Basingstoke being run in 17¾ minutes, speed up the 1/252 gradient would appear to have reached 52-53 miles per hour. The average on to Farnborough was 63 miles per hour, there was another PWR slack, then 62 to Hampton Court Junction, Clapham Junction was passed in 113½ minutes from Bournemouth and after further checks Waterloo reached in three quarters of a minute over two hours, probably only 112 minutes Net. On another occasion, No.711 ran up to Waterloo in 119¾ minutes, 115 Net. Southampton was passed in four seconds under 32 minutes and 52 miles per hour was reached up the gradient. The 46½ miles from Basingstoke to a stop for signals at Vauxhall were run in 10 seconds under 46 minutes. On this run speed was reported not to have fallen below 50 miles per hour uphill or exceeded 70 downhill. According to Rous Marten who sampled it, the 15 minutes schedule from Dorchester to Wareham could be kept. On the occasion he rode on the train No.711 kept exact time and the maximum was 80 miles per hour, as so often with Rous Marten's comments, supporting details are sparse.

Two runs, later in the year when the 16.10 schedule had been eased by a minute to 126 minutes are of interest. On the 2nd October No.721 had a load of eight carriages c. 180 tons and reached Bournemouth half a minute early despite a signal stop lasting one minute between Eastleigh and Northam Junction. The start, with this load, was excellent, Woking passed in 28¾ minutes, Basingstoke in 55 and Winchester in 73¾. The 7.4 miles from Winchester to Eastleigh were run in five and a half minutes. Five days before Christmas the performance was not so good. No.719 with the standard six coaches took 31 minutes to pass Woking, was then checked at Farnborough, passed Brockenhurst in 110½, three and a half minutes late, before being checked at New Milton and finally reached Bournemouth seven minutes late.

Generally however, signal and permanent way work meant that arrivals at Waterloo were between five and 20 minutes late. The attainment of speeds in the lower fifties up the 1/252 from Southampton required an Equivalent Draw Bar Horsepower [EDHP] of 450-500. The comparative EDHP on the 1891 tests with Adams 4-4-0 No.582 when 43 miles per hour was maintained up the 1/252 was 350-400, the IHP was given as 610.

These timings remained in operation only briefly. The early morning train left Bournemouth Central at 08.57, arrived Waterloo in the public timetable at 11.03, but after a few months this was altered, departure at 09.00, Waterloo arrival 11.08, the 10.30 Down ceased running altogether. It would appear that the T9 Class were “fit for purpose” but the track and infrastructure were not, although in fairness, the L&SW was engaged in quadrupling works between Woking and Basingstoke. However, it provided an interesting appetiser to the Twentieth Century.

Chapter One: References and Notes

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13. [RM] Vol. XLVIII p. 218-9. EL Ahrons – Ahrons gives a detailed log -7 minutes 25 seconds from Winchester pass to Micheldever pass. Winchester shown as 42¾ miles from Bournemouth – actually 41½ - timing probably at Winchester Junction, 43¾ miles, average 51.7 mph. Winchester Junction to Micheldever- 7 minutes 43 seconds to Battledown, 60.6 mph - suggests 53-55 mph at Roundwood summit and into the upper 60’s before Worthing Junction.

Chapter 2: South Eastern Railway Pre 1900

The study of passenger trains on the South Eastern Railway in the latter years of the 19th Century essentially involves the performance of locomotives designed by James Stirling. Stirling became Locomotive Superintendent of the South Eastern in March 1878 and held the reins firmly until 1898. More locomotives were built to his designs during this period than in the previous 34 years. The haulage of fast passenger trains, with the exception of the Maidstone and Chatham expresses, was entirely in the hands of his F Class" 4-4-0's during the 1890's.

Charles Rous Marten [Ref.1] wrote, when he travelled in 1884 for the last time behind a Cudworth 2-2-2 single, No.204, as he joined the train at Cannon Street station, locomotive No.198 stood on the adjacent platform, "the first of the new generation which was to supersede her [No.204] and all her sisters." In practice No.198 was the third F Class 4-4-0 built, but Rous Marten was certainly correct that they were to sweep away the singles.

Number 204 was a member of the Mails Class, designed by Cudworth in 1861 and built by Kitson and Company in April 1862. She had seven feet diameter driving wheels, two inside cylinders [17 inches in diameter by 22 inches stroke], the boiler working pressure was 130 pounds per square inch and the total heating area 1,135 square feet [975 square feet in the boiler tubes and 160 square feet in the firebox]. The firegrate area was 22½ square feet, the locomotive weighed 33 tons and the tender another 33 tons. On Rous Marten's run, No.204 hauling a load of 150 tons, 15 coaches reduced after Ashford, by slipping two coaches, to 130 tons ran the 11.6 miles from New Cross to Halstead in 19½ minutes. [Halstead Station was opened as "Halstead for Knockholt", but subsequently renamed Knockholt on 1st October 1900. The top of the climb from New Cross is referred to as Knockholt summit.] Sevenoaks, 21 miles from Cannon Street was passed in 34½ minutes and over 65 miles per hour was reached before slowing for the curve preceding Tonbridge Station, passed in 43½ minutes. The 26½ miles from there to Ashford took 30¼ minutes. Ashford was passed in 74 minutes according to Rous Marten, even though the individual times from Cannon Street to Tonbridge and Tonbridge to Ashford added up to 73½ minutes. [Rous Marten's accounts are littered with such discrepancies.] Dover was reached in 98 minutes, which on this train the Morning Continental Mail represented a two minutes gain on the schedule to Dover Town in the Public timetable.

The F Class 4-4-0's had two inside cylinders [19 inches diameter by 26 inches stroke], 7 feet diameter coupled driving wheels and the boiler working pressure was 150 pounds per square inch.

South Eastern performance in 1885

The total heating surface was 1,021 square feet [917 in the tubes and 104 in the fire-grate], the fire-grate area 16½ square feet and the locomotive weighed 41½ tons, the tender another 30½ tons. Rous Marten had many runs with the 7 feet diameter coupled locomotives in 1884 and 85 but failed to observe anything startling in the way of performance, "They did very respectably". He noted No.116 with a load of 220 tons taking 36 minutes to run from London Bridge to Sevenoaks start to stop. Number 205 on the "Tidal Express" after a stop at New Cross for signals, ran the 66 miles from there to Folkestone Junction in 85 minutes with a load of 100 tons. In the Up direction, No.214 with 170 tons ran the 54.3 miles from Ashford to London Bridge start to stop in 72 minutes. [At this time the morning fast train from Dover was allowed 78 minutes from Ashford to London Bridge, but the Up "Granville", 09.30 ex Margate had for the period a very sharp timing of 70 minutes.]

The express service on the London to Ashford route was exemplified by the various Continental Boat trains. In November 1885 there were Express departures from Charing Cross on weekdays at 08.00 [Cannon Street 08.05] "Continental Mail Express", non stop to Dover Town in 100 minutes from Cannon Street and including a portion slipped at Ashford. The 09.00 [Cannon Street 09.05] shown non stop to Folkestone Harbour in 100 minutes from Cannon Street, in practice it stopped at Folkestone Junction sidings, from where a tank engine took the train down the 1/30 incline to the Harbour Station.

The 11.00 [11.05 Cannon Street] "Royal Mail Express" ran non stop to Dover Town arriving at 12.43 with a portion slipped at Shorncliffe Camp and was followed by the 11.20 ex Charing Cross, scheduled to its first stop at Tunbridge Wells Central in 51 minutes. Here it split, a portion running to Eastborne via the "Cuckoo Line" reaching the gentle resort in exactly two hours from Charing Cross, the other portion ran to Hastings reaching there in one and three quarters hours.

The 14.50 ex Charing Cross left London Bridge at 15.03, and with the first stop at Sevenoaks reached Dover at 17.34. The 15.40 [15.53 ex London Bridge] was non stop to Ashford in 80 minutes reaching Dover 26 minutes after the 14.50. The main train "The Granville" followed four minutes later from London Bridge, taking six minutes longer to Ashford and reached Margate at 18.25 via Canterbury.

The 17.35 [17.42 Cannon Street] was the second Eastborne service of the day, scheduled to Tunbridge Wells Central in 49 minutes and due to arrive at Eastborne in five minutes over the two hours from Charing Cross. The 20.05 from Charing Cross [20.10 Cannon Street] included a slip portion for Shorncliffe and reached Dover Town in 105 minutes from Cannon Street.

South Eastern 1885 Timetable

The outstanding times in these schedules are the 51 minutes from Charing Cross and the 49 minutes from Cannon Street to Tunbridge Wells Central on the two Eastborne expresses, subsequently withdrawn at the end of the year.

In the Up direction the 01.55 "Dover Continental Mail Express" stopped at Staplehurst [a key mail distribution point] at 02.44 and reached Cannon Street at 03.45. The 04.15 from Dover Town [which originated at the Admiralty Pier] arrived at Cannon Street at 06.10 and reached Charing Cross five minutes later. On Mondays there was a 07.15 ex Hastings, which with stops at St Leonards and Tunbridge Wells Central reached London Bridge at 09.12 and Charing Cross via Cannon Street at 09.28. This "fast train" was allowed 57 minutes from Tunbridge Wells to London Bridge. The 08.12 ex Dover Town ran non stop from Shorncliffe to Cannon Street in 90 minutes, arriving at 10.00. The next express arrival was the 09.05 ex Hastings, non stop from Etchingam to London Bridge in 72 minutes, Cannon Street arrival 10.46 [Charing Cross 12 minutes later].

The 08.45 ex Dover, non stop Ashford to London Bridge in 78 minutes, reached Charing Cross at 11.06. The 09.30 ex Eastborne combined with the 09.55 ex Hastings and ran from Tunbridge Wells Central to Cannon Street in 48 minutes arriving in two hours from Eastborne and reached Charing Cross five minutes later. The Up "Granville" left Margate at 09.30, reached London Bridge two hours and ten minutes later after a non stop run from Ashford in 70 minutes and Charing Cross 17 minutes later. The afternoon Eastborne express took two hours to Charing Cross, 17.05 after a non stop run from Tunbridge Wells Central in 48 minutes. The "Continental Mail Express" starting from the Admiralty Pier at Dover ran from Dover Town to Cannon Street in 100 minutes and reached Charing Cross five minutes later. The 17.30 ex the Pier, "Royal Mail Express Day Service", stopped at Dover Town and Shorncliffe from where it was allowed 89 minutes to Cannon Street with the Charing Cross arrival five minutes later.

The outstanding timings in the Up direction were 70 minutes from Ashford to London Bridge and 48 minutes from Tunbridge Wells Central to Cannon Street and Charing Cross by the Eastborne trains. Cannon R. B. Fellows writing in 1939 [Ref.2] remembered travelling to London on these trains as a 14 year old and that "we travelled very fast between Tunbridge Wells Central and London". Although, what really stuck in his mind was travelling over the London Brighton and South Coast Railway single track "Cuckoo line" between Eridge and Polegate.

These schedules can be compared with the fast and express trains operating on the same section in July 1897. In the Down direction the 08.00 ex Charing Cross ran non stop from Hither Green [departure 10.18] to Ashford in 79 minutes and arrived at Dover and Margate at 10.25 and 10.49. The 09.00 "Continental Mail Express" left Cannon Street five minutes later.

South Eastern 1897 Timetable

It ran non stop to the Admiralty Pier in 101 minutes with coaches slipped at Ashford for Margate. The 10.00 "Continental Express" ex Charing Cross ran to Folkestone Harbour in 100 minutes, with a portion for Dover in 110 minutes.

Departures then moved to quarter past the hour. The 11.15 ex Charing Cross ran non stop from New Cross [departure 11.38] to Tunbridge Wells Central in 49 minutes with a Hastings arrival at 13.18. The 13.15 ran non stop from New Cross to Canterbury West in 86 minutes, arrival 15.02 and continued to Margate in two hours and a half from Charing Cross. The 14.10, left London Bridge at 14.23, reached Sevenoaks 39 minutes later and finally Dover Town in 2 hours and 48 minutes. The afternoon "Continental Express" left Charing Cross at 14.45, Cannon Street five minutes later and then ran non stop to Tonbridge. At Tonbridge it combined with the through train from the Great Western Railway and ran to Folkestone Harbour in 57 minutes. The 15.15 ex Charing Cross ran non stop Cannon Street to Ashford in 79 minutes and reached Margate in two hours and a half from Cannon Street [five minutes more from Charing Cross]. It was followed 15 minutes later by the 15.42 from London Bridge, allowed 81 minutes to the Ashford stop and 140 minutes from Charing Cross to Dover Town. Ten minutes later the 15.40 ex Charing Cross [15.50 from Cannon Street] ran non stop to West St Leonards in 89 minutes giving an overall time of 96 minutes from Cannon Street to Hastings.

The 16.30 ex Charing Cross [13 minutes later from London Bridge] ran non stop from London Bridge to Ashford in 79 minutes and arrived at Dover Town at 18.41. The next fast Dover Service, the "Special Continental Train", departed Charing Cross 17.35 [Cannon Street seven minutes later] and then ran to the next stop at Tonbridge in 47 minutes. The main train reached Dover Town and Pier Stations at 19.41 and 19.45 and a portion via Canterbury, Margate at 20.15.

The last boat train of the day, the 21.00 ex Charing Cross [21.05 from Cannon Street] was allowed 102 minutes to Dover Town, the Pier reached three minutes later. Coaches were slipped from this train at Shorncliffe.

In the Up direction the first boat train was the 01.50 "Mail Express" from Dover Town which, which with stops at Staplehurst and Tonbridge reached Cannon Street in five minutes under two hours. The second the 03.45 was scheduled non stop from the Town Station to Cannon Street in 105 minutes with an arrival at Charing Cross ten minutes later. The "Kent Coast Express", left Margate at 07.55, ran non stop from Ashford to Grove Park in 68 minutes and arrived at Charing Cross at 10.20. This train also included through coaches from Dover, which left the Town Station at 08.05. The 08.32 ex Dover ran non stop from Folkestone to Cannon Street in 95 minutes arriving there at 10.30 and the 08.40 ex Hastings was booked non stop from West St Leonards to Cannon Street in 99 minutes, Charing Cross being reached at 10.35. The "Special Continental Express" left the Admiralty Pier at 09.30.

South Eastern 1897 Timetable

The overall time to Cannon Street was 115 minutes, which included a start to stop schedule of 93 minutes from Sandling Junction.

There were on the hour departures from Margate at 09.00 and 10.00. The first took 2 hours 25 minutes to Cannon Street [eight minutes more to Charing Cross] running the Ashford to Cannon Street stage in 77 minutes. The second, the "Granville" was allowed 77 minutes from Ashford to London Bridge and another 15 minutes to Charing Cross reached at 12.44. The 10.15 ex Hastings had the somewhat quixotic non stop booking of Southborough to Chislehurst, 21.6 miles in 36 minutes. The afternoon "Continental Mail Express" left Dover Town at 15.05 and was allowed 102 minutes to Cannon Street. It was followed by the 16.10 ex Folkestone Harbour, which slipped the through carriages for the Great Western Railway at Paddock Wood and reached Charing Cross at 17.50. The 17.44 ex Folkestone Harbour, the "Royal Mail Express Day Service" stopped at Shorncliffe and left there at 18.04 on an 86 minutes schedule to Cannon Street with a Charing Cross arrival five minutes later. The 19.10 ex Margate ran non stop from Canterbury to New Cross reached at 21.19 in 91 minutes, then Cannon Street 13 minutes and Charing Cross 24 minutes later. The "Afternoon Continental Service", ex Dover Town at 21.50, reached Cannon Street at 23.32 and Charing Cross eight minutes later.

A new express service introduced in the summer of 1897, departed Reading at 08.40 destined for Dover Town, arrival 12.05, it included a portion for Margate reached at 12.35 which was detached at Ashford. Through coaches from East Croydon [departure 09.46] routed via Oxted and Crowhurst South Junction were added to the train at Tonbridge. In the reverse direction, departure times from Margate and Dover were 17.25 and 18.00 with arrivals at Reading and East Croydon via Oxted, at 21.17 and 20.08 respectively.

The conclusion when comparing the schedules for the two years is that there were more trains in 1897 than 1885 but little overall improvement in speed. For instance in 1885 the three non stop services reached Dover Town in 100, 98 and 105 minutes, the 1897 times were 101, 100 and 102 minutes [the last to the Pier]. Ashford however had a far superior service, one non stop in 1885 in 86 minutes from London Bridge compared with three in 1897, two from London Bridge, 79 and 81 minutes and one from Cannon Street, 89 minutes. Tunbridge Wells Central had trains in 51 and 49 minutes from Charing Cross and Cannon Street in 1885 whereas in 1897 there was nothing comparable, the South Eastern Railway's brief flirtation with Eastborne was long since a memory.

Dover Town had one Up non stop train in 100 minutes, two more in 110 minutes and 115 minutes respectively plus there were two non stop from Shorncliffe in 90 and 89 minutes in 1885. In 1897 one train from Dover Town took 115 minutes with two stops and there was a non stop in 105 minutes.

South Eastern Timetables for 1885 and 97 compared

There were trains from Shorncliffe, Folkestone Central and Sandling Junction non stop to Cannon Street in 84, 95 and 93 minutes respectively. Ashford had three good services, non stop to Cannon Street, London Bridge and Grove Park in 77, 77 and 68 minutes respectively. In 1897 there was nothing to compare with the 70 minutes Up "Granville" from Ashford, or the 48 minutes from Tunbridge Wells Central to Cannon Street and Charing Cross.

The only Down Express to Margate in 1885 was the "Granville" in two hours and three quarters, the next fastest the 07.50 took three and a half hours. In the Up direction there were six trains, the "Granville" ran from Margate to Cannon Street in two and a quarter hours, the next fastest the 07.50, took 41 minutes longer. There were 12 Down trains In 1897 [some of these were very slow eg. eight minutes over four hours from Cannon Street to Margate]. The quickest took two hours 22 minutes from Cannon Street, two more completed the journey within two hours and a half and a further two inside three hours. In the Up direction there were nine trains, four took less than two and a half hours, the quickest two hours 22 minutes and two more less than three hours.

Express trains on the South Eastern were characterised by restraint when running downhill and on the level. Debate has continued for many years as to whether the Railway imposed a 60 miles per hour speed limit, in practice 60 was seldom exceeded by much even down the tempting stretch from Sevenoaks Tunnel to Tonbridge. Rous Marten noted that the highest speed he ever recorded on the South Eastern was 70 miles per hour and that was on the "Granville" with a load of two eight wheelers and 14 six wheelers [approximately 200 tons] hauled by No.272. [Ref.3].

Number 272 was a member of the "Iron Clad" Class of 2-4-0s. Although they were nominally designed by Alfred Watkin, Sir Edward's son, in practice the design emanated from John Ramsbottom of the London and North Western Railway. Cudworth was still at the time South Eastern Railway Locomotive Superintendent. Sir Edward had called in Ramsbottom for advice on locomotive needs. The "Iron Clad's" despite a design parentage similar to the famous L&NW Presidents never emulated their performance. They appear to have been significantly improved after James Stirling fitted new boilers in the late 1880s. In this guise they had 6 feet 6 inches diameter coupled wheels and two inside cylinders [17 inches diameter by 24 inches stroke]. The boiler had a working pressure of 140 pounds per square inch and a total heating surface of 983 square feet [884 square feet in the boiler tubes and 99 in the fire box]. The fire grate area was 15¾ square feet, the locomotive weighed 34 tons and the tender another 31 tons. Number 272 after reaching 70 miles per hour before the slowing for Tonbridge ran the 26.6 miles on to Ashford in 30 minutes. Considering the locomotive was hauling six times its own weight plus tender, this was a very competent performance.

South Eastern F Class performance to Tonbridge in the mid 1890's

Rous Marten had several experiences behind F Class 4-4-0's in the 1890s. His best journey was probably with No.198 and 200 tons when the minimum up to Halstead was 32 miles per hour on the 1/120, 33 on the 1/140 and 36 through Orpington. The time to pass Halstead from the Cannon Street start was 26 minutes 46 seconds, to Sevenoaks 33 minutes 42 seconds and Tonbridge 42 minutes 21 seconds. The Tonbridge to Ashford stretch was run in four seconds under the half-hour and Dover reached in 95¼ minutes. The maximum downhill was 61 miles per hour. Although the pick up in speed at Orpington was slow the locomotive appears to have developed an EDHP of 475-525 from New Cross to Halstead. Other experiences gave Net times of 99 minutes [schedule 100] by No.133 hauling 180 tons from Dover to Cannon Street and a similar time by No.206 also with 180 tons on the afternoon Continental. His best Down run, in addition to the two already noted, was with No.222 and 190 tons which ran from Cannon Street to the sidings at Folkestone Junction in 76 seconds over the 94 minutes schedule, Net time he considered was only 85 minutes. The maximum down hill was 65 miles per hour and the minimum up to Halstead 30. Travelling to Cannon Street from Folkestone Junction No.204 with 190 tons took 102 minutes 7 seconds, it was badly delayed and Rous Marten computed the Net time as 84 minutes. He regarded his experiences with the Hastings and Margate Expresses as disappointing, although his Folkestone and Dover travels were hardly inspiring, but that probably is how the South Eastern was.

Pattinson provided details of 97 runs on the London-Halstead-Tonbridge-Dover section, a run was a start to stop stage, perhaps several on the same train. Much of his travelling was performed on Sundays or in the evenings. He detailed six experiences in each direction between Cannon Street and Sandling, Folkestone or Dover with another eight in lesser detail. All show similar characteristics, hard work from New Cross up to Halstead and speed limited to 60 miles per hour between Tonbridge and Ashford. Climbing up to Halstead the best performances gave times of 20 minutes or less from New Cross [11.6 miles]. Number 210 with 150 tons took 19 minutes 34 seconds with minima [Ref.4] of 31 miles per hour up both sections of 1/120, apparently sustained up the first stage and a maximum of 40 attained between MP's 11 and 13. Number 138 with 210 tons took 19 minutes 55 seconds with minima of 29 and 30 miles per hour. Number 206 with 190 tons was five seconds quicker, the speeds being 31, 40 at Orpington and 33 miles per hour. This closely duplicates Rous Marten's experience with No.198. Number.206 developed an EDHP of 450-500 at the top of the bank. These are good figures for a saturated steam locomotive with a firegrate of less than 17 square feet. Whilst this is perhaps the best run Pattinson timed on the Folkestone/Dover services, the general level of performance approached this.

Running between Tonbridge and Ashford was restrained by contrast, the quickest passing time over the 26.6 miles 29 minutes 26 seconds [Number 2 with 170 tons].

South Eastern 17.44 from Cannon Street 1894

Several others, irrespective of load produced times below 30 minutes, confirming it was a function of limiting speed to 60 miles per hour rather than lack of locomotive power. Pattinson sampled the 17.33 from Tonbridge, allowed 35 minutes to Ashford several times. The quickest time was 33 minutes 39 seconds by No.199 hauling 150 tons. On the 15.24, allowed 37 minutes, No.241 with 190 tons took 34 minutes 34 seconds and another F with 250 tons 37 minutes 20 seconds. Here the load was perhaps limiting speed and caused the loss of time.

Overall the F Class on the Folkestone and Dover non stop service appeared to maintain schedules comfortably. Pattinson quoted Working Timetables [W.T.T.] and not Public Timetables, the schedule of the 11.07 Cannon Street to Dover Town was 96 minutes. On two occasions time was lost, a quarter of a minute and four and a quarter minutes, albeit with loads of 240 tons. The Sunday 11.07 had a schedule of 82 minutes to Sandling and on three occasions the arrival was one minute early and one minute late twice. On the 20.25 allowed 92 minutes to Shorncliffe No.215 with 175 tons kept time exactly including 30 seconds lost through a signal check.

Pattinson's favourite train or at least the one he frequented most was the 17.44 from Cannon Street, presumably because he could join it after leaving work. It was scheduled non stop to Sandling in 87 minutes for the 64.2 miles and loadings were light, 90-120 tons. He made eight journeys to Sandling, the quickest actual time was six seconds under 86 minutes, the best Net time 83½ minutes. All Net times with these light trains were within the easy schedule. The actual arrivals were early twice, one to two minutes late four times and five minutes late twice. He also travelled on the train on five occasions when it stopped at Tonbridge. The allowance for each sector was 45 minutes, the loads varied between 100 and 150 tons. The schedule to Tonbridge was maintained twice, the other three resulted in arrivals one and a half, two and a quarter and six and a quarter minutes late. All Net times were less than 44 minutes, the best being No.116 with 150 tons in 40½ minutes. Unlike the first stage all runs to Sandling Junction were unchecked, resulting in three runs being within schedule and two exceeding the 45 minutes by 30 seconds. The best actual time was by No.197 with 140 tons in 44 minutes 45 seconds.

He also enjoyed [one hopes he enjoyed them!] three trips on the Sunday 17.44 from Cannon Street, allowed 76 minutes to the first stop at Ashford. One was on time and the other two one minute late. Net times were 71-72 minutes but loads were light 70-100 tons. This train's next stop was at Sandling scheduled in the somewhat optimistic time of 12 minutes for the 9.3 miles. On two occasions the time was 14 and 14½ minutes, but No.214 with 140 tons, took 13¾ minutes. This probably required a speed of 50 miles per hour attained up the 1/280 to Westernhanger [an EDHP of about 400]. The best run on trains not stopping at Ashford over this stretch, making allowances for train weights was by No.156.

South Eastern from Dover 1894

The average speed over the 3.8 miles from Smeeth to Westenhanger with 220 tons was 50 miles per hour, the average over the previous 4.3 miles from Ashford 54. This indicates an equivalent maintained speed on the 1/280 of 47 to 48 miles per hour [corresponding to an EDHP of 450-500].

In the Up direction Pattinson had one experience on the "Mail Express" from Dover Town in the "wee small hours". The 01.50 was allowed 49 minutes to the first stop at Staplehurst, which an F Class [number not given] ran in 47 minutes. The short 12.3 miles stage to Tonbridge took half a minute longer than the 17 minutes schedule but three minutes were gained on the 45 minutes to Cannon Street. The overall running time was 106½ minutes including slowing and restarting from the two stops but the load was only 60 tons. On the afternoon "Continental Express", due away from Dover Town at 14.45, No.60 hauling 190 tons kept exactly to the schedule of 102 minutes, despite 90 seconds lost by signal checks, No.24 with 160 tons arrived 75 seconds late. The "Royal Mail Express", departure 17.45, stopped at Sandling and was allowed 84 minutes on to Cannon Street. Number 139 with 170 tons and No.172 with 200 tons ran the initial 11.2 miles to Sandling in 19 minutes 37 seconds and 19 minutes 52 seconds respectively, schedule 19 minutes and on to Cannon Street in 84¼ and 87¾ minutes. The latter included one and a half minutes lost by checks.

Three journeys were made on the Sunday train, Shorncliffe departure 15.04, allowed 87 minutes to London Bridge. The load was 150 tons each time, the best run by No.240, in 83 minutes 23 seconds [Ref.5]. The 16.10 from Folkestone was allowed 97 minutes to Cannon Street and three journeys were within schedule, the best by No.140 with 190 tons in 90½ minutes. On the weekday afternoon Folkestone Boat Train No.241 hauling 160 tons lost seven and a half minutes with prolonged slow running in the London area. Pattinson's most used Up train was the 20.18 from Ashford which he sampled on ten occasions and the Sunday equivalent which he tried twice [20.53 from Ashford]. The schedule to the Tonbridge stop was a leisurely 40 minutes, two minutes less on Sunday. Only once did the journey take more than 38½ minutes when six minutes were lost by signal checks. The quickest times were, 34 minutes 19 seconds with 170 tons and seven seconds longer with ten tons more. These average speeds of 46 to 47 miles per hour between stops which produced a 14 percent gain on schedule highlight the sloth of South Eastern Trains over a stretch ideal for high speeds.

The short uphill stage from Tonbridge to Sevenoaks was a difficult seven and a half miles, the first mile was level, then four miles at 1/122 and two miles at 1/144. He noted sixteen runs, 12 of them continuations from Ashford. The schedule was 15 minutes start to stop and only six bettered this, the quickest, with 110 tons, was 13¾ minutes. The best runs, taking the load into account, were by No.203 with 190 tons and a time of one second over 14 minutes and No.241 which took 28 seconds more with ten tons less.

South Eastern performance on the Margate expresses 1894

The heaviest train, 250 tons, lost 2 minutes 14 seconds against the schedule. The two runs by Nos.203 and 241 were excellent bearing in mind the size of the locomotives. The uphill work after Sevenoaks involves the climb up from Dunton Green to Halstead mostly at 1/144, but there is a one and a half mile stretch downhill at 1/160 from the exit of Sevenoaks Tunnel to Dunton Green. The best times noted by Pattinson, over the 13 miles from passing Tonbridge, where speed would have been about 30 miles per hour to Halstead were: 18 minutes 52 seconds by No.240 with 150 tons - 19 minutes 38 seconds by No.139 with 170 tons - seven seconds longer by No.204 with 140 tons - 21 minutes 46 seconds by No.172 with 200 tons.

The South Eastern improved its service to Ramsgate and Margate throughout the 1880's and 90's. When Pattinson made his observations the best scheduled time over the 65.4 miles from New Cross to Canterbury was 82 minutes, in the Up direction the same stage was allowed seven minutes longer. Three timings on the Down train, No.120, with 140 tons, No.130 with 190 tons and No.43 with 140 tons [Ref. 4] resulted in times from New Cross to Canterbury of 89 minutes 48 seconds [77¾ Net], 86 minutes 1 second [81¼ Net] and 88 minutes 23 seconds, [84½ Net]. The 11.05 miles from Canterbury to Minster were run in 15 minutes 27 seconds and 14 minutes 16 seconds on the first two occasions, a gain on schedule of one and a half and two and three quarter minutes.

Starting from New Cross the three trains were travelling at 41, 31 and 36 miles per hour up the 1/140 between MP's 5 and 6 and then fell to minima of 37, 31 and 33 on the 1/120 between MP's 8 and 9. The maxima on the following easier stretch were 46, 40 and 41 miles per hour and the summit at MP 15¼ on the 1/120 was breasted at 40, 31 and 32. The times from New Cross start to passing Halstead were 17 minutes 59 seconds and 21 minutes 52 seconds on the first two. It is difficult to estimate power outputs where gradients and speeds vary considerably. However studying Pattinson's mile post readings it appears that on the 1/120 by MP15 the sustained equivalent speeds were 38, 31 and 31 miles per hour respectively, which would require EDHPs of 450-500 on the first two and 350-400 on the third. It appears that No.130, when it passed Halstead in the splendid time of 18 minutes sustained this figure throughout the climb.

After the hard running on the uphill section the two trains ran the 15.7 miles from Paddock Wood to Pluckley pass to pass in 15 minutes 52 seconds and 16¼ minutes respectively. This was probably as quick as one could expect to travel on the Tonbridge to Ashford stage in the 1890's. Pattinson was convinced that the best locomotive performance on the South Eastern was to be found on the Margate trains [marvellous the effect of having to compete with the London Chatham and Dover over a longer route had!]. The two runs with No.130 were equivalent to London Bridge to Ashford start to stop in approximately 67 and 71 minutes respectively.

South Eastern Up from Canterbury Down to Hastings 1894

Three runs on the 19.50 from Canterbury featured No.130 with 140 tons, No.130 with 190 tons and No.94 with 180 tons. On the second timing commenced at Ramsgate with a load of 160 tons, the 4.4 miles to Minster were run in 6 minutes 36 seconds, a gain of almost one and a half minutes on schedule. The load was increased at Minster to 190 tons and the 11.5 miles to Canterbury took 16¼ minutes, another one and three quarters minutes gain. From Canterbury the three trains reached New Cross in 85 minutes 6 seconds, 85 minutes 13 seconds and 97 minutes 36 seconds, 86 minutes Net. Times between Tonbridge and Halstead were 18 minutes 58 minutes and 20 minutes 31 seconds, similar to the uphill work performed on the "Continental Boat Trains". The 89 minutes schedule obviously did not require the same effort as the corresponding Down train

A return Sunday trip to Margate is of interest. On the 10.00 ex Charing Cross No.205 from the New Cross start ran to Ashford in 75 minutes although the load was only 90 tons. From Ashford some time was regained, the Canterbury stop was made in 18 minutes 11 seconds [Net 18 minutes] a gain of one and three quarters minutes and another two and a half minutes was recovered on to Minster, 14 minutes 26 seconds. Coming back, the same locomotive and train ran to Canterbury from Minster in 16 minutes 3 seconds, schedule 19 minutes and then took seven seconds over 21 minutes [including a minute lost by a signal check] for the run to Ashford, schedule 22 minutes. The final stage to New Cross occupied three seconds over 66 minutes, schedule 67 minutes, and included one slight check which Pattinson reckoned lost a quarter of a minute.

Pattinson was enamoured of the Hastings service, he praised it fulsomely [Ref.6]. The star Down train was the 15.50 from Cannon Street, booked non stop to West St Leonards, 59.6 miles, in 88 minutes. Number 91 with 140 tons [Ref.7] took 87 minutes 23 seconds, 83 minutes Net and No.72 with the same load 95 minutes 5 seconds after considerable delays, the Net time was three quarters of a minute less. Pattinson was also given a speed recorder diagram of a run with 130 tons returning on the morning 08.50 ex Hastings with 160 tons. He states that this was through the offices of Sir Myles Fenton, the South Eastern General Manager and Stirling, the locomotive Superintendent. The run on the main line as far as Tonbridge was similar to that on the Margate trains. Numbers 43 and 79 both with 140 tons were checked in the early stages of the climb to Halstead but the maximum speeds at MP12 were 45 and 42 miles per hour, the minima at the top of the 1/120 36 and 33. The earlier run on the speed diagram, also after a signal check, showed a fall from 45 to 35 miles per hour.

The 17.00 from Cannon Street was allowed 54 minutes to the stop at Tunbridge Wells Central. On three occasions the load was 150 tons and the locomotive F Class 4-4-0 No.149. The times to Tunbridge Wells were 58 minutes 2 seconds, 55¼ minutes Net, 57 minutes, 52¾ minutes Net and 58 minutes 22 seconds, 55 minutes Net.

South Eastern performance on the Hastings route 1894

The difficult 4.9 miles to Wadhurst were run in 9 minutes 2 seconds, 8 minutes 52 seconds and 9½ minutes start to stop, schedule ten minutes. The conditional stop at Battle was called each evening, the times over the 16.2 miles from Wadhurst were 23 minutes 2 seconds, 22 minutes exactly and 23 minutes 40 seconds. The 5.2 miles on the continuation to West St Leonards occupied 8 minutes 14 seconds, 8 minutes 38 seconds and 8 minutes 5 seconds. The timetable allowed 32 minutes from Wadhurst to West St Leonards, the actual times taken, excluding time standing at Battle Station were 31¼, 30 minutes 38 seconds and 31¾ minutes respectively.

Pattinson obviously liked to sample the early morning trains. On the 05.53 from London Bridge, an F Class had a load of only 80 tons and on the initial run to Chislehurst exceeded the 16 minutes schedule by one and a half minutes but made amends by running the 11.2 miles to Sevenoaks in 18½ minutes. The 7.5 miles on to Tonbridge occupied 11¾ minutes, schedule 12 minutes. There is no information on the Tonbridge to Tunbridge Wells stage; the 26.4 miles on to West St Leonards were run in 38¾ minutes, schedule 40 minutes.

The 08.48 Up was allowed 97 minutes from West St Leonards to Cannon Street, No.79 with 170 tons exceeded this by five seconds but this included a signal check and stops which cost seven and three quarters minutes. The start was good with the difficult 27.35 miles to Tunbridge Wells run in exactly 42 minutes. Two evening runs on the 19.23 from West St Leonards saw No.205 with 130 tons and No.60 with 120 tons lost two and a quarter and a quarter of a minute respectively on the 42 minutes schedule to Tunbridge Wells. They then ran the 29.5 miles to New Cross in 46 minutes 2 seconds and 44 minutes 11 seconds compared with the scheduled 48 minutes.

Pattinson's extensive records indicate that the F Class 4-4-0's were able to maintain the schedules prevailing in the mid 1890's on the Margate, Hastings and Dover routes providing loads were reasonable, less than 200 tons. They were obviously driven hard uphill, as the regular attainment of EDHP's approaching 500 by these modestly dimensioned locomotives confirms. Drivers certainly resisted the temptation to regain any time lost uphill on subsequent downhill stretches. However, as the two runs on the Up evening train, summarised in the previous paragraph, from Hastings show they were quite prepared to drop time on one stage and recoup it on the next. The time table demands of this particular train were uneven; 42 minutes St Leonards to Tunbridge Wells was much harder than 48 minutes to the next stop at New Cross. Indeed ten years previous the Eastborne train was allowed the same time from Tunbridge Wells to a stop at Cannon Street or Charing Cross. Although in the 1890's the South Eastern had not reached the position where a future Chairman referred to it as "a Railway of small locomotives dragging heavy trains about", it was moving in that direction.

South Eastern competing to Chatham

On March 1st 1892 the South Eastern opened its expensive line to Chatham Central, which was not “central” to anything, least of all Chatham. Forbes, the South Eastern’s General Manager, is reputed to have said the new bridge over the Medway and the few miles of railway had cost a total of half a million pounds, a prodigious sum of money. The South Eastern certainly tried to run a good service over its competitive folly, with express trains from Chatham [or Chatham and Maidstone combined at Strood] scheduled at times that competed well with the London Chatham and Dover service over the difficult route via Swanley. The South Eastern trains were hauled by locomotives of the Cudworth 118 Class, Stirling A Class or Q Tank’s up until the end of the century.

The 118 Class of 2-4-0’s, named after the number of the first member of the Class were built from 1859 to 1874, 124 in total. As originally built they had 6 feet diameter coupled wheels, two inside cylinders, [16 inches diameter by 24 inches stroke]. The boiler working pressure was 130 pounds per square inch, and the total heating surface 1,109 square feet [968 square feet in the boiler tubes and 141 square feet in the firebox]. The locomotives weighed 30½ tons, the tender another 25 tons. The firegrate area was 24 square feet. After 1864 the locomotives were built with a boiler with a fire grate area of 27 square feet and similar operating pressure but a reduced evaporative surface of 990 square feet. In 1871 a third boiler variation was utilised incorporating, presumably by trial and error, a better balance between fire grate and heating surface. The firegrate area was 20 square feet and the total heating surface 939 square feet [825 square feet in the boiler tubes and 114 square feet in the firebox]. By the 1890’s, all the members of the class were fitted with this boiler.

The A Class 4-4-0’s were James Stirling’s first passenger design, twelve of them were built at Ashford between 1879 and 1881. They had 6 feet diameter coupled wheels, two inside cylinders [18 inches diameter by 26 inches stroke]. The boiler had a working pressure of 140 pounds per square and a total heating area of 948 square feet [858 square feet in the tubes and 90 square feet in the firebox]. The locomotives weighed 38 tons, the tender another 26 tons. The firegrate area was 16 square feet. From 1889 the Class were fitted with a boiler with a total heating surface of 924 square feet [834 square feet in the tubes and 90 square feet in the firebox].

One hundred and eighteen Stirling designed Q Class 0-4-4 Tank’s were built between 1881 and 1897. They had 5 feet 6 inches diameter coupled wheels and a total weight of between 46½ and 48½ tons. The boilers initially were the same as those originally fitted to the first members of the “A” Class. The last 78 had the same as fitted to the “A” Class after 1889. The earlier ones had a coal capacity of one and a quarter tons, on the later ones increased to one and a half tons which rendered them more suitable for use on longer distance fast trains. One of these, No.58, was allocated to Strood depot from when it was built in 1891.

South Eastern performance on the Chatham Expresses 1894

Pattinson had his after work train on the Chatham and Maidstone route, the 17.38 from Cannon Street, the "Gravesend and Chatham Express", booked first stop Dartford in 24 minutes from London Bridge. There were further stops at Gravesend, Strood and Rochester with Chatham reached in 63 minutes from Cannon Street. He lists six runs, one in full detail, an A Class with 150 tons passed New Cross in 6 minutes 35 seconds from the London Bridge start after a signal check which caused a delay of one and a half minutes. Speed was about 35 miles per hour at St John's maintained up the grade to Eltham. The 7.4 miles from passing Eltham to the Dartford stop were run in 9 minutes 37 seconds with a maximum of 52 to 54 miles per hour between Sidcup and Bexley. Net time was 22½ minutes, actual time 9 seconds over schedule. On the other five runs, A Class 4-4-0's hauled the train on three occasions, the actual and Net times were; 26 minutes 15 seconds, 23 minutes Net - 25 minutes 11 seconds, 22¾ minutes Net - 28 minutes 42 seconds, 24½ minutes Net. Cudworth 118 2-4-0's were employed on the other occasions, taking: 23 minutes 36 seconds, 23 minutes Net - 30 minutes 8 seconds, 24 minutes Net. On all the runs the train was given as 13 coaches, 140-150 tons Gross. The seven and a quarter miles from Gravesend to Strood, the next stop were scheduled in 12 minutes. The Cudworth 118 took 10 minutes 47 seconds and an A Class 4-4-0 10 minutes 20 seconds. A Q Class 0-4-4 Tank No.58 with 110 tons on the 19.20 ex Cannon Street required 11 minutes 26 seconds.

The 22.00 from Chatham was scheduled to London Bridge in 51 minutes with stops at Rochester, Strood and Gravesend. From Strood to Gravesend the Q Class 0-4-4 Tank No.58 with 110 tons dropped 32 seconds on the 12 minutes schedule. Continuing on to London Bridge, schedule 33 minutes for the 22 miles, it recovered the lost half a minute by running the stage in 32 minutes 12 seconds. From the Gravesend start, Dartford 6.8 miles, was passed in 10 minutes 47 seconds, the average speed to Crayford was only 41 miles per hour, but rose up the gentle uphill stretch to Eltham to 49. The 7.8 miles from Dartford to Eltham were run in three seconds under 11 minutes. On another occasion Q Tank No.146 with 100 tons took 38 minutes but the Net time was only 31¼ minutes. Cudworth 118 Class 2-4-0 No.88 with 100 tons was 34 seconds quicker over the initial stretch to Dartford, averaged 46 miles per hour on to Crayford but at Eltham was only travelling at 46 thus taking four seconds more over the Dartford to Eltham section. London Bridge was reached in 31 minutes 47 seconds after a slight signal check, 31½ minutes Net.

It has already been observed that Pattinson whilst travelling on the Redhill-Reading line did not consider the locomotive performance worthy of comment. Ahrons' comments on the paucity and poverty of the South Eastern service between Redhill and Reading have been quoted too many times. In practice in the summer of 1897 there were two fast trains over the section. The 08.40 ex Reading ran to Redhill in 80 minutes for the 46.1 miles including three stops.

South Eastern Redhill to Reading

The 08.40 continued to Dover and Margate. The 13.28 departed from the Great Western railway station at Reading booked non stop to Redhill in 76 minutes. This was a light train, usually three bogie coaches hauled by a 118 Class 2-4-0, another 118 then took the coaches on from Redhill to Tonbridge where they were attached to the Folkestone Boat Train. In the reverse direction, the equivalent trains were booked from Redhill, departure 19.55 to Reading in 82 minutes with three stops and 17.55 non stop in 70 minutes. The quickest London train from Reading was the 09.05, which reached Cannon Street in two hours, Reading to Redhill in 84 minutes with eight stops. In the opposite direction the 16.29 from Cannon Street, 12 minutes earlier ex Charing Cross, took 2 hours 27 minutes with 12 stops, the Redhill to Reading section occupied almost one and three quarters of an hour. In 1895, for three months in the summer, a train left Reading at 09.55, stopped at Wellington College [Crowthorne] and North Camp and then ran non stop to Cannon Street arriving at 11.39. The return was at 16.05 ex Charing Cross, 12 minutes later from Cannon Street, this was an attempt by the South Eastern to win Aldershot to London traffic.

Pattinson, in 1894 travelled on the 17.25 from London Bridge, 17.23 in the public timetable, an 118 Class 2-4-0 with 140 tons lost 97 seconds on the 35 minutes schedule to Redhill but signal checks accounted for one and a quarter minutes of the loss. This service was destined to run for another 69 years! The Cudworth 2-4-0's reputedly were stretched to maintain the schedule between London Bridge and Redhill on the Reading trains. As a consequence seven new F Class 4-4-0's were allocated to Redhill and Reading in 1897 [with another in 1898] to replace them on the London service. There were however 48 118 Class 2-4-0's still remaining in service at the end of 1897, at this time a 118 still hauled the 16.17 Charing Cross to Reading. Reading based locomotives worked the 08.10, 09.05, 15.20, and 16.22 from Reading to London returning on the 13.04, 15.30, 19.26, and 22.02 from Cannon Street. The six top link drivers at Reading in May 1897 had 118's but within one year four had new F's. The Cudworth's finally ceased their involvement with the London trains in 1901 [Ref.8]. There is an account [Ref.9] of an afternoon trip from Reading to Crystal Palace when 118 Class No.30 took the outward train to East Croydon and the return on the 22.23 from East Croydon was behind 118 No.63.

Stirling's final locomotive design was the B Class 4-4-0. He retired at the commencement of the working agreement between the South Eastern and the London, Chatham and Dover. The 29 locomotives were delivered in 1898 and 1899, the last four after his retirement. They were an expanded F, although not expanded by much and certainly not enough to deal with the rapidly increasing trainloads at the turn of the century. They had 7 feet diameter coupled wheels and two outside cylinders [19 inches diameter by 26 inches stroke]. The boiler had a working pressure of 160 pounds per square inch with a total heating area of 1,088 square feet [976 square feet in the boiler tubes and 112 in the firebox.

South Eastern B Class 4-4-0's

The B Class 4-4-0's weighed 46 tons, the tender another 34 tons. The firegrate area was 16½ square feet. The new Locomotive Superintendent of the South Eastern and Chatham Railway Management Committee foreshortened the original order for B Class locomotives from Ashford Works so that only nine were built compared with the originally intended 20. The other 20 were built by Neilson Reid and Co.

Rous Marten had some runs behind the B Class 4-4-0's [Ref.10] shortly after they were built. One of them with 200 tons on a Charing Cross to Dover service was bedevilled by persistent signal checks such that the initial 10¼ miles took just over half an hour, the 65.3 miles from Chislehurst to Dover were then run in 78¾ minutes including a signal check at Chelsfield. Number 443 with 220 tons ran from Charing Cross to Folkestone in 113 minutes 22 seconds including 12½ minutes lost by various checks. In the Up direction, 220 tons was taken from Folkestone Jct to Charing Cross in four minutes over the 94 minutes schedule but this included four checks, two of them severe. Rous Marten attributed the bad performance on the Up Folkestone express to a gale. However bearing in mind the limited size of the B's, 220 tons was probably at the very top end of what one could handle on a Boat Train Service, with or without a gale. Time had moved on and James Stirling regrettably had not. His F and B Class 4-4-0's were not powerful enough for the heavier express trains of the new Century but they became ideal for secondary services throughout Southern England.

Chapter 2: References and Notes

- Ref. 1 Railway Magazine [RM] Vol. XII p.19 Locomotive Practice and Performance C.Rous Marten
- Ref. 2 [RM] Vol. LXXIV
- Ref. 3 [RM] Vol. XII p.93
- Ref. 4: The South Eastern & Chatham Railway-O.S. Nock, Ian Allen 1961
- Nock reproduced three off Pattinson's detailed logs. He appears to have over estimated the train weights. Eleven tons per coach assuming the trains were full with passengers is more appropriate.
- Ref. 5 J.Pearson Pattinson [Pattinson] Cassell & Co. London 1893
- Ref. 6 [Pattinson]
- Ref. 7 Reproduced by O.S.Nock, see above
- Ref. 8 [RM] Vol. LXXXII p.193-198 & 99-105 The Stirling's of the SE with some notes on the Cudworth's 1895-1906 Victor B.Nelson
- Ref. 9 Railway Observer Vol. XXV B.T.Waite
- Ref.10 [RM] Vol. XII p.92-96

Chapter 3: London, Chatham and Dover Pre 1900

London Chatham and Dover locomotive practice for the last quarter of the 19th Century, actually 1874-99 is the story of William Kirtley. Kirtley managed the LC&D's locomotive affairs throughout this period, mirroring in many ways the position of James Stirling on the South Eastern. The maelstrom of LC&D strategies during this period appear to have left locomotive affairs in comparative peace, they followed a reasonably logical planned route. Money, or rather the lack of it, was at times a problem, particularly when locomotives were being built in the companies own works at Longhedge, causing delays in construction. Those resourced from outside contractors were delivered promptly: presumably the builders had ensured they would be paid.

Locomotives employed on express passenger trains were primarily of two types. The various 4-4-0's designed by Kirtley, of which there were 39 in service on the formation of the South Eastern & Chatham Management Committee, five further M3 Class 4-4-0's were built after this event and the 27 2-4-0's built to Martley's [Kirtley's predecessor] design and subsequently rebuilt by Kirtley.

The first six M Class 4-4-0's were built by Neilson & Co in 1877. They had 6 feet 6 inches diameter coupled wheels and two inside cylinders [17½ inches diameter by 26 inches stroke]. The boiler working pressure was 140 pounds per square inch and the total heating area 1,071 square feet [964 square feet in the tubes and 107 in the firebox]. The fire grate area was 16½ square feet and the locomotive weighed 43 tons, the tender another 31 tons. Four more, very similar locomotives were constructed at Longhedge, designated M1. In 1884-5 eight more were built, six by Dubs & Co and two at Longhedge, these were the M2 Class.

The M3 Class was an extended variant designed by Kirtley in 1890. Dubs & Co. built six in 1891 with another 20 built at Longhedge between 1892 and 1901. They had 6 feet 6 inches diameter coupled wheels and two inside cylinders, [18 inches diameter by 26 inches stroke]. The boiler working pressure was 150 pounds per square inch and the total heating area was 1,110 square feet [1,000 square feet in the tubes and 110 in the fire box]. The firegrate area was 17 square feet and the locomotive weighed 42½ tons, the tender another 34 tons.

The Marley "Dawn" and "Bluebell" 2-4-0's were built in 1862 and 1863, 12 were rebuilt by Kirtley between 1882 and 1893. [He had previously rebuilt three of them in 1876]. In their final form they had 6 feet 6 inches diameter coupled wheels and two inside cylinders, [16½ inches diameter by 22 inches stroke]. The boiler working pressure was 150 pounds per square inch with a total heating area of 907 square feet [807 square feet in the tubes and 100 in the firebox].

LC&D Kirtley's Martley rebuilds and their performance

The fire grate area was 16 square feet and the locomotive weighed 34½ tons, the tender another 29 tons. The six "Reindeer" Class locomotives were built by Brassey & Co in 1865 and rebuilt by Kirtley in 1881 and 1883 [No.47]. They had 6 feet 6 inches diameter coupled wheels and two inside cylinders [17 inches diameter by 24 inches stroke]. The boiler working pressure was 150 pounds per square inch and the total heating area 1,051 square feet [951 square feet in the tubes and 100 square feet in the firebox]. The firegrate area was 16 square feet and the locomotive weighed 37 tons, the tender another 29 tons. Three similar locomotives were built at Longhedge in 1869 and 1870 [No.50 had coupled wheels reduced in diameter to 6 feet]. The three "Enigma" Class 2-4-0's were rebuilt by Kirtley in 1882 in a similar fashion to the "Reindeer" Class, although with slightly smaller boilers, total heating area 1,021 square feet.

The six "Europa" 2-4-0's were built in 1873 and 1876, the last two after Kirtley had taken over. As originally built they had 6 feet 6 inches diameter coupled wheels and two inside cylinders [17 inches diameter by 24 inches stroke]. The boiler working pressure was 140 pounds per square inch and the total heating area 1,180 square feet [1,080 square feet in the tubes and 100 square feet in the firebox]. The firegrate area was 16 square feet and the locomotive weighed 36 tons, the tender another 29 tons. Between 1890 and 1892 Kirtley rebuilt them with new boilers with a total evaporative area of 1,021 square feet [Ref.1].

Rous Marten, during his 1884/5 sojourn in the UK, travelled behind the Martley "Europa" Class 2-4-0's. Number 56 ran the 30.4 miles from Herne Hill to Chatham in 37½ minutes with a load of 110 tons. He gave the maximum speed as 65 miles per hour and to achieve such a time, even allowing for the light load, required good uphill work. The "Enigma" Class No.50, [with 6 feet diameter coupled wheels and Kirtley boiler] ran from Rochester to a signal stop at Bickley in 30½ minutes, 21.8 miles, which included the five miles mostly uphill at 1/100 to Sole Street. "Europa" Class No.57 [still essentially as designed by Martley, although incorporating some Kirtley adjustments] ran from a start at Canterbury to New Brompton [Gillingham] 25.9 miles, in 32 minutes and later after a signal stop at Meopham the 22 miles on to Herne Hill in 31 minutes.

The Public Timetable in November 1885 included the following departures from Victoria. A Continental Boat Express at 08.00, Herne Hill departure at 08.05, [later in the W.T.T.] after a stop at Chatham, reached Dover Town at 09.45 and the Pier three minutes later. The 11.00 Continental Boat Express ran non stop from Herne Hill to Canterbury in 77 minutes and reached Dover in 107 minutes. The 15.15, the "Granville" ran Herne Hill to Westgate in 92 minutes and then reached Ramsgate in exactly two hours. It was followed two hours later by the "Kent Coast Express", which after the Herne Hill stop ran to Chatham the next stop in 47 minutes. Subsequently it stopped at Faversham and then all stations to Ramsgate.

LC&D 1885 and 1897 Timetables

The Dover Continental Boat Express left at 20.00, allowed 81 minutes from Herne Hill to the stop at Canterbury, and reached Dover at 21.54. The final express was the Flushing Boat at 20.30, which ran non stop from Herne Hill to Chatham and then on to Queenborough, reached in 85 minutes from London, the Pier was reached four minutes later.

There were Up Continental Express's from Dover at 04.15, 15.30 and 17.30. They reached Victoria in 115 minutes, with two stops, 120 minutes, with three stops and 110 minutes, with two stops respectively. The Up Queenborough Boat Express left the Pier at 18.25 and with the same stops as the Down train was due into Victoria at 19.55. The Up "Granville" left Ramsgate at 10.00, booked non stop from Westgate, departure 10.18, to Herne Hill in 92 minutes with an arrival at Victoria two hours after leaving Ramsgate.

The LC&D Express Service in July 1897 was both more frequent and quicker than 12 years previously. The first Express from Victoria was the Flushing Mail Train, which left at 08.30, was allowed only 39 minutes from Herne Hill to the next stop at Chatham and reached the Pier at Queenborough in 72 minutes overall. The 09.00 "Calais Boat Express" was allowed 95 minutes from Herne Hill to the Pier at Dover, [one and three quarters of an hour from Victoria] and the 10.00 "Ostend Boat Express", with an extra stop at Canterbury, required five minutes more. Five minutes after the "Ostend Boat Express", there was a fast service for Dover, Walmer and Deal which with stops at Herne Hill, Chatham, Canterbury and Kearsney reached Dover Priory in 125 minutes, the rear portion travelling via the loop, reached Deal 13 minutes later. The 11.00 "Calais Boat Express" reached Dover in 110 minutes with the one stop at Herne Hill. The "Thanet Express" left 15 minutes before this and ran non stop from Herne Hill to Faversham in 62 minutes and then served all stations to Ramsgate. The next Kent Coast express, the "Granville" at 15.25, allowed 88 minutes over the Herne Hill to Westgate-on-Sea stage, reached Ramsgate in two hours and three minutes.

The "City Express" left from Holborn Viaduct at 17.10 and after a stop at St Pauls ran non stop to Westgate in 90 minutes, finally reaching Ramsgate in one hour 55 minutes overall. A portion for the Dover line was slipped at Faversham. The 17.33 ex Victoria reached Faversham at 19.00 after a stop at Herne Hill and three stops in the Medway towns. The front portion after Faversham was "all stations" to Ramsgate, whilst the rear was booked to Dover in 42 minutes including stops at Canterbury and the Priory Station. There were two evening Boat Trains, at 20.50 and 21.05. The first, the "Flushing Mail Train", with the same stops as the morning train, took 70 minutes to the Pier at Queenborough and the second "Calais and Ostend Boat Train" ran to Dover in one and three quarters of an hour with the one stop at Herne Hill.

LC&D Pattinson's experiences in 1896

There were boat trains from Dover at 03.45, 15.05 and 17.45. The morning train completed the journey to Victoria in 115 minutes with two stops and the two afternoon trains ran the distance in one hour and three-quarters with the one stop at Herne Hill. The Queenborough boat trains left the Pier at 06.30, 80 minutes to Victoria with one stop at Herne Hill and 18.00, 75 minutes to Victoria with stops at Chatham and Herne Hill. The Morning Expresses from the Kent Coast consisted of the 07.45 ex Ramsgate, non stop from Herne Bay to St Pauls in 90 minutes, arriving at Holborn in two hours and three minutes from Ramsgate. The 09.00 "Thanet Express" non stop from Herne Bay to Herne Hill in 82 minutes, reached Victoria in two hours from Ramsgate and finally the 10.00, non stop from Westgate to Herne Hill in 90 minutes also reached Victoria in two hours from Ramsgate. There were afternoon trains from Ramsgate at 15.30 and Dover at 16.00. Both ran fast from Faversham to Herne Hill, 70 minutes and 73 minutes non stop respectively, including a Chatham stop. Overall journey times were two hours 35 minutes and two hours 15 minutes. Additionally, there were some tightly timed semi-fast services in both directions.

Pattinson's exhaustive records in 1896 give a very complete picture of the practicality or otherwise of these schedules. Whilst a handful of his records have been republished elsewhere, a review of the whole coterie is appropriate. His experience on the Dover service, including Boat Trains, as with the South Eastern Railway and London, Brighton and South Coast Railway showed a preponderance of records in the late afternoons, evenings or Sundays. He had five trips on the Sunday 11.14 from Herne Hill, twice non stop to Dover and on three occasions stopping at Faversham. On the non stop runs, M3 Class 4-4-0's No.17 with 180 tons ran to Dover in 95 minutes 53 seconds, 95 minutes Net, and No.13 with 170 tons required 98 minutes 22 seconds, the Net time was only 93 minutes, schedule 96 minutes. On the climb up to Emsden Tunnel after Faversham, [1/110 and 1/100], speed fell from 41 to 32 miles per hour and 39 to 28 respectively. Number 17 after passing Canterbury, averaged 37½ miles per hour over the two and a quarter miles uphill to Shepherdswell, mostly at 1/132.

On the three occasions when the train stopped at Faversham, schedule 59 minutes from Herne Hill, M3 Class 4-4-0's, No.15 with 200 tons, No.188 with 190 tons and No.25 with 150 tons took 62 minutes 4 seconds, 61 minutes 48 seconds and 64 minutes 7 seconds. Net times were 61¼, 61 and 59¼ minutes. Sole Street, 22.9 miles from the Herne Hill start and at the top of the climb from Farningham Road was passed in 31 minutes 21 seconds, 31½ minutes and 30 minutes 49 seconds respectively. On the two runs scheduled non stop to Dover the times were 31 minutes and 29 minutes 39 seconds [Pattinson suffered, as did other recorders at the time, due to the virtual absence of mileposts west of Chatham, his details of uphill speeds are somewhat limited].

On the earlier boat train departure, 09.12 from Herne Hill, schedule 72 minutes to the Canterbury stop, M3 Class 4-4-0 No.17 with 160 tons and No.15 with 210 tons took 78 minutes 1 second and 76 minutes 9 seconds, the Net time on each occasion was 75½ minutes. The only record on the 10.00 boat train ex Victoria was with M3 No.20 with 210 tons. The 39 minutes allowed from Herne Hill to the Chatham stop was exceeded by 15 seconds despite passing Sole Street in 30 minutes 23 seconds, the 6.4 miles from Farningham Road up to Sole Street were run in seven and three quarters minutes. The 27.5 miles to the next stop at Canterbury took 36 minutes 3 seconds, 35¼ minutes Net. The fall in speed up to Emsden was 44 to 33½ miles per hour sustained over the last two-quarter miles. The schedule for this stretch was 34 minutes. The final 15.5 miles to Dover Priory allowed 22 minutes was maintained exactly by No.20, which involved an average of 36½ miles per hour up the last two and a quarter miles to Shepherdsweil, the minimum on the 1/132 was 34½. If No.20 did indeed sustain 33½ miles per hour up the 1/100 to Emsden this would have required an EDHP of 550-600. Despite this fine effort for a comparatively small 4-4-0, time was barely kept. Taking the load into consideration, this is the best run that Pattinson timed over both climbs east of Faversham.

The weekdays 17.33 ex Victoria was ostensibly a Margate and Ramsgate train, It was shown in the timetables as the "Kent Coast Express", with a rear portion detached at Faversham worked to Dover and designated the "Ostend Boat Express". The 17.33 was allowed 41 minutes from Herne Hill to the next stop at Strood. Eight runs on this train, plus one on the 16.20 ex Victoria with the same schedule, produced the following; "Europa" Class 2-4-0 No.55 with 145 tons took 38 minutes 6 seconds - M2 Class 4-4-0 No.181 with 160 tons 39¼ minutes - M3 Class 4-4-0 No.187 with 170 tons 39 minutes 27 seconds - M1 Class 4-4-0 No.177 with 150 tons 39 minutes 16 seconds - M3 No.189 with 140 tons, 37 minutes 22 seconds - No.189 with 190 tons 44 minutes 34 seconds, 39 minutes Net - M2 No.181 with 150 tons, 38 minutes 23 seconds - No.189 with 140 tons, 37 minutes 33 seconds - No.177 with 150 tons, 40 minutes 26 seconds, 37½ minutes Net. The "Europa" passed Sole Street in 31½ minutes after averaging 46 miles per hour up the bank, the speed at Longfield signal box was 34½ miles per hour, [there were two quarter mileposts by Longfield Box and Pattinson used to time between these]. The fastest ascent was by M3 No.189, which with the light load of 140 tons averaged 51 miles per hour from Farningham Road to Sole Street. The best climb with an M1 or M2 was No.177, which averaged 47 miles per hour with 38 at Longfield.

The 17.33, after stops at the Medway Towns, was allowed 25 minutes for the 17.6 miles from Chatham to Faversham. M2 No.181 with 150 tons required 23 minutes 43 seconds passing Newington, 7.3 miles in 10 minutes 47 seconds. M3 No.189 with 140 tons 21 seconds less passing Newington in 10 minutes 29 seconds, 22¾ minutes Net.

LC&D performance between Faversham and Dover 1896

A B Class 0-6-0, presumably a replacement for a failed 4-4-0 at Chatham took 23 minutes 44 seconds, 23 minutes Net and passed Newington in 10 minutes 42 seconds. The B Class 0-6-0's were built by Dubs & C in 1876. They had 4 feet 10 inches diameter coupled wheels and two inside cylinders, [17½ inches diameter by 26 inches stroke]. The boiler working pressure was 140 pounds per square inch and the total heating area 1,089 square feet [987 square feet in the tubes and 102 in the fire box]. The locomotive weighed 41 tons, the tender another 30 tons. The locomotive with its small driving wheels clearly ran well.

There are nine details of the climbing from Faversham up to Emsden with the Dover portion of the 17.33. Overall times are only given for the best two runs in Pattinson's monograph. M Class 4-4-0's Nos.158 and 160 with loads of 80 tons ran to Canterbury in 13 minutes 34 seconds and 13 minutes 5 seconds. Selling was passed in 6 minutes exactly and 5 minutes 25 seconds at 39 miles per hour, this speed was then maintained up the 1/100, schedule was 16 minutes. The "Europa" 2-4-0 No.55, with 140 tons, on the 16.20 ex Victoria, fell away from 33 to 31 miles per hour but then reached 32 at the top of the 1/100. The EDHP's are enlightening, the 2-4-0 developed 450-475 and the M's between 400-450. Numbers 158 and 160 then ran the 15.5 miles to Dover Priory in 20 minutes 1 second and 19 minutes 1 second respectively. Shepherdswell was passed in 13 minutes 5 seconds and 13 minutes 2 seconds from the start. Speeds up to Shepherdswell were quite spectacular. On the first run it fell to 48 miles per hour, rose to 50 on the short level stretch at MP36½ and fell away to 47 at the summit. On the second run No.160 accelerated to 47 miles per hour and held this to the summit. The "Europa" 2-4-0 was travelling at 41 miles per hour at MP36¼ and fell away to 36 at MP37¾ at the top of the 1/132; successive quarters up the gradient were run at 43, 39, 37½ and 36 miles per hour. The M Class 4-4-0 when maintaining 47 miles per hour up the gradient developed an EDHP of 450-475. The runs with No.158 and 160 were significantly better than any others timed on this train. Locomotives recorded on the Faversham to Dover section were M Class Nos. 157, 158, 159, 160 and 161 and M2 No.182.

The 20.15 ex Victoria, 20.26 from Herne Hill, allowed 72 minutes to Canterbury was recorded on nine evenings. The quickest actual time noted was with M3 Class 4-4-0 No.15 with 120 tons, 70 minutes 18 seconds, 69¾ minutes Net. The best Net time was 68¾ minutes with No.20 and the same load, the actual time 74 minutes 3 seconds due to signal checks at Chatham and Gillingham. The heaviest train, 210 tons, taken by M3 No.15 lost four minutes, 76 minutes 9 seconds, 75½ minutes Net. Train weights varied from 120 to 210 tons.

On all occasions bar one the locomotives employed were M3 Class 4-4-0's, the one exception when "Enigma" Class 2-4-0 No.52 deputised. With a load of 120 tons the elderly locomotive acquitted itself well losing just 25 seconds against schedule, attributable to a signal check.

LC&D Down Evening Expresses 1896

The Farningham Road to Sole Street stretch was run in 7 minutes 40 seconds, Sole Street being passed in 30 minutes exactly from the Herne Hill start. The quickest time in the series over this stretch, 7 minutes 12 seconds was by No.20 with 130 tons, it passed Sole Street in 27 minutes 37 seconds.

Number 20 fell from 42 to 36 miles per hour up the bank to Emsden and No.52 from 39 to 30, the best of the series here was No.15 with 120 tons which fell from 43 to 37½. Continuing from Canterbury to Dover No.20 ran this in one second under the 23 minutes schedule passing Shepherdswell in 13 minutes 43 seconds at 39 miles per hour. No.52 did only fell from 41 to 39 miles per hour up the 1/132 and accelerated to 43 on the 1/274 past Shepherdswell, an EDHP of 420-470.

The late Evening boat train, 21.00 ex Victoria, was allowed only 70 minutes from Herne Hill to Canterbury. With trains of 120 tons, M3 Class 4-4-0's Nos.13 and 15 ran the distance in 69 minutes 43 seconds, 69½ minutes Net and 75 minutes 52 seconds, 72 minutes Net. Continuing to Dover they both passed Shepherdswell at 43 miles per hour and reached Dover Harbour in 20 minutes 44 seconds and 20 minutes 55 seconds, gaining just over two minutes on schedule. No.25 with 110 tons ran to Dover Pier from Herne Hill in 88 minutes 25 seconds, 87¾ minutes Net, two and a half minutes inside schedule. Although the load was light the run was good, 7 minutes 27 seconds from Farningham Road up to Sole Street and Chatham passed in 36¼ minutes from the Herne Hill start. The 23.5 miles from Bromley to Chatham were run in exactly 26 minutes, the shortest time noted by Pattinson. Faversham was passed in 56¾ minutes.

One evening an 0-4-2 well Tank No.92 hauled the City portion of the 09.00 to Herne Hill from St Pauls. The 4.2 miles were covered in 6 minutes 3 seconds start to stop a gain of one minute on schedule. Number 92 was built in 1866 to Martley's design and rebuilt by Kirtley. In its rebuilt state she had 5 feet 6 inches diameter coupled wheels and two inside cylinders, [17 inches diameter by 22 inches stroke]. The boiler had a working pressure of 150 pounds per square inch and a total heating area of 853 square feet [768 feet in the tubes and 85 square feet in the firegrate]. The firegrate area was 15 square feet. Ahrons,[Ref.2] quoted a run some years earlier when No.84, [of the same class but in its original condition with 16 inches diameter cylinders] starting from Ludgate Hill with 130 tons passed Herne Hill in six and three quarters minutes, averaged 35 miles per hour up to Sydenham Hill and touched over 50 past Penge. It reached Bromley one minute early in 17 minutes from Ludgate Hill.

There are a few meritorious runs on the Down semi fasts and stopping trains. The Saturday 13.30 Victoria to Dover had the somewhat challenging schedule of 6 minutes for the 5.7 miles from Swanley to Fawklham start to stop. An "Adrian" Class 0-6-0 with 140 tons took one second under seven and a half minutes. An M1 4-4-0 with 160 tons was six seconds slower.

LC&D performance from Dover in 1896

The "Adrian" Class 0-6-0's were built by John Fowler & Co in 1865 and rebuilt by Kirtley between 1885 and 1890. They had 5 feet 3 inches diameter coupled wheels and two inside cylinders, [17 inches diameter by 24 inches stroke]. The boiler had a working pressure of 140 pounds per square inch and the total heating area was 1,060 square feet [960 square feet in the tubes and 100 square feet in the fire box]. The fire grate area was 16 square feet, the locomotive weighed 34½ tons. Later on the journey No.131 ran the 8.8 miles from New Brompton to Sittingbourne the next stop in one and a half minutes inside the 13 minutes schedule.

The first Up train of the day, the 04.00 was booked non stop from the Town Station at Dover to Chatham in 59 minutes, except on Mondays when it stopped additionally at Faversham in 35 minutes and then nine minutes later at Sittingbourne. Time was easily gained to Chatham, on four occasions with M3 Class 4-4-0's. Number 20 with 160 tons took 56 minutes 40 seconds, 55¼ minutes Net, No.117 with 110 tons 55 minutes 23 seconds, No.187 with 110 tons 55 minutes 28 seconds and No.188 with 190 tons 56¾ minutes. The run with No.188 was easily the best but unfortunately Pattinson gave no details of speeds up the bank from Dover to Kearsney and again from Canterbury to Emsden, perhaps he fell asleep or more likely couldn't see the mileposts. Number 20, with 160 tons attained 36 miles per hour up the 1/132 between MP45 and MP40½ and maintained it up the last six quarter-miles, an EDHP of approximately 450. From Canterbury to Emsden speed fell away between MP28 and 24½ from 49 to 34½ miles per hour maintained up the last two-quarters. On the Monday train No.20, with 140 tons reached Faversham in six seconds over the 35 minutes schedule and then ran the short stage to Sittingbourne, 7.2 miles, in ten seconds under ten minutes. The Boat Express was allowed 41 minutes from Chatham to Herne Hill. Number 20, with 140 tons took 40 minutes 32 seconds, 39½ minutes Net, it passed the summit of the 1/100 at Sole Street in 12 minutes 46 seconds at 31 miles per hour, No.17 with 110 tons, took 39¼ minutes.

Some snippets on the morning trains from Dover are worth noting. M Class 4-4-0 No.160 with 110 tons on the 09.25 from the Town Station ran the 13.2 miles from Kearsney to Canterbury start to stop in 17 minutes 12 seconds, schedule 19 minutes. From the restart it accelerated from 35 miles per hour at MP28 to 39 at the top of the 1/132 to Emsden Tunnel at MP24½. "Echo" Class 4-4-0 No.29 on the 07.50 stopping train from Dover to London, with 60 tons ran the same stretch at 44-45 miles per hour. The "Echo" Class were originally built as a 4-2-0 Crampton by Robert Stephenson & Co in 1862, they were ineffective, Martley rebuilt them as 4-4-0's in 1865 and Kirtley again in the 1880's, [No.29 in 1887,] with new boilers and cylinders. They then had 6 feet diameter driving wheels and two inside cylinders, [17 inches diameter by 22 inches stroke]. The boiler had a working pressure of 150 pounds per square inch with a total heating area of 1,087 square feet [987 square feet in the tubes and 100 square feet in the firebox]

LC&D hill climbing in the Up direction 1896

The fire grate area was 16 square feet and the locomotive weighed 39 tons. The elderly much rebuilt 4-4-0 developed an EDHP of 300-350. An interesting comparison with this is "Europa" Class 2-4-0 No.58 with 120 tons on the Sunday 18.20 Dover to London semi fast. On the 1/132 Up to Lydden Tunnel it sustained 36 miles per hour at the top of the bank [Pattinson recorded the last two quarters, presumably he started timing when he sensed the elderly locomotive was doing rather well]. From Canterbury up to Emsden it sustained 39 miles per hour on the last three miles, an EDHP of 390-440. Although Pattinson was careful in calculating his coach equivalents, it is possible that on this occasion the train consisted entirely of four wheeled coaches, the Tare weight could have been as low as 90 tons, even allowing for Sunday excursion crowding, 100 tons Gross reducing the EDHP by 50. To complete a review of the hill climbing abilities of some of the older locomotives; "Reindeer" Class 2-4-0 No.45 with 90 tons sustained 37 miles per hour up to Emsden on the 19.15 semi fast ex Dover.

Eight non stop journeys from Dover to Herne Hill show the M3 Class 4-4-0's in an excellent light, the schedule for the 74.0 miles was 96 minutes. Five runs on the 15.05 produced the following: No.187 with 150 tons, 96 minutes 9 seconds, 94¾ minutes Net - No.16 with 160 tons, 96 minutes 26 seconds, 95½ minutes Net - No.15 with 140 tons, 96 minutes 17 seconds, 95¼ minutes Net - No.15 with 170 tons, 98 minutes 57 seconds, 98 minutes Net -.No.13 with 170 tons, 98 minutes 1 second, 97¼ minutes Net. On the 17.45: No.16 with 180 tons, 97 minutes 41 seconds - No.20 with 200 tons, 100 minutes 58 seconds, 96 minutes Net - No.20 with 200 tons, 96 minutes 21 seconds, 95 minutes Net.

The two runs with the M3 Class 4-4-0 No.20 on the 17.45 probably represent the best hill climbing in the series. Speeds at the top of the 1/132 at Lydden were sustained at 31 miles per hour with 200 tons and 36 with 180 tons, an EDHP of 550-600. Up the second bank to Emsden Tunnel speeds fell from 51 to 36 miles per hour and from 47 to 33. The best performance however was from Rochester up to Sole Street, the summit of the five miles mostly at 1/100, the last 2.1 miles unbroken where the in each case speed was 32 miles per hour, requiring an EDHP of 575-625. Number 16 with the 180 tons load was travelling at 34, 33½ and 32 miles per hour at the three summits. The 17.45 appears to have been definitely the train to travel by for good locomotive performance.

Candour compels one to add that not all runs were like this. Pattinson gives details; speeds only, of No.14 with 200 tons when it only managed 26 miles per hour at Lydden and up to Emsden fell from 46 to 30. It was losing time steadily.

It appears that the M3 Class could comfortably run the Boat Trains to schedule with loads up to 150 tons. Above 150 tons it required a competent enthusiastic crew. If the load exceeded 200 tons it was impossible to observe the 96 minutes Dover to Herne Hill schedule.

LC&D to Margate and Ramsgate in 1896

The Margate and Ramsgate service did not require the same locomotive effort as the Dover Boat trains although some were tightly timed. The South Eastern's hardest turns were probably where it was in competition with the LC&D for the Kent Coast traffic, conversely the LC&D's challenging schedules were those in response to the South Eastern's Continental service. Both companies apparently needed the challenge of competing over a longer route [in the case of South Eastern] or a harder route [LC&D] to bring out their best.

The outstanding Down Kent Coast train was the 17.10 ex Holborn Viaduct, allowed 90 minutes from St. Pauls to Margate. On six occasions the load was 110 tons reduced to 80 tons after Faversham, where a portion was slipped. The locomotives employed were on three occasions M2 Class 4-4-0's and on one occasion each an M1, an M3 and an "Enigma" 2-4-0. The quickest time was by M2 No.180 with 88 minutes 2 seconds, 85 minutes Net. Pattinson did not give any downhill speeds other than to state that they did not exceed 65 miles per hour downhill other than on Boat Trains where occasionally they reached 70 in the environs of Canterbury [Rous Marten gave a figure of 74 at this point]. With No.180 the average speed from Swanley to Fawkham was 61 miles per hour and from Sole Street to Strood 58. Bearing in mind the comparatively slow speed past Swanley, the uphill grades from Farningham Road to Sole Street, the Strood slowing, 70 miles per hour was probably attained at both Farningham Road and past Cuxton Road signal box on the descent to Strood. It should be remembered that there were very few mileposts west of Chatham and Pattinson relied entirely on them for timing purposes. East of Faversham speeds were also high; No.180 ran the 12.1 miles from Whistable to Birchington in 12 minutes 12 seconds.

The "Enigma" 2-4-0 ran to Margate in 92 minutes 21 seconds, 88½ minutes Net, the 6.2 miles uphill from Farningham Road to Sole Street took four seconds over eight minutes with 41 miles per hour past Longfield Box. The M1 No.177 required 96 minutes 12 seconds but the Net time was 89½ minutes, with a time five seconds longer on the uphill stretch to Sole Street than the "Enigma" whilst the M3 ran poorly compared to the smaller locomotives taking 94 minutes 18 seconds, 89½ minutes Net.

The 15.26 from Herne Hill was allowed 90 minutes to the next stop at Margate, "Europa" Class 2-4-0 No.56 with a sizeable load of 170 tons exceeded this by 4 minutes 48 seconds; the Net time was only 88¾ minutes. The Farningham Road to Sole Street section took 8 minutes 26 seconds, the average between Herne Bay and Birchington was 54 miles per hour. There was a special stop at Faversham, 6¼ minutes from Herne Hill and from the restart the 21.9 miles to Margate occupied 27½ minutes.

An M2 Class 4-4-0, No.179, with 130 tons ran from Herne Hill to Westgate on Sea in 87 minutes 12 seconds, schedule 88 minutes, on the 15.25 ex Victoria.

LC&D from Ramsgate and Margate to London in 1896

Number 179's time up to Sole Street was identical to that of the "Europa" 2-4-0 although the speed at Longfield was only 37 miles per hour. On the 15.14 from Herne Hill, allowed 72 minutes to the first stop at Whitstable, M3 No.13 passed Faversham in 61¼ minutes reaching Whitstable in 69½ minutes, 68½ minutes Net, the load was only 110 tons. On the Sunday 10.45 ex Victoria M1 No.176 with 150 tons improved on the Herne Hill to Herne Bay booking by over two minutes, 75 minutes 51 seconds, 75½ minutes Net. Farningham Road to Sole Street was run in 8 minutes 29 seconds and Faversham passed in ten seconds under 63 minutes.

The 18.00 ex Ramsgate, was booked non stop from Margate to Herne Hill in 90 minutes. M3 Class 4-4-0 No.191 with 150 tons required 88 minutes 24 seconds, 86½ minutes Net and No.12 with 220 tons 95 minutes 49 seconds, 93 minutes Net. No.191 was timed on the 1/95 gradient from Ramsgate Harbour Station at 24 miles per hour over the last quarter mile of the one and half mile bank. Number 12 had "Enigma" 2-4-0 No.52 as pilot and the two locomotives reached 29 miles per hour with 220 tons. At these low speeds and from a cold start the EDHP's were about 480 for No.191 and 900-950 for the double headed train [Pattinson when quoting weights and speeds observed "these figures cannot be considered bad"].

The climbing, after the Margate restart, up the short 1/100 gradient between Birchington and Herne Bay was also good. Number 12 with the heavier train fell away from 50 to 34 miles per hour whereas No.191 only from 50 to 43 with 150 tons. The latter speed is shown as maintained over the last two quarters [if indeed No.191 was effectively maintaining 40 miles per hour up the gradient this would have required an EDHP of 600-650]. Number 191 passed Faversham in 25 minutes 43 seconds from Margate, following which there was a bridge slack at Sittingbourne [this slowing was in force for much of the time that Pattinson made his observations]. From Strood to Sole Street the average speed was 36½ miles per hour, 33 actual at the top of the 1/100. Number 12 with the heavier train averaged 29 miles per hour up Sole Street bank but unfortunately no speed is given at the top of the bank.

An M3 Class 4-4-0 No.190 on the Sunday 17.17 from Herne Bay, with 160 tons reached Herne Hill seven seconds inside the 76 minutes schedule, 74½ minutes Net. The average from Strood to Sole Street was 33 miles per hour and the time from Chatham to Bromley three seconds under 31 minutes, No.191 ran this section 27 seconds faster but Pattinson timed a Dover train over this section in the level half hour.

The weekday 08.00 ex Ramsgate was allowed 65 minutes from Faversham to Herne Hill. Locomotives and loads on seven occasions were:

LC&D a 2-4-0 on the "Granville" in 1896

M3 Class 4-4-0's No.20 with 190 tons - No.189 150 tons - No.189 140 tons - No.187 140 tons - No.187 140 tons - M2 No.181 140 tons - M1 No.177 with 150 tons. Overall times were; 65 minutes 24 seconds, 64½ minutes Net - 63 minutes 7 seconds, 61½ minutes Net - 65 minutes 18 seconds, 63¾ minutes Net - 66 minutes 55 seconds, 63½ minutes Net - 65 minutes 29 seconds, 64 minutes Net - 65¼ minutes, 62¼ minutes Net - 67 minutes 51 seconds, 65½ minutes Net. Speeds up Sole Street are only given for four of these runs, at the top of the 1/100; No.187 with 140 tons on two occasions, 33 and 32 miles per hour, No.189 with 140 tons had fallen to 31. The smaller M2 No.181 with identical load managed the same speed. The smaller 4-4-0's performed well on this train.

An interesting run on the Up "Granville", 10.00 ex Ramsgate, 10.18 from Westgate, allowed 90 minutes to Herne Hill involved "Europa" Class 2-4-0 No.54 with 190-200 tons. [Ref.3] There was a special stop at Faversham reached in 26 minutes 35 seconds, before this speed fell on the 1/100 before Herne Bay from 45 miles per hour at MP13½ to 32 at MP12. The stop at Faversham lasted 4 minutes 1 second and from the restart Sittingbourne was passed in 11 minutes 44 seconds. The time to Strood was 26 minutes 54 seconds with the three miles from Gillingham to Strood run in 3 minutes 33 seconds, which should have shaken the passengers up nicely, [although on one of the Dover Mails the time was 11 seconds less than this]. The climb to Sole Street was completed in 11 minutes 19 seconds, an average of 32 miles per hour, from Sole Street to Meopham the average was 35, on to Fawkham 58, to Farningham Road 63 and up the slope to Swanley 51. The 23.5 miles from Chatham to Bromley were run in 31 minutes 25 seconds and Sydenham Hill was passed in 52¾ minutes, including a slight loss of time for the Sittingbourne Bridge slack. Herne Hill would have been reached in 96 minutes from Westgate, except for a signal check at West Dulwich or in 65½ minutes from the restart at Faversham. Net time from Westgate to Herne Hill, without the Faversham stop was 89 minutes and from Faversham 64½ minutes. This run encapsulates locomotive performance on the LC&D in the 1890's. Whilst the new M3 Class 4-4-0's were very capable, the elderly Kirtley re-builds were still able to handle important trains competently. Whilst Kirtley would undoubtedly have preferred to replace locomotives built in the 60's and 70's the "make do and mend" philosophy worked tolerably well.

The Up semi-fast trains on the Kent Coast at times were quite sprightly. An M1 Class 4-4-0 No.178 with 140 tons on the 19.25 ex Ramsgate passed Birchington, 3.2 miles from Margate, in 5 minutes 24 seconds and fell from 47 to 41 miles per hour on the 1/100 before Herne Bay. It stopped there, 11.2 miles from Margate 90 seconds inside the 16 minutes schedule. On other occasions on this train the running was not so good, the speed at the top of the 1/100 being 27 miles per hour by M2 No.182 with 200 tons, 31 by No.185 also with 200 tons and 30 by M1 No.178 with 190 tons. The next stage from Herne Bay to a stop at Faversham, 10.7 miles was allowed 16 minutes.

LC&D to Ashford via Sevenoaks and Maidstone in 1896

M1 No.176 with No.178 as pilot and 190 tons passed Whitstable 4.05 miles from the start in 5 minutes 23 seconds and after losing one minute through signal checks reached Faversham in 14¼ minutes. M2 No.185, with 200 tons took 44 seconds longer to pass Whitstable than the double headed train but still reached Faversham in 14 minutes 27 seconds. An M3 No.191 on the 17.35 ex Ramsgate, 18.42 from Whitstable with a light load of 100 tons ran the 6.85 miles to the next stop at Faversham in seven seconds over nine minutes including a quarter of a minute lost by a signal check. In the reverse direction, M1 No.177 with 70 tons ran the distance in 8 minutes 52 seconds start to stop.

The third LC&D long distance route was that from Swanley Junction to Sevenoaks, Maidstone and Ashford. Most trains stopped at all stations but there was a morning "London Express" which left Ashford at 08.40, picked up by request at stations to Maidstone, then after stops at Malling, Wrotham and Kemsing ran non stop from Sevenoaks Bat and Ball to Bromley. It reached St Pauls at 10.39 with a portion for Victoria slipped at Herne Hill. Number 21, a "Tiger" Class 2-4-0 was originally built in 1862 by Slaughter, Grunning as a Crampton 4-4-0, then rebuilt by Martley as a 2-4-0 and finally rebuilt again by Kirtley in 1885. In this form it had 5 feet 6 inches diameter driving wheels and two inside cylinders, [17 inches diameter by 22 inches stroke]. The boiler had a working pressure of 140 pounds per square inch and total heating area of 1,031 square feet [939 square feet in the boiler tubes and 92 square feet in the firebox]. The firegrate area was 15 square feet and the locomotive weighed 32½ tons. This elderly lady with a load of 150 tons ran the 14.8 miles from Sevenoaks to Bromley in 19¼ minutes, schedule 20 minutes. In the opposite direction on the 18.25 Victoria to Ashford No.22 of the same Class with 120 tons ran from Eynsford to Sevenoaks the next stop in 7 minutes 7 seconds for the 5.3 miles, schedule 9 minutes. After the train reversed at Sevenoaks an "Echo" Class 2-4-0 ran the 5.2 miles from Malling to Maidstone in 7 minutes 3 seconds, schedule 10 minutes and then after the Maidstone stop did not fall below 31 miles per hour on the 1.7 miles of 1/60 before Bearstead. This gradient follows a half-mile stretch at 1/110 virtually from the platform end and a short level stretch. The elderly 2-4-0 developed an EDHP of 450-500, a fitting place to leave Mr Pattinson's records.

Pattinson was enthusiastic when writing about the LC&D; perhaps he enjoyed championing the underdog. Even though he selected the best 101 runs out of 261 for publication and almost certainly travelled with the knowledge of the Company senior management it is apparent that the locomotives, new and old, all performed well. Kirtley had served the LC&D admirably both with his new designs and his judicious rebuilding of older locomotives.

Whilst they were not made on scheduled services, no account of passenger services on the LC&D in the last decade of the century is complete, without reference to the Jockey Club visit to Paris.

LC&D The Jockey Club's visit to Paris in 1896

The runs were made on June 12th and 14th 1896 by special trains.

In the Down direction M3 Class 4-4-0 No.16 with approximately 70 tons ran from Victoria to Dover Pier in four seconds under 82 minutes. The running through the London suburbs was quick, for instance 48 miles per hour average up the 1/101 from Dulwich to Sydenham Hill and then 60 from Kent House to Bromley. From Farningham up to Sole Street the average was 59 miles per hour. Downhill the 6.1 miles from Sole Street to Strood were run at an average of 64 miles per hour, which as this included the Strood slack suggests that 70 was exceeded. There was a slack for the bridge repairs at Sittingbourne but despite this the average, between Newington and Teynham was 62 miles per hour, up to Selling 53 and 55 from Adisham to Sheperdswell 55.

Two days later on the return journey the same locomotive and train ran the initial six and three quarter miles to Sheperdswell in nine and a quarter minutes from the Dover Pier start. The average speed from Adisham to Beckenham was 60 miles per hour and Faversham 26.4 miles from the start was passed in 28 minutes 39 seconds. After Strood, 45.5 miles in 48 minutes 8 seconds, the average up to Sole Street was 48 miles per hour, then 71 between Meopham and Farningham Road. [This suggests, this stretch includes two short stages, one mile and a quarter up at 1/100, that 80 miles per hour was attained at Farningham Road]. A good average was maintained through the suburbs of London, the 9.8 miles from Bromley to the Victoria stop required five seconds over 12 minutes. Chatham to Bromley was run in 24 minutes 8 seconds and the overall time from Dover Pier to Victoria was 82½ minutes plus three seconds.

Chapter 3: References and Notes

- Ref. 1 Railway Magazine [RM] Vol. XII
Ref. 2 [RM] Vol. XLII, train working in the latter part of the 19th Century
 E.L.Ahrons
Ref. 3 OS Nock, SE & C Railway. Ian Allan 1961.
 Nock gives a load of 17½ coaches as weighing 230 tons, 190-
 200
 tons is more realistic.

Chapter 4: London, Brighton and South Coast Railway Pre 1900

William Stroudley died during December 1889. He was 56 years of age and had been Locomotive, Carriage and Wagon Superintendent of the London Brighton and South Coast Railway for almost 19 years. When he took up the reins at Brighton the locomotive stock was barely adequate and the capital expenditure budget limited. However 375 locomotives were built to his designs in the 20 years from 1877 onwards, 17 of them after his untimely death, incorporating some modifications by his successor Robert Billington, Stroudley himself at the beginning of his regime completed two 0-4-2 Tank's partly designed by his predecessor Craven. One hundred and sixteen further locomotives were built to Billington's designs by the end of the century but Stroudley locomotives remained dominant on the main passenger services throughout the 1890's.

The Brighton Railway adopted the strategy that on comparatively short journeys customers were less concerned about the speed of the train than its punctuality, a philosophy that perhaps explains the progress of Brighton train speeds. In September 1845 the quickest Down and Up trains ran between London Bridge and "London by the Sea" in 90 minutes. The Down morning service made stops at Reigate Junction [later Redhill], Three Bridges and Haywards Heath, the 17.00 ex London Bridge omitted the Haywards Heath stop. In the Up direction the 08.45 ex Brighton reached London Bridge in 90 minutes with stops at Three Bridges and Reigate. By 1853 there was a non stop train in each direction. The 08.45 Up and the 17.00 Down, scheduled in 80 minutes, reduced to 65 minutes in the Autumn of 1865, which remained the shortest time on the route until the 60 minutes schedule of the Sunday Pullman was introduced in October 1898 over the slightly more difficult route to Victoria.

Whereas increases in speed were slow to happen, frequency was another issue. On weekdays in September 1849 there were eight trains in each direction between London Bridge and Brighton, three of these served all stations. In November 1885 there were 24 Down trains; five of them included Pullman cars in the formation, two being the "Pullman Limited". In the Up direction there were 23 trains, five with Pullman facilities, two of which ran non stop to London Bridge. In July 1897 the figures were 29 Down trains including two non stop, on Saturdays there was a train from Victoria at five minutes before midnight, scheduled to Brighton non stop in 70 minutes with Pullman cars in the formation. Eight trains including the two "Limiteds" had Pullman facilities. In the Up direction there were 25 departures from Brighton for London, with two more on Saturdays. Nine trains including the two "Limiteds" included Pullman facilities.

The LB&SC services to Portsmouth and Hastings were in competition with the L&SW and the South Eastern Railways over considerably longer routes which apparently spurred it on to greater efforts in terms of speed.

LB&SC Timetable

The LB&SC in the late 1880's was sufficiently motivated, that in 1888 it introduced a non stop service to Portsmouth Town, 16.55 ex London Bridge, allowed exactly two hours for the journey, subsequently two intermittent stops were added but the overall time remained the same. The Up train stopped at Chichester from October of that year but the Down service remained non stop until 1889. Also in the summer of 1888 the 16.27 ex Victoria ran non stop to Bexhill in 114 minutes. The Up train left at 08.20 and stopped at East Croydon. This service, in this form, survived for only a few months.

Generally however, the LB&SC services were uninspiring. In 1883 E. Foxwell wrote [Ref.1] "This line has no chance of doing great things with such a short course but it may be called a smart line for speed". In 1889 Foxwell [Ref.2] with T C Farrer wrote "This line has always been smart, though scarcely great". E.L Ahron's quoted a friend of his, who many years previously had compared the London and North Western Railway's 09.48 from Torbay to Preston, scheduled at 47.4 miles per hour over 53 miles with the 17.00 "City Limited" to Brighton in 65 minutes, an average of 46.6 miles per hour. [Ref.3] The London and North Western train was for fish and meat to London hence the moral "It is better to be a dead mackerel on the North Western than a first class passenger on the LB&SC Railway!"

The Brighton timetable was a classic example of "you can fool all of the people some of the time, some of the people all of the time, but not all of the people all of the time". The Brighton and Eastborne route although bedevilled by the bottleneck with the South Eastern between Croydon and Redhill did not have any difficult gradients. The Portsmouth and Tunbridge Wells lines involved some steeply graded sections. C Rous Marten recounted how William Stroudley had told him his D Class 0-4-2 Tank's were capable of working any train on the system other than the 08.45 ex Brighton and the return working on the 17.00 ex London Bridge [Ref.4]. One assumes that Stroudley was extolling the qualities of his 0-4-2 Tank's but it could be interpreted as a comment on the undemanding nature of the LB&SC timetable.

Accounts of locomotive performance on the LB&SC in the 1880's are scarce and indeed without Pattinson we would have little information for the 90's. Pattinson's work contains details of 34 Down runs on the main line to Brighton. The 06.40 ex London Bridge stopped at East Croydon, Redhill, Haywards Heath, Burgess Hill and stations to Brighton with an arrival at 08.17. A G Class 2-2-0 single No.346 with 110 tons and D2 Class 0-4-2 No.302 also with 110 tons ran the 10.4 miles from East Croydon to Redhill in 16 minutes 4 seconds and 19 minutes 35 seconds, 17¼ minutes Net, respectively, schedule 17 minutes. From the Redhill start the Single passed Three Bridges, 8.4 miles in 10 minutes 49 seconds and stopped at Haywards Heath in 21 minutes 6 seconds.

LB&SC G Class Singles & D2 Class 0-4-2's

The 0-4-2 took 23 minutes 21 seconds, schedule 24 minutes. The Single attained 45 miles per hour up the 1/264 to MP17 and ran the last two miles up to Balcombe Tunnel at 47 and 46.

The G Class 2-2-2 Stroudley Single's were built between 1877 and 1882. They had 6 feet 6 inches diameter driving wheels and two inside cylinders, [17 inches diameter and 24 inches stroke]. The boiler had a working pressure of 140 pounds per square inch and a total heating area of 1,184 square feet [1,084 square feet in the boiler tubes and 100 square feet in the firebox]. The firegrate area was 17 square feet and the locomotive weighed 33½ tons, the tender another 29½ tons.

The D2 Lyons Class was essentially a Stroudley D Class 0-4-2 Tank without the bunker and side tanks and utilising a boiler type fitted to Stroudley's second Single "Abergavenny". They had 5 feet 6 inches diameter coupled wheels and two inside cylinders, [17 inches diameter by 24 inches stroke]. The boiler had a working pressure of 140 pounds per square inch and the total heating area was 1,071 square feet [971 square feet in the boiler tubes and 100 square feet in the firebox], the firegrate area was 17 square feet. They were built between 1876 and 1878, six more built in 1883 had larger boilers.

The 11.40 ex Victoria included a Pullman car and stopped at Clapham Junction, East Croydon, Three Bridges and Preston Park. G Class Single No.345 with 220 tons lost 55 seconds on the initial 7.4 miles from Clapham Junction to East Croydon, schedule 14 minutes although a slight signal check accounted for a quarter of a minute of this. From the restart at East Croydon 38 miles per hour was attained up the 1/264 to MP17, Redhill passed in 17 minutes 12 seconds and the 8.6 miles to Three Bridges run in 9 minutes 20 seconds pass to stop. This brisk downhill running enabled the locomotive hauling nearly seven times its own weight plus tender to arrive almost two and a half minutes inside schedule. The 27 minutes schedule from Three Bridges to Preston Park for the 20.1 miles was improved on by 24 seconds. It appears that on the 1/264 up to Merstham the Single developed an EDHP of 375-425.

The 17.00 ex London Bridge [17.01 in the WTT] was allowed 64 minutes to Brighton. On five journeys featured "Gladstone" Class 0-4-2's, Nos. and loads were; 218, 220 tons -196, 220 tons -199, 220 tons - 215, 90 tons [this was the Saturday train] -216, 200 tons. The actual and Net times for the five journeys were: 66 minutes 8 seconds, 62½ minutes Net - 64 minutes 29 seconds, 62¼ minutes Net - 63¾ minutes, 63 minutes Net - 65 minutes 5 seconds, 58¾ minutes Net - 60 minutes 57 seconds. Complete details were given of the climbs up the 1/100 from New Cross to Forest Hill, respective speeds at MP3½ were 53, 45, 47, 56 and 56 miles per hour, at the top of the bank, MP5¼ 32, 30, 29, 39 and 34. Number.196 was credited with sustaining 30 miles per hour over the last four quarter miles; No.216 apparently sustained 34 over the last two.

LB&SC "Gladstone" Class 0-4-2's

The two previous quarters were run at 37 miles per hour, which suggests a limitation with the stop watch being employed for timing purposes. Number 218 gave figures of 34, 33, 33, and 32 miles per hour over the last four quarters. These figures indicate the Gladstone's could sustain 31-32 miles per hour on the 1/100 with 220 tons, an EDHP of 600-650. These performances compare favourably with the Indicated Horse Powers [IHP] registered in the various trials carried out by Stroudley during October/November 1885. An IHP of 616 was recorded at 65 miles per hour downhill and 502 at 30 miles per hour up 1/264 with the cut off at 33 percent.

Details are available of speeds up the 1/264 gradients to Merstham, Balcombe and Clayton for five of these runs. Numbers 218 and 215 were checked by signals at MP16 when travelling at 45 miles per hour [speed falling slightly] and 49 miles per hour [speed rising but this was the Saturday train]. Numbers 196 and 199 fell from 47 to 44 miles per hour and 46 to 44 respectively. Speeds at the top of the Balcombe rise were 45, 45, 46, not given and 46, but in all cases were still falling. Similarly up to Clayton speeds were 42, 47, 46, 54 and 47 miles per hour and again with the exception of the lightly loaded train were all falling. The best performance over the three climbs was by No.218 with 220 tons when the equivalent maintained speed up the 1/264 to Merstham was 43-44 miles per hour. This would involve an EDHP of 450-500. Downhill speeds were moderate, the fastest average between Horley and Gatwick was 64 miles per hour by No.216 and between Haywards Heath and Keymer Junction the fastest was also 64 by No.218.

The "Gladstone" B1 Class 0-4-2's were built between 1882 and 1891. They had 6 feet 6 inches diameter coupled wheels and two inside cylinders, [18 inches diameter by 26 inches stroke]. The boiler had a working pressure of 140 pounds per square inch and the total heating area was 1,492 square feet [1,378 square feet in the boiler tubes and 114 square feet in the firebox]. The fire grate area was 20 square feet and the locomotive weighed 39 tons, the tender another 29 tons.

The 17.40 ex Victoria made stops at Clapham Junction, East Croydon, Preston Park and Brighton, a portion for Eastborne was slipped at Haywards Heath and motive-power was normally a "Richmond" Class 0-4-2. These locomotives were built between 1878 and 1880, they were Stroudley's second 0-4-2 design and had 6 feet 6 inches diameter coupled wheels and two inside cylinders [17¼ inches diameter and 26 inches stroke]. The boiler had a working pressure of 150 pounds per square inch [140 as originally built] and a total heating area of 1,173 square feet [1,074 in the boiler tubes and 99 square feet in the fire box]. The firegrate area was 17 square feet and the locomotive weighed 37 tons, the tender another 30½ tons.

LB&SC "Richmond" Class 0-4-2's

On eleven occasions the locomotive was a "Richmond" Class 0-4-2, once a D2 Class 0-4-2 and once a Gladstone 0-4-2. Locomotives and loads were; No.210, 210 tons - No.208, 200 tons - No.207, 200 tons - No.208, 200 tons - No.210, 210 tons - No.211, 210 tons - No.208, 210 tons - No.209, 210 tons - No.210, 220 tons, piloted from Clapham Junction to East Croydon by D Class 0-4-2 Tank No.16 - No.209, 210 tons - No.210, 220 tons with D Tank No.25 to East Croydon - No.210, 220 tons, Gladstone No.199, 220 tons and D2 No.304, 210 tons.

The schedule from Clapham Junction to East Croydon was 16 minutes, the best actual time without a pilot 14 minutes 16 seconds by No.208 with 220 tons. Numbers 210 and 16 with 220 tons were 28 seconds quicker, Net time was only 13½ minutes. Ten of the runs were completed inside 16 minutes, on two occasions actual times were half a minute over but the Net times were less than 15 minutes. The D2 No.304 with 210 tons took 17 minutes 21 seconds including three quarters of a minute lost by a signal check. Speeds on the continuation from East Croydon up the rising grades towards Merstham on seven occasions were between 37 and 39 miles per hour. The D2 reached, and maintained, 37 miles per hour, an EDHP of 325-375. The best runs by a "Richmond" were with No.210, which on two occasions attained 39½ miles per hour with 210 and 220 tons, an EDHP of 375-425. In the 1885 Stroudley tests, the maximum IHP observed from a D tank was 370 and from a G Class Single, 474. The G Class had a larger boiler than the D2. Speeds up to Balcombe were between 45 and 49 miles per hour at MP28, 38 to 41 at the tunnel entrance, the D2 fell away to 35. On three occasions Pattinson travelled in the Eastborne section, the slip portion reached Haywards Heath in 37 minutes 4 seconds [No.208 with 220 tons], 40 minutes 1 second, 38½ minutes Net, [No.208 with 210 tons] and 39 minutes 22 seconds [No.304 with 210 tons]. The schedule to Haywards Heath was 40 minutes and the on time arrival of the D2 reminds one of Stroudley's claim that a D tank [or at least the tender version of one] could time any train on the line.

The schedule from passing Haywards Heath to Preston Park with the reduced load was easy. Number 208 with 200 tons achieved the shortest time, East Croydon to Preston Park in 49 minutes 49 seconds, with its time from Clapham Junction to Croydon this gave an actual running time of 64 minutes 5 seconds, schedule 71 minutes. Two others were completed inside 52 minutes from East Croydon, three within 53 minutes, one within 54 minutes and one inside 55 minutes. Two arrivals were one and a half and four minutes late, the Net times were 53¾ minutes and 51¾ minutes. The last occasion was with the "Gladstone", but there was a slight check before Coulsdon, almost a stop before Redhill, slow running until Earlswood and finally almost a stop outside Hassocks.

The 18.00 ex London Bridge [one minute later in the WTT] stopped at Redhill, Preston Park and Brighton. "Gladstone's" Nos.190, 220 and 216 had 200 ton loads on this service.

LB&SC "Gladstone" and D Class Tank performance in 1895

Number.219 had a heavy train, 240 tons. The 18.00 was allowed 31 minutes to Redhill, the actual and Net times were 30 minutes 32 seconds - 34 minutes 5 seconds, 30¾ minutes Net - 37 minutes 9 seconds, 32 minutes Net - 43 minutes 11 seconds, 32¾ minutes Net. On the climb to Forest Hill No.219 with the 240 ton train fell from 47 to 27 miles per hour which was sustained up the last three-quarters of a mile, No.216 fell from 45 to 28 and afterwards reached 38 up to Merstham. Numbers 220 and 190 fell from 43 to 30 miles per hour and 47 to 32 respectively, the minimum in each case sustained up the last three-quarters of a mile. The schedule to Redhill was difficult to maintain, particularly bearing in mind the likely congestion at the end of the rush hour period and the purported predilection of the South Eastern signalmen between Coulsdon and Redhill to favour their own. The 40 minutes schedule to Preston Park offered scope for time recovery, No.220 ran the stage in 34 minutes 28 seconds, No.216 in a second under 36 minutes, No.190 in 38 minutes and No.219 with the heavy load in 37 minutes 49 seconds. All four runs were completely unchecked, the running was undemanding; No.216 for instance fell to 39 miles per hour at both Balcombe and Clayton but still gained four minutes on schedule.

The 19.07 ex Victoria, which included Pullman facilities, stopped at Clapham Junction, East Croydon, Three Bridges, Preston Park and Brighton. "Gladstone" No.181 with 180 tons gained three and a quarter minutes on the easy 30 minutes schedule from East Croydon but then lost three-quarters of a minute on the 28 minutes schedule to Preston Park.

The 23.55 Theatre train, allowed 70 minutes non stop from Victoria to Brighton, lost three and a quarter minutes when hauled by "Gladstone" No.200 with a light load of 110 tons. The train was checked five times between Victoria and Streatham Common, including one brief stop and then at East Croydon and Redhill all of which were considered to have cost eight minutes.

A mention of the D Tank's here may be apposite. They were the most numerous Class of locomotives on the Railway, 125 were built between 1873 and 1887. They had 5 feet 6 inches diameter coupled wheels and two inside cylinders, [17 inches diameter by 24 inches stroke]. The boiler working pressure was 140 pounds per square inch and the total heating surface 933 square feet [845 square feet in the boiler tubes and 88 square feet in the firebox]. The firegrate area was 15 square feet, the total weight 38 tons, coal capacity was one and a half tons and water capacity 860 gallons. From 1881 to 1892 they were fitted with a boiler which had a working pressure of 150 pounds per square inch and total heating surface of 1,036 square feet [948 square feet in the boiler tubes and 88 square feet in the firebox]. In 1892 some boilers were obtained from outside contractors and some built at Brighton with a working pressure of 160 pounds per square inch and a total heating surface area of 1,006 square feet [924 square feet in the boiler tubes and 82 square feet in the fire box].

LB&SC "Gladstone" performance on the Sunday 10.45

The Sunday 10.45 ex Victoria to Brighton, with stops at Clapham Junction and East Croydon plus a heavy load took a pilot locomotive to East Croydon. On six occasions with between 230 and 260 tons the run from a start at Clapham Junction was accomplished in 13¾ minutes or less. The best times were with "Gladstone" No.178 and the first Stroudley Single "Abergavenny" in 12 minutes 28 seconds and half a minute longer by No.178 with Billington D3 Class 0-4-4 Tank No.372; this run included a loss of 15 seconds by a check.

Seven runs from East Croydon to Brighton on this service represent some of the best running recorded by Pattinson on the LB&SC. The schedule over the 40.3 miles was 52 minutes. Locomotives and train weights were:- No.180, 250 tons - 187, 250 tons -180, 260 tons -178, 230 tons -192, 250 tons - 186, 250 tons - 176, 250 tons. The respective times were; 54 minutes 52 seconds, 52¾ minutes Net - 51 minutes 36 seconds - 52 minutes 20 seconds - 50 minutes 4 seconds - 54 minutes 17 seconds, 50 minutes Net - 51 minutes 29 seconds - 62 minutes 33 seconds, 52¾ minutes Net. Attained speeds up to MP17 were 39, 37, 38, 43, 41, 40 and 39 miles per hour. On the section from Three Bridges up to Balcombe tunnel No.187 sustained 43 miles per hour with 260 tons up the last three miles of the gradient, No.192 with 20 tons less fell from 44½ to 43½ over the same distance. The speeds entering the tunnel on the seven runs were 39, 43, 40, 43, 43, 41 and 36 miles per hour. Data for the rise to Clayton is not so complete. Speeds at MP45¾ were 46 miles per hour with No.187, 44 with No.178, 42 with No.186 and 39 with No.176. In all cases MP43 was passed at between 52 and 54 miles per hour. The best performance was by No.187 with the heaviest load, successive miles being run at 54, 50, 48 and 46 miles per hour. Number 178 developed an EDHP of 450-500 minimum when it attained 43 miles per hour at MP17 with 230 tons [the mile post readings indicate it was probably still accelerating at this time so the horsepower figure may have been higher]. Number 187, when sustaining 43 miles per hour with 260 tons developed an EDHP of 500-550.

The "Gladstone" Class 0-4-2's tended to dominate the London to Brighton service, although as already noted there were exceptions. The locals offered further variations, a "Belgravia" Class 2-4-0 often hauled the Sunday 18.40 ex London Bridge to Three Bridges. These locomotives were designed by Stroudley with the intention of utilising sets of frames ordered by his predecessor Craven. They had 6 feet 6 inches diameter coupled wheels and two inside cylinders, [17 inches diameter by 24 inches stroke]. The boiler had a total heating surface area of 1,224 square feet [1,112 square feet in the boiler tubes and 112 square feet in the firebox]. The firegrate area was 19 square feet and the locomotive weighed 40 tons. Number 201, with 90 tons, on the 18.40 gained two and a quarter minutes on the 19 minutes schedule from East Croydon to Redhill. It then ran the easy 8.8 miles to the next stop at Three Bridges in 12¾ minutes, a further gain of two and a quarter minutes.

LB&SC performance Up from Brighton in 1895

Pattinson gave details of 30 journeys from Brighton to London. The 08.45, all First Class train, was allowed 70 minutes non stop to London Bridge at this time. It was the heaviest regular train on the LB&SC and was always subject to scrutiny by the Company's senior management. On two occasions with loads of 260 tons reduced to 200 tons after the Victoria portion was slipped at East Croydon, "Gladstone" Class 0-4-2's Nos.200 and 189 were the motive power. Number 200 passed Haywards Heath in 18½ minutes after reaching 38 miles per hour up the 1/264 gradient to Clayton Tunnel, averaged 62 from Wivelsfield to Haywards Heath and fell from 47 at Copyhold Junction to 43 at Balcombe Tunnel signal box [MP36 to MP32]. The run up the 1/264 to Merstham Tunnel was spoilt by a signal check between Earlswood, passed in 37 minutes 31 seconds from Brighton and Redhill. London Bridge was reached in 68 minutes 7 seconds, 64¼ minutes Net, after further checks at East Croydon and New Cross. Number 189 attained 40 miles per hour at Clayton, averaged 63 from Wivelsfield to Haywards Heath, passed in 17 minutes 41 seconds. It fell from 48 miles per hour at Copyhold Junction to 42 at MP32 and on the first 5 miles at 1/264 to Merstham from 58 to 43 before signals intervened. The time to Earlswood was 58 seconds faster than No.200 and after various checks London Bridge was reached in 68½ minutes, 63½ minutes Net.

There was a departure at 08.40 on Mondays, also non stop to London Bridge, on which "Gladstone" Class 0-4-2 No.216 with 200 tons, attained 39 miles per hour at Clayton, fell to 41 at Balcombe and at MP20 before being severely checked at Merstham. The London Bridge arrival was effected in 71 minutes 32 seconds, after Earlswood had been passed in 38 minutes 6 seconds, 64¾ minutes Net. The 09.25 also ran non stop to London Bridge, allowed 73 minutes. "Gladstone" No.175 with only 140 tons passed Haywards Heath in 17 minutes 39 seconds and Earlswood in one second under 37½ minutes but then there were so many delays that it required another 43 minutes to reach London Bridge, 64½ minutes Net. The 13.20 and 17.45 were booked to the first stop at East Croydon in 56 and 52 minutes respectively. On two occasions the "Pullman Limited" weighed 130 tons and the locomotive was "Gladstone" No.218. Haywards Heath was passed in 18 minutes 2 seconds and 17 minutes 23 seconds, the speed up to Clayton and the minimum at Balcombe on the second occasion was 44 miles per hour. Redhill was passed in 39 minutes and on the 13.20 with a clear run East Croydon was reached in 52 minutes 53 seconds. Number 218 however was badly checked, including two stops between Earlswood and East Croydon, finally reached in 66 minutes 40 seconds, 51 minutes Net.

The 19.30 ex Brighton, allowed 55 minutes to the first stop at South Croydon, 39.4 miles, was with a Gladstone Class 0-4-2 and less than 180 tons an easy duty. Out of ten records on this train the best actual time was 51 minutes 40 seconds noted twice, with No.193 with 180 tons and No.179 with 150 tons. Number 193 lost half a minute due to a signal check at Hassocks.

LB&SC performance on the evening trains from Brighton

Number 178 also achieved a Net time of 51¼ minutes albeit with the lightest load in the series, 120 tons. Overall two runs finished inside 52 minutes, four inside 53 minutes, two inside 54 minutes and one inside 55 minutes. Only one journey arrived late, one and a half minutes, 54¼ minutes Net. Speeds are quoted for eight of the runs up to the three summits i.e. Clayton, Balcombe and Merstham. No.187 with 180 tons attained 39 miles per hour at the first and fell to 43 and 39. This was the best run taking into consideration the load other than No.193 for which no speeds are available but with the same load was 18 seconds quicker to Hassocks despite a signal check before and 20 seconds faster from Horley to Merstham. The 20.30 had a similarly generous schedule, 58 minutes to the stop at East Croydon. "Gladstone's" Nos.219 and 181 with 180 and 160 tons took 68 minutes 8 seconds and 57 minutes exactly, 55¾ and 56¾ minutes Net.

The following 20.40 semi-fast to London Bridge was allowed nine minutes for the 4.9 miles start to stop up the 1/264 gradient from Horley to Redhill and then from the Redhill restart 17 minutes to the next stop at East Croydon. "Gladstone" Class 0-4-2 Nos.191 with 210 tons, 190 with 220 tons and 133 with 200 tons took 10 minutes 4 seconds and 9 minutes 34 seconds on the other two occasions. The times on to East Croydon by Nos.190 and 173 were 15 minutes 47 seconds and 15 minutes 56 seconds. The nine minutes schedule from Horley to Redhill could be kept, albeit with lighter trains, a "Gladstone" on the 22.50 ex Brighton ran the course in 7 minutes 55 seconds with 140 tons.

The Sunday 17.00 ex Brighton ran to the first stop at East Croydon in 54 minutes. On four occasions when "Gladstone" Class 0-4-2's were employed, numbers and train weights were: 180, 250 tons - 187, 210 tons - 178, 220 tons - 186, 190 tons. Actual and Net times were: 52 minutes 54 seconds - 54 minutes 26 seconds, 53 minutes Net - 50 minutes 11 seconds - 52 minutes 21 seconds. On the best two runs, loads considered, Nos.180 and 178 attained 38 miles per hour at Clayton, passed Haywards Heath in 18 minutes 56 seconds and 18 minutes 25 seconds and fell from 44 to 38 miles per hour and 49 to 43 from Copyhold Junction to Balcombe Tunnel. Up to Merstham they fell from 51 to 42 miles per hour and from 61 to 44. Number 178 averaged 64 miles per hour from Three Bridges to Gatwick and 67 over the 82 chains from Gatwick to Horley; this appears to be the highest speed in Pattinson's records over this section. Earlswood was passed on the two runs in 38 minutes 53 seconds and 36¾ minutes. Number 178 ran the 15.9 miles from Three Bridges to Purley in 17 minutes 34 seconds which, recognising that signal checks were the norm around the Redhill bottleneck, must have been unusual.

The 20.40 on Sunday ran to a stop at Redhill in 40 minutes from Brighton, the schedule on to East Croydon was 15 minutes, the fastest time then booked over this section and finally 14 minutes to Clapham Junction. On four runs motive power was a Gladstone Class 0-4-2.

LB&SC Tank's between East Croydon and London 1895

Numbers and weights were: 174, 220 tons - 180, 150 tons - 186, 210 tons - 187, 170 tons. The best performance was by No.186, 38 minutes 23 seconds to Redhill after passing Haywards Heath in 18 minutes 17 seconds. The 3.9 miles from there up to Balcombe were run in three seconds inside of five minutes [two seconds longer than No. 189 took on the 08.45 ex Brighton]. The 10.4 miles to East Croydon required 15 minutes 29 seconds, but any time lost here was recovered by running the easy stretch to Clapham Junction in 11 minutes 51 seconds. The other three locomotives were four minutes late [39½ minutes Net], three quarters of a minute late and No.180 two and a half minutes early to Redhill. No times are given between Redhill and East Croydon from which it can be inferred that there were significant delays, the dreaded South Eastern signalmen perhaps? It seems likely that three out of the four trains arrived late.

Tank engines often ran over the East Croydon to Clapham Junction stretch with the Victoria portion, detached or slipped from a London Bridge train at East Croydon. The fastest time between the two stations timed by Pattinson was with a G Class Single on the Sunday 20.35 ex Eastborne, ten and three quarters minutes with a load of only 80 tons, the average speed from Selhurst to Balham was 54 miles per hour. The next fastest was with a "Gladstone" Class 0-4-2 No.186 on the Sunday afternoon Pullman, 190 tons, six seconds longer with the same average speed. Two runs behind D3 Class 0-4-4 Tank's with 40 tons took 13 minutes 43 seconds and 14 minutes 40 seconds, 12½ minutes Net, the respective schedules were 15 and 14 minutes. Five runs, behind D1 Class 0-4-2 Tank's, gave times of: 11¼ minutes by No.221 with 110 tons - 13 minutes 26 seconds, 12¾ minutes Net, No.230, 100 tons - 12 minutes 13 seconds, No.293, 110 tons - 12 minutes 15 seconds, No.1, 60 tons and 13 minutes 59 seconds, No.230, 80 tons. On the one occasion a D2 Class 0-4-2. No.305 was used it took 12¼ minutes, 12 minutes Net with a featherweight load of 50 tons.

The equivalent trains to London Bridge included the 20.33 allowed 13 minutes to the New Cross stop from East Croydon. D1 Class 0-4-2 Tank No.355 with 70 tons took 11 minutes 3 seconds, No.358 also with 70 tons was nine seconds faster and No.287 with 80 tons, 12 minutes 42 seconds. A D2 Class 0-4-2 No.309 with 160 tons ran the distance in one second over 11 minutes. However, by far the quickest was "Gladstone" Class 0-4-2 No.191, which with 80 tons completed the 7.45 miles in 9 minutes 34 seconds an average of 46.7 miles per hour. Another "Gladstone" No.195 with the portion from the Newhaven Boat Train ran the 10.3 miles from East Croydon to London Bridge in two seconds less than 14 minutes, which included losing 30 seconds to a signal check, the load was only 60 tons.

The D3 Class 0-4-4 Tank's were designed by Robert Billington and built between 1892 and 1896. They had 5 feet 6 inches diameter coupled wheels and two inside cylinders [18 inches diameter by 26 inches stroke].

LB&SC performance on the Down Eastborne trains 1895

The boiler working pressure was 160 pounds per square inch and the total heating surface 1,189 square feet [1,092 in the boiler tubes and 97 square feet in the firebox]. The locomotive weighed 48 tons, coal and water capacity was two tons and 1,160 gallons.

The Eastborne and Hastings service shared tracks with the Brighton trains as far as Keymer Junction, including the bottleneck at Redhill. The heaviest train was the 17.05 ex London Bridge, non stop to Lewes with a portion slipped at Horley for Three Bridges and East Grinstead and another at Haywards Heath which proceeded as a stopping service to Brighton. "Gladstone" Class 0-4-2 No.185 with 250 tons fell from 45 to 28 miles per hour up to Forest Hill. [Pattinson's records indicate 28 maintained up the last two quarter miles of the 1/100, an EDHP of 600-650, it seems likely that in practice speed was still falling]. The train was slowed for signals at East Croydon and after this accelerated to 39 miles per hour up the 1/264 to Merstham; the load was reduced to 200 tons after the Horley slip and speed fell at Balcombe Tunnel to 38. The Haywards Heath slip reduced the load further to 130 tons and Lewes was reached two minutes late in 68 minutes 6 seconds, 65¾ minutes Net. The 15.9 miles on to Eastborne took 21 minutes 42 seconds, recouping one and a quarter minutes of the lost time.

The 17.40 ex Victoria slipped a portion at Haywards Heath, which ran to Eastborne with only the one stop at Lewes. D1 Class 0-4-2 Tank's Nos.2 and 362, with loads of 80 tons ran from Haywards Heath to Lewes in 17 minutes 40 seconds and 17 minutes respectively, schedule was 18 minutes. On to Eastborne No.2 took 22 minutes 40 seconds, a gain of two and a quarter minutes. A "Richmond" Class 0-4-2 No.211, presumably after a late start from Haywards Heath with 70 tons ran the two stages in 14 minutes 46 seconds and 19 minutes 23 seconds. On the first stage the average speed between Plumpton and Cooksbridge was 63 miles per hour, on the second adverse signals caused a delay of 30 seconds.

The 06.30 ex London Bridge ran non stop from Lewes to Eastborne with a portion slipped at Polegate for Hastings. "Gladstone" Class 0-4-2's Nos.191 and 173 with 100 tons and 110 tons both ran the distance in 21 minutes 39 seconds against a schedule of 23 minutes. The Hastings portions weighed 40 and 60 tons respectively. On the 09.45 ex Victoria D2 "Richmond" Class 0-4-2 No.210 with 170 tons ran from Lewes to Eastborne in 25 minutes 28 seconds, losing half a minute on schedule. "Gladstone" No.218 on the 15.22 ex Victoria lost three and three-quarters minutes on schedule with a heavy train of 240 tons, 23¾ minutes Net, a loss of time by the locomotive.

On the section between Eastborne [or Polegate] and Hastings, D Class 0-4-2 Tank No.362 hauling 70 tons took 10 minutes 12 seconds start to stop over the seven miles from Pevensy to Bexhill.

LB&SC performance on Up trains from Eastborne

In the opposite direction "Gladstone" Class 0-4-2 No.194 with 120 tons took 10 minutes 17 seconds, G Class Single No.333 with 140 tons five seconds longer and D2 Class 0-4-2 with only 90 tons 47 seconds less. The train was the 20.16 from Bexhill, which after reversal at Eastborne was allowed a leisurely 26 minutes to Lewes. Actual times on four runs were; 21 minutes 59 seconds by "Gladstone" No.194 with 120 tons - 24 minutes 26 seconds, 22 minutes Net by No.177 with 140 tons - 23 minutes 49 seconds by G Class Single No.333 - 21 minutes 32 seconds by D2 No.305 with 80 tons [on the last run three quarters of a minute was lost by a signal check]. After Lewes the schedule to Three Bridges, the next stop was 36 minutes. Number 194 took 39 minutes 12 seconds but various signal checks cost eight and a quarter minutes, No.177, 33 minutes 57 seconds and the Single No.333, 32 minutes 54 seconds. The Single then ran to East Croydon in 32 minutes 31 seconds, 27 minutes Net, schedule 29 minutes. The Single ran the three stages from Eastborne to East Croydon in 83¾ minutes Net compared with the schedule of 91 minutes.

The two main morning trains from Eastborne to London were the 08.30, allowed 90 minutes non stop to London Bridge and the 09.55, which stopped at East Croydon in 73 minutes. "Gladstone" Class 0-4-2's, Nos.185 on the 08.30 and 191 on the 09.55, in each case with 170 tons, passed Lewes in 21 minutes 41 seconds and 21 minutes 27 seconds and Haywards Heath in 38 minutes 42 seconds and 39 minutes 27 seconds. Speed fell from 44 miles per hour passing Copyold Junction to 42 and 41 at Balcombe Tunnel. Up to Merstham, No.185 fell from 54 miles per hour at MP24 to 39 at the summit. No.191 passed MP24 at 58 miles per hour but was checked by signals at Earlswood. Maxima at Horley on both just exceeded 60 miles per hour. Number 185 passed through East Croydon at walking pace in 74 minutes 5 seconds and with reduced load [70 tons was slipped at East Croydon for Victoria] reached London Bridge in 88 minutes 18 seconds, 86 minutes Net. Number 191 stopped at East Croydon 34 seconds over schedule, the Net time was just under. The return Sunday excursion, 20.25 ex Eastborne, was allowed a generous 61 minutes from Lewes to East Croydon. A G Class Single No.332 with 160 tons cut this to 56 minutes 27 seconds and then as noted previously with reduced load ran on to the Clapham Junction stop in ten and three quarter minutes.

The Down Evening Newhaven Boat Train from London Bridge was hauled invariably by the same locomotive [Ref.5]. From 1880 this was the Single "Abergavenny", replaced in June 1888 by a new "Gladstone" Class 0-4-2 No.195 "Cardew ". [It was in turn replaced on this service in 1903 by Billington B4 Class 4-4-0's. The working was transferred to the Newhaven end and to minimise idle time a B4 No.73 worked the morning Up train and back down on an Eastborne train. Another B4 worked Up on an express from Easbourne and Down on the evening Boat train].

LB&SC the Newhaven Boat train

Details of six runs on the Down Boat train are available, two commencing at London Bridge and four after the stop at East Croydon. The schedule to East Croydon was 17 minutes, which "Gladstone" No.195 with a featherweight load of 60 tons cut by 30 seconds whereas with 270 tons it lost a minute. From the East Croydon restart, each time with No. 195, loads were: 150, 160, 230, 140, 190 and 200 tons and the time to reach the next stop at Lewes; 54 minutes 29 seconds, 53¾ minutes Net - 53 minutes 58 seconds, 53¾ minutes Net - 57½ minutes - 54 minutes 40 seconds, 53 minutes Net - 53 minutes 51 seconds - 53 minutes 41 seconds, schedule 55 minutes. Number 195 recovered two of the two and a half minutes lost from London Bridge, with 230 tons by running the 6.55 miles from Lewes to Newhaven Harbour in 12 minutes, conversely with 140 tons it took 14½ minutes.

Number 195 reputedly a very economical locomotive, during the whole of her career only had five drivers. She was worked under contract, a system first instigated when the Newhaven Boat was a tidal service and the Boat Train was worked by Single No.325 "Abergavenney" under Driver Turnbull's control. The Company provided the locomotive, coal and stores and paid the driver a lump sum out of which he paid his fireman and cleaners irrespective of what hours he had to work. The Company also operated a bonus system for low coal consumption; essentially the locomotive was allowed 17 pounds of coal per mile plus an additional one and a quarter pounds for each coach in the train formation. When the coal sheets were formulated at the motive power depot, drivers who had consumed less than the permitted amount were paid the bonus. Number 195 with a regular roster and no shunting duties would have shown up well and the driver it appears knew how to time the train without working the locomotive too hard. You could always pick up a couple of minutes on the virtually level Lewes to Newhaven section so you were not penalised for losing time and you were working the fire down.

On the morning Boat Train "Gladstone" No.188 was delayed by signals between Victoria and East Croydon losing three quarters of a minute on the 20 minutes schedule, 17¼ minutes Net. The load, 90 tons to East Croydon, was made up to 140 tons there. The 62 minutes schedule to the harbour from East Croydon was exceeded by 30 seconds due to signals between Lewes and Newhaven, which almost brought the train to a halt. From the East Croydon start Redhill, 10.4 miles was passed in 15 minutes 54 seconds, Haywards Heath, 27.4 miles in 36 minutes 19 seconds and Lewes, 39.6 miles in 51¼ minutes.

In the Up direction No.195 on the 06.44 ex Newhaven Harbour ran to Lewes in 14½ minutes, 12 minutes 47 seconds and 11 minutes 17 seconds with loads of 170, 120 and 150 tons. Continuing to East Croydon, on the first two occasions, the times were 62½ minutes and 60 minutes 33 seconds. Schedules were 12 minutes from the Harbour to Lewes and 62 minutes from there to East Croydon.

LB&SC performance on the Oxted Eridge route 1895

Restarting from East Croydon, after the Victoria portion had been detached, "Cardew" with a load of only 60 tons ran to London Bridge in 13 minutes 58 seconds, 13½ minutes Net, a gain of four minutes on schedule.

In the Summer Timetable there was a service from London to Newhaven and Seaford and return via East Grinstead. In the Down direction the 11.30 ex Victoria stopped only at East Croydon, East Grinstead, Horsted Keynes, Lewes and Newhaven Harbour. In the Up direction the train left Seaford at 15.00 and stopped additionally at Oxted. "Gladstone" Class 0-4-2 No.179 with 110 tons ran from Lewes to Horsted Keynes via Haywards Heath in 30 minutes, 26 minutes Net against what appears to have been a difficult schedule of 25 minutes for the 16.9 miles. From Horsted Keynes to East Grinstead, No.179 took 11 minutes 3 seconds start to stop for the 6.3 miles, over 50 percent up at 1/75 including the first two and a quarter miles from the Horsted Keynes start [Ref.6]. Regular travellers on the Bluebell Railway northwards from Horsted Keynes will no doubt be suitably impressed. Number 179 then regained over two minutes by covering the 9.7 miles from East Grinstead to Oxted in 13 minutes 50 seconds.

Tunbridge Wells West was served by semi fast trains from both London and Brighton. The best Down service from London was the 15.45 ex Victoria, allowed 53 minutes for the 34.8 miles to Groombridge. D3 Class 0-4-4 Tank No.389, with 110 tons suffered badly from signal checks as far as East Croydon passed in 24 minutes 8 seconds. The 5.9 miles uphill from South Croydon to Woldingham were then run in 9 minutes 37 seconds, the Tank developed an EDHP of 325-375 here and after a signal check at Oxted, Groombridge was reached in 56 minutes 59 seconds. Signals caused seven and a half minutes loss, leaving a Net time of 49½ minutes.

The 17.00 and 17.52 ex Victoria both made their first stop at Upper Warlingham, 15.6 miles, the former ran to Tunbridge Wells via Edenbridge, the latter via East Grinstead. On the 17.52, G Class Single No.327 with 70 tons ran to Upper Warlingham in 30 minutes 24 seconds, a loss of almost one and a half minutes on schedule, 25 minutes Net. The 4.9 miles to Oxted, including the difficult start were run in 8 minutes 7 seconds, schedule 9 minutes and the 6 miles down hill to Lingfield in 7 minutes 17 seconds, schedule 10 minutes. The Single must have comfortably exceeded 60 miles per hour here. Later on half a minute was gained from Forest Row to Withyam, schedule seven minutes. There were also semi-fast trains at 16.25 and 17.25 ex London Bridge to Tunbridge Wells, which with seven and nine intermittent stops respectively completed the journey in 80 minutes. On the 16.25 D3 Class 0-4-4 Tank No.367 with 70 tons ran the 5.3 miles from Cowden to Groombridge in 7 minutes 38 seconds, schedule 8 minutes. The tightest schedule was probably the 11.15 ex Victoria, allowed exactly one hour from Victoria to Groombridge with stops at Clapham Junction, East Croydon, Oxted and Edenbridge Town.

LB&SC Brighton to Portsmouth in 1895

There were two semi fast trains between Tunbridge Wells West and Brighton in each direction. On the 18.10 from Tunbridge Wells D1 Class 0-4-2 tank No.234 with 60 tons ran from Groombridge to Crowborough, five and a half miles in two seconds over the nine minutes schedule, this included two and a half miles at 1/88 up from Eridge to Crowborough. The Tank then romped away down the hill from Crowborough passing Buxted, 4.7 miles in six and a half minutes and stopping at Uckfield in 9 minutes 19 seconds, schedule 12 minutes. The easy 8.6 miles from Uckfield to Lewes were run in 12 minutes 21 seconds, schedule 13 minutes. The D1 ran the 21.1 miles from Groombridge to Lewes in 30 minutes 42 seconds running time including slowing down for, and starting from the two intermittent stops. A D3 Class 0-4-4 tank No.372 with 90 tons on the 07.10 from Tunbridge Wells ran from Lewes to Brighton London Road, 7.2 miles including the 3.2 miles at 1/88 to Falmer, in 12 minutes 18 seconds, a gain of one and three quarters minutes on schedule.

The coastal line west of Brighton also witnessed some smart running, but again with light loads. The 19.20 from Hove included through coaches detached from the 18.00 ex London Bridge at Preston Park. G Class Singles Nos.342 and 336 ran the first stage from Hove to Worthing, 9.15 miles, with 60 and 80 tons in 12 minutes 52 seconds and 12 minutes 2 seconds, schedule 16 minutes. On the second run the average speed from Southwick to Lancing was 54 miles per hour. The next start to stop stage on to Ford Junction, 9.1 miles took 12 minutes 36 seconds and 12 minutes 53 seconds, schedule 15 minutes. No times are available for the short Ford to Barnham section. Starting from Barnham No.336 ran the 6.2 miles to Chichester one and a quarter minutes inside the ten minutes schedule, the 8.8 miles to Havant in 11 minutes 29 seconds, schedule 14 minutes and finally the 6.45 miles from Havant to Fratton in 9 minutes 32 seconds, schedule 12 minutes. Number 336 ran the five stages including slowing down and accelerating from stops, between Havant and Fratton, [minus the 2.7 miles from Ford to Barnham] in 54 minutes 41 seconds for the 39.6 miles, a running average of 43½ miles per hour. Although the semi-fast trains on the secondary routes on the LB&SC were lightly loaded they could be very sprightly. Two snippets on the Sunday 12.30 Brighton to Worthing will complete this section. D1 Class 0-4-2 Tank No.25, with 100 tons ran the 4.5 miles down hill from Hove to Shoreham in 14 seconds over the seven minutes schedule. D3 Class 0-4-4 Tank No.392 with 70 tons on the same train ran the next 4.7 miles to Worthing in 7 minutes 39 seconds, schedule eight minutes.

The Portsmouth service of the LB&SC was regularly praised; indeed W.J. Scott, an eminent railway writer of the period regarded them as amongst the best in the UK. It is therefore not surprising that Pattinson covered the route extensively and in fact referred to Scott's enthusiasm in his writings. He gave details of six Down journeys and nine Up, plus some short runs. The first Down fast train of the day, the 11.35 ex Victoria stopped at Clapham Junction, Sutton and Fratton.

LB&SC performance on the Down Portsmouth route in 1895

A G Class Single No.349 with 170 tons had a pilot from Clapham Junction, D Class 0-4-2 Tank No.288 but still lost 68 seconds on the 15 minutes schedule for the difficult 9.3 miles to Sutton. The load was reduced to 90 tons at Sutton and with this light train No.349 ran to the Fratton stop in 92 minutes 55 seconds, including seven minutes lost by several signal checks and a stand of 82 seconds between Dorking and Horsham, schedule 97 minutes. Despite signal checks at Dorking, the speed between MP26 and MP27 at the top of the 1/100 gradient through Holmwood was 35 miles per hour. Clearly with only 90 tons the "Special Fast Express to Ventnor" was an easy haulage proposition.

The 13.50 ex London Bridge [one minute later in the WTT] made eight stops between London Bridge and Portsmouth Harbour. Starting from London Bridge, "Gladstone" Class 0-4-2 No.196, with only 70 tons ran the 13.9 miles to Sutton in 27 minutes 40 seconds, a loss on schedule of three and three quarter minutes but six and a quarter minutes were attributable to various checks. At Sutton the load was increased to 160 tons and the 38 minutes schedule to Horsham was easily kept, 34 minutes 39 seconds with 33 miles per hour at the top of the climb to Holmwood. G Class Single No.342 on another occasion on this train had a heavy load, 220 tons and from the Sutton start passed Epsom, 3.6 miles in 7 minutes 12 seconds, Dorking, 11.8 miles in 17 minutes 59 seconds. The average up to Holmwood was 32 miles per hour although speed had fallen to 24 at MP26 but by running the 8.3 miles down hill to Horsham in just under 11 minutes, the loss on schedule was an insignificant nine seconds. Pattinson noted that between Oakley and Warnham speed often exceeded 65 miles per hour and on several occasions approached 70.

The load was increased to 240 tons at Horsham [over seven times the weight of the locomotive] and No.342 passed Pulborough, 12.3 miles in 16 minutes 49 seconds, average 51 miles per hour over the 5.1 miles from Billingshurst. There was a slack at Amberley, which cost two and a half minutes, the 28 minutes schedule to the Arundel stop was exceeded by 33 seconds. Number 315 a Billington B2 Class 4-4-0 passed Pulborough in 16¼ minutes and reached Arundel two minutes early on the same train but with only 140 tons.

The Billington designed B2 4-4-0's, built from 1895 to 1897, were intended to replace the G Class Singles on the Portsmouth trains. They had 6 feet 9 inches diameter coupled wheels and two inside cylinders, [18 inches in diameter by 24 inches stroke]. The boiler working pressure was 160 pounds per square inch and the total heating surface 1,220 square feet [1,107 square feet in the boiler tubes and 113 square feet in the firebox]. Later this was increased to 1,342 square feet total [1,227 square feet in the boiler tubes]. The firegrate area was 19 square feet and the locomotive weighed 43 tons, the tender another 33 tons. Although designed to replace the G Class Singles it is hardly surprising, bearing in mind the boiler heating surface, that they were no more powerful than them.

LB&SC performance on the Down Portsmouth route 1895

Published data for IHP with the B2's gave 400 HP with a cut off of 35% at 25 miles per hour, 329 HP at 45 miles per hour. During the summer of 1883, Stroudley carried out tests on "Gladstone", D Tanks and G Class Singles. At 20% cut off and a speed of 27 miles per hour on the same gradient the Single developed an IHP slightly above 400.

The 13.50 ex London Bridge was allowed nine minutes from Arundel to Barnham, 11 minutes to the next stop at Chichester and 14 minutes on to Havant. G Class 2-2-2 No.342 with load reduced to 210 tons lost almost one minute to Barnham, 9 minutes 53 seconds, kept time to Chichester, 10 minutes 57 seconds and on to Havant, 14 minutes 6 seconds. With 140 tons the Billington 4-4-0 No.315 took 7 minutes 34 seconds, 8 minutes 49 seconds and 11 minutes 55 seconds. The Single had kept time on every stage from Sutton except one with in excess of 200 tons, the B2 running from Horsham was brisk, 54¼ minutes actual against a scheduled running time of 62 minutes.

The 16.55 ex London Bridge, [16.56 in the WTT] ran non stop over the 70.8 miles to Chichester in 94 minutes. Three runs, behind G Class Singles Nos. 342 and 335 with 90 tons and 100 tons and B2 Class 4-4-0 No.315 with 110 tons gave actual, Net times of; 91 minutes 26 seconds, 87¾ minutes Net - 91 minutes 1 second, 86½ minutes Net - 91 minutes 3 seconds, 85¾ minutes Net. To Epsom the times were similar, 23 minutes 41 seconds, 23 minutes 33 seconds and 24 minutes 1 second, following which all three trains were checked at Leatherhead, two were actually stopped. Number 315 passed Holmwood summit at 41 miles per hour, excellent work [if the 41 miles per hour was sustained up the 1/100, an EDHP of 550-600: in practice speed was probably still falling]. On another occasion Pattinson noted No.315 with 210 tons fall to a minimum of 30½ miles per hour, no other details are given. Number 315 was completed at Brighton Works in July 1895, so was only a few weeks old at the most when Pattinson timed his runs. The average speeds from passing Horsham slowly to passing Arundel were 50.8, 54.6 and 55.2 miles per hour. The 4-4-0 continuing from Chichester ran the 15¼ miles to Fratton in 19 minutes 34 seconds, including 75 seconds lost by a check, schedule 20 minutes.

The 08.45 ex Portsmouth Harbour ["Special fast train Isle of Wight and Portsmouth to London Bridge"], after stopping at Fratton was fast to Chichester and then to London Bridge. G Class Singles Nos.336 and 345 with 80 and 110 tons ran to Chichester in 18 minutes 59 seconds and 19 minutes 2 seconds respectively, a gain of one minute on schedule. From Chichester to London Bridge actual and Net times were; 119 minutes 54 seconds, 94 minutes Net - 100 minutes 21 seconds, 92¼ minutes Net, schedule 96 minutes. Number 347 averaged 51 miles per hour up the generally adverse section from Arundel to Horsham, 31.8 miles, passed in 38¾ minutes. Number 336 was nearly two minutes slower past Horsham but both trains climbed up to Ockley well.

LB&SC performance on the Portsmouth Up route 1895

Both trains did not fall below 31 miles per hour at MP30½ and were afterwards badly checked between Dorking and London Bridge.

The 13.50 ex the Harbour Station stopped five times between Fratton and London Bridge. A "Gladstone" Class 0-4-2 No.219, with 200 tons dropped 42 seconds on the ten minutes schedule from Fratton to Havant, gained 40 seconds on the 14 minutes to Chichester and another 37 seconds on the easy 47 minutes to Horsham. The 13.5 miles from Horsham to Dorking took 21 minutes 10 seconds, schedule 23 minutes with 26 miles per hour at Ockley. On another occasion Gladstone No.173 with 170 tons spent 38 seconds longer with only 23½ miles per hour at Ockley. The 11.8 miles to the next stop at Sutton, allowed 20 minutes actually took 19 minutes 7 seconds and 17 minutes 34 seconds. On the final stage to London Bridge the loads were reduced to 90 and 70 tons, actual and Net times were: 24 minutes 46 seconds, 19¾ minutes Net and 19 minutes 32 seconds, schedule 27 minutes. This train was clearly a very easy task for a "Gladstone" even with 200 tons.

The 16.40 made three stops between Fratton and London Bridge. Starting from Havant, G Class Single No.329 with 150 tons and Gladstone Class 0-4-2 No.179 with 190 tons required 57 minutes 18 seconds, 48½ minutes Net and 51 minutes 50 seconds, 51¼ minutes Net to the stop at Horsham, schedule 54 minutes. The Single ran well on the flat section, Barnham Junction 15 miles, passed in 18 minutes 49 seconds, [No.179 was nearly a minute slower] and the 3.55 miles from Arundel to Amberley were run in three and three quarter minutes before signals ruined the run from Pullborough to Horsham. Amberley, 23.55 miles from the start, was passed in 27 minutes 55 seconds. From the Horsham restart the 23.5 miles to Sutton were run in 39 minutes 31 seconds, 34½ minutes Net and 38 minutes 14 seconds, the 35 minutes schedule was undoubtedly difficult, a situation that prevailed 40 years later. Speeds at Ockley were 25 and 24 miles per hour.

The 19.10 ex Portsmouth Harbour stopped ten times between Fratton and Victoria. The schedule from Emsworth to Chichester the next stop, seven miles, was 11 minutes. "Gladstone" Class 0-4-2 No.180 with 160 tons took 11 minutes 53 seconds with two minutes attributable to signal checks. Time was regained on the next stage to Barnham Junction, 6.2 miles, run in 9 minutes 46 seconds, a gain of two and a quarter minutes. The five miles to Arundel were completed, comfortably within the nine minutes schedule, 8 minutes 31 seconds but the tight 12 minutes for the 8.35 miles to Pullborough was exceeded by 11 seconds and then the 20 minutes for the 12.3 miles to Horsham improved upon by 29 seconds. G Class Single No.338 with 160 tons and "Gladstone" No.187 with 130 tons ran from Barnham to Arundel in 8 minutes 21 seconds and 8 minutes 50 seconds respectively. The next stage to Pullborough took 12 minutes 42 seconds and 11 minutes 50 seconds.

LB&SC performance on the Portsmouth Up route in 1895

The final stage to Horsham took 19 minutes 22 seconds and 21 minutes 49 seconds, 19¼ minutes Net. "Gladstone" No.187 with 170 tons ran from Arundel to Pullborough in the very smart time of 11 minutes 13 seconds and with the load reduced by ten tons onto Horsham in 19 minutes 31 seconds. From Horsham this train had an easy schedule to Epsom 35 minutes, actual times taken by Nos. 180, 338, 187 and 187 were: 31 minutes 57 seconds - 32 minutes 57 seconds - 30 minutes 53 seconds - 33 minutes 7 seconds. Finally starting from Mitcham Junction with 50 tons, No.187 ran the six miles to Clapham Junction in almost three minutes less than the 13 minutes schedule.

The Sunday service on the Portsmouth route was sparse, the only fast Up train was the 17.45, which stopped three times between Fratton and London Bridge. "Gladstone" Class 0-4-2 No.177 with 190 tons dropped slightly over a minute on the ten minutes schedule from Fratton to Havant and ran to Horsham in 58 minutes 8 seconds, with one slight check, a loss of three minutes. "Gladstone" No.194 with 170 tons on another occasion passed Chichester in 12 minutes 51 seconds, Pullborough in 36¼ minutes and reached Horsham, 40.8 miles in 53 minutes 9 seconds. The Horsham to Sutton stage was scheduled in 36 minutes and No.177 lost another minute, whereas No. 194 gained 52 seconds, speeds at Ockley were 21½ and 27 miles per hour. The final stretch from Sutton to London Bridge was allowed 26 minutes, No.194 with 170 tons needed 22 minutes 48 seconds, 20¼ minutes Net and No.177 with 100 tons woke up and ran the distance in 21½ minutes, 18 minutes Net. Perhaps there was a crew change at Sutton?

The LB&SC was always praised for its Portsmouth service but taking into account train weights, it appears that the locomotive effort required was less than on the Brighton main line. No doubt sharp gradients, many curves and frequent slacks made the running appear more exciting, plus the LB&SC was successfully competing over a longer distance with the South Western. Conversely for many years it was criticised for its lack of fast trains to Brighton, specifically, why it could not be reached in one hour.

In 1898 the Company finally acceded and scheduled the "Sunday Pullman" in 60 minutes. It left Victoria at 11.00 and returned from Brighton at 21.00. Charles Rous Martin showed great interest, on October 2nd 1898 B2 Class 4-4-0 No.206 with 190 tons ran to Brighton in 59 minutes 9 seconds after passing Redhill in 28 minutes 36 seconds. 45 miles per hour was maintained up the 1/264 to Merstham, an EDHP of 425-475. Number.206 had a boiler with a total heating surface of 1,342 square feet. Rous Martin claimed 49 miles per hour maintained up to Balcombe but from a high speed at Horley it is likely speed was still falling. In the reverse direction the journey was completed in 37 seconds less, Earlswood, 29.0 miles was passed in 33 minutes 40 seconds from the start

LB&SC to Brighton in the hour 1898

The Up journey on the 9th October was completed in 35 seconds less although the time to Earlswood was 12 seconds slower. East Croydon to Victoria was run in just under 12½ minutes.

The last B2 No.213 “Bessemer” was built in December 1897 with a larger boiler in an attempt to appease criticism from footplate men. The boiler working pressure was increased to 170 pounds per square inch and the total heating surface to 1,460 square feet [1,350 square feet in the boiler tubes and 110 square feet in the firebox]. The locomotive weighed 45 tons, the tender another 33 tons. Rous Marten timed this locomotive from Brighton to Victoria in 57 minutes 44 seconds on the “Sunday Pullman”; he believed this was the best time achieved in the 19th Century. On the Down journey “Bessemer” completed the journey in 63 minutes 44 seconds. It appears the Billington 4-4-0’s had a margin of three to four percent on the 60 minutes schedule if everything went well, hardly a basis for a reliable service! A “Gladstone” might have had a little more in reserve, but they were yesterday’s locomotives!

When the B2’s were sent to Portsmouth some of the G Class Singles went to New Cross for light duties. One light duty was the 14.05 Saturday only from London Bridge to Eastborne! Singles Nos.350 and 348 with loads of 296 and 287 tons were timed over the 2.7 miles at 1/100 from New Cross to Forest Hill in 5 minutes 10 seconds and 5 minutes 17 seconds [Ref.7].

One day the “Sunday Pullman” in 1899 as recounted by a correspondent to the Railway Magazine [Ref.8] upon arrival at Brighton was awaited by 300 people, the actual arrival was six minutes late. The locomotive was No.202, Redhill had been passed in 29½ minutes but after that the train had lost time, the driver “nearly wept at his failure”. The previous Sunday Brighton had been reached in 58 minutes.

Chapter 4: References and Notes

- Ref. 1 Proceedings of the Statistical Society – September 1883
- Ref. 2 Express Trains - E. Foxwell and T.C. Farrer - Smith Elder 1889
- Ref. 3 Railway Magazine [RM] Vol. XLIV - Loco & Train Working in the 19th century
- Ref. 4 [RM] Vol. XXII
- Ref. 5 Stephenson Locomotive Journal Vol. XVI - AG Williamson
- Ref. 6 Note - Pattinson gave the schedule from Horsted Keynes to East Grinstead start to stop as 10 minutes. However the Public Timetable shows the train leaving Horsted Keynes at 15.49 and arriving at East Grinstead at 16.00
- Ref. 7 Railway and Transport Monthly Vol. VIII, p.118 - M.F. Long
- Ref. 8 [RM] Vol. IV, page 30

Chapter 5: The Beginning of the New Century

At the end of the 19th Century the Railways of Southern England were in a state of flux; whilst the ultimate route mileage was virtually complete they were increasingly under pressure from their clientele to run faster better services.

The South Eastern and the London Chatham and Dover spent much of the 19th century sparring with each other, warring would be too grand a word. A strategy of to hell with the clients lets knock our competitor prevailed. On the 1st January 1899 the two exhausted combatants formed the South Eastern and Chatham Railways Management Committee [the entity formally came into being on this date, although there had been meetings of the body since August of the previous year]. The locomotive superintendents of the SE and the LC&D Railways, James Stirling and William Kirtley retired, the position of locomotive Superintendent for the two Railways was assumed by Harry Wainwright, he was previously SE's Carriage and Wagon Department. Robert Surtees, the LC&D chief draughtsman, in many ways Kirtley's right hand man, transferred to Wainwright.

The Management Committee were confronted by a dire locomotive situation. The South Eastern express services were entrusted to the F Class, a design over fifteen years old, and the recently introduced [and still being built] B Class 4-4-0's. The B Class represented only a slight theoretical increase in power over the F Class, the boiler heating surface increased by some 6.5 percent. The LC&D Kirtley M Class 4-4-0's were like the South Eastern F Class, admirable machines, particularly the M3's, but they were scarcely able to maintain schedule with the heaviest Boat Trains. The LC&D's impecunious state had compelled Kirtley to implement a make do and mend policy. Many important trains were hauled by rebuilt locomotives that dated back 30 or 40 years. As if this was not enough of a challenge for Wainwright's new team, the LC&D permanent way was in a poor state, which forbade the use of heavier locomotives, or at least heavier weights on individual axles. In the Suburban area competition from other forms of transport and the refusal of the travelling public to be shut up in primitive boxes any longer led to heavier trains and punctuality, a novelty for both Railways.

The London Brighton & South Coast Railway survived the last quarter of the 19th century without running its trains much faster, merely more of them, although weights were increasing. However by the end of the Century the Company had somewhat reluctantly introduced a 60 minutes service to Brighton, albeit only on Sundays. Robert Billinton, after initially designing a 4-4-0 less powerful than a Stroudley Gladstone and barely more powerful than a Stroudley G Class single finally at the end of the Century produced an express locomotive design that represented a significant step forward.

Four Railway's at the turn of the Century

B4 Class 4-4-0 No.52 "Siemens" was completed at Brighton Works in December 1899. The locomotive had a firegrate area 18.5 percent greater than a Gladstone, total boiler evaporative area was 9.5 percent more and the cylinder volume, probably pointlessly, was increased by 8.5 percent. This gave the LB&SC a design not only able to haul the Sunday 60 minutes show-off but more importantly one capable of handling the increasingly heavy Business trains such as the 08.45 Brighton to London Bridge with its all First Class clientele. Billinton had addressed the need for larger Tank locomotives to operate the Tunbridge Wells trains and the services radiating from Brighton with the design of his D3 Class 0-4-4's in 1892. He met the requirement for larger locomotives to handle the Suburban services with his E4 0-6-2 Tank of 1897. [The E4 was essentially an update of his E3 design of 1893 with larger diameter driving wheels. The E3 was based on Stroudley's solitary Radial locomotive No.158] The E4's were used on passenger services despite their four feet six inches diameter driving wheels until the introduction of the E5 Class.

Whilst with the exception of the Ashurst spur the LB&SC routes were complete at the turn of the Century improvement of the Brighton Main Line was in full swing. The Stoats Nest to Earlswood line, which offered a parallel route to the South Eastern Railway line between Coulsdon and Earlswood also avoided the notorious Redhill bottleneck. The new line was opened on Guy Fawkes Day 1899 and to passenger services on April Fools Day 1900, it was a far from foolish investment. With the sections of line where quadrupling had taken place by 1900 and the work to be carried out in the first decade of the 20th century the LBSC by 1910 effectively had four tracks from Victoria or London Bridge all the way to Balcombe Tunnel, 31¾ miles from Victoria.

The London and South Western Railway was undoubtedly the best equipped of the four Railways to enter the new Century and offer better services to its customers. The Drummond designed T9 Class 4-4-0's and M7 Class 0-4-4 Tank's were powerful, reliable and economic [by the standard of Saturated steam locomotives] machines, they complemented the many excellent Adams designed engines in service. Parts of the Main Line were already quadrupled and there would be four tracks all the way to Worting Junction, 50.3 miles from Waterloo by the end of 1904. The Meon Valley line, from Alton to Fareham, was still to be built, and although subsequently constructed to Main Line standards it seldom functioned as such. Certain important sections of Railway in 1900, including Farnham to Alton and St. Denys to Fareham were still single track.

All four Railways were under considerable pressure to improve the quality of their coaching stock, particularly to introduce vehicles carried on bogies and with corridor connections on the longer distance services. The 20th Century was to herald an era of increasing train weights, faster schedules and spiralling coal costs all of which would challenge steam locomotive design.

Chapter 6: London and South Western 1900-1914

The London and South Western at the beginning of the twentieth Century was financially healthy and ran a reasonably fast and frequent train service. The only blot on its public reputation perhaps was its apparent reluctance to introduce coaching stock with corridor connections on its Main line trains. In the Suburban area it was replacing its coaching stock, it introduced in 1900 electrically lighted block trains of 14 vehicles with seating capacity for 660 passengers. They were described [Ref.1] at the time, as luxuriously upholstered and fitted throughout with Messrs. J.Stone and Company's system of electrically lighting. These were shortly followed by bogie block trains; at the beginning of 1905 there were 63 sets in traffic and ultimately there were to be 140. A set consisted of two 51 feet long brake vans, one 49 feet long tricomposite and one 51 feet long bicomposite. This provided accommodation for 272 passengers, 64 in First Class and 48 in Second Class. At busy times, rush hours etc. two blocks were combined together, leading to 200 ton trains. The M7 Class 0-4-4 Tank's handled such loads competently although there were frequent reports of poor acceleration from stations. The paucity of corridor coaches for Main Line services was addressed in 1906 by Surrey Warner when he became Carriage Superintendent.

Although there were some minor improvements to the fast train service to Portsmouth, and Bournemouth/Weymouth in the early years of the Century, any major improvements were restricted to the West of England. This was probably spurred on by the glamour associated with the Plymouth Boat Trains for the Trans Atlantic Liners and the fierce competition with the Great Western Railway.

In the 1901 June timetable the 09.10 ex Waterloo was scheduled to Portsmouth in 111 minutes, 45 minutes to the first stop at Guildford and another 59 minutes on to Fratton. The best Up time, with three stops en route was 117 minutes. There were also some minor improvements to the Bournemouth and Weymouth service that year. In 1903 three trains were scheduled over the 22.2 miles from Dorchester to Poole, the next stop in 26 minutes and there was a general overall improvement in the Weymouth service, in response to the Great Western Railway accelerating its trains, contingent with opening new more direct routes.

Special Days were a major feature of L&SW traffic, these varied from the large number of express trains run to Bournemouth on Maundy Thursday to Ascot Race traffic and included requirements such as Portsmouth Dockyard excursions and special's for troops and C.I.V's returning from the Boer War. Throughout the period leading up to the First World War there was an increasing requirement for troop trains, indeed in 1910 The Railway and Transport Monthly in its first volume somewhat grandly announced that the L&SW considered itself the Military Line.

L&SW 1905 Timetable

The R&TM intoned that it would adopt the sobriquet in future and considered the claim well justified.

The fast Down service to Bournemouth and Weymouth in 1905 consisted of: the long standing 05.51 ex Waterloo, which reached Bournemouth in 3 hours 31 minutes with 17 stops - 10.15, non stop to Southampton in 98 minutes and after a stop at Brockenhurst reached Bournemouth at 12.43, the Weymouth portion took 55 minutes from Bournemouth with intermittent stops at Poole and Dorchester -12.30, allowed 160 minutes to Bournemouth with the same stops as the 10.15 – [three trains left close together in the early afternoon] [Ref.2] - 14.00 non stop to Christchurch in 138 minutes, Bournemouth Central arrival nine minutes later - 14.10 to Weymouth via Wimborne and with nine stops completed the journey in one minute under four hours, first stop Basingstoke in exactly one hour from Waterloo - 14.20 non stop to Basingstoke, 67 minutes, the Stokes Bay portion reached there in 153 minutes, the Bournemouth portion took 3 hours 39 minutes - 16.10 to Bournemouth non stop in 126 minutes, two intermediate stops afterwards Weymouth in another 55 minutes - 16.50 to Winchester in 83 minutes and after a further five stops Bournemouth in 159 minutes - 18.55, Winchester 83 minutes, five further stops to Bournemouth, 158 minutes - 20.05, 17 stops, 3 hours 40 minutes to Bournemouth, five further stops, another 64 minutes to Weymouth - 21.45 Channel Islands Boat Train, 97 minutes to Southampton Docks non stop - The Mail left five minutes later, Dorchester in four and three quarter hours via. Wimborne with a portion for Bournemouth detached at Brockenhurst.

In the Up direction; 08.00 ex Weymouth, stops at Dorchester and Poole, Bournemouth in 54 minutes, then non stop to Waterloo in 130 minutes - 09.23 semi fast ex Bournemouth, nine stops, 3 hours and 3 minutes to Waterloo - 10.05, four stops [one request] between Weymouth and Bournemouth, three further stops from there to Waterloo in 2 hours 29 minutes - 10.50 ex Swanage to Waterloo via Wimborne in five minutes under 4 hours with 12 stops - 12.55 ex Weymouth 55 minutes to Bournemouth with two intermediate stops and then non stop to Waterloo in 137 minutes -16.15 one minute less to Bournemouth and eight minutes more to Waterloo with three stops - 18.00 ex Weymouth, with two stops 55 minutes to Bournemouth, with seven stops 3 hours and 1 minute London - 14.10 ex Weymouth via Wimborne at Brockenhurst attached to the 15.56 ex Bournemouth, which with six stops reached Waterloo in three minutes under three hours, 4 hours 20 minutes from Weymouth - 19.20 all stations to Poole and with a further 11 stops after Bournemouth, from there to Waterloo in exactly three hours - 21.50 Up Mail strolled to Waterloo in five and three quarter hours via Wimborne with a through portion from Bournemouth attached at Brockenhurst.

L&SW Timetable decelerations in 1906

On the Portsmouth route four Down trains could be termed fast: 09.10 ex Waterloo with four stops to Portsmouth Town in 117 minutes - 12.10 via the New Guildford line, exactly two hours with three stops - 15.35, four stops required five minutes more - 17.00, six stops, nine minutes over the two hours. It appeared the later in the day one travelled the longer it took to reach Portsmouth, in the Up direction the reverse applied: 09.41 and 12.06 from the Town station, 134 minutes to Waterloo with six stops - 14.51 with four stops, 137 minutes - 17.47 with five stops, 131 minutes - 19.06 with the same number of stops was seven minutes quicker. The average service speed was 35.7 miles per hour.

The severe accident at Salisbury on the 1st July 1906 led to some small increases in scheduled times on the Bournemouth and Weymouth service [the Bournemouth schedules were restored to their previous timings in mid 1907]. The 26 minutes non stop schedule between Dorchester and Poole was increased to 30½ minutes in the W.T.T., presumably to discourage speeds of 80 miles per hour and more through Wool. The Portsmouth service was similarly slowed by a few minutes [four minutes Down, two minutes Up on average]. Frank Box writing in the Railway Club Journal [Ref.3] in December 1906 noted that the fastest Down journey to Portsmouth Town Station in 1859 took 137 minutes, gradually reduced to 113 minutes in 1894, from which pinnacle it had then steadily risen to 123 minutes in October 1906. The Up direction pattern was similar, 140 minutes to 116 minutes and then to 126 minutes. Box was at pains however to explain that the frequency had improved immeasurably; in 1859 there were four trains per day in each direction with an average Down journey of two and a half hours and two minutes longer Up. After the decelerations of October 1906 there were 13 Down trains, two less in the Up direction, with average overall times of 156½ minutes Down and 147 minutes Up. The argument was somewhat dented by the 1894 position when there were 12 trains in each direction, average time Down 139 minutes, five minutes more in the Up. The average time was some ten minutes less for the Up journey in 1894 than at the end of 1906 and there was one more train.

The other service that saw significant deceleration after the Salisbury accident was that to Windsor, an average of slightly over three minutes on journey times varying from 53 to 74 minutes, the semi-fast trains were slowed by four to six minutes. One cannot but wonder whether this wasn't more to do with the introduction of heavier bogie coaching stock rather than a response to the total failure of a train to observe a significant speed restriction when running through Salisbury. Box in his article listed the slowing on every individual train on the Windsor route. The following May [Ref.4] he [by all accounts a very gentle man] wrote an article showing how Southampton had had a continuously improving service both in terms of frequency and speed from 1842 to 1906. He included the through trains to the London and North Western and the Great Northern Railways, as they provided a service to Waterloo in 114 and 112 minutes.

L&SW the Drummond 4-4-0's

This involved changing trains at Clapham Junction, similarly the through train to the Great Northern and Great Central Railways provided a service to Waterloo in 126 minutes with a change of trains at Basingstoke. Without these the position was that in 1894 there were 19 Up trains and 13 Down, fastest times were 104 and 98 minutes respectively and the average times 2 hours 25 minutes and 2 hours 13 minutes. The winter 1906-7 figures were 17 Up and 15 Down with fastest times of 101 and 100 minutes respectively, average times 2 hours 16 minutes Down and 2 hours 13 minutes Up.

Records of locomotive performance from 1900 to 1905 not surprisingly predominantly feature the non stop service to Bournemouth and return. [On the L&SW it was always the West of England route that attracted observers most, the rapid accelerations on the sharp gradients proving alluring. C.J.Allen always waxed lyrical concerning his first trip from Salisbury to Exeter behind a T9 Class 4-4-0]. A brief note on Drummond's 4-4-0 locomotives may be appropriate. From 1901 to 1902, 40 K10 Class were built. The K10 was essentially a C8 with driving wheel diameter reduced to 5 feet 7 inches so that they could be used for mixed traffic duties. The total heating surface was greater by 100 square feet due to the incorporation of firebox water tubes. The next design was the L11 Class, an enlarged K10. The coupled wheels were kept at 5 feet 7 inches diameter and there were two inside cylinders [18½ inches diameter by 26 inches stroke]. The boiler working pressure was 175 pounds per square inch and the total heating surface 1,500 square feet. [1,187 square feet in the boiler tubes, 148 square feet in the firebox and 165 square feet in the firebox water tubes]. The firegrate area was 24 square feet, the locomotive weighed 51 tons and the tender an additional 41 tons, the eight wheeled tenders 45 tons. The L11 Class was similar to the T9 in many details.

The S11 Class of which ten were built, were specifically designed for the Salisbury to Exeter route but were later used in Southern England. They had 6 feet 1 inches diameter coupled wheels and two inside cylinders [19 inches diameter by 26 inches stroke]. The boiler working pressure was 175 pounds per square inch and the total heating area 1,550 square feet [1,222 square feet in the boiler tubes, 163 square feet in the firebox and 165 square feet in the firebox water tubes]. The firegrate area was 24 square feet, the locomotive weighed 52 tons and the eight wheeled tenders another 45 tons. The major difference between the S11 and L11 design apart from the difference diameter driving wheels was the larger boiler with a diameter some seven inches greater.

The first L12 Class 4-4-0 was built at Nine Elms works in June 1904 they were effectively an S11 Class with 6 feet 7 inches diameter driving wheels. The Company official weights indicated they were some two tons heavier. The final Drummond design of 4-4-0 was not built until 1912. The ten D15 Class 4-4-0's also had 6 feet 7 inches diameter driving wheels.

L&SW the 16.10 ex Waterloo 1900-05

The D15 Class had two inside cylinders [19½ inches diameter by 26 inches stroke]. The boiler working pressure was 200 pounds per square inch and the total heating area 1,724 square feet [1,406 square feet in the boiler tubes, 170 square feet in the firebox and 148 square feet in the firebox tubes.] The fire grate area was 27 square feet, the locomotive weighed slightly less than 60 tons and the 4500 gallons tender another 49 tons.

Fifteen journeys on the 16.10 ex Waterloo between September 1900 and March 1905 typify locomotive performance on the 126 minutes non stop schedule to Bournemouth. [Ref.5] Up to 1904 all trains were hauled by T9 Class 4-4-0's, the first of two journeys recorded behind an L12 Class 4-4-0 was on December 29th 1904 with No. 415.

On nine of the fifteen journeys the train consisted of the usual six coaches formation [approximately 140 tons Gross], on three seven coaches [160 tons approximately] and on another three eight coaches [190 tons approximately]. The overall time varied from 123½ minutes to 142¾ minutes, the Bournemouth arrival was on time or early on four occasions, up to five minutes late on five and up to ten minutes late on five further days. The four fastest times were all with T9 Class 4-4-0's; with six coach trains on three occasions and by No.729 with seven coaches once. The best time with a 190 tons train, 127¾ minutes, was achieved by an L12 Class 4-4-0. The quickest starts to Woking, 24.4 miles in 29½ minutes were by T9 No.722 in March 1901 with six coaches and in June of the following year by T9 No.729 with seven coaches. The 23.4 miles from Woking to Basingstoke were run in 27¼ minutes on three occasions, T9's Nos.715, 773 and 708, all with six coaches. T9's Nos.773 and 313 with six coaches ran the 18.8 miles from Basingstoke to Winchester in 19 minutes. Speed was often allowed to rise considerably on the long descent to Eastleigh, on nine occasions the average between Winchester and Eastleigh exceeded 70 miles per hour. The fastest descent was behind T9 No.715, the average over the seven miles was 77.5 miles per hour suggesting a maximum of at least 80 miles per hour.

On the continuation from Southampton to Bournemouth, the fastest time pass to stop over the 28.8 miles was by No.773, 32¼ minutes, when the overall Net time from Waterloo to Bournemouth was 121 minutes. Overall performance was not as spirited as noted in 1899, there was not a single occasion when Southampton was passed in an actual time of less than 90 minutes from Waterloo, the best Net time was 88¾ minutes. The same recorder who noted these 15 journeys made two in 1899 on one of which Southampton was passed in 89¾ minutes actual [85¾ minutes Net]

Rous Marten's experiences were similar, T9 No.773, with 170 tons, reached Bournemouth in 136 minutes [126¼ minutes Net]. It passed Woking in 33 minutes after a slow start to Surbiton, 17 minutes 52 seconds.

L&SW performance to Bournemouth 1900-05

A long slowing for a PWR slack between Brookwood and Farnborough cost a further three minutes, Southampton was passed in 100 minutes 1 second. On another occasion Bournemouth was reached in 130¼ minutes with a T9 when signal checks caused delays of four minutes.

An account of a run timed by A.E.Bradfield was included in a series of holiday experiences recounted by members of the Railway Club. T9 Class 4-4-0 No.729 driven by Mercer adhered closely to schedule all the way to Bournemouth. He passed Hampton Court Junction in 18 minutes, Woking one minute early in 28 minutes from Waterloo, at Basingstoke he was 52 seconds late, schedule 53 minutes, at Eastleigh almost to time, 81 minutes 18 seconds and at Northam one minute early, 88 minutes exactly. Brockenhurst was passed 25 seconds late, schedule 127 minutes, and the final arrival at Bournemouth was nine seconds early, 125 minutes 51 seconds. Speed only exceeded 70 miles per hour briefly downhill to Eastleigh, there was a bad signal check at Basingstoke and the hardest running adjudged, based on the sound of the exhaust, to have been up the final gradient from Christchurch to Bournemouth.

The 16.10 ex Waterloo appears not to have been a very punctual train, for instance on five occasions when it was observed at Bournemouth during the period March 19th to April 6th 1902 it was running 15, two, four, seven and six minutes late. At the beginning of 1903 after an early arrival on New Years Day it was six minutes late the following day, eight coaches hauled by T9 Class 4-4-0 No.705. Records of other trains are scarce, what there is suggests that despite generous schedules, time was still lost. In December 1904 an L12 Class 4-4-0 with 240 tons on the 10.15, allowed 100 minutes to the first stop at Southampton actually took 108 minutes 2 seconds. The only delays were a signal check at Vauxhall and a bad slack at Mount Pleasant Crossing before Southampton. [Ref.7] A further four and three quarter minutes was lost on the 17 minutes schedule to the next stop at Brockenhurst, one and a half minutes was regained against the final allowance of 24 minutes to Bournemouth.

D.L.Bradley quotes from trials carried out by Drummond [Ref.8] in September and October 1905 between T9 Class 4-4-0's Nos.281 and 302 and the double single [4-2-2-0] No.720, then carrying the larger boiler fitted to it during the winter of 1903/4. The tests were carried out mainly on Waterloo to Bournemouth and Weymouth services. Number 281 arrived at Bournemouth early regularly, in fact over 11 runs the average arrival was two and a half minutes early with an average train weight of 193 tons. Number 302 on nine occasions with average weights of 195 tons arrived three minutes early and No.720 with 191 tons averaged three and a half minutes late on seven runs. Although Bradley refers to the regular use of No.720 on the 12.20 ex Waterloo up to the First World War these tests cannot have been carried out on the 12.20.

L&SW the 09.00 from Bournemouth 1901-05

The 12.20 ran in the summer period only. [The 1907 W.T.T specifies from the 28th of June to the 14th September and the 1909 W.T.T indicates an operating period from 10th July to 30th September]. The train also stopped at Boscombe before the Bournemouth stop, which would probably preclude early arrivals. The tests were presumably carried out on the 10.15, which had an easy 24 minutes schedule between Brockenhurst and Bournemouth, explaining a three minutes early arrival. The 10.15 was also allowed a generous 100 minutes between Waterloo and Southampton, well within the capabilities of a T9 with 200 tons [despite the previous example of an L12 losing time on this schedule with 240 tons]. The W.T.T gave passing times of 34 minutes to Woking Junction, 62 minutes to Basingstoke, 83 minutes to Winchester and 91 minutes past Eastleigh

In the Up direction as has been noted for a time three of the Weymouth trains were allowed only 26 minutes from Dorchester to Poole start to stop. On June 29th 1903 the 18.00 ex Weymouth was headed by Jubilee Class 0-4-2 No. 540 with six coaches, 140 tons. It made a spirited attempt with its 5 feet 7 inches diameter coupled wheels to maintain schedule. Moreton, 5.5 miles from Dorchester was passed in seven and half minutes, speed then averaged 57 miles per hour on to Wool and continuing through Wareham, Hamworthy Junction 20 miles from the start was passed in 23½ minutes and the stop at Poole effected in 26¾ minutes.

A collection of eight journeys between Bournemouth and Waterloo on the 09.00 in the period July 1901 to April 1905 provide further examples of every day performance. The schedule during this period was 130 minutes and the information is derived from the same traveller who made the fifteen Down journeys. [C.J.Allen often commented when he received more logs in one direction than the other that his correspondents had obviously gone down to Bournemouth, or wherever, to live. In this case the reason is simply that he liked to return via Fordingbridge and Salisbury, where he changed on to one of the West of England to Waterloo expresses.] The Waterloo arrival was early or on time on seven of the eight journeys, the single loss was only two minutes after there had been three PWR slacks, at Beaulieu Road, Winchester and Fleet, punctuality was better into London than out. A survey carried out at Waterloo on Tuesday, Wednesday and Thursday December 4th to 6th 1900 indicated 85.38 percent of the trains arrived on time, [The use of two places of decimals in the calculation is amusing] many were early. During the three days the number actually arriving between one and five minutes early was 89, 62 and 74.

Five of the eight journeys were with six coach trains, the other three with an additional coach, locomotives were six T9 Class 4-4-0's and two L12 4-4-0's. A T9, No.302 made the best start from Bournemouth with a six coach train, Brockenhurst was passed in 19½ minutes, Southampton in 33 minutes and Basingstoke in 74¾ minutes.

L&SW Adams Class 4-4-0 performance

The average speed from Eastleigh to Winchester was 45 miles per hour, the Winchester to Basingstoke stage run in 23¼ minutes. On another occasion No.302 after delays through the New Forest caused by a PWR slack at Beaulieu Road, averaged 52 miles per hour from Eastleigh to Winchester and ran the Winchester to Basingstoke stage in 22 minutes exactly, the load was again six coaches. Number 314 with seven coaches, passed Winchester in 54 minutes, encountered signals on both sides of Basingstoke and then ran the 34 miles from MP43 [West of Hook station] to MP9 [between Raynes Park and Maldon] in 32¼ minutes, average 63.3 miles per hour. The shortest time recorded between Basingstoke and Woking was 22¾ minutes by No.313, the 32 miles from MP49 [West of Basingstoke] to MP17 [Walton-on-Thames] were run in 31½ minutes, an average of 61 miles per hour. L12 No.415 with seven coaches took half a minute longer between Basingstoke and Woking but on another occasion when there were no checks ran the 47.8 miles from Basingstoke to Waterloo in 50 minutes exactly.

These performances, with the exception of 50 miles per hour on the 1/252 gradient, could be produced by an Adams Class 4-4-0. [Ref.9] In October 1903 for instance 460 Class No.473, replaced a failed locomotive at Basingstoke and ran to Waterloo in 47 minutes start to stop. The previous year an X2 Class No.584 with 7 feet diameter driving wheels left Bournemouth three minutes late on the 09.00 with six coaches [140 tons]. The late start could well have been because the locomotive was a last minute substitute, indeed it is possible the fire was unprepared. Christchurch was passed in 6 minutes 55 seconds, Brockenhurst in 21 minutes 50 seconds, schedule 20 minutes, and Southampton in 35 minutes 48 seconds, schedule 36 minutes, time lost on the climb from Christchurch to Sway was recovered between Brockenhurst and Totton. Eastleigh was passed two minutes late in 44 minutes 2 seconds and the 26 miles from there to Basingstoke run in 33 minutes 58 seconds, schedule 30 minutes. The best time achieved by a T9 amongst the eight was 30½ minutes, one took as long as 35¾ minutes, the X2 probably sustained between 40 and 45 miles per hour up the long ascent. It then ran the Basingstoke to Woking stage in 23 minutes 2 seconds [61 miles per hour] and the continuation to Hampton Court Junction in 10 minutes 21 seconds [64.3]. Basingstoke to Malden, 38 miles, took 3 seconds over 37 minutes and with a very quick finish from Clapham Junction to Waterloo, 5 minutes 48 seconds, the overall time was 126 minutes 38 seconds, the actual arrival was 20 seconds early, three and a half minutes inside schedule.

A less exciting performance occurred on the 2nd October 1900 when double single, 4-2-2-0 No.720 hauled the 13.58 ex Bournemouth West. It appears likely that the recorder who had not previously travelled behind this locomotive elected to sample this train rather than the preceding 13.57 non stop to Waterloo. Number 720 was built at Nine Elms in 1897 and had four cylinders driving two pairs of uncoupled driving wheels.

L&SW the Drummond double singles

The two inside cylinders drove the front pair and the outside cylinders the rear pair. The cylinders were each 15 inches diameter by 26 inches stroke [equivalent to two cylinders 21¼ inches diameter by 26 inches stroke, 24 percent greater volume than those on a T9 Class 4-4-0, originally they were even larger, 16½ inches diameter]. The driving wheels were 6 feet 7 inches in diameter. The boiler had a working pressure of 175 pounds per square inch and a total evaporative area of 1,664 square feet [1,307 square feet in the boiler tubes, 215 square feet in the firebox water tubes and 142 square feet in the firebox]. The firegrate area was 27½ square feet. The driving wheels were spaced 12 inches further apart than on a T9 permitting a longer firegrate. The locomotive weighed 55 tons, the tender another 49 tons. The locomotive was rebuilt with a larger boiler in the spring of 1904, the total heating area increased by about 6 percent, and in this form it was a more useful machine. In 1900 Drummond had five more double singles built at Nine Elms, the E10 Class, the cylinder diameter was reduced to 14 inches and the total heating area of the boiler was 1,690 square feet. They were partially successful and in their 25 to 26 years of service averaged some 20,000 miles per annum, by comparison the T9 Class figure was between 29,000 and 33,000 miles during a 55 to 60 years life. The E10's used more coal and water than a T9 and usually developed less power. Drummond apart from, as with many locomotive designers before and after, supplying too large cylinders on a multi cylinder locomotive in relation to the size of the boiler, aggravated a somewhat complex design by utilising different types of valve gear for the inside and outside cylinders i.e. Stephenson and Joy.

Number 720, on the 13.58 ex Bournemouth West, with 200 tons exceeded the allowance of seven minutes between the two Bournemouth stations by one minute and lost another two minutes on the 22 minutes schedule to the next stop at Brockenhurst. The 22 minutes schedule to Southampton was just kept and the departure from there was six and a half minutes late. The average from Eastleigh to Winchester was only 31.5 miles per hour, the time from Winchester to Basingstoke 32 minutes. There was a PWR slack at Hook, a signal check at Farnborough before a 29 minutes late arrival at Vauxhall. Without the various checks the time from Southampton to Vauxhall would have been 17 minutes more than the 97 minutes schedule. Number 720 ran better than this after being fitted with the new boiler but she was never a great locomotive. One imagines the recorder wished he had taken the previous departure; his note books are silent on the subject.

Other experiences in the first five years of the Century in the Up direction include one with T9 Class 4-4-0 No.300 with 220 tons on the 13.57 ex Bournemouth Central. The scheduled non stop run to Waterloo was completed in 131 minutes 55 seconds including three signal checks and a stop at Waterloo signal box, 126½ minutes Net, the driver G. Collarbone, the date June 1904.

L&SW the 16.10 ex Waterloo 1906

At the end of the year, T9 No.709, with 250 tons on the 11.22 from Bournemouth left Winchester two and three quarter minutes late, passed Basingstoke in 29 minutes 23 seconds, schedule 30 minutes, then with only one minor check at Woking took another 51 minutes 23 seconds to pass Clapham Junction, schedule 47 minutes and with further signal checks reached Vauxhall in 86 minutes 18 seconds, schedule 81 minutes. Trains regularly lost time up the gradient to Micheldever and regained the lost time from Basingstoke onwards, although a requirement to pass Basingstoke in 30 minutes from the Winchester start was hardly onerous.

The period 1906 to the summer of 1911 included the Salisbury accident, the probable length of time it required to forget it and culminated with the introduction of the two hours non stop service between Waterloo and Bournemouth. Although there was little improvement in scheduled speeds in the middle years of the first decade of the Century train weights did increase, both through the provision of more coaches and heavier ones in the formation. The increased weights and the variations from day to day can be noted by reference to some observations on the 16.10 ex Waterloo in 1906.

The train, hauled by L12 Class 4-4-0 No.433 on Tuesday March 20th with seven coaches reached Bournemouth in 127 minutes from Waterloo, the only delay was for signals after Eastleigh. Basingstoke was passed in less than an hour from the start, the average between Winchester and Eastleigh was slightly in excess of 70 miles per hour and the final 28.8 miles from Southampton to the Bournemouth stop were run in 33³/₄ minutes. On Thursday and Friday of the same week the train was observed at Bournemouth, on the first day L12 No.415 arrived one minute late with six coaches and on the next Adams 460 Class 4-4-0 No.475 was 13 minutes late with eight coaches plus one six wheeled van [c.210 tons]. It is not known if the elderly 4-4-0 worked through from London or had been attached as a replacement locomotive en route

An L12 Class 4-4-0, on the 21st of June [a Thursday] with seven coaches passed Basingstoke in 58 minutes, Winchester in 77¹/₂ minutes and Eastleigh in 83¹/₄ minutes. The reward for being early, a 45 seconds stop for signals at Woodmill signal box just to the North of St Denys in 87 minutes from Waterloo. From the restart the 31 miles to Bournemouth were run in 41¹/₄ minutes including a PWR. slack at Hinton Admiral. The 16.10 consisted of nine coaches, c.250 tons on Friday the 21st of September, entrusted to T9 Class 4-4-0 No.730. The schedule had been eased to 130 minutes to Bournemouth since the beginning of the month. Woking was passed in 30 minutes, Basingstoke in 59 minutes and the tunnel at Litchfield entered in 70 minutes from the start. The 10.8 miles from there to Winchester were run in 10 minutes before the train was slowed for special slacks through Eastleigh and twice afterwards, introduced as a result of the Salisbury accident. Southampton was passed in 94³/₄ minutes.

L&SW performance to Bournemouth

The Bournemouth arrival was two minutes late after a very slow run in from Christchurch.

Rous Marten had a better experience [Ref.10] when he tried the 16.10 at this time [presumably he made his presence known to the footplate crew]. T9 Class 4-4-0 No.724 with eight coaches [estimated 230 tons, the train was reportedly very full] started very slowly from Waterloo according to Rous Marten. He quoted a time of 6 minutes 17 seconds to pass Clapham Junction, which would appear to indicate he was either one or two minutes at least out in his timing or the start was far from quiet. Woking was passed in 28 minutes 29 seconds, Basingstoke in slightly over 54½ minutes and after 80 miles per hour had been attained at Shawford the train was brought to a halt at Woodmill signal box, 77 miles in 84 minutes 40 seconds from Waterloo. After a 75 seconds stop the continuation to Bournemouth took 5 seconds over 40 minutes, the arrival was in exactly 126 minutes from London. A K10 Class 4-4-0 took the Weymouth portion, four coaches, on from Bournemouth. The timetable allowed 61 minutes to Weymouth including time spent at the three stops, Poole, Wareham and Dorchester, actual overall time was 58½ minutes including three minutes spent at the stations.

The locomotives could gain considerable time on the slower schedules, although in practice time was often lost. C.J.Allen travelled on the 10.15 ex Waterloo, a T9 Class 4-4-0 No.287 with 215 tons passed Woking in 35 minutes, Basingstoke in 63¾ minutes, fell to 34 miles per hour on the 1/249 before Wootton and attained a maximum of 70 at Winchester. It reached Southampton, two and a half minutes late, in 99½ minutes, ran the 13.8 miles to the next stop at Brockenhurst in 30 seconds less than the 20 minutes schedule and the continuation to Bournemouth in 15 seconds over the 21 minutes schedule. The two minutes lost before Southampton was recovered by savings at stations, particularly on the five minutes allowance at Southampton. A schedule that allowed 64 minutes to pass Basingstoke, fall to 34 miles per hour at Wootton and still arrive only two minutes late was hardly challenging, particularly with a comparatively light train.

A relief train to the 12.30 ran on the 16th January 1908, presumably to the schedule of the Summer 12.20 to Weymouth and Swanage, made up of eight bogie coaches plus two six wheelers, probably all older stock indicating a likely Gross weight of 230 tons. The locomotive, an L12 Class 4-4-0 made a slow start to Woking, 34 minutes and passed Basingstoke 28 minutes later. The tunnel at Litchfield was entered in 73 minutes and the 22 miles from there to a 30 seconds stop for signals at Northam occupied another 23¾ minutes, Southampton was reached exactly to schedule in 100 minutes. The arrival at Bournemouth was 45 seconds early.

L&SW the longest regular non stop run

The 14.00 ex Waterloo, booked to stop at Christchurch in 129½ minutes according to the W.T.T., frequently loaded to 300 tons. [Ref.11] T9 Class 4-4-0 No.286 with 300 tons passed Basingstoke in 59½ minutes and St Denys in 91 minutes after which a three and a half minutes signal stop at Southampton led to a five and a half minutes late arrival at Christchurch. On another occasion T9 No.285, also with 300 tons took 64 minutes to pass Basingstoke and 99½ minutes to Southampton following which a series of bad signal checks ruined any attempt at timekeeping. R.E.Charlwood published a run in 1909 when L12 Class 4-4-0 No.412 with 210 tons passed Basingstoke in 56 minutes 25 seconds and Lymington Junction in 106 minutes 50 seconds before signal checks again spoiled the run.

Two Monday trips with eight coach trains on the Bournemouth non stop schedule make an interesting comparison. The first, in 1907 when the schedule was 130 minutes involved an L12 Class 4-4-0, the second two years later when the schedule had been restored to 126 minutes, T9 Class 4-4-0 No.728. The loads were reckoned at 230 and 250 tons Gross. The L12 passed Basingstoke in 57¾ minutes, the T9 Woking in 29 minutes 15 seconds, schedule 30 minutes, and Basingstoke in 56¾ minutes, schedule 56 minutes. The L12 ran the adverse stretch up to Litchfield tunnel in ten and a half minutes from Basingstoke, the T9 took 30 seconds longer and passed Eatleigh 90 seconds late in 84½ minutes from Waterloo, average from Litchfield tunnel to Eastleigh was 65 miles per hour. The L12 ran easily, arriving at Bournemouth 75 seconds within the 130 minutes schedule, the T9 arrived one minute late on the 126 minutes schedule, suggesting perhaps that by 1909 maintenance of the 126 minutes schedule with a T9 and the train weights then prevailing was difficult.

The longest regular non stop runs on the L&SW were made by the various excursions to Swanage and Weymouth, from Clapham Junction to Wareham via Wimborne. It has been suggested that they were routed via Wimborne ["Castleman's Corkscrew"] to avoid stopping at Poole. When the original L&SW Act was passed permission was granted for a level crossing at Poole provided all trains made a stop at the station. [Ref.12] Details of two runs are available, [Ref.13] in each case with ten coaches, 250 tons. The locomotive on Whit Monday 1906 was L12 Class 4-4-0 No.424 and in September 1908 T9 Class 4-4-0 No.310, the schedule for the 120 miles was 145 minutes. The L12 left Clapham Junction seven minutes late after signal checks beforehand and after further checks around Surbiton, passed Basingstoke in 58 minutes 53 seconds from the restart. The T9, delayed by a long slowing for track repairs between Surbiton and Esher, took 29½ minutes to cover the initial 20.5 miles to Woking and 57 minutes to pass Basingstoke. The two trains passed Winchester in 79 minutes 7 seconds and 79 minutes respectively and attained 75 and 72 miles per hour before Eastleigh, times to Southampton were 91minutes 5 seconds and 95 minutes 30 seconds and both ran the next stage to Brockenhurst in 17 minutes.

L&SW excursion and peak period traffic

The L12 stopped to take water at Ringwood, 122 minutes 16 seconds from Clapham Junction, 99.8 miles. After a three and a half minutes stop, it ran the 20.4 miles to Wareham in 27minutes 47 seconds, total time from Clapham Junction including the time taken to take water was 153 minutes 29 seconds, 144 to 145 minutes Net. The time taken for the water stop should strictly be debited to the locomotive. The T9 passed Broadstone Junction, 111.8 miles, in 138¼ minutes and stopped at Wareham in 147½ minutes, 144 minutes Net, the average from Brockenhurst to Broadstone was 53.3 miles per hour. The four Swanage coaches were detached at Wareham, the main trains continued to Dorchester South the next stop, running the mainly uphill 15.0 miles in 20 minutes 40 seconds and 21minutes 30 seconds. The T9, after a six minutes delay ran the final stage to Weymouth in 12 minutes, arriving at least a quarter of an hour behind schedule. The actual published schedules for the Excursions were, eight minutes to the departure from Clapham Junction, 153 to Wareham, 173 to Dorchester and 185 to Weymouth. The Swanage coaches reached the small Dorset resort in three hours exactly, the fastest normal times to Weymouth and Swanage in the summer of 1907 were 3 hours 11 minutes and 3 hours 4 minutes respectively, [six and three minutes less in 1905]. The cost of the half-day excursion in 1906 was four shillings and sixpence [approximately 10 pounds in to-day's money]

The L&SW dealt with ever increasing leisure traffic at peak periods. On Maundy Thursday 1909, a half-hourly service ran from Waterloo to Bournemouth commencing at 13.20 and finishing at 18.20. All trains left from platform one at Waterloo, schedule to Bournemouth Central was 2 hours 10 minutes with a stop at Southampton. If this schedule was adhered to this would have involved all ten trains effectively running as the 16.10. The normal trains to Swanage and Weymouth operated. The same operation [Ref.14] was repeated on Maundy Thursday 1910, departure was from platform five in the new South station, punctuality was considered good apart from certain trains delayed due to a pack of foxhounds crossing the railway line near Pirbright, "The driver stopped his train until the Hunt passed". Special services also ran in the London Suburbs, on the Easter Monday for instance 25,000 passengers travelled to the Horse Races at Kempton Park in 72 special trains. By 1911 a half-hourly service to Bournemouth on Maundy Thursday spread over a seven hours period had become the norm.

A review of locomotive performance in the Up direction can conveniently commence with four journeys between Dorchester and Poole. By this time the schedule over the 22.0 miles had been increased to 30½ minutes [in the W.T.T.] On the 18.00 ex Weymouth, 18.18 from Dorchester, Adams 460 Class 4-4-0 No.474, 445 Class No.445 and another 460 Class hauled 110, 170 and 180 tons respectively. Moreton, 5.5 miles, was passed in eight, eight and a quarter and seven and a half minutes, Wool, 10.0 miles, in 12¼, 13 and 11¾ minutes and Wareham, 15.0 miles, in 17¾, 18 and 17 minutes.

L&SW the L12 Class 4-4-0's on the Up Bournemouth Expresses 1906 and 7

The Timetable to Hamworthy Junction allowed 24 minutes; actual times were 45 seconds late, on time and one minute early and to the stop at Poole, 29½, 28 and 26 minutes. The continuation to Bournemouth included the two and a half miles climb up to Branksome with one and a half miles of that at 1/60. Numbers.474 and 447 ran the short stage in nine and a half and 11 minutes, schedule ten minutes. The 170 tons train was a difficult proposition for No.447. Rous Marten on his return trip from Weymouth travelled by the 09.50 hauled by the same locomotive that had taken him from Bournemouth to Weymouth. The K10 Class 4-4-0 No.380 with 170 tons completed the Weymouth to Bournemouth stage in a total running time of 58½ minutes, station time at the two stops was six minutes and the overall schedule from Weymouth to Bournemouth was 65 minutes. On the Dorchester to Poole stage the K10 attained 60 miles per hour between Dorchester and Weymouth, passed Wareham in 18 minutes and reached Poole in 28½ minutes.

An L12 Class 4-4-0 was diagrammed for the 09.00 from Bournemouth to Waterloo from late in 1905. It worked the 16.10 Down to Weymouth, spent the night at Dorchester motive power depot and returned to London on the 07.50 ex Weymouth. Two journeys, both on a Saturday in 1907 hauled by Nos.426 and 418 involved eight and ten coach trains, probably 240 and 300 tons from Bournemouth, the schedule to Waterloo was 128 minutes. Number 426 passed Christchurch in six and a half minutes, Brockenhurst in 22¼ minutes and after slowing for the slack at the bridge at Redbridge, Southampton in 38¼ minutes, schedule 37 minutes. The average up the long ascent was 44 miles per hour, the time to Basingstoke 81 minutes, the average on to Woking 64.5 and the time to Vauxhall 124 minutes, a signal stop resulted in a Waterloo arrival three minutes late. Number 418 with 300 tons lost time initially, 18¼ minutes from Christchurch to Brockenhurst and after the Redbridge slack was three and a quarter minutes late at Southampton. There was a severe slowing for a new bridge being built at Northam, consequently it required 50¾ minutes to clear Eastleigh, then the average speed on to Winchester was 43 miles per hour. It continued to increase on the long gradient, 44 miles per hour to MP 60 and 44.5 from there to Litchfield tunnel, an EDHP of 650-700 for a period of 20 to 25 minutes. After this hard work Basingstoke was passed in 84¼ minutes, the average to Woking was only 60 miles per hour, there were signal checks at Surbiton and Raynes Park, a very slow passage through Clapham Junction and a final arrival eight and a quarter minutes late, 129 minutes Net. The only loss of time by the locomotive with the 300 tons train was on the initial climb from Christchurch to Sway,

The previous year on a Friday in October L12 Class 4-4-0 No.422 with eight coaches was delayed at Totton after a good start to Brockenhurst and again in Southampton tunnel but even so was only one minute late at Eastleigh, schedule 47 minutes. The average speed on to Winchester was 45 miles per hour, to Litchfield tunnel 47.5 and in the upper sixties between Basingstoke and Woking.

L&SW L12's on the 09.00 and 13.57 from Bournemouth

Woking was passed in 100¼ minutes; there was a signal check before Clapham Junction, Waterloo reached in 128 minutes, 124 minutes Net, the EDHP before Litchfield 590-640.

Other runs on the 09.00, all with eight coaches were; L12 Class 4-4-0 No.421 after passing Woking in 103 minutes was badly checked and arrived nine minutes late, without the checks it would have lost two minutes on schedule – No.427 took 135 minutes, passed Basingstoke in 78 minutes, then checked for a PWR slack at Hook, for signals before Woking and before London – No. 432 kept time exactly, from Basingstoke to Waterloo. precisely 50 minutes after a severe PWR slack at Worting Junction, average from Eastleigh to Winchester was 48 miles per hour, unfortunately the recorder made no further observations until Basingstoke, it appears even taking into account the slowing at Worting that speed fell away after Winchester – No. 421 arrived one minute early without any out of course checks, Southampton passed on schedule in 37 minutes, 41 miles per hour averaged up the long climb, two and a quarter minutes late at Basingstoke, two minutes late at Woking after an average of 64.5 miles per hour from Basingstoke and the final 24.4 miles to Waterloo run in 26 minutes thanks to an unusually clear road.

The Working timetable required Eastleigh to Basingstoke to be run in 31 minutes, No.422 came closest, 31 minutes 15 seconds, which involved 48 miles per hour attained at the top of the bank. It was characteristic of L&SW timetables to require its locomotives to run hard uphill, most drivers elected to drop two to three minutes to Basingstoke and recover the lost time on the favourable stretches east of Basingstoke.

The 13.57 from Bournemouth ran to Waterloo in 132 minutes, 37 minutes to Southampton and 33 minutes from Eastleigh to Basingstoke. Rous Marten's round trip to Weymouth finished with L12 Class 4-4-0 No.423 and 260 tons. It passed Christchurch in 5 minutes 50 seconds, was 30 seconds early at Southampton, achieved between 42 and 45 miles per hour on the 1/252, times to Winchester and Litchfield were 54½ minutes and 66minutes 34 seconds after a severe PWR. slack at Micheldever. Basingstoke was passed in 80 minutes 27 seconds, the 23.4 miles to Woking took 22¼ minutes; 70 miles per hour was attained at Hook and again at Byfleet. Waterloo was reached in 130 minutes 4 seconds after signal checks in the Clapham Junction area, 124 minutes Net.

As a comparison T9 Class 4-4-0 No.114 with an identical load, in June 1906 took seven minutes to Christchurch, was one and a quarter minutes early at Southampton, maintained 41 miles per hour on the rise, passed Basingstoke in 80¾ minutes and Woking 22¾ minutes later. The average between MP's 20 and 24 was 70 miles per hour; the time to Clapham Junction after signals almost brought it to a stop was 126 minutes and to Waterloo 133½ minutes, 130½ Net.

L&SW performance on Up semi-fast in 1909

R.E.Charlwood in 1909 [Ref.15] gave brief details of various performances by Bournemouth trains. T9 Class 4-4-0 No.773 ran the 46.5 miles from a start at Basingstoke to the stop at Vauxhall in 51 minutes 10 seconds with 260 tons. T9 No.724 with 210 tons ran from Southampton to Vauxhall, 77.8 miles in 86¾ minutes, Eastleigh was passed in 8 minutes 49 seconds, Winchester in 17 minutes 31 seconds and Basingstoke in 41 minutes after a slight check at Worting Junction. This suggests 48 to 50 miles per hour on the 1/252, an EDHP of 475-525. The Basingstoke to Woking stretch was run in 21 minutes 7 seconds with a maximum of 73 miles per hour, after this there was a slight check at Raynes Park. Number 286, another T9, with 300 tons ran the 65.2 miles from Winchester to Vauxhall in 75¼ minutes. J.F.Gairns, in 1909 reported that T9 No.310 with nine coaches passed Clapham Junction in 83½ minutes from a start at Southampton.

A performance by the double single No.720 placed this locomotive in a better light than that noted previously in 1900. It was on the 13.55 ex Bournemouth West and after it had been rebuilt with a modified boiler. [Ref.16] Starting from Winchester with 310 tons Worting Junction, 16.3 miles, was passed in 27 minutes 18 seconds and Basingstoke exactly three minutes later. A special stop was made at Woking, which lasted 3 minutes 23 seconds and Vauxhall was reached in 81 minutes 45 seconds, 75¾ minutes Net. Without the Woking stop the 46.4 miles from Basingstoke pass to Vauxhall stop could have been run in 44 to 45 minutes. J.F.Gairns in 1910 reported double single No.370 of Class E10 [he actually stated it was a T9] ran the 39.1 miles from Basingstoke to Raynes Park in 36½ minutes pass to pass with a train consisting of 11 bogies, a similar performance to No.720. He also noted the long climb past Micheldever was tackled "in fine style". [Ref.17]

A correspondent writing to the Railway Magazine [Ref.18] in 1910 reported he had several records of times of 30¾ minutes pass to pass from Basingstoke to Surbiton, 35.8 miles and two of a few seconds under 30 minutes. These may have been on West of England trains but it confirms speeds well above 70 miles per hour were becoming common east of Basingstoke.

The Waterloo to Portsmouth service was considerably improved in June 1909. Amongst the changes the 09.05 ex Waterloo was re-timed to depart five minutes later. It stopped at Surbiton and then ran to Guildford via the "New" line through Claygate. It stopped afterwards at Haslemere and Fratton and reached Portsmouth Town in 114 minutes from Waterloo. The 12.10 was retimed to depart at 12.45, it ran non stop to Guildford and with one further stop at Fratton reached the Town station in 108 minutes. There was a new service at 18.40, which with stops at Guildford via Woking, Haslemere and Fratton, was two minutes quicker overall. [Ref.19]

L&SW Portsmouth line performance after the 1909 accelerations

An S11 Class 4-4-0 No.400, with seven bogie vehicles plus one six wheeled van, probably 200–210 tons, ran to the Surbiton stop in 17 minutes 32 seconds, schedule 18 minutes. The 17.8 miles from there to the next stop at Guildford via Claygate took 24 minutes 17 seconds. The gradients on this route are fairly difficult including one and three quarter miles up between Claygate and Oxshott and two miles up at 1/95 between Cobham and Horsley. From Horsley there is a fast downhill stretch past Clandon before a speed restriction for the curve between the two Guildford stations. Number 400 ran the difficult 12.7 miles from Guildford up to Haslemere the next stop in 22 minutes 19 seconds, compared with a challenging schedule of 20 minutes, then regained the lost time and more to Fratton with a time of 34 minutes 55 seconds, schedule 39 minutes. The start from Haslemere is very favourable; one and a half miles down at 1/100 initially and continuously down for another eight miles and a quarter, including two miles at 1/80. MP 51, eight miles from Haslemere was passed in 9 minutes 21 seconds at 75 miles per hour, maintained over the next ten quarter-miles.

The 12.45 ex Waterloo ran non stop to Guildford via Claygate. T9 Class 4-4-0 No.304 with 230 tons passed Hampton Court Junction, 13.3 miles, in 17 minutes 56 seconds and stopped at Guildford one and a half minutes ahead of schedule in 40 minutes 34 seconds from Waterloo. Another T9 No.722 with nine bogie carriages and a six-wheeled van, c. 270 tons, shortly after the service was introduced ran from Waterloo to Guildford in 42 minutes 18 seconds. Number 304 from the Guildford restart passed Haslemere in 20 minutes 28 seconds and was one minute early at Rowlands Castle before signals at Havant precluded an on time arrival. Another T9 No.304 with 210 tons, also on the 12.45 passed Surbiton in 16 minutes 27 seconds and Claygate in 20 minutes 39 seconds. Speed fell to 33 miles per hour at Horsley, the 6.4 favourable miles from there to London Road were run in seven and a half minutes and Guildford was reached almost one minute early in 41 minutes from Waterloo. On the continuation to Fratton, Haslemere was passed in 22 minutes 2 seconds, the average from Liphook to Liss was 66 miles per hour and the 8.3 miles on to Rowlands Castle were run in 10 minutes 5 seconds. This included the two and three quarter miles up to Buriton summit at 1/100 and 1/110. The final arrival at Fratton was three quarters of a minute early, 57 minutes 12 seconds.

The 18.40 was a light train, typically four bogie vehicles, 110 tons Gross. Adams Class T3 4-4-0 No.571 [Ref.21] passed Clapham Junction in 6 minutes 35 seconds and Wimbledon in 10 minutes 19 seconds from Waterloo. The average speed on to Woking was 63 miles per hour, passed in 26 minutes 50 seconds and Guildford was reached in 35 minutes 33 seconds, schedule 38 minutes. The 20 minutes schedule to Haslemere was improved on by 57 seconds and Rowlands Castle, 20.2 miles was passed in 22 minutes 16 seconds from the restart. Several signal checks and a stop of 92 seconds at Havant resulted in Fratton being reached in 39 minutes 48 seconds, schedule 38 minutes.

L&SW service improvements 1906-10

The final Portsmouth arrival was five seconds late, including slowing down for and restarting from the two stops the Net time from Waterloo to Fratton was 90 minutes.

The 19.00 ex Portsmouth Harbour was tightly timed, the 17.9 miles from Fratton to the next stop at Petersfield in 29 minutes, the next 24.6 miles to Guildford in 36 minutes and from there to Waterloo, including stops at Surbiton and Vauxhall, in 41 minutes. T9 Class 4-4-0 No.722 on this train with 240 tons was ahead of schedule all the way and arrived at Vauxhall 21 seconds early.

The L&SW, in the period 1906-10 initiated many improvements, which increased demands on the locomotives. Train weights continued to grow, due to increasing passenger flows, the introduction of heavier carriage stock and an increase in the number of restaurant cars. A typical new dining facility introduced in 1908 was a Refreshment Car on the 12.20 ex Waterloo, advertised as a luncheon car to Swanage and as a dining car on the return, 16.10 ex Swanage.

New services were introduced, in 1907 for example from Brighton to Bournemouth which involved running an additional train between Bournemouth and Eastleigh which included the through coaches for Brighton. Also in the same year there were two new Wednesday trains between Waterloo and Southampton, in connection with White Star Line sailings from the Docks. The following year, as part of the continuing improvement to the service to the outer London Suburbs a new train left Waterloo at 17.30, non stop to North Camp and on to Southampton via the Alton to Winchester line. This was followed shortly by another new service, the 18.45, non stop to Woking and then all stations to Basingstoke. In June 1909, as already noted, there were improvements to the Portsmouth service. This reflected the Second Half-Year results for 1908 which showed the L&SW in an excellent light, the only English Railway Company to experience growth in both its freight and passenger business sectors. The Chairman had announced in 1907 that faced with increasing competition from buses and trams within the City areas the Company would concentrate on growth in holiday [seaside] and long distance traffic to offset the loss of Suburban revenues.

The Chairmen of the Great Western and the L&SW Railway Companies met in 1910 and agreed a working arrangement between the two organisations. One of the immediate results was the introduction of an improved service between Portsmouth and Reading with through carriages being provided three times a day in each direction. At the same time L&SW locomotives began working to Oxford on the through Bournemouth to Manchester train which ran between Eastleigh and Oxford without a stop. The scheduled trains to Southampton Docks continued to multiply, the thrice weekly sailing to Le Havre resulting in a new train from Waterloo at 08.55

L&SW the Drummond 4-6-0's

The demands placed on the front line express locomotives increased even more in 1911 with the introduction of the two hours schedules between Waterloo and Bournemouth in both directions. Initially there was one Up train and one Down, 09.08 from Bournemouth and 16.10 ex Waterloo. Concurrent with this an improved business service was implemented to Godalming, Guildford, Woking and Byfleet. The number of two hours trains from Bournemouth was doubled in the winter timetable of 1911 and the 14.00 Down accelerated to reach the first stop at Christchurch in 116 minutes.

Before discussing locomotive performance on the Bournemouth two hour schedules a brief resume of Drummond's 4-6-0 designs is perhaps apposite. The first Drummond 4-6-0's, were five F13 Class delivered into service in the autumn of 1905. They were large locomotives, 6 feet diameter coupled wheels and four cylinders, 16 inches diameter by 24 inches stroke. The boiler had a working pressure of 175 pounds per inch and a total heating surface of 2,727 square feet [2,210 square feet in the boiler tubes, 357 square feet in the firebox tubes and 160 square feet in the firebox]. The firegrate area was 31½ square feet and the locomotives weighed 73 tons, the tender an additional 45 tons. They were not a success. Simplistically, unless two men fired them with virtually hand picked coal, they usually were unable to generate more power than a T9 Class 4-4-0 and when they did the coal consumption was excessive. The E14 Class No.335 built in the spring of 1907 had some modifications, but was equally unsuccessful.

The following spring five smaller 4-6-0's, the G14 Class, were built at Eastleigh. They had 6 feet diameter driving wheels and four cylinders, 15 inches diameter by 26 inches stroke. The boiler had a working pressure of 175 pounds per square inch and a total heating area of 1,920 square feet [1,580 square feet in the boiler, 200 square feet in the firebox water tubes and 140 square feet in the firebox]. The firegrate area was 31½ square feet, the locomotive weighed 71 tons, the tender an additional 49 tons. They were marginally more successful than the previous Drummond designed 4-6-0's and were employed on the Salisbury to Exeter route, where they showed scant improvement in performance over the T9 and L12 Class 4-4-0's. Five further locomotives built in the winter 1910-1911 were similar and classified as Class P14.

Five more 4-6-0's were built in the spring of 1911, these specifically for the Bournemouth service and classified as Class T14. They were similar to the G14 and P14 Classes except they had 6 feet 7 inches diameter coupled wheels, a boiler working pressure increased to 200 pounds per square inch and four cylinders all in line, the offset arrangement originally incorporated in the double singles was abandoned. Although they were originally supplied with tenders with a 4,500 gallons water capacity, these were replaced after this proved insufficient for the Bournemouth non stop trains. The replacement tenders, supplied in 1912 had a water capacity of 5,800 gallons and weighed slightly over 60 tons.

L&SW the T14's on the Bournemouth two hours service 1911

Five more T14's were built between December 1911 and April 1912. The T14's were better performers than the G14's although still very heavy on coal and water, witness the water consumption between Waterloo and Bournemouth.

Concurrent with the introduction of the two hours Bournemouth trains the five existing T14 Class 4-6-0's were allocated to Nine Elms motive power depot. They worked the 10.15, 12.30 and 14.00 Waterloo to Bournemouth trains. [Ref.22] Another member of the Class took the 16.10 to Dorchester and returned the following morning on the 08.00 from Dorchester to London. Because of their weight the Great Western Railway forbade their use over its tracks between Dorchester Junction and Weymouth. The locomotive on the 10.15 Down returned on the 14.00 from Bournemouth and that on the 14.00 Down on the 18.57 ex Bournemouth West. [Ref.23]

The work involved on the two hours schedule and the Down train which stopped at Christchurch, can be assessed by reference to the following records. [Fourteen Down, five on the 16.10 to Bournemouth and nine on the 14.00 to Christchurch]. Locomotives involved were; T14 Class 4-6-0's on nine occasions, a G14 Class 4-6-0 once, T9 Class and D15 Class 4-4-0's twice for each type. On every occasion bar one, when a T14 hauled the 14.00 ex Waterloo the train weighed between 205 and 230 tons. The best run [Ref.24] was with No.445: 35.8 miles from Surbiton to Basingstoke in 35 minutes 35 seconds - Basingstoke passed in 51 minutes 25 seconds and Winchester in 71 minutes 5 seconds - after signal checks at Eastleigh, St Denys and Southampton, Christchurch reached two minutes early, 114 minutes 14 seconds, 110 minutes Net.

Almost a year later C.J.Allen rode on the footplate of No.459 with Driver Densley and a ten coach train, 270 tons. Basingstoke was passed three and three quarter minutes later than on the previous run after a slowing at Esher for the Race traffic. Speed fell only to 53 miles per hour up the 1/249 to Wootton signal box and downhill to Eastleigh an eight miles stretch was run in six minutes with a maximum of 83. As a result of this energy, Southampton was passed in 86¾ minutes despite a signal check before and Christchurch reached in exactly the same time as on the previous occasion, 111 minutes Net. The other three runs were not as good, actual times 119½, 120¼ and 117½ minutes, corresponding Net times 119½, 117 and 117½ minutes. On all three some of the lost time was attributable to the locomotive, the first two were in 1911, the third in 1914.

The two occasions when a T9 Class 4-4-0 was noted on the 16.10 to Bournemouth were in 1911 when No.311 deputised for a failed T14 and on August 18th 1913 with only seven coaches. [This was probably a relief service] On the first occasion the actual time from Waterloo to Bournemouth was 125 minutes, 123½ minutes Net, whereas on the second the actual time was 123 minutes, 118 minutes Net.

L&SW performance on the Down two hours trains before the War

Basingstoke was passed in 54 minutes, the average from there to Litchfield tunnel was 47 miles per hour, Eastleigh in 77, Southampton in 85 minutes and Christchurch in 113 before a signal stop made the final arrival three minutes late.

The two best actual times to Bournemouth were with T14 Class 4-6-0 No.443 in October 1911 with nine coaches, 119 minutes, and No.445 with 220 tons in the same year, 119¾ minutes. Number 445, unchecked, passed Woking in 27¾ minutes, Basingstoke in 57¾, Southampton in 86 and Brockenhurst in 102, the maximum past Winchester was 75 miles per hour. Number 443 was 30 seconds slower to Woking, ran the 23.4 miles on to Basingstoke in 24¼ minutes, reached 70 miles per hour before Eastleigh and passed Southampton 45 seconds ahead of No.445 which difference was maintained to Bournemouth. The only other run to time was also by No.445 with the same load and included a signal check at Shawford which caused the train to be two minutes late at Southampton after it had been 50 seconds ahead at Winchester, approximately 117 minutes Net.

The best run on the 16.10 was with D15 Class 4-4-0 No.465 and 215 tons. [Ref.25]. The start was good, Clapham Junction passed in 6 minutes 41 seconds, a PWR slack through Wimbledon, Hampton Court Junction seven seconds inside the 17 minutes schedule and Woking in 27 minutes 37 seconds. Speeds were 64 miles per hour maximum before and a minimum of 50 at MP31, times to Basingstoke and Micheldever, 58.1 miles, 52 and 63½ minutes, there was a long PWR slack at Wallers Ash followed by a recovery to 72 at Shawford, Southampton was passed in 84 minutes 36 seconds. The 13.8 miles to Brockenhurst took 15 minutes 50 seconds and with a maximum of 73 miles per hour before the curve the train was through Christchurch in 111 minutes 41 seconds. A signal check and then a stop resulted in a minute late arrival at Bournemouth, 114-115 minutes Net.

On two other occasions, T14 Class 4-6-0 No.443 and D15 Class 4-4-0 No.463 took 121 and 123½ minutes to Bournemouth with the 16.10. The D15 lost three minutes between Southampton and Christchurch after previously running quite well. A rare performer on the 19th June 1913 was G14 Class 4-6-0 No.455 which with eight coaches made a reasonable start, Surbiton in 15 minutes before a PWR. slack at Esher, to Weybridge, 19.1 miles, 25½ minutes and Woking passed six and a half minutes later. The Woking to Basingstoke stretch took 26¾ minutes, at the latter station it was four and three quarter minutes late, the average on to Litchfield tunnel was only 45.5 miles per hour, on the descent the average from Winchester to Eastleigh was 73. Southampton was passed nearly four minutes late, 91¼ minutes from Waterloo. The driver tried to achieve an on time arrival with times to Brockenhurst of 15½ minutes and from there to Bournemouth 15¾ minutes, including only four and a half minutes from Christchurch to the Bournemouth stop. He presumably felt slowing for the curve was a luxury he could scarce afford.

L&SW the Down semi-fasts

One can imagine the train rocking through the station at 70 to 75 miles per hour. The Net time was 120 to 121 minutes, probably as good as could be obtained from one of these rather poor machines.

Although the 14.00 and 16.10 departures from Waterloo inevitably attracted the most attention, some of the others involved heavier formations albeit with more generous schedules. Three journeys on the 10.15 are probably typical [Ref.26]. L12 Class 4-4-0 No.429 on Whit-Monday 1911 had 310 tons and improved on the 97 minutes schedule to the first stop at Southampton by 80 seconds. It passed Basingstoke in 61¾ minutes and ran the 19.1 miles from Micheldever to St Denys at an average of 67.5 miles per hour with a maximum of 72 over a two miles section. Later in the same summer, L12 No.418 with 330 tons was 20 seconds ahead at Woking, schedule 33 minutes, then fell to 39 miles per hour on the 1/320 to MP31 and passed Basingstoke two and a half minutes late, 62 minutes 35 seconds. The maximum past Winchester was 68 miles per hour and Eastleigh was reached two minutes late, 92 minutes 5 seconds. Another vehicle was added to the train at Eastleigh increasing the weight to 350 tons. The 5.3 miles to Southampton the next stop took 10 minutes 50 seconds, a further loss on schedule of nearly a minute with another minute lost to Brockenhurst, 20 minutes 55 seconds. The load was reduced to 310 tons here and the final stage to Bournemouth completed ten seconds inside the 21 minutes schedule, with a maximum of 69 miles per hour before Christchurch.

A journey on the same train in 1913 with 320 tons gave passing times of, Clapham Junction, fractionally under eight minutes, Woking 30 minutes 40 seconds and Basingstoke 57 minutes 50 seconds. Speed fell to 36 miles per hour at Wootton, presumably because the train was ahead of schedule and without exceeding 66 afterwards Eastleigh was reached early in 88¼ minutes, 87 minutes Net. The short run to Southampton was accomplished in ten minutes and a quarter and with the load reduced to 290 tons Brockenhurst reached in 19 minutes 35 seconds. There was a further reduction there to 260 tons and the final stage to Bournemouth took 20 minutes 40 seconds. The times on the two runs to pass New Milton from the Brockenhurst start were 10 minutes 15 seconds and 10 minutes 35 seconds with 310 and 260 tons. [The 5.8 miles, includes the initial two and three quarter miles to Sway at gradients of 1/176, 1/200 and 1/103.] Christchurch was passed in 15 minutes 50 seconds and 15 minutes 55 seconds with maxima of 69 and 72 miles per hour before the station.

The 12.30 ex Waterloo, allowed 102 minutes to the first stop at Southampton had D15 Class 4-4-0's Nos.467 and 468 with 310 and 325 tons on two occasions. They passed Clapham Junction in 7 minutes 45 seconds and 7 minutes 40 seconds, Woking in 31 minutes 50 seconds and 32 minutes 35 seconds. Times on to Basingstoke were 29½ minutes and 30 minutes 25 seconds, from there to Winchester 22 minutes 25 seconds and 22 minutes 10 seconds

L&SW a double single keeps time

The second ran faster down the grade, 73 miles per hour average between Winchester and Eastleigh compared with 70. The Southampton arrivals in each case were three and a half minutes early, 98 minutes 35 seconds. There is always more than one way to skin a rabbit.

A double single, E10 Class No.373 with 310 tons on this service passed Clapham Junction in 8 minutes 10 seconds, Woking in 32 minutes 32 seconds and Basingstoke in 61 minutes 28 seconds. The Basingstoke to Winchester stretch took 22¾ minutes, the average on to Eastleigh was 65 miles per hour and the stop at Southampton effected in 98¼ minutes, 20 seconds quicker than the D15's. An E10 producing a better performance than a D15, such is the fascination of steam locomotive performance although perhaps in this case it reflects the generous schedule. [Ref.27]

Seventeen journeys on the two Up two hours non stop trains from Bournemouth to Waterloo can now be considered. [Ref.28] Locomotives involved were; T14 Class 4-6-0's on nine occasions, L12 Class 4-4-0's thrice, D15 Class 4-4-0's twice and a T9 Class 4-4-0 and a G14 Class 4-6-0 once each. Overall punctuality was better in this direction, it was almost certainly two to three minutes easier than the Down; relevant factors included the favourable start from Bournemouth and that the Southampton bottleneck occurred in the first quarter of the journey and not the last.

Six runs were completed within two hours, four arrived within two minutes of the schedule and the remaining seven were within the range two and three quarter to seven and a half minutes late. The Net time was less than two hours on every occasion bar two, one of which was the solitary run with a G14, the other with an L12. Train weights were in the range 215 to 270 tons.

The fastest time was with T14 Class 4-6-0 No.444 with 220 tons, shortly after the inauguration of the new service. The uphill work was average, Eastleigh to Basingstoke in 31 minutes, schedule a challenging 28 minutes. Time was gained with a good start to Southampton, 28.8 miles from Bournemouth, passed in 31 minutes 29 seconds. The fast stretch from Basingstoke to Woking was reeled off in 21 minutes and the finish from there to Waterloo took 25½ minutes, free of any out of course checks. The overall time from Bournemouth to Waterloo was 117 minutes 9 seconds. The next quickest, surprise, surprise was with T9 Class 4-4-0 No.311 and the normal 220 ton load. Southampton was passed in 32 minutes 2 seconds, Eastleigh to Basingstoke took 31 minutes 41 seconds with a minimum of 42 miles per hour on the 1/252, at Basingstoke the train was 24 seconds behind schedule, 71 minutes 24 seconds. The stretch to Woking was completed in 21 minutes 28 seconds, the 12.4 miles from there to Surbiton in 11 minutes 2 seconds and Waterloo reached in 118 minutes 25 seconds after a signal check at Vauxhall, 117¾ minutes Net.

L&SW the Up two hours trains

A faster Net time, with 270 tons, was achieved by T14 Class 4-6-0 No.445. The initial 15.1 miles to Brockenhurst took 18 minutes 36 seconds, 29 seconds faster than No.311, by Southampton however the T14 was only two seconds ahead. There was a long PWR slack at St Denys; Eastleigh to Basingstoke took 30 minutes 2 seconds. Speed fell from an attained 50 miles per hour at Eastleigh to 46 at the top of the 1/252, reached 75 after Basingstoke and the time from there to Woking was 20 minutes 51 seconds. Surbiton, 95.9 miles from Bournemouth, was passed in 102 minutes 32 seconds, 101½ minutes Net and with a smart finish Waterloo could have been reached in 116 minutes, less than 115 minutes without the St Denys slack. In practice with continual signal checks after Raynes Park, Waterloo was reached in 119 minutes 26 seconds.

The L12 Class 4-4-0's performed well on two occasions. Number 419, in 1912 with 220 tons took 35¼ minutes to Southampton and then ran Eastleigh to Basingstoke in 32 minutes 5 seconds. C.J.Allen was travelling on the footplate and Driver Childs told him that they would lose time over this stretch to ensure they conserved water. Speed up the 1/252 was maintained at 44 miles per hour despite water conservation measures, an EDHP of 575-625. The time from Basingstoke to the stop at Waterloo was 46 minutes 10 seconds, including a PWR slack at Vauxhall, which cost half a minute. Speeds were 74 miles per hour at Basingstoke, 63 at MP31 and 76 at Woking, the Basingstoke to Woking time 20 minutes 55 seconds. Number 434, deputising for a stopped T14 during the first few weeks of the accelerated service, with 250 tons passed Southampton in 32 minutes 50 seconds, Basingstoke in 73 minutes, after 32 minutes for Eastleigh to Basingstoke and Woking in 94 minutes 40 seconds. There was a slight slowing for a signal check at Weybridge and again for Race traffic at Esher with the result that the Waterloo arrival was 75 seconds late, the Net time probably very close to the scheduled 120 minutes.

The third run with an L12, with a 230 tons train, was a rather poor affair and resulted in a seven and a half minutes late arrival at Waterloo, c.122 minutes Net. Southampton was passed in 35 minutes, Eastleigh to Basingstoke took 32 minutes and there were PWR slacks at Woking and Wimbledon.

The solitary recorded G14 Class 4-6-0 run on the 24th June 1913 confirmed the general poor reputation of these locomotives. Number 455 with a standard 230 tons train passed Southampton and Basingstoke in 34 and 72 minutes, Eastleigh to Basingstoke occupied 31 minutes. There was a PWR slack at Hook and a signal check at Raynes Park, Waterloo was reached six minutes late; the Net time was at the best 120 minutes. This and the run in the Down direction appear to confirm the view that the G14's were inferior to the not very good T14's. Drummond's most powerful 4-4-0's consistently outperformed his 4-6-0's, higher continuous power output with lower coal consumption, indeed most footplate crews achieved better performances with a T9 Class 4-4-0.

L&SW D15 Class 4-4-0's on the Up two hours trains

All three D15 Class 4-4-0's arrived at Waterloo on time. Locomotives were: No's 467 with 215 tons - 469 with 225 tons - 466 with 220 tons - overall actual and [Net times] -119½ minutes [117] - 119 minutes [116] - 120 minutes. These three runs testify to the effectiveness of this design of 4-4-0, the natural final development of the T9. With hindsight it can be opined that Drummond should have built the D15 Class before embarking on the construction of an express 4-6-0 locomotive. He might also have had a better outcome if he had designed an inside cylinder 4-6-0, similar to Holden on the Great Eastern Railway.

The D15's passed Brockenhurst in 18 minutes 5 seconds, 19 minutes 9 seconds and 20 minutes 10 seconds and Southampton in 32 minutes 7 seconds, 33 minutes 8 seconds and 34 minutes 25 seconds. Eastleigh to Basingstoke was run in 30 minutes 48 seconds with 48 miles per hour sustained up the 1/252, 30 minutes 26 seconds with 53 falling to a sustained 46 and 30 minutes 15 seconds with a sustained 48. All three locomotives developed an EDHP of 575 - 625. Times from Basingstoke to Woking were 21 minutes 8 seconds, 18 minutes 55 seconds, with 78 miles per hour at Hook and 68 minimum at MP31 and 21 minutes 20 seconds. On the second after Woking 78 miles per hour was attained again at Byfleet and Surbiton, 95.8 miles, was passed in 101 minutes and 39 seconds. Number 466 ran the 12.4 miles from Woking to Surbiton in ten and three-quarters minutes, No.469 took 11 minutes 4 seconds, the Woking to Weybridge times were 4 minutes 20 seconds and 4 minutes 32 seconds, which suggests No.466 reached at least 80 miles per hour at Byfleet.

The 17.15 from Bournemouth could be an interesting train, seven records, the first one in 1912, the next two in 1913 and the last four in 1914 illustrate the point. The schedule allowed 22 minutes to the first stop at Brockenhurst, 19 minutes to the next at Southampton and 90 minutes over the 77.8 miles to Vauxhall. Passing times from Southampton were 10 minutes to Eastleigh, 43½ to Basingstoke and 66 to Woking. Locomotives were L12 Class 4-4-0 No.428 in 1912, D15 Class 4-4-0's Nos.467 and 468 in 1912 and E10 Class Double Singles Nos.371, 370, 369 and 373 in 1914.

The L12 ran to Brockenhurst in five seconds over schedule with 280 tons where the load was increased to 330 tons and lost another half a minute to Southampton. E10 No.371 with 315 tons took 20 minutes 48 seconds to Brockenhurst and No.369 with 250 tons, 11 seconds more and on to Southampton they were 25 seconds and 44 seconds inside schedule. From Southampton the L12, with 330 tons passed Eastleigh in 10 minutes 40 seconds, Basingstoke over four minutes late in 47 minutes 40 seconds, Woking in 69 minutes 25 seconds and reached Vauxhall, after signal checks, seven minutes late, 96 minutes 50 seconds, 93¾ minutes Net. Speeds were 37 miles per hour on the 1/252, 70 at Basingstoke, 59 at MP31 and 75 at Woking.

L&SW the 17.15 from Bournemouth, 1912-4

The two D15 Class 4-4-0's with 220 tons and 240 tons passed Eastleigh in 9 minutes 25 seconds and 9 minutes 45 seconds. The Eastleigh to Basingstoke stretch was run in 33½ minutes and 30 minutes 55 seconds with sustained speeds up the gradient of 41 and 47 miles per hour. Basingstoke was passed 35 seconds early and almost three minutes early. Number 467 ran poorly after Basingstoke and arrived 70 seconds late, No. 468 checked at Brookwood, Hampton Court Junction and finally stopped outside Vauxhall Station, arrived 5 minutes 10 seconds late, the Net time was probably only 86 to 87 minutes.

The E10 Double Singles [4-2-2-0] had 315, 210, 250 and 225 tons when they left Southampton [the last run was made on February 2nd 1914]. They passed Eastleigh in 10 minutes 11 seconds, 9 minutes 47 seconds, 10 minutes 3 seconds and 10 minutes exactly. Speeds up the 1/252 were 43 miles per hour sustained, 43 falling to 42 and averages of 44 and 46 between Winchester and Micheldever. Basingstoke was passed in 43¾ minutes, 43 minutes 31 seconds, 43 minutes 19 seconds and 43 minutes respectively. The EDHP developed on the runs for 20 to 25 minutes were 650-700 by No.371, 450-500 by No.370 and 540-590 by No.369 and No.373. At this time No.371 still carried its Drummond boiler with water tubes in the firebox. Numbers 369, 370 and 373 had new replacement boilers without the fire box tubes. Number 371 took 21 minutes 26 seconds from Basingstoke to Woking with a maximum of 69 miles per hour but was checked by signals before Clapham Junction, then brought to a halt before Vauxhall and had difficulty in restarting so Vauxhall was reached six minutes late, 88 minutes Net. Number 370 kept to the schedule within a few seconds, it passed Surbiton in 76 minutes 55 seconds and finally reached Vauxhall 25 seconds early. Number 369 dropped one and three quarter minutes for no obvious reason and arrived Vauxhall one and a half minutes late. Number 373 ran the 14.6 miles to Farnborough at an average of 62½ miles per hour, the 8.8 miles to Woking, including the slight rise to MP31, at 62 and the 12.4 miles from Woking to Surbiton at 65. The final arrival at Vauxhall was three quarters of a minute early.

Coal returns for August 1911 show Nos.369, 370 and 373 averaged slightly under 41 lbs/mile, 30 percent more than typical for a T9. However after all the initial tribulations it appears footplate crews had mastered the Double Singles, performances up the 1/252 were good, that of No.371 very good.

The service to Portsmouth was improved in 1909 and from October 1st 1912 corridor dining car sets were introduced on some trains, specifically the 09.10, 12.45 and 18.40 Down and the 07.55, 12.00 and 19.00 Up [Ref.29]. The 18.40 as already noted was a light train when first introduced, after October 1912 it became a harder proposition. T9 Class 4-4-0 No.119, with 285 tons took 7 minutes 50 seconds to Clapham Junction, 19 minutes 22 seconds to Hampton Court Junction and slowed through Woking, in 31 minutes 48 seconds,

L&SW performance on the Portsmouth Direct in 1912

It reached Guildford in 40 minutes 25 seconds, a loss of nearly two and a half minutes on what, with this load, was a difficult schedule, [shortly afterwards it was increased to 41 minutes.] At Guildford the load was reduced to 210 tons, the 12.7 miles up to Haslemere were run in 20 minutes 53 seconds and the time lost up to this point then recovered by running the 29.8 miles to Fratton in 35 minutes 58 seconds, three minutes within schedule.

A T9 Class 4-4-0 No.722 in the summer of 1912 had 240 tons on the 07.55, ex Portsmouth, later in the same summer No.704 had 210 tons. [The operation of this train had by then changed, a reduced load from Portsmouth to Guildford where passenger loadings were light and gradients heavy, extra coaches added at Guildford, from where the converse was true]. Number 722 ran from Fratton to Haslemere four seconds inside the 46 minutes schedule. The minimum up the seven and a quarter miles climb from Havant to Buriton, culminating in two miles at 1/80 was 26 miles per hour and up the one and a half miles at 1/100 at the end of the eight miles climb to Haslemere 24. Number 704 took 44 minutes 8 seconds, falling to 24 miles per hour at Buriton but only to 37 before the Haslemere stop. The steeply graded down hill stage to Godalming the next stop, was run in 12 minutes 55 seconds and 12 minutes 28 seconds respectively, the level 4.2 miles from there to Guildford in 8 minutes 24 seconds. Number 704 lost two minutes on the nine minutes schedule, due to signals at Peasmarsh Junction. Number 722 continued from Guildford with 240 tons whereas No. 704 had a substantial train of 305 tons. Number 722 passed Woking, 6 miles, in 9 minutes 56 seconds, there was a long PWR slack at Weybridge and with a time of only 14 minutes from Hampton Court Junction to Vauxhall, including the Clapham Junction slowing, the arrival was only two and a quarter minutes late, schedule 35 minutes. Number 704 passed Woking in 10 minutes 10 seconds at 25 miles per hour and then ran the next 17.1 miles to Wimbledon in 17 minutes 38 seconds. There were fog and signal delays before Clapham Junction, resulting in a loss of 89 seconds to Vauxhall.

A feature of the L&SW Timetables up to the outbreak of the Great War was the continuing improvement in services to the outer Suburbs, some involving comparatively long distance non stop runs. W J Scott wrote a series of articles on this subject in 1911. From Waterloo on the main line there was one train which made its first stop at Walton and Hersham, 17.1 miles in 28 minutes, three to Weybridge, 19.2 miles in 27-30 minutes, one Up non stop to Vauxhall and one to Byfleet 21.7 miles in 34 minutes. Woking was well served with nine non stop trains; most of these were allowed 34 minutes for the 24.4 miles, many were main line services to Bournemouth, Portsmouth or the West of England. In the Up direction there were ten daily trains which ran non stop to Clapham Junction, Vauxhall or Waterloo, the quickest ran the 23 miles to Vauxhall in 29 minutes. Brookwood had two trains, emanating from Farnham that ran to Vauxhall, 26.7 miles, the next stop in 33 and 34 minutes.

L&SW residential services from London

Aldershot received a good service, there were six trains from Waterloo which covered the 35.1 miles in 61 to 70 minutes, and the 17.30 ran non stop to North Camp [now Ash Vale]. In the Up direction there were six trains which reached Waterloo inside 63 minutes. Many of these were hauled by M7 Class 0-4-4 Tank's which particularly in the Up direction often showed a good turn of speed on the generally favourable gradients. [Ref.30]

An M7 Class 0-4-4 Tank No. 49 on a 30 minutes schedule from Woking to Vauxhall with 220 tons passed Surbiton 12.4 miles in 14¾ minutes. It reached 57 miles per hour at the bottom of the 1/387 gradient at MP20½, fell away to 55 up the adverse 1.2 miles at 1/330 and finally attained 63 at Esher. Number 328 with 225 tons, was five seconds faster to Surbiton with identical speeds until Esher where it reached 64 miles per hour. Clapham Junction was passed in 23 minutes 24 seconds and 23 minutes 10 seconds, the stop at Vauxhall effected well within schedule, in 27 minutes 16 seconds and 26 minutes 45 seconds. The average speeds over the 11.9 miles from Weybridge to Wimbledon were 57.6 and 57.9 miles per hour respectively.

On the 10.18 from Brookwood, 09.53 ex Farnham M7 Class 0-4-4 Tank No.323 [Ref.31] with 230 tons ran the 16 miles to a special stop at Surbiton in 18 minutes 50 seconds. This involved passing Woking, 3.6 miles, in five and three quarter minutes and subsequent speeds of 63 miles per hour at MP15½, 56 at Oatlands and 65 at Esher. Number 129 with 215 tons was 11 seconds faster to Woking from the start. It then reached 63 miles per hour at MP15½, fell away to 55 and finally attained 67 Esher. The time to pass Surbiton was 18 minutes 2 seconds, to Clapham Junction, 24.1 miles, 26 minutes 29 seconds and to the stop at Vauxhall, 29 minutes 54 seconds. [The W.T.T for the 10.18 gave passing times of: Woking - six minutes, Hampton Court Junction - 18, Raynes Park - 23, Clapham Junction - 29 and Vauxhall - 33]. Number 129 averaged 58.9 miles per hour from Weybridge to Wimbledon. Drummond reputedly designed the M7's for express duties in the West of England but had to abandon such ideas after a derailment at Tavistock in 1898. Immediately before the Great War they were being driven at speeds on outer Suburban trains probably higher than he envisaged possible when they were designed, and certainly higher than normal running between Plymouth and Exeter would have required.

If the fast outer Suburban trains represented the pinnacle of South Western commuter services, the Swanage branch was the epitome of the important seaside branch line, not just on the South Western but anywhere in Southern England. The branch was ten miles [less two chains] long from Worgret Junction to Swanage, the distance from Wareham, the junction for Swanage, slightly in excess of 11 miles. Gradients were steep, in the Down direction, approximately three miles at 1/78 or 1/80. In the Up direction there were about three and a half miles at 1/76, 1/78 or 1/80 and another two miles between 1/110 and 1/330.

L&SW The Swanage branch

There were in the summer of 1914 twelve weekday departures from Swanage, most ran to Bournemouth, with through coaches or a connection from there to Waterloo. The fastest service to London was the 13.05 which stopped only at Poole before Bournemouth Central, 24 miles, reached in 43 minutes from Swanage, where it joined the two hours express to Waterloo, arrival 16.00. The 08.07 connected at Wareham with the 08.00 ex Weymouth and reached Waterloo in one minute over the three hours. The 16.10, ex Waterloo, conveyed through carriages for Swanage, reached in exactly three hours. The star Swanage train was the 12.40, composed of corridor stock plus buffet car ["Luncheon Car Express"], diagrammed for haulage by an L12 or T9 Class 4-4-0, the largest locomotives permitted on the branch at this time. It ran non stop from Brockenhurst to Swanage via Wimborne in 60 minutes, the 42.2 miles included ten miles of single track on the Swanage branch in addition to the various junctions and speed restrictions. It arrived in Swanage at 15.50 and departed 23 minutes later ["Dining Car Express"] for Waterloo via Bournemouth where it was combined with a portion from Weymouth and reached Waterloo at 19.40.

Locomotives used on the Swanage branch included a locally based Adams 415 Class 4-4-2 Tank [No. 0106 in the immediate pre War period]. This hauled the first train of the day, the 07.30 Swanage to Salisbury via Wimborne, over 50 miles. It returned to Swanage on the 16.10 arrival from Bournemouth after working a Salisbury to Bournemouth service, in the evening it ran to Wareham and back twice. During the day locomotives allocated to Bournemouth or Hamworthy Junction depots maintained the Branch service. Hamworthy depot supplied the "Hamworthy buses", as they were affectionately called, the Adams Class 46. They were built in August 1879 as 4-4-0 Tank's and rebuilt as 4-4-2 Tank's in the early 80's [Nos.375-9]. Dimensionally they were similar to the 415 Class except the firegrate area was some 12 percent smaller.

The Jubilee Class 0-4-2's worked many trains and reputedly were unpopular, the 0456 Class 4-4-0's were well regarded. The T9 or L12 Class 4-4-0, which arrived at Swanage on the 12.40 ex Waterloo train worked back to Bournemouth on the 17.50. The smaller wheeled Drummond 4-4-0 Classes also appeared. [Ref.32]

Dugald Drummond, who died suddenly in November 1912, left a set of excellent 4-4-0's. The M7 Class 0-4-4 Tank's, there were 105 in service, were truly ubiquitous. They handled express trains over distances of 30-40 miles, as well as the shorter inner suburban ones, the only criticism was their comparatively slow acceleration. The much-maligned double singles were doing useful work, footplate crews had had a decade to accept their foibles but the various 4-6-0's ranged from moderate to unsatisfactory. The best, the T14's, were reasonably reliable but seldom produced work that a T9 could not emulate and were inferior to the D15's. The 4-4-0's as saturated steam locomotives exhibited good fuel efficiency, the 4-6-0's however most certainly did not.

Chapter 6: References and Notes

- Ref 1 Railway Magazine [RM] Vol. VI p. 576
- Ref 2 The 14.00 was a "Pullman Drawing Room Car Express" to Bournemouth, the 14.10 an express to Weymouth, the 14.20 ran to Bournemouth and Stokes Bay, for the Isle of Wight, described in the W.T.T. as a "Bournemouth and Stokes Bay" express, whereas Bradshaw labelled it an "Isle of Wight express".
- Ref 3 Railway Club Journal [RCJ] Vol. V. p. 91-3 South Western deceleration. Frank E.Box
- Ref 4 [RCJ] Vol. VI p. 38-40 Southampton and the L&SW Railway Frank E.Box
- Ref 5 H.Brindley [details in private collection]
- Ref 6 [RCJ] Vol. IV p.7-8
- Ref 7 [RCJ] Vol. IV M.D.Greville
- Ref 8 Locomotives of the L&SW Railway D.L.Bradley RCTS Vol.2 p.79
- Ref 9 Railway and Transport Monthly [RTM] Vol. II p. 294
- Ref 10 [RM] Vol. XXII p. 381 Rous Marten refers to the 16.10, 126 minutes schedule so presumably the run was made before September 1st 1906
- Ref .11 [RM] Vol. XXVI J.F.Gairns
- Ref 12 Act 71 – Clause 7 "Every train arriving at Poole or passing to or from the L and SW Railway from or to the Poole and Bournemouth railway shall stop at the station at Poole".
- Ref 13 [RCJ] Vol. V p.54
Railway Pictorial [RP] Vol. 3 p. 86-7 and p.162
- Ref 14 [RM] Vol. XXIV p. 426
- Ref 15 [RM] Vol. XXIV p. 332.
- Ref .16 Railway Notes [RN] Vol. III p.22
- Ref .17 [RM] Vol. XXVI p. 33-42
- Ref .18 [RM] Vol. XXVI p. 427
- Ref .19 [RN] Vol. I
- Ref 20 [RP] Vol. 3 p.152 Frank E.Box
- Ref 21 [RM] Vol. XXXV
- Ref 22 [RN] Vol. III p. 121-2
- Ref 23 Originally the T14 hauled the 09.20 ex Waterloo transferring to the 10.15 ex Waterloo at Brockenhurst which it then worked to Bournemouth. It is believed this practice only persisted briefly
- Ref 24 [RM] Vol. XXIX O.J.Smith
- Ref 25 [RTM] p. 373 R.E.Charlwood.
- Ref 26 [RN] Vol. III p. 82
[RM] Vol. XXXI p. 352 and Vol. XXXIII p. 473-7
- Ref 27 [RM] Vol. XXXV C.J.Allen quoting a City correspondent Vol. LXXIII R.A.Wooding.
- Ref 28 [RM] Vol. XXIX O.J.Smith & Brindley private papers, [RTM] Vol. IV p. 481 and Vol. IX R.E.Charlwood.
- Ref 29 [RTM] Vol. VI p. 121.

Ref . 30 [RM] Vol. XLIII p. 310 C.J.Allen quoting a correspondent.

Ref . 31 C.J.Allen quoting a correspondent gives No.233 which was an Adams 0-4-4 Tank but refers to a Drummond Tank in the article. It is extremely unlikely, the author believes impossible, for an Adams O2 to have produced such a performance. Number.233 may well have been M7 No.323.

Ref 32 [RM] Vol. LXXI F.J Gale

Chapter 7: London, Brighton and South Coast Railway 1900-1914

The passenger services of the LBSC from 1900-1914 can be likened to the sport's writer's beloved game of two halves. Half time occurred when, after almost a decade of operating only on Sundays, the 60 minutes Pullman schedule from Victoria to Brighton and return became a weekday event. Schedules changed very little during the decade, although trainloads continued to increase particularly on the Morning and Evening Business trains. The summer of 1905 can be regarded as typical of the first half. The quickest Down weekday train to Brighton was still the 17.00 ex London Bridge, in the Public timetable to Brighton non stop, in 65 minutes. The best train from Victoria was the 13.50, allowed 70 minutes. There were two trains from London Bridge with one stop en route in 75 minutes and three completed the journey in 80 minutes with three stops. The 11.40 ex Victoria ran to Worthing in 100 minutes, with a 76 minutes start to stop schedule from Clapham Junction to Hove. The twelve best trains from London to Brighton averaged 79 minutes for the 50.5 miles.

In the Up direction in 1905 the ten best trains also averaged 79 minutes from Brighton to London. [The figures can only be approximate as the times to London Bridge and Victoria for those trains, which divided at East Croydon were different.] The best Up non stop schedule, 70 minutes was achieved by the 08.45 and 09.55 to London Bridge and the 17.45 to Victoria, the 13.20 non stop was allowed three minutes more. Three trains with two stops en route and one with only one were allowed 82-83 minutes. Apart from the heavy 08.45, another comparatively hard locomotive task was the 07.30, to London Bridge, 90 minutes with stops at Hassocks, Burgess Hill, Redhill, Purley and East Croydon. There were Up fast trains from Worthing at 08.22 and 09.50, the first ex Bognor, with one stop after Worthing reached London Bridge at 09.50, the second ex West Worthing stopped four times after Worthing.

The best trains to and from Portsmouth offered real competition to the L&SW. The 11.35 ex Victoria ran non stop from Clapham Junction to Fratton, the longest non stop run on the LB&SC, 81.7 miles and reached Portsmouth Town in one hour 57 minutes. The 13.42 on Saturdays, with an additional stop at Sutton was allowed an extra eight minutes and the 16.55 ex London Bridge with stops at Arundel, Chichester and Fratton one minute longer again. On weekdays the 13.42 made eight stops which lengthened the journey time by 33 minutes.

The three best Up trains were the 08.45, 09.45 and 15.40 from the Town station, the morning ones reached London in 2 hours 5 minutes, the 08.45 stopped at Fratton, Chichester and Ford Junction, and the 09.45 served Horsham not Ford. The afternoon train, with five stops ran to Victoria in 2 hours 13 minutes.

LB&SC Billinton locomotives

The best Eastborne trains from London were the 17.05 ex London Bridge, 93 minutes with the one stop at Lewes and the 15.22 ex Victoria, which with the same stop was allowed two minutes longer. In the Up direction the 08.30 ex Eastborne, ran non stop to London Bridge in an hour and a half and the 09.55 with a stop at East Croydon was three minutes slower.

The prime new locomotive requirements of the LB&SC at the turn of the century, in addition to a larger express locomotive, were for a Tank-engine capable of handling the increasingly heavy Suburban trains. These were increasingly formed of new bogie coaches, typically a formation consisted of two off 48 feet long Brakes, four off 50 feet long Composites and one off 48 feet Composite First Class to which the odd four wheeled vehicle was often added

Mr. Billinton after "Bessemer" entered service, produced the B4 Class 4-4-0's. Thirty-three were built, 25 of them by Sharp Stewart in Glasgow which led to the Class being known as the "Scotchmen". They had 6 feet 9 inches coupled wheels and two inside cylinders [19 inches diameter by 26 inches stroke, there were some minor variations]. The boiler working pressure was 180 pounds per square inch. [The first three had boilers pressed at 175 pounds per square inch, later ones had this increased to 200 but ultimately they were all standardised at 180] The total heating surface was 1,635 square feet in the first eight, 1,564 square feet in No's 47-51 and 1,611 square feet in the later ones, [1,485 square feet in the boiler tubes and 126 square feet in the firebox]. The fire grate area was 24 square feet, the locomotive weighed 51½ tons, apart from three built at Brighton with lighter frames which weighed 49 tons. [The tenders weighed an additional 35 tons except for the three with the lighter frames, two tons less].

After the introduction of his 0-4-4 Tanks Billinton concentrated on 0-6-2 Tanks [large Radials] for Suburban and semi-fast trains. The first E4 Class 0-6-2 Tank was built in December 1899 and by September 1903, when the last one left Brighton Works there were 75 in service. The E4 Class was a development of the E3 Class, primarily intended for freight operations, they had 5 feet diameter coupled wheels and two inside cylinders [18 inches diameter by 26 inches stroke]. The boiler working pressure was 160 pounds per square inch with a total heating surface of 1,200 square feet [1,107 square feet in the boiler tubes and 93 square feet in the firebox]. The firegrate area was 17½ square feet and the total weight of the locomotive 52½ tons. The E5 Class, a development of the E4 Class were intended for faster running and had coupled wheels 5 feet 6 inches diameter and increased coal and water capacity. The boiler, [similar to that on the C2 Class freight locomotive] had a working pressure of 160 pounds per square inch, [later raised to 175] and a total heating area of 1,212 square feet, [1,107 square feet in the boiler tubes and 105 square feet in the firebox]. The locomotive weighed 58 tons. Water capacity was 1,665 gallons [E4 1,408] and coal capacity 3½ tons [E4 2¼]

LB&SC the 08.45 ex Brighton 1905

The heaviest train on the system was the 08.45 ex Brighton, particularly on Monday mornings. Major Myers [Ref.1] was a regular traveller on the Brighton line for many years and three journeys on the 08.45, with the Monday load, 375 tons Tare [probably 400 tons Gross, reduced to 245 tons after the Victoria portion was slipped at East Croydon] exhibit maximum B4 Class 4-4-0 performances.

Number 49 was driven by Driver Young and No.70 twice by Driver Tompsett. Two of the runs, by No.49 and by No.70 were virtually unchecked until the Redhill avoiding line was left at Coulsdon. The times to passing Preston Park, 1.3 miles, were four and a quarter minutes and 4 minutes 20 seconds after slight checks for signals and for the 3.3 miles up the 1/264 to Clayton Tunnel, six and a half minutes and 6 minutes 5 seconds respectively. Number.70 probably attained 40 miles per hour up the gradient, an EDHP of 700-750. The 7.9 easy miles on to Haywards Heath took 9 minutes 20 seconds and 9 minutes exactly and the 5.6 miles rising at 1/264 [except for a half-mile at 1/293 immediately after Haywards Heath station] to MP32, seven and three quarter minutes and 8 minutes 5 seconds. Leaves on the rails were a problem on the second run. Earlswood, 29.0 miles was passed in 39¼ minutes and 38 minutes 50 seconds, the 4.4 miles from there, adversely graded, [average 1/220; 1/163, 1/200, 1/230 and through the tunnel 1/206] to the Quarry summit were run in 7 minutes 10 seconds and 6 minutes 5 seconds respectively. The average on the second through Quarry tunnel was 38 miles per hour. Quarry Summit, 33.4 miles, was passed in 46 minutes 25 seconds and 44 minutes 55 seconds. On the first, the time to East Croydon was 54¼ minutes and with continual signal checks from there London Bridge was reached 20 seconds inside the 70 minutes schedule. Major Myers computed a Net time of 65¾ minutes, which would have required a time of 12 minutes from passing East Croydon to the stop at London Bridge. Number 70 took 28 minutes 10 seconds from passing Quarry to the London Bridge stop due to continuous signal checks and arrived three minutes late, 64¼ minutes Net.

The third run was badly checked at Preston Park by the proceeding Worthing train, hauled by a "Gladstone" 0-4-2, apparently with a leaking boiler tube. There were further checks at Haywards Heath, before Balcombe Tunnel, at Horley and up to Quarry. East Croydon was passed in 62 minutes 50 seconds and the 10.3 miles to the London Bridge stop were run in 11 minutes 20 seconds. Although the actual running time was 74 minutes 10 seconds, the Net time was only 62¾ minutes. All three journeys were made in 1905.

As a comparison, "Gladstone" 0-4-2 No.216 [Ref.2] with the normal weekday load of 345 tons [reduced by 100 tons at East Croydon] passed Haywards Heath in 18 minutes 17 seconds and Earlswood in 36 minutes 33 seconds. The minimum up to Balcombe Tunnel was 46 miles per hour, the 3.2 miles from Earlswood pass to Quarry signal Box pass took 5 minutes 9 seconds, 69 was attained at Purley.

LB&SC the Sunday Brighton Pullman 1902

The time to East Croydon was 52 minutes 14 seconds, following a bad signal check at South Croydon. [Stoats Nest was passed in 45 minutes 27 seconds from the start, schedule 48 minutes; an unchecked run could have passed East Croydon in 50 to 51 minutes]. London Bridge was reached in 67 minutes 2 seconds from Brighton; the Net time was 62½ minutes, based on the time to Stoats Nest, a realistic figure. These runs suggest a B4 Class 4-4-0 could do with 400 tons what a Gladstone could do with 365 tons.

The 60 minutes Sunday Pullman to Brighton not surprisingly continued to attract Rous Marten's attention and at the General Manager's invitation he made two return journeys in 1902. [Ref.3] On the Down runs B4 Class 4-4-0 No.68 with 250 tons took 63 minutes 53 seconds to complete the journey whereas No.55 with 255 tons was significantly quicker, 57 minutes 17 seconds. Number 55's start to East Croydon was good, 15 minutes 20 seconds, with a minimum of 36 miles per hour at Balham. After East Croydon Rous Marten claimed 55 miles per hour maintained up the 1/264, Earlswood passed in 29 minutes 4 seconds. The average on to Horley was 70 miles per hour and 65 from there to Three Bridges. Haywards Heath was passed in 44 minutes 23 seconds, the average down the grade to Wivelsfield was 74 miles per hour and the minimum up the following 1/264 55, 64.8 the average over the 21.95 miles from Earlswood to Hassocks..

The return journeys were interesting, No.49 with 160 tons attained 60 miles per hour up the 1/264 to Clayton Tunnel and passed Earlswood, 29.0 miles in 29 minutes 58 seconds. The average from Three Bridges to Horley was 74.5 miles per hour. Despite signal checks North of Earlswood and at Norbury, Wandsworth Common, 47.0 miles was passed in 50 minutes 41 seconds before signal checks caused the final four and three-quarter miles to take almost 20 minutes, the overall time to Victoria was 80 minutes 40 seconds. Number 55, with 255 tons attained 54 miles per hour up to Clayton Tunnel, was through Haywards Heath in 15 minutes 49 seconds from the start and averaged 70 from Three Bridges to Horley. The time to Earlswood was 33 minutes 31 seconds, to East Croydon 45 minutes 7 seconds and to Victoria, reached almost two minutes early, 58 minutes 1 second. Number 49 with a continuation from Earlswood to Victoria similar to No.55 could have reached Victoria in 54 minutes.

Billinton arranged for a week of Trials with No.70 in December 1902, on the 22nd on the 08.45 ex Brighton 38 miles per hour was attained on the 1/264 up to Clayton Tunnel. The load was 350½ tons, probably 375 tons Gross. The best of Major Myers' runs gave 40 miles per hour with 400 tons Gross, an EDHP of 690-740. The EDHP developed by No's 55 [55 miles per hour with 255 tons] and 49 [60 with 160] were 700-750 and 550-600 respectively. The Billinton Trial represented 620-670 EDHP. The Trials Register indicates the 38 miles per hour involved an Indicated Horsepower of 963. The locomotive was worked with the Regulator 75 percent open and a cut off of 48 percent to achieve this.

LB&SC B4 performance 1902

It appears that on Rous Marten's journey behind No.55 and on Major Myers with No.70 Full Regulator working with a similar cut off was employed. At 75 percent regulator opening there was 15 pounds per square inch pressure drop between the boiler and the steam chest. At full regulator working later in the run the drop was ten pounds per square inch [170 to 160]. Full regulator opening and a cut off of 30 percent produced an IHP of 922 up the 1/264 through Haywards Heath at 55 miles per hour. Not surprisingly as they were hauling seven and a half times the locomotive weight, the B4's were worked hard to meet the schedule of the 08.45. On the 22nd December No.70 worked back to Brighton on the 17.00 ex London Bridge with a Gross load of approximately 280 tons. The coal consumption for the day was 45lbs per mile including light engine running and 47lbs per mile for the 107.4 miles of revenue mileage. A good figure for a saturated steam locomotive hauling related to its modest dimensions a heavy train.

The Sunday Pullman [which also ran on Christmas Day etc.] became somewhat of a challenge in terms of speed, encouraged no doubt by ideas floated at the time to build a new all electric railway to Brighton offering 90 miles per hour station to station travel. On Sunday December 21st 1901 the Pullman reached Brighton in 53 minutes 49 seconds with B4 Class 4-4-0 No.70. Keymer Junction was passed in 45 minutes. On Christmas Day No.68 completed the course in 56 minutes, a time equalled on February 9th 1902 when Keymer Junction was passed in 46 minutes. The Up journey on Christmas Day took 55 minutes with East Croydon passed in 42 minutes. The ultimate speed demonstration occurred on July 26th 1903 when, as reported many times since No.70 with a light train, 130 tons, ran from Victoria to Brighton in 48 minutes 41 seconds. Speed was maintained at 62 to 64 miles per hour up the 1/264 after Croydon and reached 90 at Wivelsfield. The return trip was completed in 50 minutes 21 seconds with a maximum of 85 miles per hour.

The B4 Class 4-4-0's replaced the "Gladstone" Class 0-4-2's on the hardest duties, they in turn replaced some of the G Class 2-2-0's. A comparison of a B4 replacing a "Gladstone" is afforded by two journeys on the 12.00 ex London Bridge shortly after Christmas in 1901 and 1902 respectively. [Ref.4] The load in each case was the same, 180 tons [three eight wheelers and eight six wheelers]. "Gladstone" No.184 exceeded the 20 minutes schedule to Croydon by 50 seconds, the 2.7 miles New Cross Gate to Forest Hill took 5 minutes 35 seconds. B4 No.43 arrived 45 seconds early at East Croydon with a time of 5 minutes 8 seconds from New Cross Gate to Forest Hill. The "Gladstone" ran poorly to the next stop at Redhill taking 19 minutes, the B4 took 21 minutes 50 seconds but was badly delayed by signals, schedule 16 minutes. The 14 minutes allowance to the next stop at Three Bridges was bettered by 105 and 95 seconds with maxima of 50 and 53 miles per hour. Times from Three Bridges 20.0 miles to Preston Park were 27 minutes and 26 minutes 55 seconds, schedule 28 minutes.

LB&SC Gladstone performance 1904

The initial 4.55 miles to Balcombe, including the rise up to the tunnel were run in 8 minutes 20 seconds and 8 minutes respectively, maxima on both runs were 58 miles per hour. Much of the locomotive performance on the Brighton was, as the timetable demanded, mundane and introducing a new Class of locomotive was not going to change it. The final arrivals at Brighton were 70 seconds and two minutes late. The B4 ran better overall than the "Gladstone" but both indicate two clear characteristics of locomotive performance; lax schedules encourage lax running and changing locomotives for a newer design will not necessarily change the behaviour of footplate crews. Messrs. Young and Tompsett, to name two would have achieved an on time arrival one surmises.

The "Gladstone" Class 0-4-2's used extensively on the Eastborne and Hastings trains, at times disgraced themselves. On February 16th 1904 No.183 whilst hauling the 08.30 to London Bridge developed a fault at Lewes and was piloted to Three Bridges by a D Class 0-4-2 Tank No.28, where D3 Class 0-4-4 Tank No.390 replaced them and ran on to London Bridge, reached 25 minutes late. On May 21st of the same year No.193 on the 12.05 Down Hastings failed at Three Bridges, the replacement was again D3 No.390 which continued to Hastings.

Although the 08.30 Eastborne to London Bridge was a fairly heavy train the 90 minutes schedule was not difficult. Gladstone Class 0-4-2 No.185 with 278 tons, reduced to 198 tons after the Victoria portion was slipped at East Croydon, covered the initial 4.2 miles to Polegate in 6 minutes 20 seconds and passed Lewes, 15.9 miles, in 20³/₄ minutes. The train was 4 seconds within the 35 minutes schedule at Keymer Junction, there was a check for signals at Haywards Heath, Three Bridges was passed in 48 minutes 52 seconds and 67 miles per hour the average over the 8.8 miles to Earlswood. The signal box at Quarry was passed in 61 minutes 50 seconds and despite three separate signal checks between Stoats Nest and East Croydon, London Bridge was reached in 87 minutes 6 seconds, Net time marginally over 80 minutes. [Ref.3]

The heaviest Down Eastborne train, the 17.05 ex London Bridge, slipped a portion for Forest Row at Horley and another at Haywards Heath. The locomotive was usually one from a link consisting of B4 Class 4-4-0's Nos.44, 51, 56, 67, 72 and 74 and "Gladstone" Class 0-4-2 No.217. A B4 could maintain the 93 minutes schedule to Eastborne, including the stop at Lewes, even if three or four minutes were lost due to signal checks before East Croydon, which was often the case, whereas with No.217, not all the lateness was recoverable.

Gladstone Class 4-4-0's hauled many of the London to Brighton trains until around 1906, F.S.Bond timed some during the period 1904-5. [Ref.6]. Numbers 184 and 193, each with 190 tons ran from London Bridge to the first stop at East Croydon, with the 14.00, in 17¹/₄ and 18¹/₂ minutes respectively.

LB&SC Gladstone performance

Number 183 after slowing for a PWR slack at New Cross Gate accelerated on the 1/100 to 32 miles per hour [this entailed an EDHP of at least 560–610]. From the East Croydon restart times to Quarry summit, 6.9 miles, were 11 minutes 55 seconds and 11 minutes 40 seconds. Number 183 attained 42 miles per hour on the 1/264 and fell away to 40 on the 1/165 before the tunnel. On the descent from Quarry No.184 averaged 70 miles per hour between Earlswood and Horley and passed Three Bridges, 19.0 miles, after a signal check before the station, in 24 minutes 10 seconds and then with easy running afterwards reached Preston Park almost two and a half minutes within schedule, actual time 51 minutes 35 seconds. Number 183, checked by a PWR slack at Horley, was 3 minutes 40 seconds behind No.183 at Haywards Heath, but despite a signal check at Hassocks was still one and three quarter minutes early at Preston Park. The Net times were 50½ minutes and 49¾ minutes although Mr. Bond suggested that on the first run No.184 could have achieved with a normal finish a time of 48 minutes.

A “Gladstone” Class 0-4-2 No.190, on the Saturday 17.00 ex London Bridge with 190 tons ran to the Brighton stop half a minute within the 65 minutes schedule. Speeds were moderate initially, 24 miles per hour at Forest Hill, then 42 sustained up to Quarry after 47 had been reached on the easier gradient at Stoats Nest [an average EDHP of 475–525 from Croydon to Quarry]. The minima at Balcombe, after PWR slacks at Horley and Clayton were 47 miles per hour, the maximum downhill approximately 65. Number 198 made a faster run on the 18.00 ex London Bridge with 240 tons after restarting from Redhill, Horley, 5.0 miles at the bottom of the downhill grade passed in 6 minutes 40 seconds, Haywards Heath in 21 minutes, 65 miles per hour averaged over the 3.8 miles to Burgess Hill, the minimum at Clayton about 47. Preston Park, 28.6 miles from Redhill was reached in 34 minutes 10 seconds, a gain on schedule of six minutes.

Another record on the Saturday 17.00 ex London Bridge [Ref.7] with “Gladstone” Class 0-4-2 No.220 and 220 tons [Did the train weight always match the locomotive number on the Saturday 17.00?] produced, helped by a clear road, a time to Brighton of 61 minutes 50 seconds. The start this time by comparison was very brisk, Forest Hill passed at 39 miles per hour, after 55 at New Cross Gate. The 3.8 miles from Stoats Nest to Quarry were run at an average of 47.5 miles per hour with the result that the train was two and a quarter minutes early past Quarry, schedule 27 minutes. It seems likely that the recorder of this run had invited the footplate crew “to have a go”. The resulting performance was apparently close to the maximum for a “Gladstone”. The recorder noted that after this, matters were taken gently between Earlswood and Three Bridges, the minimum at Balcombe was 50 miles per hour. Haywards Heath was passed in 47 minutes 9 seconds and the average from there down to Keymer Junction was 71 miles per hour.

LB&SC Gladstone maximum speeds

There was a widely held belief during the eighteen nineties, that the "Gladstone" Class 0-4-2's were unsteady above 65 miles per hour, to disprove this several instances were quoted in the early 1900's where the locomotives travelled somewhat faster. This did not answer the question as to whether the absence of a leading pony truck led to them riding badly at speed, it merely indicated that if it did footplate crews were prepared to live with it.

"Gladstone" Class 0-4-2 No.174 on the 15.50 non stop to Brighton from Victoria was delayed as far as Stoats Nest by the late running through train from Liverpool and Manchester. This ran via Redhill, enabling the 15.50 to pass it whilst traversing the Quarry line. Number 174 took 39 minutes 31 seconds to Earlswood, where it was five and a half minutes behind schedule. The average over the next 7.8 miles to Three Bridges was 69 miles per hour before speed fell away to 56 up to Balcombe tunnel and then rose to 78 before Keymer Junction. The Earlswood to Haywards Heath time was 16 minutes 25 seconds and to Hassocks, 21.7 miles from Earlswood 21 minutes 35 seconds, Brighton was reached four seconds within the 70 minutes schedule. The locomotive was credited with a maintained 56 miles per hour up the 1/264 on the approach to Balcombe Tunnel which with 165 tons required an EDHP of 500-550. On the occasion No.220 averaged 47.5 miles per hour up the last three and three quarter miles to Quarry Summit, equivalent to 50 miles per hour maintained up 1/264, the EDHP was 550-600.

Mr. Bond gave details of two journeys on the 17.45 ex Brighton, "Gladstone" Class 0-4-2's No.174 with 255 tons and No.193 with 200 tons. They passed Clayton in 9 minutes 20 seconds and 9 minutes 10 seconds at 42 and 45 miles per hour respectively, an EDHP of 450-500 and 425-475. On the second occasion the locomotive was driven with full regulator and 27 percent cut off, the boiler pressure fell from 142 pounds per square inch leaving Brighton to 120 at Clayton summit. On the first run the maximum at Burgess Hill was 61 miles per hour, the minimum at Balcombe 45, the maximum after Three Bridges 66 and at Quarry, 33.4 miles passed in 41 minutes 40 seconds, 41 miles per hour minimum. Signal checks afterwards caused the 50.4 miles to Grosvenor Road to take 63 minutes 40 seconds but a non stop run to Victoria could have been completed in 63 minutes. Number 193 passed Balcombe Tunnel North at a minimum of 48 miles per hour, 24 minutes 20 seconds from Brighton but was then eased and with various signal checks ultimately came to a halt at Clapham Junction in 62 minutes 10 seconds, 60 minutes Net.

A lively run was observed in 1906 on the 12.35 Worthing to London Bridge. [Ref.8] The recorder, at pains to emphasise the train was nine minutes late when it left Three Bridges, at 13.48 on a 27 minutes schedule over the 19.0 miles to East Croydon the next stop. A "Gladstone" Class 0-4-2 No.179, with 125 tons passed Quarry summit, 10.8 miles, in 11 minutes 43 seconds from the start.

LB&SC G Class Singles on the Tunbridge Wells route

The speed at Quarry was 54 miles per hour, the average afterwards between Purley and Purley Oaks was 74 and the stop at East Croydon effected in 19 minutes 8 seconds. One hopes that the driver responsible for this joyous exhibition was not admonished and that the recorder's "cri de coeur" that it was a timekeeping run was taken into account. A "Gladstone" with a light train could significantly improve on generous LB&SC schedules. Number 186 with 120 tons on the 19.14 from Fratton, schedule 79 minutes for the 55.5 miles to Three Bridges achieved a Net time of 65 minutes. The level 17.7 miles from Havant to Ford were run in 17 minutes 49 seconds. A "Gladstone" in 1905 hauled the daytime Newhaven Boat Train. Number 179 with 185 tons on the 10.00 ex Victoria passed Balham in the good time of 8 minutes 10 seconds, touched 61 miles per hour at Balham and stops at East Croydon in 16 minutes 2 seconds. The London Bridge portion, attached at East Croydon, increased the load to 265 tons and the next stop at Lewes was reached three and a half minutes early, the average over the 46.2 miles from East Croydon was 51 miles per hour.

At the beginning of the Century most trains on the Tunbridge Wells route were hauled by G Class 2-2-2 singles. Four singles including the original one, No.325, were allocated to Tunbridge Wells' depot, additionally three more at Brighton, at Battersea and New Cross frequently ran to and from Tunbridge Wells. The 07.20 Tunbridge Wells to London was usually worked by a single and if No.325 with Driver Lusted was at the controls, "a good run could be expected". Maximum speeds were normally 65 miles per hour between Riddlesdown and Sanderstead and 60 between Thornton Heath and Clapham Junction. [Ref.9] The 08.22 from Oxted also with a G Class single, was a New Cross duty, the locomotive ran Down light early in the morning. The 15.45 ex Victoria, non stop to Groombridge in 53 minutes was regularly observed passing Oxted behind a single at high speed, 35 minutes after leaving Victoria. This involved passing MP17¼ in 31 to 32 minutes, almost entirely uphill from the Victoria start. Number 325 often hauled this train and on two occasions with 200 and 220 tons reached Groombridge in 48 and 49 minutes.

Whilst the ongoing use of the "Gladstones" on many main line trains was logical, the continued use of the G Class 2-2-2 singles, at times on heavily loaded trains, was more surprising. A New Cross allocated G Class regularly worked the 14.05 London Bridge to Eastborne and Hastings with loads of 200 to 300 tons and equally regularly lost time, often as much as half an hour. [Ref.10]. They frequently appeared on the more manageable Saturday 17.00 to Brighton. In September 1904 No.348 with 160 tons ran to Brighton in 60 minutes 53 seconds, Hassocks, 43.7 miles was passed in 51¼ minutes. In October of the same year No.350 with 150 tons took 64 minutes 37 seconds, only 57 minutes Net.

They also, despite the advent of the 4-4-0's still appeared at times on the Portsmouth route.

LB&SC Stroudley Tank's on London Suburban trains

Number 349 with 110 tons ran the 81.8 miles from Clapham Junction to Fratton in a Net time of 98 minutes and maintained a steady 64 miles per hour on the long flat stretch parallel to the South Coast.

The London Suburban trains became a harder haulage proposition with the delivery of more and more bogie coaches during the first five years of the Century. Stroudley's renowned 0-6-0 Tank's, "The Terriers", previously ubiquitous on the South London line service were replaced by larger locomotives. Simplistically the E4 Class 0-6-2 Tank's and later the E5 Class replaced the Stroudley D Class 0-4-2 Tank's which in turn had replaced the Terriers. As is inevitable the practice often failed to meet the theory and the D's continued on occasions to fulfil most duties. On the Country branches, the trickle down effect led to the replacement of four-wheeled carriage stock by six-wheeled stock and to haul the resultant increased loads D Tank's replaced Terriers.

In the early years the D Class 0-4-2 Tank's were double manned, but one link, "The Lavender Gang", had their own engine and worked country turns from London such as to Brighton via Horsham, or to East Grinstead and Tunbridge Wells. They also handled block trains of seven bogies, often supplemented with one or two other vehicles, apparently satisfactorily. A.G.Williamson [Ref.11] recounted how when working up the 1/100 from New Cross, controls were set at half Regulator, cut off brought back to 45 percent and these settings maintained until the train was half way along the platform at the next station, Honor Oak Park. Steam was then shut off and the train brought to a rapid halt. Much of their work on the level was done at half Regulator and 22 percent cut off and in the "off peak" period when running with half a block, [less than 100 tons] the gear would be brought back to half a turn from the mid point, c.15 percent cut off.

The Terrier Class 0-6-0 Tank's at times also handled the seven coach block trains [c.170 tons] Number 668, "Clapham", was sold to the L&SW Railway [with No.646] for use on the Lyme Regis branch. Number 668, after a General overhaul and before delivery to the South Western was tested on the 07.10 Victoria to Stoats Nest via Crystal Palace. This involved hauling the 170 tons train over the 16.5 miles with 14 intermediate stops, including time spent at the stations, in 66 minutes. The various station starts included, the rise up to Grosvenor Bridge leaving Victoria, the 1/94 from Wandsworth Common, the 1/111 from Streatham [now called Streatham Hill], the 1/69 from West Norwood and the 1/103 from Gypsy Hill. The South Western's two inspectors travelling on the train were reputedly well pleased with what they saw.

The Terrier's continued to demonstrate their speed worthiness, despite coupled wheels of only 4 feet diameter. Sixty miles per hour or more was recorded behind them on the London Bridge portion of the Newhaven Boat Train when descending Forest Hill bank.

LB&SC introduction of the Marsh Atlantic's

Sixty miles per hour was also recorded behind "Terriers" between Brighton and Worthing on the auto trains and between Hurst Green Junction and Edenbridge on the Oxted to Tunbridge Wells direct line.

The Billinton 0-6-2 Tank's, as already noted worked alongside the D Tank's and were very highly regarded, particularly the E5 Class, which despite the larger diameter driving wheels accelerated better than the E4's. At higher speeds all the Billinton Radials were hamstrung by their front-end design [Ref.12].

Robert Billinton, who died in November 1904, like Stroudley before him suddenly, left the LB&SC Board in a quandary over the selection of urgently required new larger express locomotives. It is not easy to envisage what Billinton would have done had he lived. Douglas Earle Marsh however, the newly appointed Locomotive, Carriage and Wagon Superintendent, ordered five Atlantic [4-4-2] type locomotives from Kitsons, Unsurprisingly, as Marsh was previously deputy to H.G.Ivatt at Doncaster, the locomotives were very similar to the Great Northern Railway's large boilered "Atlantic's". Indeed some of the drawings, supplied to Kitsons were taken directly from Doncaster. The H1 Class 4-4-2's had 6 feet 7½ inches diameter coupled wheels and two outside cylinders, [18½ inches diameter by 26 inches stroke]; No.39 had 19 inches diameter cylinders. The boiler had a working pressure of 200 pounds per square inch and a total heating area of 2,455 square feet [2,318 square feet in the boiler tubes and 137 square feet in the firebox]. The fire grate area was 31 square feet and the locomotive weighed 67 tons, the tender another 39 tons. These locomotives represented a significant increase in power over existing LB&SC locomotives and were quickly assimilated into the locomotive fleet. They were initially run in on the Brighton to Portsmouth service.

There are some early records of performance behind H1 Class 4-4-2's Nos.37 and 38. [Nos.40 and 41 were still being delivered at the time.] [Ref.12]. Number 37 on the 07.30 Brighton to London Bridge, after the Redhill stop, accelerated the 382 tons Tare train to 45 miles per hour on the 1/264 to Merstham. Assuming the Gross load was 410 tons, an EDHP of 875-925 [More, if the train was still accelerating] The 7.4 miles from Redhill to Purley the next stop were run in 10 minutes 29 seconds, schedule 12 minutes. With the load reduced to 207 tons at East Croydon, 225 tons Gross, the 10.1 miles to London Bridge were run in 14 minutes 29 seconds including signal checks at New Cross and outside the Terminus, the maximum was 72 miles per hour. Number 37 with the Saturday 19.15 ex Victoria and 285 tons ran from East Croydon to Preston Park, the next stop in 47 minutes 51 seconds, including three and a half minutes lost by signal checks, the schedule an undemanding 57 minutes. The following day, a Sunday, the same locomotive with a light train of 195 tons on the 11.05 ex Victoria ran from East Croydon to Brighton, 40.5 miles, in 47 minutes 23 seconds, 42 minutes Net, schedule 50 minutes.

LB&SC performance H1 Class 4-4-2's Nos.37 and 38

Number 38 with 175 tons [presumably the Saturday train] on the 17.00 ex London Bridge passed New Cross in 5 minutes 6 seconds, ran the 2.7 miles of Forest Hill bank in three and a half minutes and despite signal checks at Norwood Junction and South Croydon, passed Quarry Box in 24 minutes 56 seconds. There was a further signal check at Earlswood and after a PWR slack at Horley the train accelerated from 33 to 57 miles per hour up the gradient to Balcombe tunnel. Seventy-seven miles per hour was attained before Wivelsfield and Brighton reached one minute early in 63 minutes 57 seconds from London Bridge, 57 to 58 minutes Net. Returning on the 19.30 ex Brighton with 275 tons Gross No.38 ran to the first stop at South Croydon in 51 minutes, a gain of five minutes on the relaxed schedule. Number 38 on the 16.00 ex London Bridge with 305 tons reached 54 miles per hour at New Cross and climbed Forest Hill bank in 4 minutes 28 seconds. Clearly LB&SC schedules, apart from the heavy Up morning trains were unlikely to challenge such locomotives.

The hardest schedule on the Brighton line probably remained the Sunday Pullman, by 1907 seven Pullman cars and two six wheeled vans, 240 to 250 tons Gross. Rous Marten [Ref.14] was keen to sample the new H1 Class 4-4-2 Atlantics on this train. Number 38 with Driver Vallance encountered a slowing to 10 miles per hour for a PWR slack at Stoats Nest, a reduction to 50 from Earlswood to Three Bridges and another PWR at Clayton tunnel. Even the presence of Rous Marten could not avoid a late arrival, three minutes to be exact; the maximum at Wivelsfield was 72 miles per hour.

What a Saturated H1 Class 4-4-2 could do was shown by the trial of June 30 when Brighton was reached in 51¾ minutes. [Ref.15] The Trials Register indicates the maximum IHP was developed between Purley and Stoats Nest when the boiler pressure was 182 pounds per square inch and the regulator half open. Two readings with cut off set at 45 and 50 percent and speeds at 55 and 53 miles per hour gave IHP's of 1,381 and 1,402. The maximum reached during the trial was 86.5 miles per hour at Wivelsfield. Boiler pressure, 200 pounds per square inch on departure from Victoria fell such that at Burgess Hill and Hassocks it was only 130 pounds per square inch at which stage the locomotive was being driven with the regulator full open and the cut off at 45 percent. Coal consumption was 41.8 lbs. per mile, there is a note to the effect that coal was burnt erratically, that there was much clinker and ash. Whilst on publication of the Register, comment was made that the driver had little trouble in working the train, in practice it appears quite the reverse, indeed if the driver sensed no trouble he wasn't aware what his fireman was doing. Probably the fire banked too high at Victoria was then pulled about in the early stages of the run so that the locomotive had to be pounded up to Balcombe, Full regulator and 45 percent cut off to achieve a minimum of 60 miles per hour. The IHP here was 1,280 with the boiler pressure down to 161 pounds per square inch. Speed was limited to 55 miles per hour past Horley due to the widening works South of Earlswood.

LB&SC early Marsh 4-4-2 Tank's, I1 Class

Rous Marten's return journey was a perfect example of what can happen when there is a significant increase in motive power without a change in schedule or increase in the weight of the train. H1 Class 4-4-2 No.40 driven by Pont passed Haywards Heath in 15 minutes 5 seconds, sustained 60 to 62 miles per hour up to Balcombe, coasted downhill past Horley at the same speed and only reached a maximum of 65 between Purley and Purley Oaks. There was a slight signal check at Windmill Bridge Junction after which 60 miles per hour was attained at Thornton Heath before an arrival at Victoria, five and a half minutes early, the actual time was 54 minutes 25 seconds. The average speed from Brighton to Victoria, 56 miles per hour, was achieved without exceeding 65 miles per hour. No.40 developed an EDHP of 850-900 throughout the eight miles from Wivelsfield to Balcombe tunnel signal box.

The next, assuming the Atlantics are credited to him, Marsh passenger design were his various Classes of 4-4-2 Tank's. The first the I1 Class, was intended to replace the D Class 0-4-2 Tank's, considered too small and the E4 and E5 Class 0-6-2 Radial Tank's, considered unsuitable due to the absence of a leading bogie. It has been hypothesised that Marsh decided the large number of 0-6-2 Tank's awaiting repair at Brighton works, when he took up the reins, indicated they required more frequent maintenance due to the lack of a leading bogie. With this in mind a number were converted to a 2-4-2 configuration, which did not reduce maintenance requirements but did reduce their effectiveness. He also observed that the L&SW and the SE&C Railways managed their Suburban service with four coupled Tank's. In practice L&SW stations were further apart so initial acceleration was not as important and the SE&C due to its impecunious state still employed older and therefore lighter carriage stock. [Ref.16]

The I1 Class had 5 feet 6 inches diameter coupled wheels and two inside cylinders [17½ inches diameter by 26 inches stroke]. The boiler working pressure was 170 pounds per square inch with a total heating area of 1,041 square feet. [948 square feet in the boiler tubes and 93 square feet in the firebox] The firegrate area was 17½ square feet and the locomotive weighed 66 tons. Coal and water capacities were three tons and 2,000 gallons respectively. Although Marsh employed a front end design derived from his old boss Ivatt and thereby hoped to overcome the lack of freedom in the 0-6-2 Tank's when running quickly he nullified this by utilising a quite inadequate boiler.

The limitations of the I1 Class 4-4-2's were soon common knowledge and indeed Marsh and L.Billinton witnessed the problem first hand when they both travelled on the footplate of No.600 when it hauled the Royal Train to Epsom Downs on Derby Day. With six coaches, the I1 Tank struggled on the difficult gradients of the branch from Sutton. The locomotive apparently had to be nursed to avoid stalling and also lost time on the easy return journey that evening.

LB&SC further 4-4-2 Tank designs

Marsh built twenty I1 Class 4-4-2's before modifying the design. The resultant I2 Class had the same cylinders, coupled wheels and firegrate as the I1's, the boiler was about five percent larger. The total heating area was 1,097 square feet [1,003 square feet in the boiler tubes and 94 square feet in the firebox] Ten I2's were built followed by five of the I4 Class [essentially the I2 fitted with boilers with a superheater. It is believed the original intention was to fit the I2 Class with superheated boilers] The I4 boiler had a working pressure of 160 pounds per square inch and the total heating area was 1,108 square feet, [799 square feet in the boiler tubes, 94 square feet in the firebox and 215 square feet in the superheater]. The weights of the I2 and I4's were 68½ and 70 tons respectively. Water capacity was 2,238 gallons. The I4 Class were fitted with larger cylinders, 20 inches diameter by 26 inches stroke. Marsh appeared incapable of modifying a design without introducing further changes thus it became impossible to assess the effectiveness or otherwise of the original modification.

However at the end of October 1907 the first I3 Class 4-4-2 left Brighton works. This, essentially a B4 Class boiler mounted on a modified I1 Class chassis, had 6 feet 9 inches diameter coupled wheels and two inside cylinders, [19 inches diameter by 26 inches stroke]. The boiler working pressure was 180 pounds per square inch and the total heating area 1,625 square feet [1,499 square feet in the boiler tubes and 126 square feet in the firebox]. The firegrate area was 24 square feet and the locomotive weighed 73 tons.

The first I3 Class 4-4-2 tank, No.21 was an immediate success on the heaviest duties. On January 15th it hauled the 08.45 ex Brighton, 359 tons, probably 390 tons Gross and kept the 70 minutes schedule to London Bridge exactly including a PWR slack to 15 miles per hour at Blechingley Bridge and another to five at Bricklayers Arms Junction. From the Brighton start Haywards Heath was passed in 19 minutes, Three Bridges in 27 minutes, Quarry in 41 minutes and East Croydon in 54 minutes, the Net time was reckoned at 65 minutes. Four days later No.21 arrived at Brighton five minutes early with the Sunday Pullman.

Number 21 was clearly capable of handling the Company's hardest assignments although coal consumption was heavy, at 43.2 lbs. per mile greater than figures obtained for the B4 Class and the Atlantics. Consequent to these findings Marsh built the next I3 Class 4-4-2, No.22, with a boiler with superheater. The boiler working pressure was 160 pounds per square inch [initially 140 pounds per square inch] and the total heating area 1,574 square feet [1,143 square feet in the boiler tubes, 126 square feet in the firebox and 305 square feet in the superheater]. Marsh found it necessary to increase the diameter of the cylinders to 21 inches but fortunately incorporated overhead ten inches diameter piston valves. Trials, recorded in the Register, in the autumn of 1908 compared the saturated and superheated locomotives, Nos. 21 and 22 on the 08.45 ex Brighton, with the standard 359 tons Tare, 390 tons Gross train.

LB&SC success with the superheated 13

They attained 40 and 41 miles per hour up to Clayton. The recorded IHP was 1,001 and 1,010 and assuming acceleration had finished, the EDHP was in the range 665-715 and 690-740. Number 21's regulator was three quarters open, cut off 47 percent, boiler pressure 173 pounds per square inch, 17 less in the steam chest, equivalent figures on the superheated locomotive were, 40 per cent cut off, 160 pounds per square inch with a loss of eight. Past Haywards Heath both locomotives were driven with full regulator and 30 per cent cut off, speeds were 58 and 60 miles per hour, IHP 953 and 981, boiler pressure 174 and 158 pounds per square inch, six pounds loss to the steam chest. The superheated locomotive ran better between Hassocks and Horley, the saturated locomotive driven on full regulator over this stretch, cut off was 35 percent at Hassocks, 30 percent afterwards, the superheated locomotive on full regulator, 30 percent cut off to Haywards Heath and 25 percent afterwards. Comparative speeds were 54 and 56 miles per hour at Hassocks, 58 and 60 at Haywards Heath, 59 and 63 at Three Bridges and 67 and 71 at Horley. Coal consumption was 35.1 lbs. and 31.2 lbs. per mile for the superheated locomotive. Marsh had produced a winner.

Twenty-seven I3 Class 4-4-2 Tank's were built from 1907 to 1913, No.21 had 6 feet 9 inches coupled wheels the others 6 feet 7½ inches. Six were built with saturated steam boilers and 19 inches diameter cylinders after No.21 [the seven were fitted subsequently with superheated boilers between 1919 and 1927]. The 20 superheated locomotives all had 21 inches diameter cylinders. Ultimately [post 1927] the Class consisted of four with 19 inches diameter cylinders, one with 20 inches and the rest with 21 inches. Also eventually, after some variations, the Class had boilers with a total heating surface of 1,500 square feet [1,126 square feet in the boiler tubes, 120 square feet in the firebox and 254 square feet in the superheater]. The firegrate area was 23¾ square feet, the locomotive weighed 75½ tons.

During the first months in service I3 Class 4-4-2 No.22 regularly worked the daytime Newhaven Boat Train. A brief record exists which suggests this was an easy assignment. [Ref.17] With 245 tons the 19 minutes schedule from Victoria to East Croydon was improved on by more than two minutes, 16 minutes 52 seconds and the 46.2 miles to Newhaven Harbour, the next stop took 59 minutes 22 seconds, schedule 61 minutes.

Number 21 hauled the Sunday Pullman on successive Sundays in January 1908. On January 12th Brighton was reached in the level hour and on the 19th and as noted already, a special effort was made. Clapham Junction was passed in 5 minutes 2 seconds and East Croydon in 15 minutes 4 seconds including a PWR slack to 10 miles per hour after Clapham Junction. There was another PWR slack at Stoats Nest despite which Quarry was passed in 24¼ minutes and a third at Blechingley Bridge to 15 miles per hour. The time to Earlswood was 27 minutes 21 seconds.

LB&SC inauguration of the Weekdays 60 minutes Brighton schedule

The 29 miles from Earlswood to Brighton were run in 28¼ minutes with an average speed from Earlswood to Preston Park of approximately 67 miles per hour including the uphill stretches to Balcombe tunnel and Clayton. Details of this run are sparse and conflicting. [Ref.18]. The article in "Railway Notes" says "We are not at liberty to quote the maximum speed but we cannot help thinking that such high speeds have never been obtained before by a Tank [engine]" It seems likely 80 miles per hour or more was reached. The load was 242 tons Tare, probably 255 tons Gross. In the opposite direction No.21 passed Keymer Junction in 12 minutes 52 seconds, Three Bridges in 23 minutes 20 seconds and Earlswood in 29 minutes 26 seconds. The average from Three Bridges to Earlswood was 76 miles per hour. Quarry was passed in 33 minutes 17 seconds and with 70 miles per hour at Purley Oaks, East Croydon in 42¼ minutes. The continuation to Victoria was taken easily resulting in a final time to Victoria of 56 minutes 41 seconds, the load 217 tons, 230 tons Gross.

1908 was the year, after a decade of 60 minutes Sunday Pullman running to Brighton, when a 60 minutes schedule appeared on weekdays. From 1908 to 1913 the LB&SC steadily improved its services on all three main lines i.e. to Eastborne and Hastings, Brighton and Worthing, Bognor and Portsmouth. In summer 1912 there were nine weekday non stop trains from London to Brighton, eight from Victoria and one from London Bridge. The 11.00, 15.00 and 18.35 ex Victoria and the 17.00 ex London Bridge ran to Brighton in the even hour, the 13.55, 15.40 16.30 and 17.35 ex Victoria in 65 minutes, the 11.40 and 20.30 ex Victoria, with one stop en route in 70 minutes. The 16.00 and 18.00 ex London Bridge with one stop, at Redhill and Horley respectively, reached Brighton in 72 and 75 minutes. The 09.00 and 10.05 ex Victoria made three and two stops respectively and were allowed 80 and 79 minutes to Brighton.

There were eight non stop trains from Brighton to London, three to London Bridge and five to Victoria. The 12.20, 13.20 and 17.45 ran to Victoria in 60 minutes, the 07.15 to London Bridge and the 08.10 to Victoria in 65 minutes, the 08.45 and 09.55 to London Bridge and the 09.45 to Victoria in 70, 71 and 70 minutes respectively. The 08.15 and the 09.20 to London Bridge made one intermediate stop and were allowed 68 and 71 minutes respectively. The 15.40 ran non stop to East Croydon and with a further stop at Norwood Junction reached London Bridge in 73 minutes, the following 15.50 ran first stop Clapham Junction and took 65 minutes to Victoria. The 22.00 with stops at Haywards Heath and East Croydon reached Victoria at 23.11.

The five best Down trains to Portsmouth, the 08.55, 11.35, 13.35 and 18.15 ex Victoria and the 16.50 ex London Bridge were allowed 130, 118, 129, 126 and 140 minutes to Portsmouth Town with four, two, four, six and three stops en route. In the Up direction the five best from Portsmouth to London were the 08.47 to London Bridge and the 11.00, 15.20, 16.50 and 19.15 to Victoria.

LB&SC the Pacific Tanks

They were allowed 127, 120, 125, 120 and 131 minutes overall with five, three, four, three and four stops.

The Eastborne service was significantly improved in 1913, seven fast trains during the summer, 11.15, 15.20, 17.20 and 00.05 ex Victoria and 17.05 ex London Bridge in exactly 90 minutes with one stop, the 08.20 ex Victoria in 97 minutes with two stops and the 15.20 with one stop 95 minutes. In the Up direction the 09.35, 11.45 and 18.15 from Eastborne ran non stop to Victoria in 85 minutes, the 14.25 and 17.10 with one stop in 90 minutes.

Locomotive development continued in parallel with Timetable improvements. Marsh produced at the end of December 1910, J Class 4-6-2 Tank No.325. It had 6 feet 7 inches diameter coupled wheels with two outside cylinders, [21 inches diameter by 26 inches stroke]. The boiler working pressure was 170 pounds per square inch and the total heating area 1,944 square feet [1,462 square feet in the boiler tubes, 125 square feet in the firebox and 357 square feet in the superheater]. The firegrate area was 25¼ square feet. Number 326 built in 1912, incorporated some design modifications by L.B.Billinton, in particular incorporating Walschaerts valve gear rather than Stephenson. The two locomotives weighed 89 and 87 tons. Both carried three tons of coal, No.325's water capacity was changed several times in the first few months of operation but ultimately was slightly over 2,000 gallons, No.326 slightly less than 2,000 gallons.

The J Class could have become a LB&SC standard alongside the I3 Class had not Marsh been taken ill, he resigned in July 1911, Robert Billinton's son L.B.Billinton took up the reins after a short delay. Whilst Marsh was ill six more Atlantic's were placed on order, the H2 Class 4-4-2 which had certain differences from the original five H1's. The cylinders were 21 inches diameter by 26 inches stroke, the boiler working pressure 170 pounds per square inch, total heating area 2,529 square feet [1,913 square feet in the boiler tubes, 137 square feet in the firebox and 479 square feet in the superheater]. The firegrate area was 31 square feet, the locomotive weighed 70 tons, the tender an additional 39 tons.

Billinton completed one express passenger design, the L Class 4-6-4 Tank's and a mixed traffic design, the K Class 2-6-0 before the outbreak of War. The first K Class mogul entered service in September 1913. They had 5 feet 6 inches diameter coupled wheels and two outside cylinders, [21 inches by 26 inches diameter]. The boiler working pressure was 170 pounds per square inch and the total heating area 1,573 square feet [1,155 square feet in the boiler tubes, 139 square feet in the firebox and 279 square feet in the superheater]. The firegrate area was 25 square feet, the locomotive weighed 64 tons, the tender another 41½ tons. The first two Baltic tanks were built in April and September 1914, the rest of the Class appeared after the end of the War. The coupled wheels were 6 feet 9 inches diameter and they had two outside cylinders

LB&SC the last G Class single duties

Cylinders were 22 inches diameter by 26 inches stroke, boiler working pressure 170 pounds per square inch, total heating surface 2,070 square feet [1,535 square feet in the boiler tubes, 152 square feet in the firebox and 383 square feet in the firebox]. The firegrate area was 27 square feet, the total weight of the locomotive 98 tons, coal capacity three and a half tons, water 2,700 gallons. The LB&SC had moved in a decade from relying primarily, on Stroudley Singles and "Gladstones" to Atlantics, B4's [and the Tank version the I3's], the two J Class Pacific Tanks, with the prospect of the Baltic Tank's to come for its express passenger trains.

The last G Class 2-2-2 single in service, No.329A was withdrawn in May 1914, having outlived the rest of the Class by more than three years. In the period 1910 to 1914 it regularly hauled the Eastborne Sunday Pullman in each direction, there was a period when it hauled the train on twenty consecutive Sundays. A log of a journey timed by M.F.Long [Ref.17] with the standard formation of three Pullman coaches plus two brake vans included an arrival at Eastborne two and a quarter minutes early, actual time from Victoria to Eastborne 87 minutes 41 seconds. The run exhibited very even speeds, the maximum of 65 miles per hour attained between MP's 36 and 39, either side of Haywards Heath. [Long commenting on the run noted that he had travelled many thousands of miles behind G Class singles and had never recorded greater than 75 miles per hour]. Minima were 39 miles per hour at Quarry and 49 at Balcombe. Quarry summit was passed in 30 minutes 8 seconds from Victoria, one minute late, Three Bridges in 41 minutes exactly, to time and the slack for Keymer Junction was taken in 53½ minutes [30 seconds early]. At Lewes it was two minutes early, 65 minutes 6 seconds. The only out of course checks were for signals [slight] at Balham and Selhurst.

Single No.345, "Plumpton", was timed by J.N.Maskelyne in May 1910, some nine months before its withdrawal from service, with the 11.10 Tunbridge Wells to Victoria formed of five eight wheelers and two six wheeled vans. [Ref.20] The 5.3 miles uphill, from Edenbridge to the next stop at Oxted, were run in 8 minutes 55 seconds, this probably entailed 40 miles per hour at least up the gradient to Hurst Green Junction, half of the 4.2 miles to this point is at 1/110 or steeper. From Oxted the single covered the 9.9 miles to the East Croydon stop in 13 minutes 22 seconds. [The first 2.8 miles from Oxted are uphill, 1/100 for the first half a mile and then at 1/132 through the tunnel.] The maximum on the subsequent descent to Sanderstead was 68 miles per hour. This at the time was the quickest Maskelyne had timed between Oxted and East Croydon, although later, September 1913 he noted a B4 Class 4-4-0, with the same weight of train complete the distance in 15 seconds less. The last time he travelled behind a single on the Tunbridge Wells to London route was behind No.329 in September 1913, with the 18.03 Victoria to Tunbridge Wells, he travelled as far as Edenbridge. Number 329 at this time still regularly hauled the 15.45 Victoria to Tunbridge Wells, first stop Groombridge, 34.1 miles from Victoria, in 53 minutes.

LB&SC Gladstone performance 1908-1914

The "Gladstone" Class 0-4-2's continued to haul some fast trains and frequently deputised for larger and newer engines. Major Myers timed No.194 on the 18.00 ex London Bridge with a heavy train of 325 tons. It reached 48 miles per hour at New Cross, fell to 27 at Forest Hill and rose to 52 at East Croydon. There were signal checks after Croydon but with 64 miles per hour at Earlswood it arrived on time at Horley, 38 minutes from London Bridge. This train was allowed a generous 36 minutes for the 24.9 miles from Horley to Brighton, which it cut to 31 minutes 37 seconds. From the restart it attained 41 miles per hour on the 1/264 to Balcombe Tunnel North, an EDHP of 575-625. At this time No.194 carried a Vulcan built boiler. [Between 1900 and 1909 a total of 28 new boilers were built; by the Vulcan foundry, the North British Locomotive works and at Brighton. Dimensions varied, those that were outsourced had a total heating area of 1,320 square feet, a working pressure of 160 pounds per square inch and a firegrate area of 20 or 20½ square feet. Those built at Brighton, 1,250 square feet, 170 pounds per square inch working pressure and 20¾ square feet. The new boilers, although smaller, were considered better steam producers than the original Stroudley ones]

Two runs with Marsh re-boilered "Gladstone" Class 0-4-2's, in the Up direction, indicate the capabilities of these Victorian masterpieces in their new guise. [Ref.21] On the 09.20 ex Brighton, with 270 tons, the initial stage to Haywards Heath was completed half a minute within schedule, 18 minutes 26 seconds. Starting from Haywards Heath, Three Bridges was passed in 12 minutes 35 seconds, Earlswood, 16.1 miles in 20 minutes 19 seconds and after travelling on the Local line from Stoats Nest, East Croydon in 34 minutes 54 seconds. There were signal checks after East Croydon and the final arrival at London Bridge effected in 50 minutes 11 seconds, 48 minutes Net. Another rebuilt "Gladstone" with 180 tons on a 60 minutes non stop booking to Victoria breasted the initial rise to Clayton at 46 miles per hour [an EDHP of at least 450-500] and passed Keymer Junction in 13¼ minutes at 65 miles per hour. The minimum at Balcombe was 50 miles per hour, the maximum past Gatwick Racecourse 71, and the time to Earlswood 32 minutes 28 seconds with 49 minimum afterwards, the EDHP was well in excess of 500 when climbing to both Balcombe and Quarry summits. There was a signal check before East Croydon, the station passed in 44½ minutes and Victoria finally reached in 60 minutes 25 seconds, 57 to 58 minutes Net. This suggests a Gladstone could time the lighter loaded weekday Pullman service. On a train, with an easier timing, 54 minutes to a stop at East Croydon, No.220 with 300 tons attained 40 miles per hour at Clayton and passed Balcombe at 44 after 63 at Keymer Junction.

A run, in 1913, with a lightly loaded "Gladstone", No.179 with 100 tons, shows how fast these 0-4-2's could travel. Signals after the start at Preston Park delayed the train such that it took 22 minutes 42 seconds to pass Balcombe. There was a maximum of 74 miles per hour past Horley.

LB&SC Billinton 4-4-0's on the Down 60 minutes non stop's

The time over the 19.1 miles from Three Bridges to East Croydon was 19 minutes 5 seconds, the latter station reached in 47 minutes from Brighton. The continuation to Victoria took 14 minutes 27 seconds. The Gladstones in the immediate pre War period often hauled Excursion's, the schedules were seldom demanding. In 1911 for example one hauled 220 tons from Brighton to East Croydon in 56½ minutes. [Ref.21] However, as train weights increased and scheduled times reduced they were relegated to secondary services, ten were withdrawn from service before the First World War, the rest all bar one, fitted with new boilers were in service at the Grouping in 1923.

The LB&SC service that attracted the most attention was that from London to Brighton. Thirty-two runs between Victoria and Brighton, [summer 1908 to the outbreak of War, were published in various Journals [Ref.22]. They probably represent day to day performance with the exception of five timings which perhaps were specially selected. Locomotives were: I3 Class 4-4-2 Tank's on nine occasions - H1 Class 4-4-2's eight times - B4 Class 4-4-0's four times - H2 Class 4-4-2's four times - B2X Class 4-4-0's three times - J Class 4-6-2 Tank's three times - L Class 4-6-4 Tank once. Train weights varied from 160 to 315 tons; 160 to 200 tons eight times, 200 to 250 tons eight times, 250 to 300 tons twelve times and over 300 tons four times. This may misrepresent normal train weights, many weekday trains consisted of only four Pullmans plus two brakes whereas the Sunday train invariably approached or exceeded 300 tons. One can surmise that a disproportionate number of journeys were made at weekends.

Three records with rebuilt Billinton B2X Class 4-4-0's, all with 200 tons, perhaps represent a tendency by the particular correspondent to select those that showed them in the most favourable light. Net times were 58¼, 58¾ and 62 minutes. The correspondent commented the third was the most typical B2X performance. Clapham Junction passed in five and three quarter minutes, East Croydon in 15 minutes 40 seconds, Earlswood in 29 minutes 20 seconds, Three Bridges in 36 minutes 20 seconds and Haywards Heath in 46 minutes 25 seconds. The B2X rebuilds, although a far more capable machine than the original B2's were still a relatively modestly dimensioned locomotive. The B4 Class 4-4-0 runs all resulted in actual times in excess of 60 minutes, i.e. 62½, 64, 66 and 62¾ minutes, corresponding Net times were 61, 55, 64 and 62¾ minutes. The best performance was by No.46 with 200 tons, the heaviest load taken was 255 tons.

The nine records with I3 Class 4-4-2 Tank's included six by superheated examples. The actual [Net] times from Victoria to Brighton by the six were; 58¾ [57¼], 59¼, 61¾ [59], 61¼ [58¾] and 61¾ [59] minutes, respective loads were 315, 245, 160, 310 and 165 tons. Numbers 22 and 87 hauled the two in excess of 300 tons in 1909 and 1914. Number 22 passed East Croydon in 16 minutes 58 seconds after a check for signals at Clapham Junction, No. 87 was five seconds slower also after a signal check.

LB&SC Atlantic's on the 60 minutes schedule to Brighton

The times from East Croydon to Quarry box were 10 minutes 29 seconds and 10 minutes 39 seconds, this probably entailed approaching 50 miles per hour sustained on the 1/264 and between 40 and 45 minimum on the 1/165 to Quarry. Assuming 55 miles per hour past East Croydon, the average EDHP over the next ten and a half minutes was 675-725. Number 22 ran the 10.8 miles from Quarry to Three Bridges in 11 minutes 19 seconds, fell to a minimum of 52 miles per hour at Balcombe Tunnel Junction, passed Keymer Junction in 49¼ minutes at 75 and had an unchecked run in to the Terminus at Brighton. Number 87 ran from Quarry to Three Bridges in 10 minutes 8 seconds where it was 66 seconds ahead of No.22, reduced to 20 seconds at Keymer Junction and with signal checks at Preston Park arrived 75 seconds late. A superheated I3 could keep the 60 minutes schedule with 300 tons and a clear road.

The three saturated I3 Class 4-4-2 runs gave actual [Net] times of 58¾, 60 and 67 [64] minutes, respective loads 240, 180 and 220 tons. The run by No.28 in 58¾ minutes was timed by W.J.Scott, who commented on the even running, i.e. not less than 50 miles per hour on the adverse gradients and not higher than 70 downhill. These runs support the general view that the superheated I3's were not only more economical than the saturated ones but significantly better performers.

The H1 and H2 Class 4-4-2 performances show they were masters of their duties as their size would predicate on all trains and with light loads, if driven enthusiastically they gained considerable time. H1 No.39 with 160 tons was checked to 10 miles per hour at Clapham Junction for a PWR slack, recovered to 56 at Streatham Common and passed East Croydon in 17 minutes 5 seconds. There was another PWR slack at Coulsdon and a signal check at Earlswood despite which Three Bridges was passed in ten seconds under 40 minutes. The minimum at Balcombe tunnel was 58 miles per hour, after a severe slowing in the tunnel for engineering works 75 maximum at Haywards Heath and a time of 13 minutes for the final 13.1 miles from there to Brighton, the arrival was 65 seconds late but the Net time 54 minutes or less. On another occasion H1 No.39 with 270 tons, passed East Croydon slowly in 17 minutes 9 seconds after a PWR slack, accelerated to 49 miles per hour at Stoats Nest and fell away to 44 at Quarry. The maximum at Horley was 67 miles per hour. There was a signal check on the Ouse viaduct before Haywards Heath which spurred Driver Fox on. Subsequent speeds were 77 miles per hour at Wivelsfield, 59 at Clayton, 67 before Preston Park. The result, he reached Brighton in 59 minutes 8 seconds, 56 minutes Net.

The four H2 Class 4-4-2 records gave similar actual and [Net] times i.e. 61 [59], 60 minutes 50 seconds [59], 60 minutes 1 second and 61 [59] minutes, respective loads were 160, 310, 320 and 165 tons. The two heavy loads were noted in 1914 both with No. 422. It passed East Croydon in 16 minutes 5 seconds and 15 minutes 32 seconds.

LB&SC the Pacific and Baltic Tank's on the Down 60 minutes

The first time it ran via the Local Line to Coulsdon and passed Quarry at 44 miles per hour in 27 minutes 2 seconds, the second in 25 minutes 33 seconds at 45. Maximum speeds at Horley were 65 and 69 miles per hour, minima at Balcombe tunnel 46 and 43. The Atlantics apparently handled 300 tons easily.

Both J Class 4-6-2 Tank's were capable machines, the second No.326 considered the better. It is generally accepted that if Marsh had not been taken ill, he would have ordered more of them rather than the second batch of Atlantics procured by L.B.Billinton in his absence.

Three timings with J Class No.325 gave actual and [Net] times of 61 minutes 47 seconds [53³/₄], 63 minutes 4 seconds [56¹/₂] and 60 minutes 28 seconds [59] with loads of 160, 290 and 280 tons. Number 325 with the light train, after signal checks before East Croydon and a PWR slack at Stoats Nest, accelerated to 52 miles per hour on the initial gradient and fell away slightly to 51 on the final one and a half miles at 1/165 up to Quarry. [Even with this light train an EDHP of 580-630] There was a further slack to 25 miles per hour after Earlswood, a rapid acceleration to 72 at Horley and Three Bridges passed in 40 minutes 53 seconds from Victoria. The remaining 21.7 miles to the Brighton stop were run in 20 minutes 54 seconds with 59 miles per hour minimum at Balcombe tunnel, 77 at Keymer Junction and 58 minimum at Clayton.

The 290 tons train was taken out to East Croydon inside 16¹/₂ minutes, including a PWR slack before the station from where it recovered to 49 miles per hour at Stoats Nest before falling away to 45 at Quarry. The maxima at Horley and Haywards Heath were 74 and 76 miles per hour, the intermediate minimum 55 at Balcombe Tunnel. This spirited running resulted in Keymer Junction being passed in 47¹/₄ minutes from Victoria despite the various checks, before a further series of signal checks resulted in a three minutes late arrival. On the third run East Croydon was passed in 17¹/₂ minutes, after signal checks at Wandsworth Common, Quarry ten and a quarter minutes later and with moderate speeds onwards the arrival at Brighton would have been to time but for a signal check at Preston Park.

A run behind Baltic tank No.327 in the first few months of 1914 is of interest despite a light load of 200 tons for its speeds [Ref.23]. It was made at the time when there were concerns over water surging in the side tanks at high speeds. However, surging or not, No.327, initially delayed by signals at Wandsworth Common and East Croydon, passed there in 16¹/₂ minutes and ran the 8.2 miles on to Quarry in 8 minutes 52 seconds, with a minimum of 56 miles per hour at the summit [an EDHP of 850-900 probably]. Speed then rose rapidly after Quarry, 75 miles per hour before Earlswood, 81 afterwards, 60 minimum at Balcombe tunnel and 78 at Haywards Heath before signals intervened. The final time to Brighton was 58 minutes 40 seconds, 53 minutes Net or less.

LB&SC the 17.00 ex London Bridge

The 17.00 ex London Bridge, allowed 60 minutes non stop to Brighton had a more favourable start to East Croydon than trains from Victoria, probably saving one to two minutes. Three journeys on this train, one behind an H1 Class 4-4-2 and two behind B4 Class 4-4-0's show the B4's in a better light than the examples quoted previously on Victoria to Brighton trains. The H1 in 1910 with 260 tons was operating to a 65 minutes schedule. It took 15 minutes 35 seconds to pass East Croydon, after a minimum of 37 miles per hour up the 1/100 to Forest Hill and subsequently passed Three Bridges in 36¾ minutes, Haywards Heath in 45¾ and finally reached Brighton in 59 minutes 10 seconds. B4's Nos.72 in 1911 with 260 tons and No.51 with 280 tons in 1914 reached Brighton in actual times of 59¼ and 61 minutes, 58 and 57¼ minutes Net respectively. Number 72 passed East Croydon in 15 minutes, was checked by signals to 20 miles per hour at Stoats Nest, after which there was a clear road and a maximum of 75. Number 51 started gently, 48 miles per hour at New Cross and 32 at Forest Hill, one minute slower to East Croydon and after a signal check and a PWR slack was one and a half minutes late past Earlswood, 30 minutes 27 seconds. Speed then reached 69 miles per hour at Horley before another signal check at Three Bridges, recovered to 46 at Balcombe Tunnel before Driver Cox let No.72 go down the long favourable stretch to Keymer Junction and reach 83. The impetus enabled Clayton Tunnel to be entered at 64 miles per hour before an unfortunate PWR slack at Preston Park prevented a punctual arrival.

The 15.40 ex Victoria included a Worthing portion and was scheduled to Haywards Heath in 51 minutes, an ample time although the train could be heavy. Motive power was usually a B4 Class 4-4-0 or an I3 Class 4-4-2 Tank. [Ref.24] In 1910 a B4, with 320 tons was through Clapham Junction in 5 minutes 56 seconds, East Croydon in 17 minutes 20 seconds and Earlswood in 32 minutes 2 seconds. [Three minutes slower than the schedule for the 60 minutes Brighton non stop] Speed rose to 69 miles per hour at Horley, Three Bridges was passed in 39 minutes 26 seconds and with a final 68 before the stop Haywards Heath was reached in 49 minutes 12 seconds. By comparison the superheated I3's with 335 and 325 tons took 51 minutes 2 seconds and 51 minutes 5 seconds, 49½ and 49 minutes Net. With 325 tons, times were the same to Clapham Junction as the B4, 30 seconds ahead at East Croydon and 52 seconds ahead at Earlswood. There was a PWR slack after Earlswood and the subsequent running restrained.

The 20.30 ex Victoria, a light train, on one occasion with H1 Class 4-4-2 No.41, and 110 tons passed East Croydon in 14 minutes 13 seconds at 56 miles per hour and Quarry in 22 minutes 45 seconds. Not surprisingly signal checks then spoilt the proceedings. On another day, with the same load, H1 No.37 was delayed in the initial stages by signals and a PWR slack so that it took 22 minutes 37 seconds to pass East Croydon. Speed then reached 57 miles per hour on the 1/264 at Purley and fell to 50 on the 1/165 before the train slowed for a PWR slack at Stoats Nest.

LB&SC performance on the Down one stops to Brighton

At Stoats Nest No.37 was 10 minutes 50 seconds behind No.41 but then ran the 19.2 miles from Quarry summit to the stop at Haywards Heath in the somewhat surprising time for the period of 16 minutes 22 seconds. Actual overall time from Victoria was three seconds less than 50 minutes, passing times and speeds from Quarry, Earlswood 2 minutes 55 seconds, Horley 5 minutes 17 seconds at 77 miles per hour, 65 up to Balcombe tunnel and 79 at Copyhold Junction before the Haywards Heath stop. If No.41's time out to Quarry is added to that of No.37 from Quarry to Haywards Heath, 39 minutes 7 seconds for the 38.1 miles from Victoria to Brighton results, all good fun but hardly hard work for an H1 with such a light train. Number 37 ran the 12.9 miles from Haywards Heath to Brighton in 15 minutes 22 seconds, 14½ minutes Net with Hassocks passed in 6 minutes 57 seconds at 70 miles per hour and a minimum of 61 at Clayton.

During the 1912 Coal strike an emergency timetable operated with train formations increased. [Ref.25] B4 Class 4-4-0 No.65 ran to the first stop at Three Bridges with 340 tons, in 45¼ minutes with speed falling to 32 miles per hour at Quarry. The load was reduced to 270 tons at Three Bridges and the remaining 21.4 miles to Brighton completed in 27¾ minutes.

The 13.55 ex Victoria non stop schedule from Clapham Junction to Brighton was 56 minutes. B4 Class 4-4-0 No.65 with 180 tons took 57 minutes 52 seconds [57 minutes Net]. The initial 7.8 miles to East Croydon took 12 minutes 55 seconds, the next 8.2 miles to Quarry another 11 minutes and the 26 miles from there to Hassocks 24¾ minutes before a PWR slack delayed progress. H2 Atlantic No.426 with 190 tons passed East Croydon in 11 minutes 40 seconds at 50 miles per hour. Speed rose to 59 miles per hour at Purley then fell to 50 at Quarry, 21 minutes 12 seconds from Clapham Junction and with easy running afterwards Brighton was reached three quarters of a minute early, 55 minutes 18 seconds. Intermediate passing times were, Three Bridges 31 minutes 40 seconds and Haywards Heath 40 minutes 50 seconds. An I3 on the 13.55, when it was booked to run to Brighton non stop and carried a portion for Worthing slipped at Preston Park had a heavier load of 250 tons. It passed Clapham Junction in 6 minutes 22 seconds, was then stopped by signal at Wandsworth Common and took 24½ minutes to pass East Croydon. The Worthing portion then ran from there to a stop at Preston Park in 40½ minutes, with a maximum of 75 miles per hour at Haywards Heath. The overall actual time from Victoria to Preston Park was 65 minutes 7 seconds, 57 minutes Net.

An I4 Class superheated 4-4-2 Tank No.35 had 220 tons on the 11.50 semi-fast ex London Bridge. It passed New Cross in 6 minutes 5 seconds, fell to 28 miles per hour at Forest Hill and reached the first stop at East Croydon half a minute late in 18½ minutes. The 8.6 miles to pass Merstham took 14 minutes 25 seconds and after a signal check Redhill was reached four minutes late.

LB&SC the Eastborne service

The favourably graded 8.6 miles to Three Bridges took 12 minutes 35 seconds without exceeding 55 miles per hour. From the restart it attained 36 miles per hour at Balcombe tunnel and passed Haywards Heath in 12 minutes 35 seconds with a maximum of 58. There was a further signal check and the Brighton arrival was ten minutes late. This supports the view that the I4 Class design was poor; perhaps with a firegrate of only 17 square feet no more should be expected. On another occasion No.35, with only 110 tons exceeded the 16 minutes schedule from Haywards Heath to the next stop at Preston Park by 25 seconds. Hassocks, 5.8 miles was passed in 8 minutes 55 seconds. This compares, somewhat unkindly with D1 Class 0-4-2 Tank No.267 and 75 tons which reached 60 miles per hour at Keymer Junction, fell to 54 at Clayton, passed Preston Park in 13 minutes 22 seconds and reached Brighton in 15 minutes 43 seconds.

The Eastborne service was overall more easily timed than that to Brighton. As noted already a "Gladstone" Class 0-4-2 could keep the 90 minutes non stop schedule to and from London. The inaugural Eastborne Sunday Pullman was "Gladstone" hauled in each direction. The train weighed 275 tons and No.180 lost six and a quarter minutes to Eastborne, supposedly due to a big end running hot. In the opposite direction No.179 passed East Croydon four and a half minutes early and after signal checks, reached Victoria in 89 minutes 21 seconds.

C.J.Allen made a return trip to Eastborne in 1913. I3 Class 4-4-2 Tank No.78, with 200 tons, reached Lewes, the first stop, in 66 minutes 40 seconds. There were signal checks at Balham and Wivelsfield and a severe PWR slack at Stoats Nest, in between speed reached 68 miles per hour at Horley and 67 at Haywards Heath with a minimum at Balcombe tunnel of 53. Allen computed the Net time at 60½ minutes. The 15.9 miles from Lewes to Eastborne took 22 minutes 10 seconds. In the Up direction, the 14.25 ex Eastborne had H2 Class 4-4-2 No.424 with 305 tons and lost 3 minutes 10 seconds on the 72 minutes schedule to the first stop at East Croydon. Lewes was passed in 21 minutes 20 seconds after a maximum of 66 miles per hour at Glynde and Keymer Junction in 34 minutes 5 seconds. From the 20 miles per hour slack the next 19 miles occupied 23 minutes 5 seconds which only left 14 minutes 50 seconds to achieve an on time arrival, possible but difficult. In practice there was a long PWR slack and a late arrival. The load was reduced to 210 tons at East Croydon and the 7.8 miles to Clapham Junction run in 12 minutes 5 second with a signal check and the final stage from there to Victoria in six minutes exactly.

Earlier, in 1911, C.J.Allen recorded a run on the Newhaven Boat Train. The 350 tons train, hauled by nothing larger than a B2X Class 4-4-0 ran to East Croydon exactly to schedule, fortunately a generous 20 minutes. From the Croydon restart MP19 was passed in 16 minutes 23 seconds, Three Bridges in 27 minutes 10 seconds and Lewes in 51 minutes 10 seconds, the minimum at Balcombe tunnel was 42 miles per hour.

LB&SC the Up 60 minutes schedule ex Brighton

The B2X reached 64 miles per hour before Haywards Heath but a signal check before Newhaven, resulted in a 4 minutes 40 seconds late arrival. This was a good performance for such a modestly dimensioned locomotive, hauling between seven and eight times its own weight plus tender. Another record involving a B2X serves to confirm that the rebuilding of the original B2's had produced a useful machine. This time with 270 tons on the 17.05 ex London Bridge the B2X passed New Cross in five and a quarter minutes, East Croydon in 16 minutes 40 seconds, Quarry in 28 minutes 10 seconds and Horley in 35 minutes 35 seconds. Speeds were 27 miles per hour minimum at Forest Hill, 65 at Horley, 48 at Balcombe and 69 at Haywards Heath. Keymer Junction was passed in 51½ minutes and with 64 miles per hour between Plumpton and Cooksbridge, Lewes reached in 63 minutes 20 seconds, 62 minutes Net. With the reduced load, 180 tons after the Forest Row slip at Horley, the final stage from Lewes to Eastborne took 22 minutes 40 seconds, schedule 23 minutes.

An analysis of 33 runs from Brighton to London on the non stop schedule, not surprisingly, gives a similar breakdown of locomotives as in the Down direction. i.e. B2X Class 4-4-0 once, J Class 4-6-2 Tank twice, B4 Class 4-4-0 four times, H1 and H2 Atlantics four and eight times and I3 4-4-2 Tank's 12 times.

The B2X Class 4-4-0 reached 74 miles per hour at Keymer Junction and was through Haywards Heath in 15 minutes 54 seconds with a 190 tons train. It fell to 47 miles per hour at Balcombe Tunnel, attained 69 at Horley, passed Earlswood in 32¾ minutes, Quarry [actually MP18½] in 36¾ minutes, East Croydon in 45¼ minutes and reached Victoria almost two minutes early, 58 minutes 7 seconds.

Both J Class 4-6-2 Tank's featured; No.325 with 280 tons and No.326 with 290 tons. The initial 1/264 to Clayton was breasted at 51 and 52 miles per hour, [EDHP at least 700–750 and 740–790] at Keymer Junction speeds were 75 and 71 and the times to Haywards Heath 15 minutes 8 seconds and 15 minutes 27 seconds. The minima at Balcombe were 50 and 51 miles per hour, the maxima at Horley 75 and 73, times to Earlswood 30 minutes 36 seconds and 31 minutes 46 seconds. Number 326 passed Quarry in 34 minutes with a minimum of 52 miles per hour and was through East Croydon in 41¼ minutes, an excellent time. The remaining stage to Victoria taken gently, occupied 16¾ minutes, the train could have easily reached there inside 55 minutes. Number 325 fell to 47 miles per hour at Quarry, then attained 69 at Purley, was checked by signals at South Croydon and passed through East Croydon in 43¾ minutes and reached Victoria in 57 minutes 38 seconds, 57 minutes Net. [Ref.26]

The B4 Class 4-4-0's handled weekday loads comfortably. Two records with 160 tons show Clayton Tunnel entered at 50 and 53 miles per hour [EDHP only 430-480 and 470-520]. On the second run speed reached 74 miles per hour at Keymer Junction and fell to 51 at Balcombe.

LB&SC B4's and Atlantic's on the Up 60 minutes

Earlswood was passed in 31 minutes 25 seconds and Quarry Box in 35 minutes 5 seconds. On the first run the minimum at Balcombe was 53 miles per hour, the time to MP19½ 34 minutes 15 seconds, both trains were then delayed by signals. Two other experiences with B4's, each with an additional coach i.e. 190 and 200 tons gave speeds of 48 miles per hour entering Clayton Tunnel, 73 and 68 at Keymer Junction and times to Haywards Heath of 15¾ and 16 minutes. The minimum at Balcombe on the first was 53 miles per hour, on the second there were signal checks. Earlswood was passed in 31 minutes 54 seconds and 32¼ minutes, the final arrivals at Victoria effected in 58 minutes 54 seconds and after several signal checks in the Suburbs, 62¼ minutes.

It has been noted that the performance of the B4 Class 4-4-0's declined after their first few years in service and this has been attributed to some nebulous design feature. It appears more likely that they were driven very hard, with long cut offs, in the early years and after the introduction of the Atlantics, superheated I3's and the J tanks, all driven on shorter cut offs, the same control settings became the norm for the B4's. The footplate crews thereby gave the impression that a B4 could not maintain the 60 minutes schedule with trains exceeding 200 tons weight in the Up direction and perhaps they began to believe it. There would have been a saving in coal!

The Atlantics could comfortably time 300 tons trains and with the 160 tons weekday formations they were under utilised. Four journeys with loads around 300 tons illustrate the point, three behind H2 Class 4-4-2's. H1 Class 4-4-2 No.40 with 280 tons attained 47 miles per hour at Clayton, reached 72 at Keymer Junction, never fell below 60 on the rising grades to Balcombe [an EDHP of 950-1,000], attained 75 at Horley and passed Earlswood in 30¾ minutes. H2 No.422, on two occasions with 300 and 315 tons passed Keymer Junction in 13 minutes 13 seconds and 13 minutes 51 seconds. [No.40 took 13 minutes 29 seconds] On the first occasion Balcombe Tunnel Box was passed in the same time as No. 40 i.e. 19 minutes 42 seconds, on the second in 20 minutes 52 seconds. Times to Earlswood were 30 minutes 52 seconds and 32 minutes 31 seconds. Number 425 with 290 tons, reached 47 miles per hour at Clayton, 73 at Keymer Junction passed in 13¾ minutes; the minimum up to Balcombe was 54, the maximum at Horley 72, Earlswood was passed in 31 minutes 32 seconds. Continuing after Earlswood, the saturated Atlantic, No.40 slowed for a PWR slack to 20 miles per hour, passed East Croydon in 45 minutes 25 seconds and with a maximum of 61 before Clapham Junction stopped at Victoria in 58 minutes 28 seconds, 55 minutes Net. The superheated Atlantic No.422 ran very easily on the first occasion, 16 minutes from East Croydon to the Victoria stop and arrived half a minute early, 59 minutes 23 seconds, 58½ minutes Net. Number 425, after the slowest time to Earlswood fell to 45 miles per hour at Quarry, passed East Croydon in 43¼ minutes and finishing quickly reached Victoria in 56½ minutes.

LB&SC I3's on the Up 60 minutes

Overall twelve runs with the Atlantic's produced seven on time or early arrivals at Victoria, on all twelve the Net time was less than 60 minutes.

The twelve records with I3 Class 4-4-2 Tank's include two on the 08.10 and 09.55 to London Bridge, schedule 65 and 71 minutes non stop. Time was easily kept on both with trains of 210 and 200 tons. The I3 Class, like the B4 were, as a general rule not rostered for the heaviest trains, although two of the runs involved 300 tons, Nos. 21, a saturated I3 in 1909 with 315 tons and superheated I3 No.87 in 1913. [Ref.27]. Details of No.21's effort are limited, Keymer Junction passed in 14 minutes 2 seconds and the 11.6 miles from there to Three Bridges run in the excellent time of 10 minutes 38 seconds, the maximum at Keymer Junction must have been high to achieve such a time. After this good start Victoria was reached unchecked in 59 minutes 33 seconds. Number 87 started slowly, or at least not as quickly as the saturated locomotive. The times to Hassocks and Haywards Heath were 12 minutes 24 seconds and 17 minutes 52 seconds. The 27.5 miles from Haywards Heath to East Croydon were run in 28³/₄ minutes. No speeds were given by the recorder, but from the detailed passing times they must have been at least 50 miles per hour at Balcombe, 75 at Horley and 50 to 51 at Quarry. East Croydon was passed in 46 minutes 35 seconds and, after a PWR slack, Victoria reached in 13 seconds over the hour.

The I3 Class 4-4-2's had a comfortable margin on the 60 minutes schedule when hauling trains of around 200 tons. Five journeys were completed within the 60 minutes schedule and the other in 61 minutes. Net times varied from 54³/₄ minutes to 59 minutes, the 54³/₄ minutes achieved by Driver Suckley with No.23 and 160 tons. [Ref.28] He attained 52 miles per hour at Clayton, passed Keymer Junction in 12 minutes at 74, took the climb to Balcombe easily with speed falling to 50, then ran up to 77 at Horley, this produced a time of 30 minutes 20 seconds to Earlswood. There was a PWR slack afterwards, 70 miles per hour at Purley, East Croydon passed in 43 minutes 7 seconds and Victoria reached, two minutes early, in 57 minutes 55 seconds. This could have been bettered, No.24 for instance, with 210 tons, maintained 56 miles per hour up to Balcombe and No.24, with 290 tons, accelerated from 49 to 51 miles per hour on the 1/264.

The smaller 4-4-2 Tank's occasionally appeared on the slower expresses. I1 Class 4-4-2 No.10 with 220 tons on the 09.55 ex Brighton departed two minutes late, suggesting the locomotive was a late substitution. It passed Keymer Junction in 15 minutes 34 seconds, Three Bridges in 30 minutes 5 seconds, Earlswood in 38 minutes 35 seconds and Purley in 50 minutes 12 seconds. There were bad signal checks after this, the correspondent reckoned a Net time to London Bridge of 66 minutes although 67 or 68 minutes seems more realistic, the schedule a very liberal 71 minutes. The I1's with coupled wheels of only 5 feet 6 inches diameter and a somewhat constipated front end were limited in top speed.

LB&SC the 1912 coal strike

Number 6, with a light train, 85 tons, ran from Horley to Haywards Heath the next stop in 16 minutes. It reached 47 miles per hour up the gradient to Balcombe Tunnel and 66 on the subsequent descent before slowing for the Haywards Heath stop, probably as fast as an I1 could travel comfortably. [Ref.30]

The morning business trains, with both London Bridge and Victoria sections loaded heavily between Brighton and East Croydon although the schedules took account of this. A B4 Class 4-4-0 on the 08.10 with 400 tons passed Haywards Heath in 18¾ minutes before it was badly delayed by signals but the recorder reckoned the Net times to Three Bridges, Earlswood and East Croydon were 30, 37¾ and 52 minutes respectively. With, the load reduced to 230 tons after Croydon, Victoria was ultimately reached in 68 minutes 33 seconds. An H1 Class 4-4-2 on the same train ran to a stop at East Croydon in 51¾ minutes and on the 08.45 with an H2 Class 4-4-2 and 420 tons, the slip portion for London Bridge reached East Croydon in 53 minutes 12 seconds, 51¼ minutes Net.

The Up semi fast trains, like the Down trains did not require the same level of performance as the 60 minutes non stop. Whereas the schedules on the semi fast trains were generous some of the all stations locals were difficult. E.S.Hallett was a regular passenger on the 17.05 Brighton to Haywards Heath. The scheduled start to stop times were:- Brighton to Preston Park, 1.0 miles, three minutes - Preston Park to Hassocks, 5.5 miles, ten minutes - Hassocks to Burgess Hill, 2.1 miles, four minutes - Burgess Hill to Wivelsfield, 0.8 miles, three minutes - Wivelsfield to Haywards Heath, 2.9 miles, six minutes. Hallett's best times over the stages were: 3 minutes 3 seconds - 8 minutes 47 seconds [with an attained 47 miles per hour up the 1/264] - 3 minutes 40 seconds - 2 minutes 1 second - 4 minutes 51 seconds, [46 miles per hour on the 1/330]..The train weighed 100 tons and was hauled by a D3 Class 0-4-4 Tank.

During the 1912 Coal strike as noted already, special schedules were introduced, a less frequent service of heavier trains. B2X Class 4-4-0 No.201, with 250 tons ran from Brighton to East Croydon in 50 minutes 25 seconds start to stop, a loss on schedule of two and a half minutes, 49 minutes Net. B4 Class 4-4-0 No.61, with 200 tons, cut this by 30 seconds, which required no greater haste than to pass Earlswood in a few seconds inside 35 minutes. I3 Class 4-4-2 tank No.26 with 290 tons, on a 66 minutes schedule from Brighton to Clapham Junction completed the journey in 62¾ minutes, 61 minutes Net. The time to Keymer Junction from the Brighton start was 14 minutes 52 seconds. B4 No.65 with a train of only 155 tons passed Hassocks in 10 minutes 32 seconds, Balcombe in 20 minutes 2 seconds and East Croydon in 43 minutes 51 seconds. Clapham Junction despite a signal check was reached in 55½ minutes. The maximum at Horley was 73 miles per hour.

LB&SC the Mid Sussex route in 1912

Until the 1913 accelerations, the Up Eastborne trains were timed more easily than the Brighton ones between Keymer Junction and London although the 08.30 ex Eastborne could at times be very heavy. J Class 4-6-2 tank No.326 starting from the Haywards Heath stop, with 375 tons reached 45 miles per hour on the 1/264 to Balcombe tunnel and passed Three Bridges in 12 minutes 51 seconds. The maximum at Horley was 66 miles per hour, the minimum at Quarry 45, the time to East Croydon, 27.5 miles, the next stop 34 minutes 57 seconds. H2 Class 4-4-2 No.421, with a lighter train, 275 tons, reached 49 miles per hour up to Balcombe, passed Three Bridges in 11 minutes 58 seconds before continual signal checks ruined the run. An I3 Class 4-4-2 tank No.24 with 260 tons, attained 50 miles per hour up to Balcombe, was through Three Bridges in 11 minutes 47 seconds, reached 73 at Horley and fell to 48 at Quarry, passed in 22 minutes 36 seconds. This spirited running led to a time of 31½ minutes from Haywards Heath to East Croydon.

There are few details available of performance on the Mid Sussex route to Bognor and Portsmouth. C.J.Allen made a return trip in 1912 and although the loads were light, as the trains kept close to schedule they give a good impression of times and speeds required to maintain schedule. [Ref.31] H1 Class 4-4-2 No.39, with 145 tons ran to Clapham Junction the first stop in five and three quarter a minutes on the 11.35 ex Victoria. From the restart it passed, Mitcham, 6.0 miles in 10 minutes 25 seconds, Epsom, 12.9 miles, in 21 minutes, Dorking in 31½ minutes [the maximum before was 60 miles per hour, the minimum at Holmwood 36] and Horsham in 49 minutes 10 seconds. Between Horsham and Chichester the maximum was 64 miles per hour, the latter station passed in 86 minutes 5 seconds from Clapham Junction. There was a PWR slack before Havant and signal checks before the Fratton stop, the times to the two stations 97¼ minutes and 107 minutes 25 seconds. Schedule for the 81.7 miles from Clapham Junction to Fratton stop was 107 minutes, the Net time on this occasion 104 minutes. Allen returned on the 16.50 from Portsmouth, a 155 tons train headed by H1 Class 4-4-2 No.42. Chichester was reached ten seconds inside the 20 minutes schedule from Fratton, 19 minutes Net. The 41 minutes schedule to the next stop at Horsham was improved on by one and a quarter minutes, 39 minutes 45 seconds, with Arundel passed in 15 minutes 20 seconds. The final stage from Horsham to Victoria took 85 seconds less than the 53 minutes schedule. Intermediate passing times were: Dorking 18 minutes 50 seconds, Epsom 29 minutes 25 seconds and Sutton 34 minutes 10 seconds. The actual running time from Fratton to Victoria was 111 minutes 20 seconds; the Net time was one minute less.

A short section of Railway that often witnessed some interesting locomotive performance was that from Brighton to Eastborne. The west direction was particularly challenging including the 1/88 climb from Lewes to Falmer.

LB&SC Brighton to Eastborne 1908-1912

Trains stopping at Lewes had a difficult start and even the non stop ones were hindered by the severe speed restriction through the station. In the opposite eastbound direction there was a climb from the start out of Brighton and although not difficult, rising grades after the river Ouse was crossed after Lewes. The heaviest regular train over the route was the, "Sunny South Express", 290 tons Tare. Eastborne depot regularly rostered an I2 class 4-4-2 Tank for the duty, either No.14 or No.19. In the Eastbound direction an E5 Class 0-6-2 Tank with the normal load, after a bad signal check leaving Brighton, reached 34 miles per hour initially and then fell away to 28 on the 1/101 at Falmer. Lewes was reached to schedule in 19 minutes. The E5 from the restart passed Glynde in 6 minutes 5 seconds, attained 50 miles per hour in the short dip and fell to 43 afterwards, Polegate in 16 minutes 53 seconds and reached Eastborne one and a half minutes late, 23 minutes 28 seconds. I2 Class No.14, with the same load was quicker to Glynde by 33 seconds at 52 miles per hour, passed Berwick in 11 minutes 7 seconds, Polegate exactly one minute ahead of the E5 and reached Eastborne precisely to schedule. In the Westbound direction the "Sunny South" omitted the Lewes stop, the overall schedule from Eastborne to Brighton was 42 minutes. Number 19, with the standard load, completed the run comfortably inside schedule, 41 minutes 8 seconds, on the 1/88 speed rose from 20 to 22½ miles per hour. [The modestly dimensioned locomotive developed an EDHP of 550–600, probably an all out effort]

Speeds on the lighter trains could be quite surprising, particularly when climbing to Falmer westbound. D1 Class 0-4-2 Tank No.298, fitted with a Marsh 170 pounds per square inch boiler on the 14.25 Hastings to Brighton, ran from Bexhill to Polegate the next stop in 12 minutes 46 seconds, with 120 tons and reached a maximum of 59 miles per hour. D1 No.255, also with 120 tons, ran from Polegate to Lewes, the next stop in 15 minutes 23 seconds, a gain on schedule of four and a half minutes. Speeds were, 46 miles per hour minimum on the rising grades to Berwick and 61 past Glynde. A D1 No.255 starting from Lewes with 75 tons, reached 37 miles per hour on the 1/88 and after a PWR slack and a signal check stopped at London Road station in 13 minutes 57 seconds. Number 246, fitted with a 150 pounds per square inch boiler, with 100 tons, reached 41 miles per hour on the 1/88, passed Falmer, 4.5 miles, in 7 minutes 41 seconds and, after a slight slowing for signals reached London Road in 11 minutes 27 seconds, 11 minutes Net. An E5 Class 0-6-2 Tank No.404 with 100 tons was tame in comparison, exactly eight minutes to pass Falmer and 39 miles per hour on the 1/88. Honours were definitely with the smaller older locomotive.

An I3 Class 4-4-2 Tank with a saturated boiler, in the eastbound direction hauling 110 tons reached 40 miles per hour leaving Brighton, fell to 36 at Falmer and stopped at Lewes in 11 minutes 20 seconds. The next stage, to the stop at Polegate, took 13 minutes 27 seconds with 58 miles per hour at Glynde, 54 at Berwick and 64 before the Polegate stop.

LB&SC the South London Line

Polegate to Bexhill the next stop was run in 11 minutes 42 seconds with 64 miles per hour the maximum. The running time over the 29¾ miles from Brighton to Bexhill was 36½ minutes, including slowing down for and starting from the two stops, albeit with for an l3 a light load.

The South London line was electrified in 1910 with total success in terms of passenger loadings, those previously lost to competing surface tramway systems from 1900 to 1910 were more than regained in a short space of time. M.F.Long wrote a lengthy article for the Railway Club in 1910 headed; "Was the abolition of steam justified?" There was no argument in terms of service frequency, 80 electric trains per day compared with 43 steam hauled. The electric schedule for the journey from London Bridge to Victoria was 24 minutes in total. Long's best record with steam, with eight off four wheeled coaches, gave a running time of 22 minutes 2 seconds including two and a quarter minutes lost by signal delays, time taken at the station stops was 5 minutes 5 seconds. He quoted typical electric journeys, 21 minutes 14 seconds running time with 2 minutes 14 seconds spent at the stations. Long opined that "from considerable experience with all types, there is not a single Stroudley, Billinton or Marsh Tank locomotive incapable with a load of three bogie coaches of adhering to a 24 minutes schedule." He omitted to say that at times steam locomotives had to haul a complete close-coupled seven coaches bogie set [weighing 170 tons] when the times would have exceeded 25 minutes. 1910 witnessed the start of the inevitable ultimate success of electrification of Railway routes in the South East of England.

The Great Eastern Railway showed the World what could be achieved with steam locomotives operating an intensive Suburban service. In May 1911 the LB&SC demonstrated on a one off basis, what it could do, the occasion, the Coronation Fete at Crystal Palace. Between 10.30 and 14.28, 34 trains ran to Crystal Palace Low Level from the Streatham direction, 27 of them via Gypsy Hill and seven, the long way round i.e. via Selhurst and Norwood Junction. In total during this period 42 trains ran to Crystal Palace Low Level station. The number of passengers carried was 56,000, mainly children with 14 and one leader per compartment. The various trains originated from: L&SW, worked from Battersea yard by a LB&SC locomotive fitted with vacuum braking systems - London and North Western Railway, worked by a L&NW crew [there were regular scheduled L&NW workings to East Croydon] - seven North London Railway, worked by L&NW locomotives and crews - four Great Western, worked by their own locomotives and crews from Kensington. The LB&SC itself ran and worked 21 trains from Victoria and eight from London Bridge via Forest Hill. Of the 42 trains, 31 arrived before time, three were too time and eight ran late [one was one minute late, two were two late, one was three late, two were four late and two were five late].

The return trains left Crystal Palace between 16.35 and 20.11 [scheduled to depart at 20.15]. Each return train left in the same order it had arrived, so every child spent the same length of time at the Fete. Locomotives used on the trains were 0-6-0 and 0-6-2 Tank's. Trains from Penge station left between 16.55 and 19.03. The normal service, including the electric to Crystal Palace was cancelled.

Chapter 7: References and Notes

- Ref.1 Railway Magazine [RM] Vol. XXXIX C.J.Allen quoting Major Myers
 verbatim
- Ref.2 Railway Notes [RN] Vol.1 p.86 M.F.Long.
- Ref.3 [RM] Vol. XI p.487-9
- Ref.4 Beckerlegge collection Railways [Ry] Vol..12 p.219
- Ref.5 [RN] Vol. 1 p.96-7
- Ref.6 [RM] Vol. 99 p.579-82
- Ref.7 [RN] Vol.1
- Ref.8 Railway Club Journal [RCJ] Vol. IV p.5
- Ref.9 Locomotive News [LN] Vol. X
- Ref.10 Railway and Transport Monthly [RTM] Vol. VIII p.241
- Ref.11 Stephenson Locomotive Society Journal Vol. XVIII p.113
- Ref.12 [RM] Vol. 109 Letter from J.Pelham Maitland
- Ref.13 [RCJ] Vol. V p.28
- Ref.14 [RM] Vol. .XXII p.20
- Ref.15 Railway Observer, Journal of the Railway Correspondence and
 Travel Society. Vol. XXII
 J.N.Maskelyne- Locomotives of the LB&SC. Locomotive
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 Company 1927
 Locomotives of the LB&SC D.L.Bradley Published by the RCTS
- Ref.16 [RM] Vol. 109 J.Pelham Maitland
- Ref.17 [RN] Vol. 1

Ref.18 Details of this run are given on page 23 of Railway Notes Volume 1 [No author, but likely to have been M.F.Long] and in Vol. XXII of the Railway Magazine. The details were sent to the Magazine by Marsh.

	Railway Notes		Railway Magazine
	Minutes	seconds	minutes
Victoria	00	- 00	0
Clapham Junction	05	- 12	5
Balham	07	- 43	8
East Croydon	15	- 04	13
Quarry	24	- 18	24
Earlswood	27	- 21	
Three Bridges	34	- 57	34
Keymer Junction	44	- 16	45
Preston Park	52	- 03	
Brighton	55	- 35	55

PWR slacks at Clapham Junction to 10 miles per hour, Stoats Nest, severe. Blechingley Bridge 10 miles per hour/ If the Railway Notes figures are correct, the average speed from Three Bridges to Keymer Junction was 71 miles per hour and from there to Preston Park 66.5 miles per hour.

- Ref.19 [RTM] Vol. VIII p. 14
- Ref.20 [LN] Vol. X
- Ref.21 [RM] Vol. XXVI Article by Major Myers & E.S.Hallett
- Ref.22 [RN] [RTM] and [R.M]
- Ref.23 [RM] Vol. XXXV & XXXVII C.J.Allen gave details from a log sent to him by a "Lewes correspondent " in Vol. XXXV, and then published the whole log in Vol. XXXVII.
- Ref.24 [RM] Vol. XXVI E.S.Hallett
- Ref.25 [RTM] Vol. V Major Myers
- Ref.26 [RM] Vol. XXXVII and [RTM] Vol. VIII
- Ref.27 [RN] Vol. 1 p. 23
- Ref.28 [RTM] Vol. V
- Ref.29 [RTM]
- Ref.30 [RTM]
- Ref.31 [RM] Vol. XXI

Chapter 8: South Eastern and Chatham Railway 1900-1914

On the 1st of January 1899, the South Eastern and Chatham Railway Managing Committee formally came into existence. Parliamentary sanction was in practice still being sought at this time, the committee had met since the previous summer; nothing was ever simple with two Companies. One of the earliest committee decisions, announced at the second meeting, was H.S.Wainwright's appointment as Superintendent of the Locomotive, Carriage and Wagon Department for the two Railways. Wainwright was previously South Eastern Carriage and Wagon Superintendent. Messrs, Stirling and Kirtley both retired at the end of 1898 after fulfilling their particular roles on the South Eastern and the London Chatham and Dover Railways, for many years.

In terms of appropriate locomotives, or rather the lack of, Wainwright inherited a challenge. The South Eastern F Class 4-4-0's were admirable machines, but they were a 20 years old design and clearly not powerful enough for many current operating requirements. The B Class design only tinkered with the problem. On the LC&D Railway Kirtley's designs were more modern, particularly the M3 Class 4-4-0's, but there were only a limited number of these. The LC&D route had restricted axle limits over certain bridges, which limited the size of locomotives that could be utilised. This coupled with long stretches of adverse gradients presented an ongoing conundrum.

When trains were light on the LC&D route timekeeping was easy. On July 6th 1899 J.T.Burton-Alexander travelled on the 09.15 Victoria Boat Train, a prelude to further travelling through three Continents [Ref.1] and encountered M3 Class 4-4-0 No.4 on a train of 6 coaches, 120 tons. The start from Herne Hill was 4 minutes 50 seconds late, a check to five miles per hour at Beckenham cost another three minutes. The 17 miles from Swanley to the Chatham stop, including the climb up to Sole Street, were run in 19 minutes, Net time Herne Hill to Chatham was 38¼ minutes, the schedule a very tight, 40 minutes. The Chatham to Dover stage was run in 55¼ minutes, schedule 57 minutes. There was a PWR slack for bridge repairs at Newington and a further slack at Faversham for station subway works, 53 minutes Net i.e. 91¼ minutes running time from Herne Hill to Dover. The 21.3 miles from Faversham, passed slowly to Dover Priory occupied 31¼ minutes. The Net time for a Herne Hill to Dover non stop run would have been 89 minutes.

Perhaps the only good news for Wainwright on the locomotive front was that Robert Surtees, previously Kirtley's drawing office manager at Longhenge, was to be his chief Draughtsman. The SE&C inevitably became engulfed by the financial stringency that had previously affected Kirtley and Surtees. Up to the outbreak of the First World War, the character of SE&C meetings was one of promises from the Board to achieve economies, concomitant with the rationalisation of services and infrastructure between the two Railways. The Shareholders were always offered promises.

SE&C D Class 4-4-0 1901

The primary locomotive need in 1899 was for the ever increasingly heavy Boat Trains. Wainwright and Surtees moved quickly, submitting drawings to the committee for a new design of 4-4-0, the D Class, in June 1899 with the first locomotive delivered by Sharp Stewart & Co. in February 1901. Annual deliveries were 12 in 1901, eight and 20 in the next two years. Another 11 were built in 1906 and 1907 bringing the total to 51, 21 of those built at Ashford, the remainder outsourced. The D Class had 6 feet 8 inches coupled wheels and two inside cylinders, [19 inches diameter by 26 inches stroke]. The boiler had a working pressure of 175 pounds per square inch and a total heating area of 1,505 square feet [1,381 square feet in the boiler tubes and 124 square feet in the firebox]. The firegrate area was 20¼ square feet, the locomotive weighed 50 tons and the tender another 39 tons.

Such was the shortage of locomotives confronted by the committee that five 4-4-0's, designed for the Great North of Scotland Railway by W.Pickersgill, built by Nelson Reid and Co. and subject to an order cancellation, were purchased at the end of 1899. They, the G Class, had 6 feet 1 inches diameter coupled wheels and two inside cylinders, [18 inches diameter by 26 inches stroke]. The boiler had a working pressure of 165 pounds per square inch and a total heating area of 1,207 square feet [1,094 square feet in the boiler tubes and 113 square feet in the firebox]. The firegrate area was 18 square feet, the locomotives weighed 44½ tons and the tender another 36 tons. They were employed on semi-fast services on the former LC&D routes to Dover and Margate from London. Rous Marten thought them ok, "One brought a 20 coaches [200 tons] train into Margate in excellent style"

A second more powerful Class of 4-4-0 was designed in 1905, effectively a modified D Class, intended to handle some of the more difficult tasks on the LC&D. The E Class had 6 feet 6 inches diameter coupled wheels and two inside cylinders, [19 inches diameter (19¼ inches on the first five built) by 26 inches stroke]. The boiler had a working pressure of 180 pounds per square inch and the total heating area was 1,532 square feet [1,396 square feet in the boiler tubes and 136 square feet in the firebox]. The firegrate area was 21¼ square feet, the locomotive weighed 52 tons and the tender another 39 tons. Twenty-six were built from 1906 to 1909 at Ashford. The new locomotives, as they became available, provided a slightly more powerful alternative to the D Class and continued the process of replacing the Stirling and Kirtley 4-4-0's on the heaviest duties although the older locomotives remained an essential part of the SE&C locomotive stock.

The SE&C timetable offered scant improvement in Service speed from 1900 to 1914. The only significant improvements were to the Kent Coast trains in 1912 and 1913, and after considerable criticism from the media, the introduction of a 90 minutes schedule between Charing Cross and Dover via Tonbridge in 1913.

SE&C the June 1905 Timetable

The major departures from London in June 1905 are typical, Continental trains left for Dover at: 09.00 from Charing Cross, non stop London Bridge to Dover in 101 minutes - 11.00 from Victoria, non stop Herne Hill to Dover in 100 minutes - 13.30 from Victoria, non stop Herne Hill to Rochester in 44 minutes and with stops at Chatham, Sittingborne, Faversham, Canterbury, Kearsney and Dover Priory an overall journey time of 142 minutes - 21.00 from Charing Cross, non stop Cannon Street to Dover Town in 104 minutes -to Folkestone Harbour at 10.00 and 14.20 from Charing Cross, non stop to the Harbour in 100 minutes. [In practice locomotives were changed at Folkestone Junction prior to reversal for the short run down the very steeply graded Harbour branch].

The 17.00 ex Victoria ran non stop to Maidstone East in 57 minutes and to the next stop at Folkestone in 47 minutes with another ten minutes to Dover. There were other ordinary express trains: Charing Cross 11.00 via Tonbridge - Victoria 12.30, fast to Rochester then all stations - Charing Cross 15.22, non stop London Bridge to Ashford in 72 minutes - Charing Cross 16.28, non stop Cannon Street to Folkestone in 84 minutes, a two coach portion slipped at Ashford [this express service instigated in June 1903 was initially worked by an F Class 4-4-0, but shortly afterwards a D Class 4-4-0 was diagrammed for the duty] - Victoria 19.45, non stop Herne Hill to Chatham and principal stations to Dover.

There were trains for the Kent Coast from Victoria:: 10.45, non stop Herne Hill to Faversham in 64 minutes - 15.25, non stop Herne Hill to Westgate in 91 minutes - 16.20, non stop Herne Hill to Rochester in 46 minutes - 17.36 non stop Herne Hill to Rochester in 44 minutes. Trains left the City at 17.10 ex Holborn Viaduct, non stop St. Pauls to Margate in 93 minutes and at 18.15 ex Cannon Street, non stop London Bridge to Chatham in 57 minutes.

The principal trains to Hastings were: 10.30 Victoria, non stop Herne Hill to Tunbridge Wells in 52 minutes - 11.15 Charing Cross, non stop New Cross to Tonbridge in 48 minutes - 15.35 Charing Cross, non stop Cannon Street to Tunbridge Wells in 52 minutes - 16.50 Charing Cross, non stop Cannon Street to Tunbridge Wells in 55 minutes - 17.30 Charing Cross, non stop London Bridge to Tonbridge in 48 minutes.

The through train from the Great Western Railway departed Reading General at 14.55 and after a stop at Guildford reached Redhill at 16.24. The 19.9 miles from Redhill to Tonbridge the next stop, were scheduled in 25 minutes and the 26.6 miles from there to Ashford in 30 minutes. The overall time from Reading to Dover Harbour was 2 hours 54 minutes.

The principal departures from Dover were: the Mail Train, 01.45, Cannon Street in 125 minutes with stops at Folkestone, Staplehurst and Tonbridge - the Continental Mail at 03.40 non stop Harbour to Chatham in 56 minutes, another 50 minutes to Cannon Street - 09.00 via Maidstone East, non stop from Folkestone to Maidstone in 43 minutes, another 55 minutes to Victoria –

SE&C the April 1910 Timetable

Afternoon Continental, non stop from the Town station to Cannon Street in 102 minutes - 17.20, non stop the Pier to Herne Hill in 95 minutes – Ostend Express, 19.35 the Harbour, Victoria in 129 minutes with seven stops en route, the longest non stop section Chatham to Herne Hill in 42 minutes - 21.05, non stop the Harbour to Victoria in 100 minutes - 08.30 Folkestone non stop to Cannon Street in 90 minutes.

The best Up trains from Hastings were: 08.40, non stop West St. Leonards to Cannon Street in 92 minutes - 08.52 ex Bexhill West, non stop Tunbridge Wells to Cannon Street in 48 minutes - 14.50 to Charing Cross, non stop Tunbridge Wells to London Bridge in 47 minutes - 17.26 to Victoria non stop Tunbridge Wells to Herne Hill in 54 minutes.

The main changes to the Timetable in the Down direction by 1910 were: 10.00 to Folkestone Harbour, ten minutes longer for the journey -11.00 Charing Cross to Dover travelled via Maidstone East, London Bridge to Maidstone in 58 minutes and on to Ashford stop 32 minutes - 16.25 ex Cannon Street, non stop to Folkestone in 89 minutes [five minutes longer than previous] - 18.00 ex Victoria non stop to Tunbridge Wells in 58 minutes.

The Great Western Railway through train left Reading at 14.50 and after stops at North Camp, Guildford and Dorking reached Redhill at 16.17. The Redhill to Tonbridge time was two minutes slower, overall Reading to Dover 3 hours 14 minutes. The Midland Railway through train left Ludgate Hill at 14.44, non stop Herne Hill to Tonbridge in 40 minutes and reached Dover at 17.47.

On the Kent Coast route: 09.50 ex Victoria, non stop Herne Hill to Chatham in 45 minutes, and to Canterbury East in 36 minutes - 15.25 allowed an additional two minutes between Herne Hill and Westgate - 17.10 ex Holborn Viaduct an extra two minutes between St. Pauls and Margate - 18.15 ex Cannon Street, three minutes less between London Bridge and Chatham - 19.45 ex Victoria four minutes less between Herne Hill and Chatham.

The major changes in 1910 compared to 1905 in the Up direction were; 01.45 from Dover, non stop Dover Priory to Cannon Street in 105 minutes - 09.00, omitted Folkestone stop, ran to Maidstone East in 60 minutes and to Victoria in 59 minutes - afternoon Continental departures - 15.20, non stop Harbour to Cannon Street in 102 minutes - 17.20, non stop the Pier to Herne Hill in 100 minutes - evening - 20.50 non stop Dover Priory to Cannon Street in 110 minutes. The two fast Morning trains from Ramsgate were allowed 73 minutes non stop from Faversham to Cannon Street and 93 minutes from Margate to Herne Hill respectively.

The principal Hastings line trains were: 08.40, non stop West St. Leonards to Cannon Street in 91 minutes - 08.53 ex Bexhill West, non stop Tunbridge Wells to Cannon Street in 54 minutes - 08.56 ex Hastings, non stop Tunbridge Wells to London Bridge in 48 minutes - the two Victoria trains left at 09.40 and 17.00.

SE&C D Class performance 1902 and 1903

The Victoria trains ran from Tunbridge Wells to Herne Hill, the next stop in 65 and 51 minutes respectively. It can be seen that whilst Hastings had an improved service in 1910 compared with five years earlier the Up services from the Kent Coast and in connection with sailings from the Continent had had their schedules eased by a few minutes.

The through trains to the Midland and Great Western Railways left Dover Harbour at 10.40 and 11.05. The Midland train, with six stops, reached Herne Hill via Tonbridge in 2 hours 22 minutes. The Great Western train was allowed 36 minutes Ashford to Tonbridge, 25 minutes from there to Redhill and 86 minutes on to Reading with stops at Dorking, Guildford and North Camp.

SE&C Train loads until the end of 1905 were reasonable, indeed the older Stirling and Kirtley locomotives could maintain schedule with enthusiastic crews. The Wainwright/Surtees 4-4-0's kept time easily. Rous Marten had a few experiences with D Class 4-4-0's immediately after they entered service [Ref.2]. In 1902 with No.730, in the Down direction with the 09.00 Charing Cross to Dover Pier via the South Eastern route and on the return by the 17.15 from Dover via the former LC&D route loads were 210 tons Down and 190 tons Up. There were signal checks at London Bridge, Hither Green and Grove Park, the initial 10.1 miles from Cannon Street to Chislehurst required 19 minutes 59 seconds, then there was a clear road to Dover. The 66.2 miles to the Pier run in 76 minutes 29 seconds pass to stop, without exceeding 66 miles per hour. In the Up direction Sheperdswell, 6.8 miles, was passed in 12 minutes 36 seconds, average speed 32 miles per hour from passing Kearsney. No actual speeds were given but Rous Marten hinted they were high, passing times suggest the mid-seventies at Canterbury East. Faversham, 26.5 miles was passed in 33 minutes 38 seconds and Chatham, 44.1 miles, in 50 minutes 21 seconds, the 7.3 miles from Faversham to Sittingborne run at an average of 72 miles per hour.

Rous Marten elsewhere in his article mentioned that, "Mr. Wainwright's locomotives could certainly run at 78 or 80 miles per hour". It can be deduced that No.730 reached 78 before Canterbury and 80 at Teynham. The 23.4 miles from Chatham to Bromley took 30 minutes 51 seconds, Herne Hill was passed in 88¾ minutes from the start and Victoria reached in 95 minutes 5 seconds. This train, unusually did not stop at Herne Hill, the service connecting with the incoming Boat was run as two separate trains due to a previously cancelled sailing.

Approximately one year later Rous Marten had a round trip with D Class 4-4-0 No.737, one of the locomotives built at Ashford with 19¼ inches diameter cylinders. The Down journey made with the 11.00 ex Victoria, the load 230 tons after the Herne Hill stop. There was a signal check at Beckenham Junction, then with a clear road the 74.4 miles to Dover were run in 91 minutes 23 seconds start to stop. The maximum was 76 miles per hour and "seldom fell below 40 miles per hour up the steep banks", Net time Herne Hill to Dover 89½ minutes, schedule 100 minutes.

SE&C Kirtley 4-4-0 performance

In the Up direction with the 17.15 ex the Pier, assessed ten tons lighter, speeds were 35 miles per hour up to Sheperdswell, 30 minimum up to Sole Street and the journey maximum 82. The entrance to Penge tunnel, 71.4 miles, was reached in 81 minutes, there were various signal checks, a two and a half minutes stop at Herne Hill to detach the City portion and the final arrival at Victoria was six minutes late. Number 737 was running about five minutes ahead of No.730 at Penge and with a similar finish could have reached Victoria in 90 minutes from Dover.

Whilst Rous Marten enjoyed four excellent runs behind D Class 4-4-0's, his experiences behind Kirtley designed 4-4-0's in 1900 and 1901 were overall poor. M3 Class 4-4-0 No.12 with 140 tons on the 09.00 ex Victoria left Herne Hill eight and a half minutes late and reached Dover one minute early. Actual running time was 91 minutes 59 seconds including a signal stop lasting 71 seconds and two signal checks. On the 11.00 with 160 tons and double headed by M3 Nos.14 and 20 the time from Herne Hill to Dover was 102 $\frac{3}{4}$ minutes. In the Up direction No.13, with 170 tons ran from Dover Pier to Herne Hill in 100 minutes 37 seconds. It only reached 25 miles per hour on the 1/132 to Shepherdswell and up to Selling and on the 1/100 to Sole Street 20. Numbers.14 and 20 returned on the 17.25 with 180 tons and took 108 minutes 49 seconds to reach Herne Hill. Number 24 with 178 tons, hampered by a signal stop and six severe signal checks required 113 minutes.

An M3 Class 4-4-0 No. 485 in 1901 with 200 tons on the 09.00 ex Victoria ran from Herne Hill to Dover Pier in 97 $\frac{1}{2}$ minutes. [South Eastern locomotives were allocated 1 to 459 in the SE&C list, LC&D locomotives had 459 added i.e. No.26 became 485]. There was one signal check at Sittingborne; the maximum was 70 miles per hour reached on the descent from Sole Street. On the return, with a lighter load the time over the same distance was 103 minutes 12 seconds. Speeds were 30 miles per hour up to Shepherdswell and 23 to Sole Street. Three weeks later, on the same train Nos.4 and 19, in harness, attained 36 miles per hour up to Shepherdswell but at Sole Street only 20. Rous Marten said, "This was quite the worst performance I have ever experienced behind the Kirtley engines".

It is difficult to reconcile these indifferent performances with those timed by Pattinson some three to four years previous. Intuitively one feels this was connected with the formation of the SE&C Management Committee, which for whatever reason disheartened the LC&D footplate crews.

W.J.Scott [Ref.3] writing in 1899 said the SE and the LC&D show a most striking improvement in everything except high speed. "At present they are a little in the position of Austria and Hungary, with a personal union under the reign of King Alfred". [Alfred Willis was General Manager of the SE&C] One of the first new services initiated after the "union", ran from Victoria to Hastings. Rous Marten made a return trip, out on the 10.30 ex Victoria and back on the 17.26 ex Hastings. An M3 Class 4-4-0 No.16, with a load of only 90 tons, lost time in both directions.

SE&C the 16.36 to Folkestone in 1905

In the autumn of 1901 Rous Marten fared better, No.462 [ex. No.3] with 120 tons gained seven minutes on the 54 minutes schedule from Tunbridge Wells to Herne Hill.

Rous Marten's experience on the South Eastern with No.730 has already been mentioned. He travelled four times to Folkestone in 1905 [Ref.4].on the 16.36 Cannon Street to Folkestone, schedule 84 minutes. Locomotives and loads were: D Class 4-4-0 No.734, 240 tons - No.734, 200 tons - Stirling B Class 4-4-0 No.456, 260 tons - D No.727, 250 tons. He quoted no times for the Stirling, "it was much impeded by signals and therefore arrived late".

The three runs by the D Class 4-4-0's were interesting, in fact he was quite enthusiastic about them, despite the fact they failed to deliver i.e. they all reached Folkestone late. Number 734, on the first occasion took six and three quarter minutes to pass New Cross from Cannon Street and exactly 20 minutes to cover the adverse 11.4 miles to Knockholt, the minimum on the 1/120 past Grove Park was 30 miles per hour. On the second, No.734 passed New Cross in 6 minutes 7 seconds and took another 23 minutes 5 seconds to Knockholt, falling to 25 miles per hour at Grove Park. Number 727 fell to 33 miles per hour at Grove Park, rose to 36 at Chislehurst, further to 41 on the more easily graded stretch past Orpington and passed Knockholt at 34. [Rous Marten quoted speeds only for this journey, whereas on the two runs behind No.734 he gave passing times and the one speed at Grove Park]. Number 734 passed Sevenoaks in 33 minutes 9 seconds and 37 minutes 53 seconds. On the first the run downhill to Tonbridge was quick, Sevenoaks to Tonbridge, including the slowing to 30 miles per hour for the curve before Tonbridge station, 7.5 miles, run in seven and a half minutes. On the second the equivalent time, due to signal checks was nine and a quarter minutes. The times to Tonbridge for No.734 were 40 minutes 39 seconds and 47 minutes 8 seconds, 40 minutes exactly for No.727.

The fast stretch from Tonbridge to Ashford was run in 29 minutes 35 seconds, 30 minutes 10 seconds and 30 minutes respectively. Number 727 showed considerable fluctuations in speed over this stretch, even allowing for variations in gradients. Actual speeds were; 60 miles per hour at Paddock Wood falling away to 56, 69 at Marden, a fall to 49 on the gentle rise to Chart. The final arrivals at Folkestone were 64 seconds, eight minutes five seconds and two minutes late respectively.

In the Up direction "The" Folkestone express was the 08.30, allowed 90 minutes to Cannon Street. Rous Marten gave details of three runs made in 1905. Locomotives and loads were; B Class 4-4-0 No.453, 200 tons - D Class 4-4-0 No.745 200 tons – D No.75, 200 tons [Ref.5]. The overall times were, 86 minutes 24 seconds, 84 minutes 11 seconds and 89 minutes. Numbers 453 and 745 passed Ashford in 18 minutes 24 seconds and 18 minutes 44 seconds after both experienced a PWR slack at Smeeth, on the second occasion to ten miles per hour. The initial times to Westenhanger had been similar, 9 minutes 17 seconds and 9 minutes 20 seconds.

SE&C the 10.08 ex Margate 1903

The 26.6 miles from Ashford to Tonbridge took 26 minutes 16 seconds and 25 minutes 16 seconds with maxima of 70 and 73 miles per hour and the uphill stretch from Tonbridge to Sevenoaks 12 minutes 59 seconds and 13 minutes 2 seconds. The minimum each time between Hildenborough and Sevenoaks was 31 miles per hour. Number 745 accelerated initially on the 1/120 gradient, 32 to 33 miles per hour and then due to slipping fell away to 31 in Sevenoaks Tunnel. Knockholt, 54.4 miles was passed in 64 minutes 58 seconds and 64 minutes 24 seconds at minima of 40 and 45 miles per hour. There were PWR slacks at Orpington and Chislehurst with speeds restrained on the downhill section from Knockholt to New Cross. Net times were probably 81½ and 80 minutes respectively. The run with the large boilered Stirling was a very competent performance.

The only record the Author has traced on the Kent coast up to 1905 was one timed by J.F.Vickery. [Ref.6]. He prefaced his log with the comment "Although the SE&C is not very famous for the number and speed of its expresses". The run was recorded in 1903 and was a special limited express running ahead of "The Granville", booked to depart Margate at 10.08. ["The Granville" itself left at 10.13 with a non stop booking from Westgate to Herne Hill in 90 minutes.] The locomotive was D Class 4-4-0 No.745 with a light train of 135 tons Gross, consisting of, one four wheeled brake, two six wheeled thirds, one six wheeled second, one eight wheeled bogie lavatory first, all for Victoria, one eight wheeled bogie composite first and second, two six wheeled thirds and one six wheeled brake for the City. The coaches were of South Eastern origin.

Number 745 was checked by signals at New Brompton [Gillingham] and stopped for 36 seconds at the foot of Sole Street bank. Speeds were 55 miles per hour average between Herne Bay and Whitstable, 60 between Teynham and Sittingborne, after the signal stop 30 up the 1/100 to Sole Street, 67 average between Fawkham and Farningham Road, and probably more exciting for the passengers 64 between Bickley and Bromley. The total time from Margate to the stop at Herne Hill was 93 minutes 20 seconds, probably 89 minutes Net.

Number 555, a Kirtley large "Scotchmen" 0-4-2 Well Tank ran the City portion from Herne Hill to St. Pauls in 7 minutes 48 seconds including a signal check at Blackfriars. Speed averaged 49 miles per hour between Camberwell and Walworth Road. Number 55 at this time was running with a boiler, which had a working pressure of 150 pounds per square inch and a total heating area of 853 square feet. The firegrate area was 14½ square feet and the locomotive weighed 42 tons.

Express train weights, particularly on the Continental Boat trains, increased considerably from 1906 to 1914. Probably in anticipation of this, in May 1906, a series of Trials was carried out between Ashford and Tonbridge with a D and an E Class 4-4-0 and loads varying from 140 to 400 tons. In the two years leading up to the War 90 minutes schedules were introduced to Margate and Dover with restricted loads, other express trains were increasingly heavy.

SE&C performance from Dover and Folkestone 1906-1914

D or E Class 4-4-0's hauled most express trains on the Folkestone, Dover and Kent Coast routes, during the eight years before the War. Boat trains invariably loaded to 300 tons, sometimes 350 tons or more. The locomotives hauled up to seven times their own weight plus the tender, generally, taking into account their relatively small dimensions, they performed well. The traveller on the South Eastern route had a reasonable chance of arriving on time, and even if late it would usually be only a matter of minutes. The SE&C came under continual pressure from the travelling public to speed up its services. "Dover in 90 minutes" was a frequently repeated clarion call. The SE&C operated its services over track that had quite severe axle load limits, particularly true of the ex. LC&D route where little if any progress was made in bridge improvements during the whole of the SE&C Management Committee's existence.

Details of 66 journeys [Ref.7] afford a reasonably complete view of day to day locomotive demands and performance on the Up Dover and Folkestone Expresses. All 66 trains were hauled by Wainwright/Surtees designed 4-4-0 locomotives, 40 by E Class, the remainder by D Class. Train weights exceeded 300 tons on 39 occasions and 350 tons five times. The remaining 27 included eight when the load was less than 200 tons, eight between 200 and 250 tons and 11 between 250 and 300 tons.

The five heaviest trains merit discussion in some detail. E Class 4-4-0 No.163 with 350 tons ran the 64.4 miles from a stop at Sandling Junction to Cannon Street in 85 minutes. This, the Folkestone Car Train, consisted of six saloon cars and five large bogie coaches with every seat occupied. Ashford was passed in 12½ minutes; the 26.6 miles from there to Tonbridge took 27 minutes 55 seconds and the hard 7.4 miles up to Sevenoaks 13 minutes 55 seconds. The 13 miles from Tonbridge to Knockholt were climbed in 20 minutes 35 seconds. St. Johns, 58.8 miles from Sandling Junction, was passed in 72¾ minutes before there was a stop for signals lasting two and a half minutes. The average speed of 48.5 miles per hour start to pass by a small 4-4-0 hauling seven times its own weight provides a good yardstick with which to measure locomotive performance on the SE&C. This run was made in 1912.

The 21.05 from Folkestone Junction schedule was allowed 93 minutes to Charing non stop. E Class 4-4-0 No.176 with 360 tons ran the initial 5.5 miles to Sandling Junction in 11 minutes 13 seconds and passed Ashford in 21 minutes 18 seconds. The fast stretch to Tonbridge took ten seconds longer than No.163 and up to Sevenoaks No.176 needed 78 seconds more. Orpington 57.1 miles from the start was passed in 75 minutes 54 seconds and Charing Cross reached in 94 minutes 53 seconds. E Class No.166 on the 21.05 on another occasion with 350 tons left the Junction sidings nine minutes late; it then passed Sandling in 11 minutes, Ashford in 21½ minutes and Tonbridge in 50½ minutes. The time from Tonbridge to Sevenoaks was 15¾ minutes and to London Bridge slightly over 90 minutes and to the stop at Charing Cross 94½ minutes.

SE&C E performance in 1913

The 15.20 from Dover [allowed 105 minutes to Charing Cross] loaded to 370 tons with E Class 4-4-0 No.175 ran the initial 6.7 miles from the Pier to Folkestone in 14 minutes 28 seconds after a 30 minutes late start. The average from Folkestone to Sandling was 35 miles per hour, the maximum before Tonbridge 60, the station was passed in 64½ minutes from Dover. The climb to Sevenoaks with this big train was laboured, almost 16 minutes for the 7.4 miles and it took 90 minutes 10 seconds to pass Orpington, 63.8 miles. There was a signal check at St. Johns and Charing Cross reached in 110 minutes 10 seconds, without the signal check the loss against schedule would have been four minutes. The locomotive developed an EDHP of 575-625 ascending the long gradient from Dover to Westenhanger.

These four runs were all timed in 1912. In 1913 C.J.Allen travelled on the 13.40 ex Folkestone Harbour. The train weighed 350 tons and was taken by three 0-6-0 Tank's from the Harbour station to the Junction sidings in 3 minutes 35 seconds. Three minutes later E Class 4-4-0 No.179, attached at the opposite end left for Charing Cross. Number 179 passed Westenhanger in 13 minutes 35 seconds and attained 37 miles per hour up the gradient, an EDHP of 575-625. The time to Ashford was 22 minutes 5 seconds and on to Tonbridge another 27 minutes 40 seconds with a maximum of 65 miles per hour. The climb to Knockholt took 22 minutes 40 seconds, with a minimum of 27 miles per hour entering Sevenoaks tunnel, 14 minutes 55 seconds from Tonbridge to Sevenoaks, a maximum of 54 after Sevenoaks and a final minimum 32 on the 1/143 up to Knockholt. New Cross was passed in 84 minutes 35 seconds, after 68 miles per hour at Hither Green, from where signal checks caused the train to take 88¾ minutes to pass London Bridge and 96¼ minutes to stop at Charing Cross. Allen reckoned the Net time from Folkestone Junction to Charing Cross 91½ minutes, 98 minutes from the Harbour - two minutes less than schedule.

Allen recorded another run around the same time on the 19.55 Ostend Boat Express when the start out of Dover was excellent. The locomotive was Boat Train regular, E Class 4-4-0 No.179, the load 320 tons and from the restart at Folkestone Central it reached 44 miles per hour up to Westenhanger, passed in 10 minutes for the 5.7 miles. After 68 miles per hour at Ashford the train was badly delayed at Headcorn and Marden. Tonbridge was passed slowly, 28 miles per hour was attained at the top of the 1/120 with an increase to 30 on the 1/144 through the tunnel. The minimum at Knockholt was 43 miles per hour after a maximum of 55 at Dunton Green, the time from Tonbridge to Knockholt 22 minutes 5 seconds. Number 179 developed an EDHP of 675-725 both up to Westenhanger and between Tonbridge and Sevenoaks. The run was further checked in the Suburbs, London Bridge finally reached in 96¾ minutes, despite the delays, within the 97 minutes schedule, although this schedule allowed for diversion over the slower Maidstone route. Allen reckoned the Net time was 84 minutes from Folkestone to London Bridge. Two earlier Rous Marten experiences in 1907 with trains in the 300-350 tons range gave times from Folkestone Junction to Charing Cross of: 90 minutes 52 seconds [87 minutes Net] by E Class 4-4-0 No.273 with 330 tons -

SE&C performance on Up Boat trains

One hundred and three quarter minutes by D Class 4-4-0 No. 736 with 320 tons, respective schedules 94 and 104 minutes. On the first occasion the Ashford to Tonbridge time was 26 minutes 34 seconds and after the Tonbridge slack speed reached 33 miles per hour and fell to 30 in the tunnel.

Some five years later E Class 4-4-0 No.176 with 325 tons took 99 minutes 5 seconds, 88 minutes Net. It reached 41 miles per hour up to Westenhanger and 70 at Headcorn after which there was a prolonged signal stop at Tonbridge. From the restart the climb to Knockholt was fairly laboured, 23 minutes to Knockholt, but then the 16.6 miles to Charing Cross were run in 19 minutes with a maximum of 71 miles per hour past Hither Green.

The 13.40 from Folkestone Junction in 1911 stopped at Tonbridge, schedule 50 minutes with another 47 minutes on to Charing Cross. E Class 4-4-0 No.19, with 280 tons, reached Tonbridge in 51¼ minutes, 50 minutes Net and ran the continuation to Charing Cross in 46 minutes 10 seconds. Times for D Class 4-4-0 No.726 with 310 tons were 53 minutes 26 seconds and 49 minutes 2 seconds and for E No.67 with 310 tons, 52½ minutes, 52 minutes Net and 46 minutes 27 seconds. They passed Sevenoaks from the Tonbridge start in 16 minutes 54 seconds, 17 minutes 35 seconds and 17 minutes 38 seconds respectively. A year later E No.491, with 320 tons demonstrated that the schedule to Tonbridge could be kept. From the Folkestone start Sandling was passed in 10½ minutes, Ashford in 21 minutes and the 26.6 miles from there to Tonbridge took 28 minutes. From the restart Sevenoaks was passed in 17 minutes and Charing Cross reached in 47¼ minutes.

E Class 4-4-0's usually worked the Boat Trains in 1914; the smaller D Class 4-4-0's unable to consistently maintain the schedules, the experience with No.726 probably typical. A year earlier D No.750, with 340 tons on the 13.40 ex Folkestone Harbour started well from the Junction, Westenhanger in 13 minutes 25 seconds and Ashford in 21 minutes 55 seconds. The climb up to Sevenoaks reduced speed to 24 miles per hour and at Knockholt, passed in 77 minutes 50 seconds it was only 28. There was a final flourish, 69 miles per hour at St. Johns and London Bridge reached in 94 minutes 25 seconds.

Four runs on Dover to Victoria trains via Tonbridge probably represent the normal performance with reasonable loads before the outbreak of War. D Class 4-4-0 No.502 with 320 tons ran from Dover Town to passing Ashford in 31 minutes and was through Tonbridge inside 59 minutes. Victoria was reached in 103 minutes 25 seconds after signals at Beckenham Junction, Herne Hill and outside Victoria. Three runs of the runs [Ref.8], D No.490, with 300 tons, E Class 4-4-0 No.511 with 260 tons and superheated E No.36 with 260 tons, although starting from Dover were all timed from passing Folkestone. The actual [Net] times from Folkestone pass to Victoria were: 100 minutes 5 seconds [95 minutes] - 90 minutes 50 seconds - 89 minutes 45 seconds and from Ashford to Tonbridge: 28 minutes 25 seconds - 28 minutes 30 seconds - 27 minutes 35 seconds, from Tonbridge to Sevenoaks and on to Knockholt : 15 minutes 50 seconds [this train stopped at Sevenoaks for water

SE&C the superheated E's

- 13 minutes 30 seconds [20 minutes 40 seconds] -12 minutes 15 seconds [19 minutes 25 seconds]. Knockholt was passed in 75 minutes 20 seconds, 67 minutes 10 seconds and 65 minutes respectively from Folkestone. The Net time for the D was probably 72½ minutes although logic says delays due to taking water should be set against the locomotive. The average speeds over this 54.4 miles section were 45, 48.5 and 50.2 miles per hour.

The outstanding performance, even allowing for the comparatively light load, was by the superheated E Class 4-4-0 No.36, in climbing from Tonbridge to Sevenoaks in 12¼ minutes, which required a speed in the upper thirties on the 1/120. The E, with its time of 13½ minutes also ran very well over this section. The D, after stopping for water at Sevenoaks, supposedly due to a leak in a firebox tube, climbed to Knockholt in 9 minutes 10 seconds and ran from Knockholt to Victoria, 17.6 miles, in 25¾ minutes. This included a time of 9 minutes 55 seconds over the 8.7 miles from Bickley to Herne Hill. The E and the superheated E ran the Knockholt to Victoria stage in 23 minutes 40 seconds and 24¾ minutes, the Bickley to Herne Hill sections took 9 minutes 50 seconds and 10 minutes 5 seconds.

E Class 4-4-0's Nos. 36 and 275 were rebuilt in 1912 incorporating a Robinson and Schmidt designed superheater respectively. The boiler operating pressure was reduced to 160 pounds per square inch and the cylinder diameter increased to 20½ inches. This led to an increase in locomotive weight, 53½ tons, which unfortunately restricted route availability. Number 36, with the Robinson superheater, had a total heating surface of 1,426 square feet [1,063 square feet in the boiler tubes, 136 square feet in the firebox and 230 square feet in the superheater]. Number 275, with the Schmidt type superheater, had a slightly lower total heating area; the superheater area was 211 square feet. Both locomotives had excellent reputations, the run behind No.36 explains why.

Some details of other runs in the period from 1910 to 1914 further amplify the quality of day to day running on the South Eastern Main line.

1910

Class E No.159 Folkestone to New Cross pass	- 89¾ minutes	-270 tons
Class E No.159 " " " "	- 81¾ "	-250 "
Class E No.514 Sandling Jct. to Grosvenor Rd.	- 80 "	-180 "

Although the load behind No.514 was light, speeds were high. Paddock Wood, 30.6 miles was passed in 30 minutes 4 seconds, with a maximum of 72 miles per hour at Headcorn. After the Tonbridge slack, passed in 36 minutes 42 seconds, the 7.4 miles to Sevenoaks were run in 11 minutes 35 seconds and with signal checks afterwards, Grosvenor Road was finally reached one minute early, departure from Sandling was three minutes late. This was the Sunday evening express from Deal.

Class E No.275 Folkestone Cen. to L'B'ge	- 89¾ minutes [82Net]	- 270 tons.
Class D No.750 " " " "	- 100½ minutes [90Net]	- 340 tons

SE&C Day to day Up Boat train performance

1911

Class D No.574 Dover to Victoria - 109¼ minutes [103 Net] - 310 tons
Class E No.507 “ “ “ - 125½ minutes [111 Net] - 310 tons
Class D No.727 Ashford to London Bridge, . To Tonbridge stop 30¾ minutes
Continuation to London Bridge 39 minutes [36 Net] – 215 tons.

1912

Class E No.273 Folk Jct. to Charing X - 93½ minutes [91 Net] - 295 tons

1913

Class E No.160 Folk Central to Cannon St - 80½ minutes [76 Net] 210 tons
On this run, the 10.40 ex Folkestone Central, non stop schedule 84 minutes to Cannon Street there was a slack for a PWR. to 15 miles per hour at Staplehurst and signal checks at Tonbridge and London Bridge. The 20.2 miles from Sevenoaks to London Bridge were run in 20 minutes 55 seconds pass to pass, with the 9.4 miles from Knockholt to Hither Green covered in seven and three quarter minutes with a maximum of 80 miles per hour after Grove Park. The old South Eastern Railway's 60 miles per hour ceiling was definitely a thing of the past.

Class E No.157 Folkestone Jct. to London B'ge 85½ mins.[84½ Net] 260 tons.
Class D No.509 Folkestone Cen. to Cannon S. 89 mins.[84½ Net], 255 tons.
No.509 ran the first 40.4 miles to Tonbridge in 44 minutes 47 seconds.

1914

Class D No.549 Dover Pier to London Bridge - 102¾ minutes, - 255 tons
Class D No.549 Dover Pier to Charing Cross - 105½ minutes - 330 tons
Class D No.732 Folkestone Cen to Cannon St. - 84½ mins [82 Net] - 215 tons
Class D No.502 “ “ “ “ “ - 88½ mins [83 Net] - 205 tons

The Down Boat Trains loads were far more consistent. [They were not subject to the vagaries of late sailings and the consequent need at times to add additional coaches at the very last moment as occurred with London, bound trains. The most frequent cause of heavy Up trains was when a late sailing resulted in the arrival of the Ostend and Calais boats almost simultaneously.]

The heaviest loads, for which details exist, in the Down direction, were on the 11.00 ex Victoria in 1911 and on the 16.33 ex Charing Cross in 1912, in each case 345 tons. C.J.Allen [Ref.9] was on the footplate of E Class 4-4-0 No.275 on the 16.33. Allen reported at the time that “in fairness“ to the driver the locomotive was not his [the driver's] regular locomotive, there was an adverse side wind and the locomotive was booked for repairs the following day. In practice the performance was very good, no apologies were needed.

SE&C over 300 tons on Down Boat trains

E Class 4-4-0 No.275 reached 46 miles per hour at New Cross, fell to 27 on the 1/120 up to Elmstead, accelerated to 39 through Orpington and finally fell to 28 at Knockholt, passed in 29 minutes 10 seconds from Cannon Street. [27 miles per hour on 1/120 represented an EDHP of 675-725 and 39 on 1/310 575-625. Since it was still accelerating at Orpington, it is likely the EDHP was c.700 continuously from New Cross to Knockholt]. There was a bad signal check at Dunton Green and a PWR. slack at Paddock Wood from which No.275 accelerated this sizeable train to 61 miles per hour at Headcorn. The load was reduced to 220 tons after the Ashford slip, Folkestone was reached in 94 minutes 42 seconds, seven and three quarter minutes late, 87 minutes Net as per schedule.

Rous Marten in 1906 travelled on the afternoon Continental Express with D Class 4-4-0 No.740 and a 310 tons train. He claimed 36 miles per hour was maintained up the 1/120, which then fell away to 27 at Chislehurst, this CRM thought might be due to a PWR. slack. The speed at Knockholt was 32 miles per hour, the maximum after Paddock Wood 63 and the final time to Folkestone Junction two seconds inside the 94 minutes schedule. The performance climbing up to Knockholt was similar to that recorded by C.J.Allen with E Class 4-4-0 No.275, unless 36 miles per hour really was sustained on the 1/120 which would require an EDHP of 860-910. This suggests that the equivalent sustained speed was 27 to 28 miles per hour representing an EDHP of 640-690.

The morning 10.00 o'clock service was allowed ten minutes longer in the timetable and E Class 4-4-0 No.247 with 290 tons reached Folkestone Junction in 97½ minutes. J.F.Gairns recorded two journeys in 1909. D Class 4-4-0 No.75 with 312 tons [presumably about 330 tons Gross] reached Folkestone in 90½ minutes, including two PWR slacks in the London suburbs and a slowing to 15 miles per hour at Paddock Wood. E Class 4-4-0 No.19 with 295 tons ran from a signal stop at New Cross to the Folkestone Junction stop in 82½ minutes.

Trains at this time still on occasions loaded lightly, on the 11.15 ex Victoria E Class 4-4-0 No.514 with 180 tons ran to Folkestone Central in 94 minutes, a loss on schedule of four minutes. This train ran via Swanley, the 14.8 miles from Bickley to Sevenoaks Tubs Hill were covered in 18 minutes 50 seconds after which it required another 54¼ minutes to reach Folkestone. E No.315 on the 17.05 from London Bridge with 110 tons reached 54 miles per hour at Orpington and only fell to 46 at Knockholt. Folkestone was reached in 80 minutes 25 seconds, 77 minutes Net.

The following details from 1910 onwards present a picture of day to day performance in the Down direction.

1910

Class E No.514 Victoria to Dover Pier 101¼ minutes - 325 tons

SE&C Day to day performance on the Down Boat trains 1911-1914

1911

Class D No.247 Cannon Street to Folkestone 81 minutes [79 Net] - 145 tons
The load was reduced after Ashford to 90 tons by slipping. There was a signal check at St. Johns, Knockholt was passed at 37 miles per hour, 70 reached before the Tonbridge slack, passed in 39 minutes and the maximum after Paddock Wood 68. Ashford was passed in 66 minutes.

Class E No. ...	Charing Cross to Dover Town	95½ minutes	-	330 tons
Class E No.....	Charing Cross to Dover Pier	99¾ minutes	-	330 tons
Speed fell to 29 miles per hour after Grove Park and rose to 41 at Orpington.				
Class E No.515	Herne Hill to Dover Town	98¾ minutes	-	330 tons
Class E No.506	Herne Hill to Dover Town	97 minutes	-	345 tons
Class E No.275	Charing Cross to Dover	98 minutes	[97½Net]	310 tons
Class D No.745	Charing Cross to Tonbridge	47 minutes	[46½Net]	300 tons
Class D No.745	Charing X to Folkestone Jct.	103 minutes	-	300 tons
Class E No.36	“ “ “ “	93 minutes	-	310 tons

1912

Class E No.67	Charing X to Folkestone Jct.	96¾ minutes	[93Net]	- 305 tons.
Class D No.501	Victoria to Dover Town	103¼ minutes	[101Net]	230 tons
Class E No.175	Charing X to Folkestone Jct.	95¼ minutes	-	300 tons

1913

Class E No.275 Cannon St. to Dover Town 97¼ minutes [93Net] - 305 tons
08.53 relief ex Charing Cross via Cannon Street, The 09.00 preceded it whilst the 08.53 stopped at Cannon St. The 08.53 passed Knockholt in 29¼ minutes from Cannon Street. Speeds after were 64 miles per hour at Dunton Green, 46 minimum at Sevenoaks, 72 before the Tonbridge slack and 66 after. No.275 was rebuilt with a superheater at this time.

1914

Class E No.504	Victoria to Dover Town	102½ minutes	[102Net]	- 325 tons
Class E No.514	Victoria to Dover Pier	103 minutes	[100¾Net]	- 295 tons

These two runs emphasise the difficulty of the 98 and 100 minutes schedules with 300 ton trains. Number 504 was over three minutes late past Bickley, 22¼ minutes. It fell to 26 miles per hour at Knockholt, touched 73 before Tonbridge and slowed slightly for a PWR slack at Headcorn, the minimum at Westenhanger was 45 and the time to pass Folkestone Central 94 minutes 21 seconds. Number 514 took nearly nine minutes to pass Herne Hill, was two and a half minutes late at Bickley, 21 minutes 38 seconds. It suffered a signal check approaching Orpington, another through the station, recovered to 29 miles per hour at Knockholt, reached 69 before Tonbridge passed in 47¾ minutes, was severely checked for a PWR slack at Headcorn and fell to 45 at Westenhanger. These schedules required a more powerful locomotive if strict time was to be kept.

SE&C to Dover in 90 minutes

The SE&C introduced a 90 minutes schedule on the 16.30 Charing Cross to Dover in the summer of 1913 with limited accommodation.

Details of three journeys on the 16.30 indicate a new level of speed on the South Eastern route, two recorded in 1913 and one in 1914. Locomotives were: E Class 4-4-0 No.176 with 175 tons - E No.273 with 160 tons - E No.273 with 175 tons. The times to pass New Cross were 8 minutes 40 seconds, 8 minutes 16 seconds, on the third there were signal checks. Number 176 after 56 miles per hour through New Cross, fell to 42 at Grove Park, recovered to 51 at Orpington and passed Knockholt in 23 minutes 20 seconds at 42. [An average speed of 47.5 from New Cross to Knockholt] On the other two runs Knockholt was passed in 24 minutes 55 seconds and 25 minutes 27 seconds, in each case at 31 miles per hour.

Passing times to Tonbridge were 36 minutes 35 seconds, 39 minutes 1 second and 38 minutes 46 seconds. Number 176 reached 69 miles per hour at Dunton Green, fell to 58 at Sevenoaks tunnel and then touched 70 at Hildenborough. Number 273 attained 72 and 73 miles per hour before slowing for the Tonbridge slack. The Tonbridge to Ashford stage was run in 26 minutes 55 seconds with a maximum of 67 miles per hour, 27 minutes 5 seconds and 26 minutes 53 seconds with a slight PWR slack. Times to pass Ashford were 63½ minutes, 66 minutes 6 seconds and 65 minutes 39 seconds, the minima at Westenhanger on the first and third runs 51 and 53 miles per hour with 64 and 70 reached before Folkestone. Number 176 was through Folkestone in 78 minutes 10 seconds but was then stopped by signals before Dover Town station and finally reached the Pier 80 seconds late, without the stop 87 minutes. On its first run No.273 with continuous signal checks from Ashford onwards passed Folkestone in 88 minutes 11 seconds and reached the Pier 7 minutes 8 seconds late. On the second occasion with a clear road it passed Sandling Junction in 73 minutes 19 seconds and reached the Pier in 89 minutes 32 seconds from Charing Cross.

One of the first decisions of the SE&C Management Committee was to reopen the Otford East curve to permit through running from Swanley to Maidstone and Ashford. At the same time the LC&D station at Ashford was closed and all trains used the South Eastern station. The Maidstone line provided an alternative Boat Train route and the Up Ostend Boat train if on time went this way, in practice the boat was often late and it ran via Tonbridge

Rous Marten travelled on the 17.00 ex Victoria in 1906. D Class 4-4-0 No.492 with 200 tons lost 13 minutes to Maidstone, the first stop, actual time 68 minutes. From the restart speed was only 26 miles per hour at Lenham and Folkestone was reached in 48 minutes. Earlier in the year No.492 had performed better, albeit with a lighter train of 160 tons, Maidstone reached in 56 minutes 19 seconds and with a minimum speed of 38 miles per hour on the 1/80 approaching Lenham the continuation to Folkestone run in 45 minutes 2 seconds. In the Up direction the same locomotive and train ran to Maidstone in 40 minutes 24 seconds from Folkestone.

SE&C, via Maidstone to Folkestone and the Hastings branch

Rous Marten quoted a minimum of 45 miles per hour on the 1/100 after Ashford. The Maidstone to Victoria section took 52 minutes 38 seconds [schedules for the two stages 43 and 55 minutes].

Some five years later J.F.Gairns cited E Class 4-4-0 No.547 with 180 tons reaching Maidstone in 59 minutes, including a slack for bridge repairs at Kent House and continuing to Folkestone in another 46 minutes including a long PWR slack past Ashford. The distances from Victoria to Maidstone and from there to Folkestone Central are 39.9 and 33.1 miles. A D Class 4-4-0 No.734 in 1912, with a light train of 140 tons, starting from Ashford, passed Maidstone in 25¼ minutes, Otford Junction in 45¼, Swanley in 55¾ and reached London Bridge over three minutes within schedule, actual time 74 minutes 49 seconds for the 55.9 miles from Ashford.

Locomotive performance over the Hastings route was seldom reported and from what was, appears like that over the Maidstone route, taking into account train weights, to have been relatively undemanding. Rous Marten sampled the "Victoria flyer" in 1906, Kirtley M3 Class 4-4-0 No.467, with 160 tons, fell to 29 miles per hour on the 1/95 before Bickley, did not exceed 60 before Tonbridge and dropped to 25 on the short section of 1/53 after the station. The overall time from Victoria to Tunbridge Wells was 62¾ minutes, schedule 60 minutes including the Herne Hill stop. In the Up direction the same locomotive and train lost six minutes between Tunbridge Wells and Victoria. Rous Marten quoted the driver "I'm afraid to run after the Salisbury accident".

A Stirling B1 Class 4-4-0 No.21, with 210 tons lost one minute on the 49 minutes schedule from Cannon Street to Tunbridge Wells. It passed Elmstead at 38 miles per hour, Knockholt in 24 minutes 54 seconds, Sevenoaks in 31 minutes 25 seconds, Tonbridge in 40 minutes 11 seconds and reached Tunbridge Wells Central in exactly 50 minutes. A comparison run although with a lighter load, 150 tons, with a Kirtley M3 Class 4-4-0 No.474 on the Victoria service passed Bickley in 12½ minutes from the Herne Hill start and Knockholt in 20 minutes 58 seconds. The 13.0 miles from there to Tonbridge took 14 minutes 21 seconds, almost a minute less than the B1 and with a time of nine and three quarters minutes onwards from Tonbridge to the Tunbridge Wells stop the final arrival was almost two minutes early, actual time 45 minutes 5 seconds. [Ref.10]

A B1 Class 4-4-0 No.458, in the Up direction, on the Victoria service with only 85 tons, ran from Tonbridge to Herne Hill the next stop in 36¾ minutes, schedule 37 minutes. The initial 7.4 miles to Sevenoaks took only 11 minutes 17 seconds and Bickley, 18.6 miles was passed in 25 minutes 6 seconds. B1 No.443, with 120 tons starting from Tunbridge Wells ran down the hill to Tonbridge, 4.85 miles, in seven and a quarter minutes and covered the next stretch to Sevenoaks in 12 minutes 22 seconds. It passed Bickley, 23.5 miles, in 33 minutes 55 seconds and reached Herne Hill 18 seconds late against the 44 minutes schedule. [Ref.11]

SE&C the L Class 4-4-0

C.J.Allen, in 1914, quoted an "Ealing correspondent", who travelling on the 15.53 from Cannon Street noted a six minutes late departure. There were signal checks at London Bridge, New Cross was passed in 7 minutes 10 seconds, [the 8.9 miles from there to Orpington took 11 minutes 55 seconds, an average of 45 miles per hour] and Sevenoaks in 28 minutes 50 seconds. The time to Tonbridge was five seconds inside 36 minutes and the stop at Tunbridge Wells effected in 44 minutes 5 seconds from Cannon Street, 43 minutes Net, the schedule was 48 minutes. The 15¼ miles to the next stop at Robertsbridge were run in 18 minutes 20 seconds and the 11.1 miles from there to the West St. Leonards stop in another 14 minutes 25 seconds, a further gain on schedule of three and a quarter minutes. The train weighed 220 tons and the locomotive responsible for this lively running was newly built L Class 4-4-0 No.779.

Twenty-two L Class 4-4-0's [designed by Wainwright and Surtees in 1913] were built in 1914. Number 779 was one of a batch of ten delivered from Borsig in July. They had 6 feet 8 inches diameter coupled wheels and two inside cylinders, [20½ inches diameter by 26 inches stroke]. The boiler working pressure was 160 pounds per square inch, the total heating area 1,731 square feet [1,252 square feet in the boiler tubes, 160 square feet in the firebox and 319 square feet in the superheater tubes]. The firegrate area was 22½ square feet and the locomotive weighed 57½ tons, the tender another 40 tons. Axle weights [the SE&C Management Committee had failed to improve the civil structures on the LC&D lines] restricted them to South Eastern routes.

The L Class 4-4-0's, the last locomotives designed under Wainwright's aegis, were actually built after Maunsell had picked up the reins. Maunsell is credited with improving the design in respect to some details.

The last new design actually built during the Wainwright regime was the J Class 0-6-4 Tank. They had 5 feet 6 inches diameter coupled wheels and two inside cylinders, [19½ inches diameter by 26 inches stroke]. The boiler working pressure was 160 pounds per square inch and the total heating area 1,233 square feet [887 square feet in the boiler tubes, 112 square feet in the firebox and 234 square feet in the superheater tubes]. The firegrate area was 17½ square feet and the locomotives weighed 70½ tons. Coal capacity was three and a half tons, water 2000 gallons. The locomotives were purportedly developed for the Hastings route, including commuter trains to Tonbridge and express's to Hastings. After initial teething troubles No.207 was tested on the 12.00 Hastings to Charing Cross and reported "too short in the legs". Aside from the 5 feet 6 inches diameter driving wheels one cannot but wonder why the powers that be would have thought a locomotive with a grate area of only 17½ square feet had the stomach let alone the legs. Locomotive history on the Southern lines frequently affords examples of smaller locomotives being called on to replace previously barely adequate larger ones. The J Class were subsequently employed on commuter services to Redhill and Dorking, Tadworth and Addiscombe, particularly during the rush hour period when trains were heavy.

SE&C Queenborough Boat trains

During the Wainwright Superintendency many Stirling 4-4-0's were rebuilt, including 69 F Class 4-4-0's which were fitted with domed boilers [seven more of them were rebuilt after Maunsell had assumed the position]. The F1's in their new guise had a firegrate area of 17½ square feet; the boiler working pressure was 170 pounds per square inch and the total heating area 1,124 square feet [1,011 square feet in the boiler tubes and 113 square feet in the firebox]. These modifications increased the locomotive weight to 45 tons. Following on from this success the B Class 4-4-0's, except No.458, were rebuilt to be almost identical to the F1 Class. The 104 Stirling rebuilds, in practice only 103 were in service at the same time, No.185 was converted after No.20 had been withdrawn from service, handled the majority of the secondary main line trains for many years.

Although Boat Trains were increasingly transferred away from the LC&D route during the first decade of the Century, some Dover trains and the two return services to Queenborough still went this way. A Kirtley M3 Class 4-4-0 No.463, with 200 tons in 1911 on the 10.45 ex Victoria ran from Herne Hill to Queenborough non stop in 20 seconds over the 64 minutes schedule. [Ref.12] Three minutes were lost through a PWR slack and the start from Herne Hill was 3 minutes 40 seconds late. In the Up direction, on the 18.15 ex Queenborough No.463, with 175 tons ran to the first stop at Chatham in 25½ minutes including a PWR slack at Rainham, a loss of two minutes. From the restart another two and a half minutes were lost to the next stop at Herne Hill, schedule 40 minutes, with a severe PWR slack at Shortlands causing a three minutes delay. These runs appear to support a statement made by J.F.Gairns in 1910, "making up time on the SE&C is severely discouraged". Whether an official view or not, in practice it seemed to be the case. [Ref.13]

In the early years of the Century the Queenborough Boat trains were often hauled by a Kirtley reboilered Martley designed 2-4-0. One of these, most likely an "Enigma", with three bogies and two six wheelers on the 18.00 ex Queenborough, ran from Chatham to Herne Hill, the next stop in 36 minutes, a gain of one minute on the very tight schedule ruling over the 30.4 miles. The small locomotive attained 40 miles per hour on the 1/100 up to Sole Street.

Rous Marten had a return Boat Train trip to Dover via Chatham in 1906 with E Class 4-4-0 No.504 and 300 tons. The Herne Hill to Dover stage took 97 minutes 56 seconds, the minima up the 1/95 to Bickley and the 1/100 to Emsden were 37 and 36 miles per hour. On the Up journey the stage took 40 seconds longer, the minimum up to Sole Street was 27 miles per hour with 73 attained downhill at two different locations. If the 27 miles per hour was a maintained figure this required an EDHP of 725-775.

Some three years later J.F.Gains recorded E Class 4-4-0 No.515, with 280 tons, on the 17.20 from Dover reach Herne Hill in 104 minutes, with several bad checks en route. D Class 4-4-0 No.586 with an identical load took 101 minutes, including checks at Beckenham, Kent House and in Sydenham Tunnel.

SE&C Dover Boat trains via Chatham

The flexibility available to Boat Trains, vis a vis route availability is highlighted by a journey in 1910 behind E Class 4-4-0 No.160 with 295 tons on the 08.58 from Cannon Street. It ran to Dover via Chatham. [Ref.14] The start was delayed by signal checks to such an extent that it required 28 minutes to pass St. Mary's Cray, 12.5 miles, the 63.8 miles from there to Dover took 86¼ minutes. The maximum descending from Sole Street was 65 miles per hour; the 106 minutes schedule to Dover was exceeded by eight and a quarter minutes. Chatham was passed five and three quarter minutes late, schedule 49 minutes and the 57 minutes allowance on to the Pier exceeded by 2 minutes 35 seconds.

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The schedule for the 17.20 ex Dover Pier in 1911, non stop to Victoria, allowed 105 minutes. R.E.Charlwood recorded three journeys on this train behind E Class 4-4-0 No.514 with 295 tons, E No.507 with an identical load and E No.511 with 305 tons. The actual and [Net] times for the three runs were: 111 minutes 55 seconds [111 minutes] - 110 minutes 47 seconds [110 minutes] - 120 minutes 1 second [118 minutes]. The minima ascending Sole Street on the second and third runs were 22 and 21 miles per hour. Herne Hill was passed in 104 minutes 20 seconds and 102 minutes 52 seconds on the first two occasions. This schedule appeared quite unrealistic with a 300 ton train and one can envisage that once footplate crews accepted this they would have little incentive to try to maintain time.

W.J.Scott, in 1912 timed an E Class 4-4-0 with 307 tons Net, probably 330 tons Gross, on the first part of the 11.00 ex Victoria, actually booked to depart at 10.57 and allowed 107 minutes non stop to Dover Pier via Chatham. Herne Hill was passed in nine and a quarter minutes, Swanley in 29 minutes 10 seconds [over three minutes late] and from there the 9.2 miles to Sole Street were run in the excellent time with this load, of ten and three quarters minutes. Without exceeding 62 miles per hour on the subsequent descent Chatham was passed in 49 minutes 22 seconds, schedule 48 minutes. At Faversham the train was two and three quarter minutes late, 70 minutes 42 seconds. The difficult 23.1 miles from there to Kearsney took 30 minutes 52 seconds, before adverse signals in the tunnel by Dover Priory resulted in a stop and a Pier arrival ultimately in 109 minutes 59 seconds. Kearsney was passed in 101 minutes 34 seconds indicating an arrival at the Pier with a clear road in 106 to 107 minutes was possible.

Working 300 tons trains over the Chatham line with relatively small 4-4-0's represented a considerable challenge for footplate crews, particularly if they resisted the temptation to run quickly downhill.

J.F.Gairns, in 1913, timed D Class 4-4-0 No.737 with 320 tons on the 11.00 ex Victoria. From the Herne Hill restart it passed Sole Street in 33½ minutes, Faversham in 68 and reached Dover Harbour in 104. A loss of seven minutes on schedule, but 320 tons for a D represented more than a challenge, it bordered on a guilty plea of cruelty to engines.

SE&C the 17.15 ex Dover

Two further runs [Ref.15] on the 17.15 from Dover in 1912, against a non stop schedule of 107 minutes to Victoria, gave actual times of 109 minutes 10 seconds and 125 minutes 30 seconds, 103 and 111 minutes Net. The load in each case was 310 tons, the locomotives, rather surprisingly D Class 4-4-0 No.574 and E Class 4-4-0 No.507. The D started well passing Sheperdswell in 14 minutes 52 seconds, the average from Dover Priory to Sheperdswell was 34 miles per hour, an EDHP of 750-800. The times to Canterbury and Faversham were 26 minutes 12 seconds and 38 minutes 56 seconds, the 17.6 miles on to Chatham run in the excellent time of 17 minutes 24 seconds. There were then delays for signals, 6 minutes 53 seconds to cover the 1.4 miles from Chatham to Rochester Bridge. From what must have been a very slow speed, the 5.9 miles from Rochester Bridge up hill to Sole Street were run in 12 minutes 27 seconds. [The two runs behind E Class Nos. 514 and 507 the previous year had taken 12 minutes 55 seconds and 13 minutes 40 seconds with minima of 21 and 22 miles per hour after running through the Medway Towns at normal speeds]. Number 574 passed Herne Hill in 102 minutes 10 seconds. The E No.507 performance was poor.

Whilst with the normal Boat Train loads in force over the Chatham route during the period 1910-1914 the Surtees/Wainwright 4-4-0's were under powered on the Chatham route, they could keep time on the Tonbridge route, although with little to spare. There were few occasions on the Chatham route when the locomotives did not loose time even with no out of course checks. It must however be emphasised that these small locomotives were hauling 300-350 ton trains up 1/100 gradients on occasions at speeds as high as 27-28 miles per hour.

W.J.Scott was a regular user of the Kent Coast services; indeed at one time he had a free travel pass over the SE&C in return for which he was expected to pass on his advice to the General Manager. In 1912 Scott wrote that the SE&C considered that the 90 minutes non stop schedule to Margate wasn't unduly difficult and consequently introduced further trains to this timing. He however was unable to find in his records an instance when Margate had been reached on time, although if a train were a few minutes late on arrival at Margate it would invariably be on time at Ramsgate. He cited an example when the train exceeded the 95 minutes schedule to Margate by 2 minutes 44 seconds, reduced the lateness to 50 seconds at Broadstairs [schedule 103 minutes] and was 21 seconds to the good at Ramsgate Harbour, schedule two hours.

Scott quoted two logs "from many" on the crack 17.05 ex Ramsgate with the "usual Belpaire locomotives", [E Class 4-4-0], when with 175 and 200 tons the times to pass Herne Hill from Margate were, 93 minutes 10 seconds and 87 minutes 51 seconds. On the first single line working was in force between Westgate and Herne Bay, it took 32¾ minutes to cover the initial 21.9 miles to Faversham. On the second, with a clear road, the time was 26 minutes 54 seconds and on the climb to Sole Street 35 miles per hour was attained on the easier stretch past Cuxton Road, the minimum at the summit 32.

SE&C a rebuilt B on a Margate Express in 1910

The time from Rochester Bridge to Sole Street was 10 minutes 25 seconds, an EDHP of 650-700. Swanley Junction, 56.2 miles from Margate was passed in 69¾ minutes and Victoria reached in 93¾ minutes, 90¾ minutes Net, time was lost for signal checks between Swanley and Bickley. On the first run there were signal checks and a stop between Herne Hill and Victoria, the Net time 92 minutes.

In the Down direction Scott quoted, as typical an occasion when, with 200 tons there was a signal check at St. Mary Cray, it took 29¾ minutes to pass Swanley, 17.6 miles from Victoria and the 56.2 miles from Swanley to Margate another 65½ minutes. In 1913 he published a log, without comment, on the 09.10 ex Victoria with 150 tons, reduced to 100 tons by slipping at Faversham. Passing times from Victoria were: Bickley, 11.9 miles, 19 minutes 41 seconds, Sole Street 36 minutes 55 seconds, Chatham 46 minutes 3 seconds and Faversham [30 seconds early] 66 minutes 31 seconds. The remaining 21.9 miles to Margate, with the light train were reeled off in 22¾ minutes and Margate was reached in 89¾ minutes. The implication, the 90 minutes schedule could be kept, but only with no out of course delays and limited to six coaches.

What in practice was locomotive performance like on the Kent Coast trains? Was Scott's judgement accurate? Fifty published records on trains that were booked to run non stop between Victoria or Herne Hill and Westgate or Margate, or in the reverse direction, from 1909 to 1914 enable a reasonably balanced view to be taken. They were all hauled by D or E Class 4-4-0's except for one occasion when a rebuilt Stirling 4-4-0 was employed.

B Class 4-4-0 No.217, was the first member of the Class to be rebuilt to a B1, and entered service in this guise in July 1910. Shortly after this R.E.Charlwood was a passenger on the 10.15 ex Victoria when No.217 hauled the train, booked non stop to Westgate in 96 minutes. The load for a rebuilt Stirling was very heavy, 285 tons. The start from Victoria was inevitably slow, Herne Hill passed in slightly over nine and a half minutes following which the 30.4 miles to Chatham were run in 40 minutes 23 seconds, including 9.2 miles from Swanley to Sole Street in 10 minutes 17 seconds. There was a PWR slack at Sittingborne, the train was through Faversham in 73½ minutes and the actual time to the Westgate stop was 96 minutes 58 seconds, Charlwood computed 94½ minutes Net. The return was made on a 95 minutes non stop schedule from Margate to Victoria and proved far too much for the small 4-4-0, even in its rejuvenated form. Passing times from Margate were Faversham in 32½ minutes and Chatham in 54½ minutes. The Rochester Bridge to Sole Street stage took 13 minutes 38 seconds, suggesting a minimum of 20 miles per hour on the 1/100, not bad for a B1 with 285 tons. Victoria was reached 13 minutes late, ten and a quarter minutes of which could be booked against the locomotive. Perhaps someone at the depot sent the B1 out really believing, despite its 17½ square feet firegrate, it could run from Margate to Victoria in 95 minutes hauling 285 tons. The Down run was excellent.

SE&C Day to day performance on the Down Kent Coast

The other 48 runs invariably ended with a late arrival, usually between two and ten minutes, irrespective of the difficulty or otherwise of the schedule. The introduction of the 90 minutes non stop schedule to Margate on the "Cliftonville", the 09.10 ex Victoria, on the 2nd October 1911 resulted in faster running than previously but only sufficient to achieve the same level of lateness. Loads on the route were less than on the Boat Trains, although still demanding, between 190 and 290 tons. The only occasion when a load less than 190 tons was observed led to the early arrival at Margate already noted. On the majority of occasions, not only did the locomotive lose time, there were out of course delays.

The most capable locomotive performances appear to have been on the evening train which ran non stop from St. Pauls to Margate rather than on the 09.10 ex Victoria. The best on the St Pauls service was by D Class 4-4-0 No.731 with nine bogies, reduced to five after a slip at Faversham, Gross weights were probably 240 and 130 tons. Number 731 passed Chatham in 46 minutes, Faversham in 67¼ and stopped at Margate in 89¾, schedule 93 minutes. A passenger travelling to Faversham in the slip portion noted arrivals at the station in 68¾ minutes twice with trains weighing 290 and 200 tons respectively. Was the better timekeeping of the train in anyway connected with the influence groups of Season Ticket holders could bring to bear?

A general view of performance in the Down direction can be represented by reference to four logs published in the Railway & Transport Monthly in 1914. Two behind D Class 4-4-0's Nos.730 and 577 on the 15.20 ex Victoria with 225 and 220 tons booked to the first stop at Westgate in 88 minutes. One behind D No.746 with 195 tons on the 90 minutes non stop 09.10 to Margate and one behind D No.748 with 195 tons on the 92 minutes timing from St Pauls to Margate. The three trains from Victoria passed Herne Hill in 8 minutes 36 seconds, 9 minutes 58 seconds and 8 minutes 34 seconds, there were signal checks on the first two before Herne Hill. Speeds at the top of the 1/101 at Sydenham Hill were 29, 32 [EDHP 690-740] and 26 miles per hour. Number 748 ran from St. Pauls to Herne Hill in 6 minutes 58 seconds, and whilst no actual speeds were quoted the passing times would suggest attained 32 miles per hour at Sydenham Hill. The times to Bickley Junction were 20 minutes 37 seconds, 21 minutes 17 seconds, 20 minutes 32 seconds and 19 minutes 12 seconds, speeds on the first three 35, 44 and 44 miles per hour. The first and second were delayed by a PWR slack at Swanley, the third by a slack at Sole Street and the fourth by signals at St. Mary Cray. Sole Street was passed in 39 minutes, 39 minutes 40 seconds and 37 minutes 50 seconds from Victoria and 38 minutes 43 seconds from St Pauls. Average speeds over the 3.5 miles from Fawkham to Sole Street were 43, 50, 46 and 42 miles per hour, No.577 again the best performer.

The four trains passed Chatham in 47 minutes 37 seconds, 47 minutes 21 seconds, 47 minutes 27 seconds and 47 minutes 21 seconds. Times to Faversham were: 68 minutes 20 seconds and 67 minutes 30 seconds by Nos.730 and 577, the allowance in the WTT for the 15.20 was 66 minutes.

SE&C performance on Up Kent Coast trains

Number 746 took 71 minutes 26 seconds after delays for four PWR. slacks between Gillingham and Rainham and No.748, 68 minutes 57 seconds. Schedules for the latter two were 67 and 68 minutes, both slipped portions at Faversham and continued to Margate with 140 and 115 tons. Numbers 730 and 577 ran the 20.4 miles from Faversham to the stop at Westgate in 23 minutes 20 seconds and including a PWR. slack at Whitstable 25 minutes 10 seconds. The Westgate arrivals were 3 minutes 40 seconds and 4 minutes 40 seconds late, the Net times assessed as two and a quarter and three quarters of a minute over the demanding 88 minutes schedule. On the two running non stop to Margate the 21.9 miles from Faversham to the stop required 23 minutes 33 seconds and 24 minutes 24 seconds with a PWR slack at Whitstable. The arrivals at Margate were nearly five minutes and 81 seconds late, Net times 90¼ and 91¾ minutes.

The Down 10.15, allowed 95 or 96 minutes, depending on the year, from Victoria to Westgate was a consistently heavy train. E Class 4-4-0 No.504, with 285 tons ran to Westgate in 99 minutes 49 seconds, including a long signal stop at Farningham Road. The 38.0 miles from Chatham to Westgate were run in 42½ minutes, Net time Victoria to Westgate was 91½ minutes.

An E Class 4-4-0 No. 514 with 200 tons achieved the best actual time, on the 17.05 ex Ramsgate, schedule 91 or 92 minutes from Margate to Victoria. It passed Faversham in 25 minutes 55 seconds from Margate, Rochester Bridge in 48 minutes 40 seconds, [the 5.9 miles up to Sole Street took 9 minutes 50 seconds], Bickley in 73 minutes 35 seconds and reached Victoria in 92 minutes 35 seconds, 90 minutes Net. The shortest Net time and perhaps the best performance recorded by a D Class 4-4-0 was with No.736 and 235 tons, times to Faversham, Rochester Bridge and Bickley were 24 minutes 49 seconds, 45 minutes 43 seconds and 71 minutes 4 seconds. The climb up to Sole Street was one second quicker than No.514 with a minimum of 32 miles per hour. The train was delayed after Bickley by various signal checks, Net time was reckoned at 87 to 88 minutes.

C.J.Allen published a run on the Up "Cliftonville" behind E Class 4-4-0 No.275 with 275 tons timed by a "friend". Allen stated in his article, November 1915 that No.275 was fitted with a superheater. Number.275 however was prohibited from running on the Chatham route in its rebuilt form, it is reasonable to assume the run actually occurred before the middle of 1912 when it still carried a saturated steam boiler. Two PWR slacks caused the initial 21.9 miles to Faversham to take 28 minutes 40 seconds, speeds between there and Chatham were 65 miles per hour at Teynham, falling to 50 at Sittingborne and rising to 62 at Newington. The time to Chatham was 48 minutes 41 seconds and the 7.4 miles on to Sole Street took another 12¾ minutes with 31 miles per hour sustained on the 1/100. The maxima downhill after Sole Street were 71 miles per hour at Farningham Road, 64 at St Mary Cray and 67 at Shortlands. The 26.9 miles from Sole Street to Victoria stop occupied 30¾ minutes, actual time from Margate to Victoria was 92 minutes 11 seconds, Net time 89¾ minutes.

SE&C speeds on the Kent Coast trains

D Class 4-4-0 No.736 developed an EDHP of 710-760 when climbing up to Sole Street and E Class 4-4-0 No.275 775-825, probably close to the achievable maxima for both Classes and an indication of the increase in power represented by the E Class design.

A year earlier Allen had published a run from a "friend in Bromley" when E Class 4-4-0 No.504, with 240 tons on the "Cliftonville", passed Faversham in 25¾ minutes, Chatham in 45 minutes 50 seconds, Sole Street in 58 minutes 14 seconds [the Rochester Bridge to Sole Street time was 10 minutes 43 seconds] and Herne Hill in 83½ minutes. After a very brief signal stop Victoria was reached 13 seconds late, 91 minutes 13 seconds from Margate, 90 minutes Net.

The 10.10 from Westgate allowed 92 minutes to Victoria non stop, with D Class 4-4-0 No.493 and E Class 4-4-0 No.157 on separate occasions, both with 290 tons was checked by signals at Whitstable before passing Faversham in 26 and 25¾ minutes. Number 493 passed Gillingham slowly in 44½ minutes and ran from Sole Street to Victoria in 35½ minutes including checks for signals at Shortlands, Sydenham Hill and Herne Hill. Number 157 was delayed slightly at Gillingham, before Sydenham Hill and after Herne Hill. The actual times from Westgate to Victoria were 98 and 97 minutes, the Net around 93 minutes.

C.J.Allen published in 1919 two runs timed by a correspondent just before the War, which included detailed speeds. The Down journey, with the 17.10 ex Holborn Viaduct, hauled by D Class 4-4-0 No.730 with 230 tons was checked initially by signals resulting in a time of 20 minutes 33 seconds to pass Bromley, presumably from St Pauls. Subsequent speeds were, 61 miles per hour at St Marys Cray falling away to 44 at Swanley, 67 maximum at Farningham Road and 42 minimum at Sole Street. The time from Bromley to Rochester Bridge was 26 minutes 8 seconds, a PWR slack after the usual check through the station caused the Rochester Bridge to Chatham section to take 3 minutes 13 seconds and Sittingborne was passed in 62 minutes 3 seconds. The maximum was only 62 miles per hour owing to a slight slowing for signals and the time on to Faversham, where the slip portion of 100 tons was detached, eight minutes exactly. With the reduced load No.730 ran the 21.9 miles on to Margate in 9 seconds over 23 minutes, speeds were 64 miles per hour at Herne Bay, 71 past Birchington with a minimum of 52 in between. The actual start to stop time was 94 minutes 12 seconds, 88 minutes Net.

A D Class 4-4-0 No.577, with 240 tons allowed 68 minutes from Faversham to the next stop at Herne Hill left Faversham six minutes late. It reached 65 miles per hour at Sittingborne and then fell away to 49 at Newington; the time for the initial 17.6 miles to Chatham was 22 minutes 5 seconds. The uphill section from Rochester Bridge to Sole Street was run in 10 minutes 29 seconds with a minimum of 30 miles per hour on the 1/100, an EDHP of 675-725.

SE&C to Crystal Palace in fifteen minutes

Speeds after Sole Street were 73 miles per hour at Farningham Road, 53 at Swanley, 64 at St Mary Cray, 55 at Bickley Junction and 60 through Bromley. Bromley, 41.2 miles from Faversham was passed in 50 minutes 43 seconds, the 23.5 miles from Chatham run in 28 minutes 38 seconds. Allen stated that the locomotive was then eased, speed falling to 41 miles per hour in Penge tunnel, the final stage from Bromley taking 8 minutes 53 seconds which would give a time to the Herne Hill stop of 59 minutes 36 seconds. [He actually gave a start to stop time of 60 minutes 33 seconds] Whatever the actual total time, it was a good performance and the two runs probably represent the best that could be achieved with a D Class 4-4-0 hauling loads between 200 and 250 tons. It emphasises that the Down 90 minutes and Up 92 minutes non stop Margate schedules left no room for out of course delays or steaming difficulties with the locomotives.

Whilst the D and E Class 4-4-0's were hard pressed to maintain express schedules on the Kent Coast they coped comfortably with other fast trains. A correspondent writing to the Railway Magazine in 1910, in response to many individual criticisms of performance on the Kent Coast, listed his personal experiences. He had had various journeys on the 10.55 from Herne Hill on which the Net time to Faversham had always been less than the schedule, 64 minutes with loads less than 240 tons. Similarly he quoted a run on the 15.35 from Herne Hill to Westgate when with 230 tons the journey was completed in six minutes less than the 93 minutes schedule. On the 08.53 from Faversham to Cannon Street, schedule 73 minutes non stop, he gave Net times of 67¾ minutes with 250 tons and 69½ minutes with 200 and 300 tons. On the 10.20 from Westgate to Herne Hill the Net time was 87½ minutes with 230 tons against an easy 93 minutes schedule. None of which addressed the real issue, the SE&C had insufficiently powerful locomotives to reliably haul its express trains. The D and E Class 4-4-0's however performed well, to attain an EDHP of 36 to 38 per square feet of firegrate area with a turn of the Century design of saturated steam locomotive was good.

The SE&C did not have any "short sharp bookings" but in 1911 in response to the LB&SC introduction of electric services to Crystal Palace it initiated a 15 minutes non stop schedule from Victoria to Crystal Palace. The distance was 9.8 miles and included the initial 1/64 up to Grosvenor Bridge, the last four miles up to the terminus at 1/80 after Cow Lane Junction, increasing to 1/78 after Nunhead. [According to the LC&D gradient profile a section through Sydenham station was as steep as 1/71.28]. The normal train consisted of ten coaches, 120 tons, hauled by 0-4-4 Tank's, the journey reputedly on occasions being completed in less than 14 minutes. On May 12th 1911 a First Class special made up of bogie coaches weighing 168 tons ran the course just inside the 15 minutes schedule.

The SE&C like the LB&SC was involved in the transport arrangements for the Coronation Fete in 1911, it handled 35,000 passengers. These required 40 special trains, three supplied by the Midland Railway worked to Sydenham Hill, the remaining terminated at Crystal Palace High Level station.

SE&C the Rebuilt Stirling's prove their worth

Eight trains were provided by the Great Northern Railway, their locomotives and carriage stock working through via the Widened Lines and Snow Hill. The SE&C service was provided by 14 sets of vacuum brake fitted trains, each consisting of 14 vehicles, except one made up to 15 coaches. 12 were used, the remaining two held as standby at Victoria and Blackfriars. Tender locomotives hauled all the SE&C trains, their use obviated any delays due to taking water at Crystal Palace, they hauled the Up trains tender first. Twenty-seven trains were reported early at the Palace, four on time and four late, two were one minute late, one was two minutes late and one was three minutes late. The Up service commenced at 16.30, trains departed at six minutes intervals until 20.12.

The Stirling 4-4-0's throughout the pre-war period handled most of the semi-fast trains. They monopolised the Redhill to Reading section including the through express train from the Great Western Railway. A rebuilt Stirling, with 150 tons on the Birkenhead to Dover was checked for a PWR slack after leaving Guildford and passed Shalford, 1.9 miles in 4 minutes 20 seconds. The 4-4-0 then sustained 35 miles per hour on the 1/100 past Chilworth, accelerated to 53 down the short 1/100 before Gomshall and fell to 36 up the final one and a quarter miles at 1/96 to MP 33¾. Passing times from Guildford were; Gomshall, 7.7 miles, 13¾ minutes and Dorking Town, 12.4 miles, 19 minutes. The average from Shalford to Gomshall was 37 miles per hour, an EDHP of 540-590 up the eight miles from Shalford to MP 33¾. Speed was restrained on the long descent at 1/96, 61 miles per hour was the maximum at Dorking, the minimum up the rising gradient to Betchworth, two miles at 1/125 and 1/116, was 48 and the maximum afterwards 60 at Reigate. The train passed Reigate in 25 minutes 50 seconds and reached Redhill in 28 minutes 26 seconds, 28 minutes Net, schedule 32 minutes. [Ref.16] An excellent performance and the appropriate point on which to leave the SE&C at the outbreak of the First World War.

Chapter 8: References and Notes

- Ref 1 Railway Runs in Three Continents. J.J.B.Alexander 1900
- Ref 2 Railway Magazine [RM] Vol. XI & XIII
- Ref 3 [RM] Vol. V p. 278-80
- Ref 4 [RM] Vol. XVI
- Ref 5 Rous Marten refers to No.75 as a Stirling 4-4-0. No.75 was a D Class 4-4-0 built by Dubs & Co. in 1903. The old No.75 was a Cudworth 118 Class 2-4-0, placed on the duplicate list in 1903 as No.75A.
- Ref 6 Railway Club Journal Vol. III, p. 6
- Ref 7 Taken from details published in various issues of the Railway Magazine, Railway & Transport Monthly and the Locomotive News
- Ref 8 Locomotive News Vol. XI p. 23 The three runs were tabulated adjacent a group of runs commencing at Folkestone.
- Ref 9 [RM] Vol. XXIX p. 205
- Ref 10 [RM] Vol. XXXV
- Ref 11 Railway & Transport Monthly [RTM] Vol. VIII
- Ref 12 Railway Notes Vol. III
- Ref 13 [RM] Vol. XXVI
- Ref 14 [RTM] Vol. II p. 236
- Ref 15 [RTM] Vol. IV p. 485
- Ref 16 This run is quoted by C.J.Allen in the Railway Magazine Vol. XXXV from "a correspondent at Farnborough". He gives the time from passing Reigate to the Redhill stop as 2 minutes 36 seconds, which suggests 28 minutes 26 seconds for Guildford to Redhill. But he also quotes a total journey time of 29 minutes 9 seconds, 28 minutes Net, presumably allowing 70 seconds for the PWR slack before Shalford. The 2 minutes 36 seconds for the final 1.8 miles appears short, even allowing for 60 miles per hour past Reigate Station bearing in mind the sharp final curve approaching Redhill station. The other passing times are supported by the quoted speeds.

Chapter 9: The June 1914 Timetable

The June 1914 timetables represented the culmination of years of steady improvement in speed and frequency on the L&SW and the LB&SC Railways and the taking of a pragmatic view by the SE&C Railway.

The Bournemouth and Weymouth service of the L&SW, whilst there had been faster trains between the two towns a decade earlier, provided a reasonable choice plus the two through services from Bournemouth to the North of England. The first train of the day from Waterloo was the 05.50, which with six intermediate stops and gentle travelling between, reached Bournemouth in four minutes under three hours and Weymouth at 09.52 after three further stops. The 08.55 with the same number of stops completed the journey to Bournemouth in seven minutes less. The first express, the 10.15, took 90 minutes to the first stop at Eastleigh and then after Southampton and Brockenhurst reached Bournemouth in 2 hours 33 minutes. The Weymouth arrival was at 14.03, after five further stops. The 12.30 ran to the first stop at Southampton in 100 minutes and with further ones at Brockenhurst and Boscombe, required two minutes longer than the 10.15 to reach Bournemouth. The Weymouth arrival was at 16.14, after a further four stops.

The afternoon departures from Waterloo commenced with the 14.00 which made its first stop at Christchurch in 116 minutes and reached Bournemouth in six minutes over two hours. There were through coaches for Swanage, which provided a through service to all stations between Bournemouth and the Isle of Purbeck resort, reached one hour after the Bournemouth arrival. The 16.10 went one better, non stop to Bournemouth in exactly two hours, then with three further stops Weymouth in 3 hours 6 minutes. The 16.10 arrived exactly one hour after the 14.10 from Waterloo which ran via "Castleman's Corkscrew", and stopped at Basingstoke, Winchester, Southampton, Brockenhurst and all stations from Wimborne to Weymouth except Upwey. The 16.50 and 18.55 both made their first stops at Winchester, in 85 and 87 minutes respectively. With further stops at Southampton, Brockenhurst, Christchurch, Boscombe and Pokesdown, Bournemouth was reached in 2 hours 39 minutes and 2 hours 49 minutes. The 18.55 continued to Weymouth, arrival 23.07 after six further stops.

In the Up direction the 08.00 ex Weymouth stopped three times before Bournemouth and following a three minutes stop ran to Waterloo non stop in exactly two hours, overall time Weymouth to Waterloo eight minutes over three hours. The 08.45 took exactly four hours to Waterloo, eight stops between Weymouth and Bournemouth and afterwards at Boscombe, Brockenhurst, Southampton, Winchester and Vauxhall, the Winchester to Vauxhall stage scheduled in 75 minutes. The third morning departure from Weymouth, the 10.03, with three stops en route, reached Bournemouth at 11.14, departed 11.20, stopped Christchurch, Southampton, Winchester and Vauxhall and arrived at Waterloo at 13.58. Schedule from Christchurch to Southampton and Winchester to Vauxhall were 38 and 78 minutes.

L&SW Up timetable from Weymouth

The 12.55 ex Weymouth stopped at Dorchester and Poole before Bournemouth which it reached in 61 minutes. A portion from Swanage was added. [This left Swanage at 13.05 and ran the 24.0 miles to Bournemouth, in 43 minutes including two minutes spent at Wareham, the only stop.] The combined train left Bournemouth at 14.00 on a two hours non stop schedule to Waterloo. It was followed shortly by the 13.57 ex Bournemouth West, 14.09 from Bournemouth Central. This stopped at Brockenhurst, Southampton, Winchester and Vauxhall with a final Waterloo arrival at 16.46. The schedule from Winchester to Vauxhall was 76 minutes.

The 14.10 ex Weymouth made its way slowly to Brockenhurst via the "Corkscrew", it stopping at every station and finally completed the journey in two minutes under two hours. A portion detached at Hamworthy Junction, left there at 15.16 and ran to Bournemouth West arriving five minutes before the 15.44 departure for London. [Bradshaw indicates through carriages from the 15.16 to the 15.44]. The 15.44 joined the 14.56 ex Swanage at Bournemouth Central [this with stops at Corfe Castle, Wareham and Poole reached Bournemouth Central in 50 minutes]. The combined train left the Central station at 15.56 and with stops at Boscombe, Brockenhurst, Southampton, Surbiton, Wimbledon, Clapham Junction and Vauxhall reached Waterloo at 18.45. Weymouth passengers could travel either via Bournemouth West, going in and out of the Terminus or via Ringwood, stretching their legs for 15 minutes at Brockenhurst. The Southampton to Surbiton stage was allowed 84 minutes, the train was described as a "Weymouth, Swanage and Bournemouth Express" but for the citizens of Weymouth this seemed a bad joke.

The 16.10 really was an express, it made two stops between Weymouth and Bournemouth Central which was reached in 61 minutes. It amalgamated there with the 16.13 ex Swanage [allowed 50 minutes to Bournemouth with three stops]. The combined train left Bournemouth at 17.15, stopped at Brockenhurst and Southampton, ran from there to the next stop at Vauxhall in 90 minutes and reached Waterloo in 2 hours 25 minutes from Bournemouth. The 18.00 was a train of two halves. It ran to Bournemouth in only 59 minutes with stops at Dorchester and Poole, the quickest time of the day and then took another 2 hours 54 minutes to Waterloo including seven stops.

There were two through trains from Bournemouth to the North; one ran to Birkenhead and Manchester, the other to York and Newcastle, left Bournemouth West at 10.15 and 11.20. The Manchester one departed the Central station at 10.25 and with stops at Boscombe, Southampton and Eastleigh reached Oxford, 102 miles in two hours and a half and Manchester finally at 16.50. The Newcastle train left the Central station at 11.31 and after stops at Boscombe, Christchurch, Brockenhurst, Southampton and Eastleigh was due at Basingstoke at 13.21. It reached Oxford 73 minutes later following stops at Reading and Didcot. The York arrival was at 19.57 and the Newcastle one at 22.50.

L&SW timetable for the Portsmouth, Aldershot and Reading Services

The southbound Birkenhead service left Oxford at 14.07 and with the same stops as the corresponding northbound train required one minute less from Oxford to Bournemouth Central. The York train omitted the Didcot, Brockenhurst and Christchurch stops but took six minutes more between Oxford and Bournemouth than the northbound one.

The Portsmouth service was never good, merely occasionally less poor. There were six reasonably fast trains in June 1914 departing from Waterloo at: 09.10 to the Town station in exactly two hours with five stops en route - 12.45, with stops at Guildford and Fratton was eight minutes quicker - 15.45 and 16.30, six and ten stops respectively, reached Portsmouth Town in 2 hours 10 minutes and 2 hours 20 minutes - 16.55 made six stops and required 2 hours 9 minutes - 18.40 with stops at Guildford, Haslemere and Fratton was the quickest of the day, 111 minutes. There were two Down trains which ran via the New Guildford line, the 11.10 and 15.45. The first stopped initially at Clapham Junction, Wimbledon and Surbiton before it ran non stop to Guildford in 27 minutes. It then stopped at all stations to Portsmouth. The second stopped at Cobham at 16.15 and reached Guildford at 16.34.

In the Up direction the six best trains were: 07.55, five stops including Vauxhall, reached Waterloo in exactly 2 hours from the Town station - 09.41, with the same stops was two minutes quicker overall - 12.06, with an additional stop was 14 minutes slower - 14.51 with stops at Fratton, Guildford and Vauxhall reached Waterloo in 119 minutes - 17.51 with six stops was 13 minutes slower - 19.06 also completed the journey in exactly two hours with five intermediate stops.

The Aldershot, Farnham and Alton service was tolerably good, which probably reflected the importance the L&SW attached to Military traffic and certainly reflected the niggling competition offered by the SE&C over its far longer route. The 09.25, 16.12, 17.30 and 17.55 ex Waterloo reached Aldershot in 70, 64, 62 and 66 minutes respectively. The 16.12 ran non stop to Woking in 35 minutes and on to the next stop at Ash Vale in another 15 minutes. The 17.30 and 17.55 ran to Woking in 34 and 36 minutes with another 16 and 14 minutes to Ash Vale. The four best Up trains were the; 09.10, 10.01, 12.08 and 20.27 from Aldershot which were allowed 57, 58, 55 and 56 minutes to Waterloo. The schedule for the 09.10 Woking to Waterloo was 36 minutes, that for the 10.01 from Brookwood to Vauxhall 33 minutes and for the 12.08 over the same stage one minute. The 20.27 from Woking ran to Vauxhall in 29 minutes. Many of these trains were entrusted to M7 Class 0-4-4 Tank's.

The two best evening trains on the Reading line were the 16.40 and 18.28 ex Waterloo, respectively first stop Virginia Water in 36 minutes and Egham in 34 minutes. Times to Ascot were in 55 and 57 minutes, both then continued to Camberley and Woking reached at 18.12 and 19.58. The Saturday 18.22 ran to Basingstoke reached at 20.17. The 15.38 and 16.45 departures ran non stop to Staines from Waterloo in 30 and 29 minutes respectively. The best Up train from Ascot was the 09.12, this was the 08.30 ex Farnham.

LB&SC timetable to Brighton and Eastborne

The 09.12 ran to Waterloo in 48 minutes with a Virginia Water stop at 09.27. The 09.25 from Ascot, 08.51 ex Reading stopped all stations to Staines, Vauxhall and Waterloo, overall 58 minutes from Ascot. The 09.45 ex Reading, 10.15 from Ascot reached Waterloo at 11.10 omitting the Staines stop.

Whilst the L&SW timetable exhibited stops, starts and sometimes even reversals in its progress over the years the LB&SC timetable displayed a reasonably consistent, although conservative progression from 1898 to 1914. Brighton had eight non stop trains on weekdays, seven from Victoria plus the 17.00 ex London Bridge. The 11.00, 15.10, 17.00 and 18.35 were allowed 60 minutes, the 15.40, 16.30, 17.35 and 00.05 an extra five minutes. There were additionally five trains to Brighton with one stop en route: the 11.40 and 13.55 ex Victoria, stopped at Clapham Junction and ran to Brighton in 70 and 65 minutes - 16.00 ex London Bridge stopped Redhill and took 72 minutes - 18.00 ex London Bridge with a Horley stop 75 minutes - 20.25 ex Victoria with a Haywards Heath stop took 65 minutes. The 10.05 and 21.55 ex Victoria with three stops reached Brighton in 76 and 81 minutes [the 10.05 schedule from East Croydon to Haywards Heath the next stop, 27.5 miles, was 34 minutes. The 11.50 ex London Bridge to Brighton took 83 minutes with four stops.

There were four weekday Eastborne trains first stop Lewes; three from Victoria at: 11.15, 15.20 and 17.20 in 65, 67 and 66 minutes and the 17.05 ex London Bridge, which slipped a portion for East Grinstead at Horley, in 65 minutes. They continued non stop to Eastborne in 90, 95, 91 minutes and 90 minutes from London. Some of the Eastborne semi-fast's were smartly timed: 06.15 ex London Bridge with three stops reached Eastborne in 103 minutes - 09.00 ex Victoria, with five stops, reached Eastborne in 103 minutes, it slipped a portion at Haywards Heath, which gave an 80 minutes service to Brighton including stops at East Croydon, Purley and Earlswood as well as time spent attaching a locomotive at Haywards Heath - 09.45 ex Victoria with four stops reached Eastborne in 110 minutes - 12.00, with four stops was two minutes quicker and the 14.00 with five, four minutes slower - 16.05 ex London Bridge took one and three quarter hours with three stops - 18.45 ex Victoria with two additional stops needed four minutes longer.

The Newhaven Boat Trains left Victoria at 10.00 and 20.45 and stopped at East Croydon and Lewes. The Morning train reached the Harbour station in 82 minutes, the Evening train took eight minutes more. The "Sunny South Express" ran gently over the Brighton line, 63 minutes from East Croydon to the next stop at Brighton and after reversal 43 minutes to Eastborne.

Worthing was served by portions slipped from Brighton trains at Preston Park, off the 10.05, 11.40, 13.55 and 20.35 ex Victoria, overall times were 102, 91, 88 and 84 minutes respectively. There were three evening trains to Worthing, 17.08 ex London Bridge, 17.45 ex Victoria and 17.56 ex London Bridge, overall times were 82, 90 and 91 minutes. The 17.08 stopped at Preston Park and Hove, the 17.45 made an additional stop at Haywards Heath and the 17.56 at Shoreham.

LB&SC timetable from Brighton and Eastborne to London

Hastings was served by slip portions, detached at Polegate from the 06.15 ex London Bridge, the 12.00, 13.25 and 15.20 ex Victoria, the 16.05 ex London Bridge and the 17.20 ex Victoria. The 15.20 and 17.20 gave times to Bexhill of 105 and 103 minutes respectively with Hastings reached fifteen minutes later.

There were eight weekday non stop trains from Brighton to London, the 07.15, 08.45 and 10.00 ran to London Bridge and the 08.10, 09.45, 12.20, 13.20 and 17.45 to Victoria, the last three scheduled in the level hour. The morning trains to London Bridge were allowed 65, 70 and 65 minutes respectively and the 08.10 and 09.45 to Victoria 65 and 70 minutes. There were two trains that made one intermediate stop, the 09.20 at Haywards Heath and the 15.50 at Clapham Junction; overall times to London were 71 and 65 minutes. Some of the semi-fast's had comparatively brisk schedules, bearing in mind loadings. The Up service offered similar journey times from the various intermediate stations to London as in the Down direction without the help of slip portions. The 07.30 ex Brighton with stops at Hassocks, Burgess Hill, Redhill, Purley and East Croydon reached London Bridge in 88 minutes, the 11.00 with two stops Victoria at 12.15 and the 14.20, all stations to Haywards Heath and a further stop at Clapham Junction, Victoria in 88 minutes. The 15.40 ran to London Bridge in 73 minutes with stops at East Croydon and Norwood Junction. There were evening departures at 18.05, 19.30 and 22.00, the first two with three stops reached Victoria in 85 and 87 minutes, the 22.00 connected with the 21.30 ex Eastborne at Haywards Heath and after a stop at East Croydon reached Victoria at 23.11. The "Brightonian" spending a day in London was better served than the "Cockney" enjoying a day beside the Sea; presumably the assumption was that wealthy Londoners did not spend their free days in Brighton, whereas the converse was certainly true.

There were three non stop trains from Eastborne scheduled to Victoria in 85 minutes at 09.35, 11.45 and 18.15. The 07.30, with five stops reached London Bridge in 101 minutes, the 08.30, with only Haywards Heath took 90 minutes and the 14.25, which regularly loaded in excess of 300 tons, 95 minutes to Victoria, with stops at East Croydon [72 minutes] and Clapham Junction. The London Bridge portion, detached at East Croydon, arrived at the same time. The 16.20, with five stops, ran to London Bridge in 113 minutes, the following 17.05 connected at Polegate with the 16.58 ex Bexhill, the combined train ran from there non stop to Victoria in 83 minutes, the overall time from Eastborne to Victoria was 95 minutes. The 19.50 and 21.30 both stopped three times and reached London Bridge in 100 and 101 minutes. The 21.30, as already noted, connected with the 22.00 ex Brighton at Haywards Heath.

The 08.15 ex Hastings stopped at both St. Leonards stations, left Bexhill at 08.30 and with further stops at Lewes [where through coaches from Seaford were attached] and Balcombe reached London Bridge at 10.15. There were connections at Polegate from Hastings with trains from Eastborne throughout the day. The 10.20 ex Hastings, with an Eastborne connection at Polegate and eight stops had an overall schedule to Victoria of 2 hours 17 minutes and the 14.10 with one stop less took three minutes more to London Bridge.

LB&SC timetable in competition with the L&SW to Portsmouth

The 16.58 ex Bexhill, with one stop reached Victoria, 71.5 miles, in 102 minutes compared with 105 minutes by the 08.30 with an additional stop.

The two Up Newhaven Boat Trains left the Harbour station at 06.10 and 16.45 and reached Victoria in 90 and 85 minutes with a stop at East Croydon. There were trains for Brighton from the Harbour, at 06.10 and 17.00, the morning service, a Motor train in 28 minutes non stop, the afternoon one, which included First and Second Class accommodation, made a stop at Lewes and took two minutes longer.

Whilst the LB&SC Hastings service offered some competition to the SE&C it could not overcome the 20 percent longer, albeit more favourably graded route. Indeed the best times from Victoria to Hastings by the two competing routes, 118 and 100 minutes, reflected closely the difference in mileage. On the Portsmouth route, despite a 16 percent longer journey, the LB&SC definitely gave the L&SW a run for its money.

The 08.55 ex Victoria stopped at East Croydon, Arundel, Chichester, Havant and Fratton with a Portsmouth Town arrival in 2 hours 10 minutes. The 11.35 ran from Clapham Junction to Fratton the next stop in 109 minutes and reached the Town station in two minutes under two hours. The 13.35, with additional stops at Chichester and Havant was eleven minutes slower. The 16.50 ex London Bridge, first stop Chichester, second Fratton, took 2 hours 6 minutes. Bognor was reached by a slip portion from this service in 102 minutes. The 18.15 ex London Bridge, with stops at South Croydon, Purley, Horsham, Chichester & Fratton, reached the Town in five minutes over the two hours and a portion detached at Horsham, after stops at Arundel, Ford Junction and Barnham Junction, Bognor in 110 minutes.

The final train of the day, 20.35 ex Victoria, ran via the Brighton Main Line, stopped at Haywards Heath and slipped a portion at Preston Park at 21.38. This left there at 21.41 and with further stops at Hove, Worthing, Ford, Barnham, Chichester and Fratton, arrived Portsmouth Town 22.55. The overall time was 140 minutes for 96¼ miles, with eight intermediate stops. The other semi-fast train along the Coastal Section west of Brighton was the 09.40 ex Brighton, which with stops at Hove, Worthing, Chichester and Fratton reached Portsmouth in 70 minutes.

The fastest five trains on the L&SW route to Portsmouth Town had an average time of two hours from Waterloo, the best was 111 minutes. The quickest five on the LB&SC averaged 2 hours 6 minutes, with a best of 118 minutes. The sixth fastest of the day on both routes took 2 hours 20 minutes,

There were LB&SC departures from Portsmouth Town at 08.47, 09.30, 11.00, 12.15, 15.00, 16.50 and 19.17. These trains made five, seven, three, five, five, three and six stops respectively and gave overall journey times of 2 hours 6 minutes to London Bridge, 2 hours 22 minutes, 2 hours, 2 hours 20 minutes, 2 hours 10 minutes, 2 hours and 2 hours 9 minutes to Victoria.

LB&SC timetable to Crowborough, Uckfield and Tunbridge Wells

In this direction the six best L&SW trains to Waterloo averaged 2 hours 4 minutes, the corresponding LB&SC trains were four minutes slower. The quickest times to London by each route were 118 minutes and two hours respectively. The seventh of the day on the L&SW took 2 hours 41 minutes to Waterloo; the corresponding LB&SC train was 19 minutes quicker. The Up morning train from Bognor ran via Worthing, 06.20 from that Town.

After the opening of the Ashurst spur there was a significant improvement in the London, Crowborough and Uckfield service, whilst the Tunbridge Wells service was modified. The seven best trains to Crowborough were: 11.10 ex Victoria, which with stops at Clapham Junction, East Croydon, Oxted, Edenbridge and Eridge provided a service to Crowborough, after changing to the Motor Train at Eridge, in 83 minutes and to Uckfield in 98 minutes, after a stop at Buxted - 13.38 ex London Bridge ran fast to East Croydon, stopped at all stations to Edenbridge, where the train divided, the front portion ran fast to Eridge, reached Crowborough at 15.02, omitted the Buxted stop and terminated at Uckfield at 15.15, the rear portion ran to Tunbridge Wells, stopping at all stations except Ashurst - 15.45 ex Victoria, non stop to Eridge in 57 minutes, Crowborough ten minutes later, then all stations to Brighton, reached at 17.52 - the 16.45 ex London Bridge ran to Eridge in 60 minutes with stops at East Croydon, Upper Warlingham, Oxted and Edenbridge, this was a tight timing, Crowborough was reached at 17.52 and Uckfield at 18.07..

The 16.50 ex Victoria followed closely behind the 16.45 ex London Bridge, first stop Upper Warlingham, then Oxted and Edenbridge, where it divided, front portion fast to Eridge, the rear all stations to Tunbridge Wells, Crowborough was reached at 18.03, the train terminated at Brighton at 19.01 - 18.03 ex Victoria stopped at Clapham Junction, divided at East Croydon, the front portion reached Crowborough at 19.11 after the one stop at Edenbridge and terminated at Uckfield at 19.26, a portion was slipped at Ashurst, which after a stop at Eridge continued to Eastborne via the Heathfield line, the rear portion after the East Croydon stop ran all stations to Tunbridge Wells - 19.00 ex London Bridge departed East Croydon at 19.19, stopped at all stations to Edenbridge except Selsdon Road, ran fast to Crowborough where it terminated at 20.18 - 20.05 ex Victoria, with stops at Clapham Junction, East Croydon, Oxted, Edenbridge and Eridge reached Crowborough at 21.20 and terminated at Uckfield at 21.36.

The 11.10 ex Victoria ran to Eastborne via Eridge and Heathfield, the 13.38 ex London Bridge and 15.45 ex Victoria included through coaches for Eastborne and the 16.50 and 18.03 ex Victoria coaches for Heathfield. The best time to Heathfield from London was 93 minutes by the 15.45; the other four trains gave overall times from 96 to 104 minutes. The quickest times to Tunbridge Wells were provided by slip portions detached, at Ashurst, from the 11.10, 15.45 and 16.45; 79, 67 and 70 minutes respectively. The next best time was 81 minutes by the rear portion of the 16.50 ex Victoria. The quickest London to East Grinstead time was 64 minutes by the 17.48 ex Victoria with five stops.

LB&SC timetable Crowborough and Tunbridge Wells to London

The 17.48 stopped at East Croydon, Upper Warlingham, Oxted, Lingfield and Dormans. The coaches slipped from the 17.05 ex London Bridge to Eastborne at Horley reached East Grinstead in 67 minutes, the fastest time of the day between London and East Grinstead via Three Bridges.

The quickest service between Tunbridge Well and Brighton was by the 09.23, which with stops at Groombridge, Eridge, Crowborough, Uckfield and Lewes completed the journey in 68 minutes. The best time northbound was 75 minutes by the 17.43 ex Brighton.

The seven best trains each day between Crowborough and London were: 07.05 ex Brighton, depart Crowborough 08.10, fast to Edenbridge, stopped all stations to Sanderstead then East Croydon and Clapham Junction, Victoria arrival 09.38, through coaches from Eastborne and Heathfield, departure 07.34, added at Eridge, through coaches for London Bridge detached at East Croydon - 08.34 ex Uckfield, Crowborough 08.47, stopped Eridge, Upper Warlingham, Sanderstead and East Croydon, reached London Bridge at 10.00, 08.22 ex Heathfield connected at Eridge and provided best service to London of the day - 10.20 ex Brighton, semi fast to Eridge, stops at London Road, Lewes, Uckfield and Crowborough, departure at 11.09, then Eridge, Ashurst, Edenbridge, East Croydon and Clapham Junction, Victoria 12.30, through carriages from Eastborne and Heathfield, departure 10.44, connection from Tunbridge Wells, departure 11.10 at Ashurst - 08.16 ex Brighton, all stations to Eridge, except Falmer, same stops after Eridge as the 10.20, plus pick up only at Cowden, Victoria 10.38, connection from Tunbridge Wells, 09.25, through coaches from Eastborne and Heathfield, 08.47 - 15.10, 16.46 and 17.45 from Uckfield, 15.25, 17.00 and 18.01 from Crowborough to Victoria in 87, 85 and 74 minutes respectively, first two stopped at Eridge and Ashurst with connections from Tunbridge Wells, the 15.10 stopped afterwards at Edenbridge, Oxted, Upper Warlingham, East Croydon and Clapham Junction, the 16.46 at all stations to Oxted, the 17.45 at Eridge, Edenbridge, Oxted, East Croydon and Clapham Junction, the best time of the day from Crowborough to London. A connection with the 16.40 ex Eastborne at Eridge gave a 90 minutes service from Heathfield to London.

The six best trains on the Tunbridge Wells to London service took 80 to 87 minutes over the journey. From East Grinstead the first four departures of the day gave times to London Bridge of between 64 and 67 minutes, the fastest time via Three Bridges route was 72 minutes with a change of trains. The two best trains of the day were the 10.26 [09.50 ex Tunbridge Wells] and the 21.00 ex East Grinstead, both allowed 41 minutes to East Croydon. The morning train stopped at Dormans, Lingfield, Oxted and Upper Warlingham, the evening one additionally served South Croydon.

The South Eastern & Chatham, despite its financial difficulties which prevented track upgrading and its limited motive power, still endeavoured to provide a service of fast trains. The improvement to the Kent Coast Timetable was such that as already noted the locomotives seldom kept time.

SE&C timetable Down Boat Trains

The SE&C prestige services in June 1914 were, as they had been for decades, those that connected with the Cross Channel Sailings,

The Down "Continental Mail Express" left Charing Cross at 09.00 and reached the Pier at Dover in 100 minutes after a stop at Dover Town. This was followed, an hour later, by the "Continental Boat Express" to Folkestone Harbour, reached in 110 minutes, after an engine change at Folkestone Junction sidings before reversal and the steep descent to the Harbour station. The 11.00 "Calais Boat Express" ex Victoria ran to Dover Town in 100 minutes and reached the Pier five minutes later.

The Afternoon Continental service commenced with the 14.05 ex Charing Cross, a combined "Continental Boat Express", to Folkestone Harbour in 100 minutes and "Ostend Boat Express", to Dover Town station in 109 minutes, the Pier five minutes later. The 16.30 ex Charing Cross, a special fast "Afternoon Continental Boat Express", reached Dover Pier in 90 minutes. The apparently magical 90 minutes schedule had been championed by Railway journalists and consultants for many years, signalling a new railway Utopia. The "Flushing Boat Express", left Victoria at 20.30, stopped at Herne Hill ten minutes later and reached Folkestone Harbour in one and three quarter hours. The Morning Flushing service left at 10.00, stopped at Herne Hill, ran from there to Queenborough in 63 minutes and to the Pier three minutes later, a total journey time from Victoria of 78 minutes. The 21.00 ex Charing Cross ran to Dover Pier in 100 minutes after the stop at the Town station.

There was also a frequent service of fast trains to Folkestone and Dover. The 09.07, ex Charing Cross, left London Bridge six minutes later allowed 69 minutes to the next stop at Ashford, reached Folkestone Central at 10.53 and Dover Harbour a quarter of an hour later. There were three morning trains via East Croydon, two then ran on the old South Eastern route via Redhill, the other via Oxted and the Crowhurst spur: 07.40 ex Cannon Street, ten minutes later from London Bridge, all stations from East Croydon to Redhill, reached at 08.42, then after a three minutes stop ran the 19.9 miles to the next stop at Tonbridge in 25 minutes, and with three stops before Ashford and afterwards at Canterbury West, Minster and Ramsgate Town reached Margate South, 102 miles from Cannon Street at 11.06 - 09.37 ex London Bridge all stations between East Croydon and Tonbridge was allowed 93 minutes for the initial 40¼ miles, then sufficiently filled with passengers it leapt into action, ran the 26.6 miles to the next stop at Ashford in 30 minutes, stopped Folkestone at 12.00 and reached Dover Harbour at 12.24, [64 minutes for the 47¼ miles from Tonbridge to Dover, including time at the two stops] - The 10.18 had a similar split personality, stopping at all stations from East Croydon to Tonbridge via Oxted and the Crowhurst spur, it required 77 minutes to cover the initial 35.5 miles to Tonbridge. There was a 20 minutes stop there before the train ran the final 21.3 miles from Paddock Wood to Ashford in 27 minutes start to stop. The 11.05 ex Charing Cross [11.15 from London Bridge] stopped at New Cross, Hither Green, ran to the next stop at Maidstone in 38 minutes and from there to Asford in another 31 minutes.

SE&C timetable to Folkestone and Dover

Ashford was reached in 90 minutes from London Bridge and Dover Priory after two further stops at 13.32. The train continued to Deal arrival 13.50, and terminated at Sandwich at 14.00. The 13.05 ran via Tonbridge, with stops at London Bridge and Chislehurst, it reached Ashford at 14.29 and after four further stops Dover Town at 15.20. The 15.00 ex Charing Cross, 15.09 from London Bridge, ran from there to Ashford the next stop in 71 minutes and with four further stops reached Dover Priory at 17.10. A portion for Canterbury, detached at Ashford, completed the journey in 115 minutes. On Fridays and Saturdays there was a 15.00 ex Charing Cross, first stop Sandling Junction, 65.4 miles, in 83 minutes, then Folkestone Central, which reached Dover Priory at 16.54. This train terminated Sandwich at 17.26 after stopping at Deal 11 minutes earlier.

The 16.25 ex Charing Cross ran into Cannon Street and from there to Folkestone Central in 88 minutes. A carriage was slipped at Paddock Wood on Fridays and a portion at Ashford every day. Dover was reached in 101 minutes from Cannon Street at 18.15. The 17.00 ex Victoria ran via Maidstone East the first stop, reached in 58 minutes after two minutes it continued non stop to Folkestone Central in 47 minutes, Dover Town was reached in one minute over the even two hours from Victoria. The 18.00 ex Charing Cross, Cannon Street 18.08 ran non stop from there to Folkestone Central in 83 minutes, Dover Town arrival 19.45. The 19.15 ex Charing Cross, with stops at Cannon Street, London Bridge and Tonbridge for five minutes, reached Ashford at 20.54 and after a stop at Folkestone Central, Dover Town at 21.36.

There were two through workings from North of the Thames. The combined train from the Midland and Great Northern Railways left Herne Hill at 15.05 and, including a three minutes stop at Tonbridge was allowed 92 minutes to Ashford. With further stops at Sandling Junction, Shorncliffe and Folkestone Central, it reached Dover Harbour at 17.24 and after a stop at Walmer, Deal at a quarter to six.

The train from the Great Western Railway left Redhill at 16.02, allowed 53 minutes to the next stop at Ashford. After a five minutes stop and a further stop at Folkestone Central the train was into Dover Harbour, Walmer & Deal ten minutes behind the through train from the Midland.

In the Up direction the longstanding 01.45 ex Dover Town ran to Cannon Street in 125 minutes with stops at Folkestone, Staplehurst and Tonbridge. The "Continental Mail Express", departure 03.45 ran via Chatham reached in 60 minutes to the stop and Victoria in two minutes under two hours. The "Flushing Mail" left at 06.00, first stop Herne Hill in 95 minutes via Chatham, and reached Victoria 13 minutes later. The "Continental Mail Express" also via Chatham, was due away from the Pier at 08.20 and after a stop at Canterbury East at 08.47 arrived at Charing Cross at 10.15.

The "Afternoon Continental Boat Express" left from Folkestone Harbour at 13.40 [usually behind three Tank engines as far as the Junction sidings].

SE&C timetable Up Boat Trains

A 4-4-0, ran to Charing Cross in 105 minutes from the Junction sidings, including a stop at Tonbridge at 14.38. The "Continental Mail Express" ex Dover Town, 15.20 ran to Charing Cross non stop in 110 minutes.

There were three Evening Boat Trains. The "Ostend Boat Express" left Dover Town at 19.55, Folkestone Central at 20.15 and ran via Maidstone. It arrived at London Bridge at 21.52 and Charing Cross eight minutes later. The 21.05 "Continental Boat Express" was allowed 100 minutes from Folkestone Harbour to Charing Cross. The Evening "Flushing Boat Express" left Queenborough Pier at 18.15, ran from the Town station to the next stop at Chatham in 23 minutes, on to Herne Hill in another 39 minutes and reached Victoria in 79 minutes including time spent at the three stops.

Other Dover Folkestone London trains included: 06.30 ex Dover Town, which with stops at Folkestone Central, Ashford and Tonbridge, reached Cannon Street at 08.47 - 08.05 ex Dover Harbour stopped four times before Ashford, departure 09.00 and with a further stop at Paddock Wood, reached Cannon Street at 10.34 - 09.00 ex the Harbour with stops at Folkestone Central and Maidstone East reached Victoria at 11.00, except on Mondays when it ran ten minutes later from Folkestone. The split times from Folkestone to Maidstone and on to Victoria were 45 and 59 minutes. The next departure from the Harbour station, the 10.20, stopped only at Folkestone Central and ran from there to London Bridge in 82 minutes. It terminated at Charing Cross at 12.12.

The 10.50 ex Dover, with stops at Folkestone Central, Shorncliffe, Sandling Junction, Ashford, Paddock Wood and Herne Hill arrived at Victoria at 13.11. This was the through service from Deal, departure 10.25, to the L&NW, Midland and Great Northern Railways, the through carriages detached at Herne Hill reached Ludgate Hill at 13.15 and Kentish Town at 13.36. This train was smartly timed, 26 minutes from Ashford to Paddock Wood and 52 minutes from there to Herne Hill. The through train to the Great Western left Deal at 11.05, stopped additionally at Paddock Wood on request. A portion from Margate was attached at Ashford. The combined train left there at 11.57 on a generous schedule, 42 minutes to the next stop at Tonbridge, Redhill reached at 13.04 and Reading Great Western at 14.33.

The 14.10 ran via the Maidstone route, the 14.50 via Redhill, both had good connections from Ramsgate, Margate and Canterbury at Ashford. The 14.10, an all stations service as far as Ashford, left there at 15.20 and arrived at London Bridge at 16.45 after a stop at Maidstone from 15.48 to 15.52. It terminated at Charing Cross at 16.02. The 14.50, after stops at Folkestone Central, Ashford, Paddock Wood and Tonbridge reached Redhill at 16.43. With further stops at Purley and East Croydon the London Bridge arrival was at 17.24. The 16.40 ex Dover Town replicated the 14.10, albeit with complications. A train left Sandwich at 16.20, which with stops only at Deal and Dover Harbour caught up the 16.40 at Shorncliffe, where the two were combined. The combined train then stopped at all stations to Ashford, reached at 17.38.

SE&C timetable to the Kent Coast

The 16.40 ex Dover spent eight minutes at Ashford with a good connection from Margate. The timing from Ashford was easier than the 14.10, four minutes more to Maidstone, 48 minutes to the next stop at Hither Green, London Bridge reached at 19.19, Charing Cross ten minutes later. The next service, Boat Trains apart, was not until the 19.45, ex Dover Town, arrival London Bridge at 21.59 and Charing Cross at 22.07 after stops at Folkestone Central, Sandling Junction, Ashford, Paddock Wood and Tonbridge.

The SE&C timetable in many ways reflected the Railway, for the General Public unfathomable, for the Railway Enthusiast fascinating and for Shareholders problematic.

The LC&D route to Dover was used less by Boat trains, although still a diversionary option, by the outbreak of the War. The main fast and semi fast trains served either the Kent Coast resorts or Canterbury and Dover for residential traffic. The first Down train to Margate, the 07.20 ex Cannon Street, routed via Dartford and Gravesend made 14 stops and reached Margate in just under three hours. The 07.45 ex Victoria with 12 stops ran to Dover Harbour in two and three quarter hours overall. The first Fast train, the "Cliftonville", 09.10 ex Victoria, ran non stop to Margate in 90 minutes. It was followed five minutes later by a train to Dover Priory, which with five stops completed the journey in 2 hours 18 minutes. The "Thanet Express" left at 10.15, booked to the first stop at Westgate in 95 minutes, Margate arrival at 12.00. The 10.45 stopped at Herne Hill, Faversham 63 minutes later and all stations on to Margate, reached in 2 hours 9 minutes. The 14.05 made an additional stop at Chatham and was 11 minutes slower to Margate.

The 16.01 ex Cannon Street with stops at London Bridge, Chatham, Faversham and all stations to Margate took two minutes under two hours to Margate. The 18.16 ex Cannon Street with stops at London Bridge and Chatham reached there in 99 minutes. A portion slipped at Faversham followed on all stations to Margate. The split times between London Bridge, Chatham and Margate were both 47 minutes. The 17.10 ex Holborn Viaduct, after a stop at St Pauls ran non stop to Margate in 95 minutes.

There were trains from Victoria at: 15.20, first stop to Westgate in 90 minutes, arrival Margate at 16.54 - 16.20 to Dover Harbour in 2 hours 36 minutes with nine intermediate stops - 17.32 allowed 95 minutes to Herne Bay including stops at Herne Hill, Rochester Bridge, Chatham and Whitstable, a portion slipped at Swanley Junction proceeded all stations to Chatham - 19.00, first stop Whitstable in 83 minutes and after a further one at Herne Bay Margate reached in 111 minutes - 20.15, with stops at Herne Hill, Faversham and all stations to Margate required 2 hours 17 minutes.

There were departures from Margate on Mondays at 06.44, 07.37, 07.48 and 08.00 which reached Cannon Street in 111 minutes with four stops, 98 minutes with one, 108 minutes with one and 100 minutes with one respectively.

SE&C timetable from the Kent Coast to London

The last three ran up from Whitstable, Herne Bay and Whitstable in 77, 91 and 81 minutes. On other weekdays there were trains at 07.34, to Cannon Street in 107 minutes with four stops and at 08.00 in 100 minutes, 84 minutes from Herne Bay the only stop to Cannon Street. The 08.07 ex Margate stopped at all stations to Faversham and then ran non stop to Cannon Street in 68 minutes, arrival 10.01 with a portion from Dover Harbour, departure 07.38, all stations to Faversham. Other trains from Dover Harbour included, the 09.30, five stops, Victoria reached in 2 hours 10 minutes [connection with the 09.08 ex Deal at Kearsney] and semi fast's at 12.00, 13.15, 15.37, 18.00 and 19.25 with overall times of around two hours and a half.

Principal departures from Margate in the morning were: 09.02, non stop to St Pauls in 96 minutes - 10.15, non stop from Westgate to Victoria in 100 minutes, arrival 11.05. In the afternoon the 13.05 and 15.31 served all stations to Faversham and then ran to Victoria in 86 minutes. The first stopped at Chatham, Bromley South and Herne Hill, the second omitted the Bromley stop, overall times from Margate to Victoria were 2 hours 27 minutes and 2 hours 25 minutes. The Up "Cliftonville", left Margate at 17.22 and ran to Victoria in 90 minutes. The 18.03, all stations to Faversham and four further stops reached Victoria in 2 hours 29 minutes. The 19.29 stopped at Herne Bay, Faversham and Herne Hill, completing the journey two minutes inside two hours, the 21.06, with stops at Westgate, Birchington, Herne Bay and 77 minutes from the last stop at Whitstable to Victoria took nine minutes less.

The through train from points North, Kings Cross departure at 14.55 and Herne Hill at 15.35 ran non stop from there to Westgate in 90 minutes. The corresponding North-bound train, the 10.05 from Margate left Westgate five minutes later and ran to the next stop at Herne Hill in 94 minutes and reached Kings Cross at 12.10.

There were four trains on the Ashford to Margate Sands route of the South Eastern Railway which stopped only at Canterbury West, Minster and Ramsgate Town: 10.06 [07.40 ex Cannon Street] - 11.58 - 18.42 [16.40 ex Cannon Street] - 21.10. Overall times, including time spent at the stations for the 34 miles were 60, 62, 59 and 59 minutes respectively. In the opposite direction the 14.25 ex Margate Sands with stops at Ramsgate Town and Canterbury West reached Ashford in 57 minutes [as previously noted it combined at Ashford with the 14.50 ex Dover and ran to Charing Cross via Redhill]. The 16.30 with the same two stops took three minutes more and the 10.40 with an additional stop at Minster 64 minutes.

Hastings was served by trains from both Victoria and Charing Cross/Cannon Street. The two daily direct ones from Victoria left at 10.30 and 21.30. The morning stopped at Herne Hill then ran non stop to Tunbridge Wells in 48 minutes later, the evening made its first stop at Tunbridge Wells in 53 minutes. Both trains ran non stop onwards to Crowhurst and stopped at all stations to Hastings from there. Overall times from Victoria to Hastings were 103 and 100 minutes.

SE&C timetable the Hastings branch

The 14.50 ex Victoria connected at Herne Hill with the through train from Kings Cross and the North. This provided a connection to Hastings after a ten minutes wait at Tonbridge [overall Victoria to Hastings 2 hours 18 minutes with four stops].

There were five trains that reached Hastings in less than two hours from Cannon Street or London Bridge: 11.15 ex Charing Cross [11.20 from London Bridge] stops New Cross, Hither Green, Tonbridge, Tunbridge Wells Central, Crowhurst and both St, Leonards' stations, Hastings arrival 13.08 - 14.25 [14.33 from Cannon Street] fast to Sevenoaks, stops Tonbridge, Tunbridge Wells, Robertsbridge, Crowhurst and stations to Hastings, overall time 113 minutes - 15.45 [15.53 from Cannon Street] first stop Tunbridge Wells in 48 minutes, to the next at West St Leonards 40 minutes, Hastings, after a further stop at St Leonards in 97 minutes overall - 16.50 [16.58], first stop Robertsbridge, 48.5 miles, 67 minutes, connection for stations to Bexhill, further stop at St Leonards, 92 minutes to Hastings. There were business trains at: 17.01 ex Cannon Street, fast to Tunbridge Wells and then all stations to Hastings - 17.25 ex Charing Cross, [17.36 from London Bridge], 41 minutes non stop to Tonbridge and then all stations to Wadhurst where the train terminated at 18.42 - 18.03 ex Charing Cross [Cannon Street 18.15] 49 minutes non stop to Tunbridge Wells and following stops at Wadhurst, Battle and all stations afterwards, 103 minutes from Cannon Street to Hastings.

The two Up Victoria trains left Hastings at 09.45 and 17.00. The morning stopped both St Leonards' stations, Tunbridge Wells and reached Victoria at 11.28; the afternoon also stopped Crowhurst and Herne Hill, but was only one minute slower overall. The 10.50 and 14.50 also ran to Victoria with portions for London Bridge and Cannon Street and London Bridge and Charing Cross respectively detached at Tonbridge and Orpington. Both made seven stops between Hastings and Victoria, overall times were 117 and 120 minutes, the detached portions reached London Bridge at 12.55 and 16.45 respectively.

The morning business trains from Hastings to Cannon Street were: 07.07, all stations to Robertsbridge, then Tunbridge Wells, Tonbridge, Sevenoaks and London Bridge, overall time one hour 58 minutes - 08.05, omitted Battle stop, then Tonbridge, Sevenoaks and London Bridge, 18 minutes quicker, [Tunbridge Wells to Cannon Street 45 minutes] - 08.45, eight minutes quicker than the 08.05, non stop from West St Leonards to Cannon Street in 83 minutes, overall time from Hastings to Cannon Street one and a half hours - 08.56, all stations to Tunbridge Wells, then to London Bridge in 47 minutes non stop and on to Charing Cross, 11.07 - 08.53 ex Bexhill, preceded the 08.45 ex Hastings from Crowhurst, ran non stop from Sidley to Tunbridge Wells in 51 minutes, [conditional stop at Robertsbridge for passengers transferring to or from the Kent and East Sussex Railway, arrived Cannon Street 10.41, 54 minutes non stop from Tunbridge Wells.

The 15.40 ex Hastings served all stations to Crowhurst, then Tunbridge Wells, London Bridge non stop in 45 and reached Charing Cross at 17.26.

SE&C timetable competitive to Dorking

The 19.12 and 19.55 departures from Hastings ran to London Bridge in 112 and 124 minutes with seven intermediate stops. The 19.55 connected with the 19.45 from Dover at Tonbridge.

The SE&C was often criticised for the high cost of its Season Tickets compared to other Railways, it did however endeavour to provide its Surrey based clients with a reasonable service to and from London. The best trains to the Caterham Branch were the 16.51 and 17.20 ex London Bridge Low Level, which ran to the first stop at Purley in 21 and 22 minutes and reached Caterham in 40 and 38 minutes. The 18.35 ex Charing Cross, from London Bridge at 18.41, stopped East Croydon, Purley and Warlingham and reached Caterham at 19.18. The best Up train was the 09.12 ex Caterham, which with stops at Purley and East Croydon reached London Bridge at 09.45 and Cannon Street four minutes later

The through train to and from the Great Western Railway provided the quickest service between Redhill and Reading in both directions. The 46.1 miles northbound took 84 minutes with three stops. The southbound time was ten minutes less with only one intermediate stop at Guildford, the 25.8 miles between Reading and Guildford scheduled in 40 minutes and the 20.3 miles, to Redhill in another 32 minutes. Some other trains omitted some stops. The SE&C offered a good service between London and Dorking during the Business rush period. In the Down direction the 16.10 ex Charing Cross, ran non stop to Redhill in 32 minutes from London Bridge and after a further stop at Reigate reached Dorking at 17.09, 46 minutes from London Bridge; it terminated at Shalford at 17.31. The 17.25 ex London Bridge, allowed one minute longer to Redhill, reached Dorking at 18.12, after a stop at Reigate and continued to Reading reached at 19.28, 89 minutes from Redhill to Reading, with eight stops and one conditional stop. The Redhill to Guildford time of 35 minutes with three intermediate stops required smart running. The 18.02 ex London Bridge, 32 minutes to Merstham and all stations afterwards arrived at Dorking at 18.59. The 18.34 from London Bridge [18.27 ex Charing Cross] stopped at Coulsdon in 27 minutes, served all subsequent stations, including Dorking at 19.32 and terminated Shalford at 19.52.

There were six departures from London Bridge to Dorking commencing 16.23 finishing 18.52; the average time over the 28.6 miles was 55 minutes, the quickest 46 minutes, the slowest 63 minutes. The LB&SC ran over a shorter route to Dorking, 23.9 miles from Victoria and 25.5 miles from London Bridge. [SE&C 28.6 from London Bridge] It ran eight trains from London to Dorking between 16.15 and 18.30, six ex London Bridge with an average journey time of 60 minutes. The best, the 17.00 stopped at Sutton, Epsom, Ashstead and Leatherhead reached Dorking in 50 minutes and the 17.45, with additional stops at Tulse Hill, Cheam and Box Hill, was seven minutes slower. The two trains from Victoria, the 16.53, stops at Clapham Junction, Sutton and Leatherhead and the 18.00, stops at Sutton and Epsom, both took 51 minutes. Outside of the afternoon peak period the LB&SC. definitely provided the better service.

SE&C timetable the North Kent line

Four trains ran to Dorking in under the hour on the LB&SC, the 06.35 and 10.25 ex London Bridge took only 45 and 47 minutes, with the one stop at Sutton.

There were eight departures on the SE&C, from Dorking, commencing 06.52 and finishing 10.12 for London, the average time to London Bridge was 57 minutes. The best were the 08.00, all stations to Coulsdon and non stop from there to London Bridge in 24 minutes, reached at 08.58 and the 08.29 and 09.22 which had the same schedule. The 08.54 ran non stop from Reigate to London Bridge in 37 minutes with an arrival at 09.48, the 09.16 with stops at Reigate, Redhill and East Croydon was one minute quicker. The best train from Reading was the 09.03, 85 minutes to Redhill with seven stops and from there to London Bridge the next stop in 29 minutes, reached at 10.59, 47 minutes from Dorking to London Bridge. All eight trains continued to Cannon Street and seven from there to Charing Cross.

There were ten departures from Dorking LB&SC to London commencing 07.00 and finishing 10.46. Eight ran to London Bridge, average time 59 minutes. The quickest were the 08.32, 55 minutes with stops at Leatherhead, Epsom & Ewell and the 08.53, 54 minutes with stops at Box Hill, Leatherhead, Ashstead and Epsom. The two Victoria trains, the 09.10 and 10.46 reached there in 53 and 52 minutes respectively with five and two stops. As in the Down direction the LB&SC offered a better service than the SE&C outside the peak period, three to London in less than one hour: 12.56 in 49 minutes with three intermediate stops - 15.47 was three minutes quicker with only one stop - 18.52 to Victoria in 45 minutes with one stop. The SE&C definitely offered the better Business Service as well as the convenience of the choice of three London stations.

The SE&C North Kent Line service, without the need to compete with other Railways was in 1914 no better than twenty years previous. The two best Down afternoon trains, 16.44 and 17.14 ex Cannon Street, left London Bridge three minutes later. The 16.47 stopped at Dartford at 17.12, Gravesend 17.25 and terminated Maidstone West 18.08, after stopping at all stations from Gravesend. The 17.17 stopped at Gravesend at 17.52, Strood 18.04 and reached Chatham at 18.11. The quickest Up trains were the 08.01 ex Maidstone, which left Snodland at 08.15 and with stops at Strood, Higham and Gravesend, reached London Bridge at 09.22 and the 09.11 ex Maidstone, which omitted the Higham stop but stopped additionally at Eltham and reached London Bridge at 10.26. The respective connections from Gillingham left there at 08.14 and 09.24.

Chapter 10: A Review at the Outbreak of War

The onset of War inhibited progress in running more frequent and faster trains in much of Southern England. The L&SW and the LB&SC Railways had introduced many improvements since the turn of the Century, particularly over the preceding five years. The services of the 19th Century were a distant, and in most cases, remote memory. The SE&C Railway had offered its patrons less improvement but there had been some significant gains. The improving schedules required more locomotives of greater tractive power. All three Railways had seen a new locomotive “supremo”, Drummond died whilst in harness, Marsh and Wainwright retired through ill health, all three left legacies, as with most senior business managers, that were variable.

Drummond supervised the design and construction of a range of 4-4-0's, all good, the T9 and D15 Classes probably worthy of the epithet “excellent”. His 4-6-0's on the other hand were at best indifferent; some were barely “fit for purpose”. Urie, his successor, designed in 1913 a 4-6-0 radically different from Drummond's approach, two outside cylinders with Walschaerts valve gear, a large sloping firegrate, large piston valves and an overall design philosophy aimed at improving accessibility to the various moving parts. A design intended to give a long reliable service between General overhauls, the forerunners of a range of reliable 4-6-0's, but only after the War.

Marsh began his tenure on the LB&SC by borrowing a design from the Great Northern Railway; he then produced some very feeble 4-4-2 Tank's followed by the successful I3 Class. He effectively copied his predecessor's B4 Class 4-4-0 as a 4-4-2 Tank, but incorporated a modification of his own; a competent saturated steam locomotive became, after fitting with a boiler with a steam superheater, excellent. At the end of his reign he developed the express Tank further with his J Class Pacific. However, although these were very able machines, his assistant L.B.Billinton during Marsh's illness, responding to an urgent need for further express locomotives built more Great Northern type Atlantic locomotives. Furthermore on Marsh's retirement, Billinton, when he became Superintendent introduced his own design of Baltic Tank [4-6-4], two of which were built before the outbreak of War.

Maunsell on taking up the reins from Wainwright on the SE&C inherited the biggest challenge. The SE&C was a Railway earning inadequate financial returns, failing to improve its infrastructure [the Chatham route was still subjected to a crippling restriction on axle weights] and pursued by a critical and vociferous clientele. There was a competent albeit comparatively small range of 4-4-0's designed by Wainwright and Surtees. The Chairman said in 1907 the Railway was a Company with large trains being dragged about by small locomotives. Wainwright's last design, the L Class, actually constructed under Maunsell's aegis were larger, but not greatly so, and due to axle loadings could only be used on the South Eastern section.

1900-1914 Improvement

The overall improvements in service on the three Railways; new locomotives, better and therefore inevitably heavier coaching stock and improved station facilities from 1900 to 1914, were immense. As has been noted locomotive power had kept pace with these developments on the L&SW and the LB&SC but not on the SE&C. One technical development particularly led to this satisfactory situation, the introduction of boilers with superheaters. The two Wainwright's 4-4-0's that were fitted with superheaters, but for the increase in locomotive weight, would have mitigated the problems on the SE&C had they been able to run on the Chatham route.

The LB&SC, in 1914 operated a regular 60 minutes non stop schedule to Brighton, with train weights often exceeding 300 tons. The previous year it had introduced 85 minutes timings between London and Eastborne. The Portsmouth service competed effectively with the L&SW over a significantly longer route. The Company operated a reasonably punctual service with heavier trains than a decade previously in the Suburbs. It was also already operating electrified services, with more routes to follow, which offered a quicker and more frequent timetable than could be provided with steam traction.

The L&SW had successfully introduced a two hours non stop schedule to Bournemouth. Portsmouth in 1914 benefited from an improved service, after a chequered history of accelerations followed by decelerations over the two previous decades. Commuter services particularly those for the outlying areas such as Haslemere, Farnham, Brookwood and Basingstoke were quick, comfortable and punctual. In the London Suburbs the L&SW like the LB&SC introduced improved carriage stock and was preparing for the electrification of many of its inner Suburban routes.

The SE&C handled the heavy Boat train traffic competently despite its limited motive power, struggled to maintain ambitious schedules to the Kent Coast Resorts and provided a scarcely adequate Suburban service. It was in this activity, as were the other two Companies, losing market share to other forms of Transport but unlike the other two was not taking the appropriate action to deal with the threat.

The Railway Companies [Accounts and Returns] Act of 1913 required the Companies to provide more details than before in their published accounts of expenditures. One of the parameters disclosed was annual train mileage. The respective annual reports for the year 1913 indicate that the annual distances worked per locomotive owned by the L&SW, LB&SC and the SE&C Railways were 19,080, 21,630 and 20,720 miles respectively. Comparisons, whilst invariably odious are fascinating none the less. For the big Railways, the Great Western, the London and North Western and the Midland [all of which owned in excess of 3,000 locomotives] the comparative figures were 16,090, 15,590 and 15,070 miles respectively. This is not entirely fair as these Railways ran a much higher freight train mileage as a percentage of their total train mileage than the three Southern lines.

1913 The Three Southern Companies vs. the Rest

Maintenance costs are inevitably heavily influenced by the necessity for intermediate and general locomotive repairs, which will occur more frequently if higher annual mileages are run. The numbers for the six Railways reflected this although differing wage rates also led to distortions. The annual cost of maintenance per locomotive on the Southern Railways was £260, £278 and £263, on the three large Railways £273, £236 and £236 respectively.

Coal costs were influenced primarily by two factors; the amount of work carried out by a locomotive throughout the year and the distance the coal had to be transferred from mine to locomotive depot. The three large Railways definitely had the advantage of cheaper coal in addition to the fact that their locomotives were running a lower annual mileage [albeit they may well have been working harder, particularly in the case of the L&NW and therefore consuming more coal per mile travelled but not necessarily per EDHP developed]. The coal cost per annum per locomotive for the L&NW was £375 and for the Midland and the GWR £298. The comparative figures for the three Southern lines were; £490, £452 and £456. The higher figure for the L&SW probably reflects both the heavy gradients on the West of England route and the propensity of Drummond's behemoths to gobble coal.

The interesting figure however emerges when the sum of the annual maintenance and coal costs is divided by the annual mileage to give an operating cost per mile travelled. The three Southern Railways figures are 3.95, 3.40 and 3.50 new pence [If multiplied by 45 to 50 it probably represents the cost in the year 2000] and for the three large Railways 3.55, 3.95 and 3.55 new pence respectively. In other words the Southern Railways although running higher mileages and using more expensive coal achieved similar locomotive costs per mile. Additionally the saving in Capital outlay through building fewer locomotives should be taken into account. Although recognising the age of many of the locomotives, which would be fully depreciated, the actual saving to the Southern Railways was probably only 2.5% of the annual coal and maintenance costs, i.e. c. £20 per annum. This assumes, and it is a big assumption, that the Southern Railways built or brought locomotives as cheaply as the other three. In practice they certainly utilised cheaper locomotives than the GWR but probably more expensive ones than the other two large Railways.

Comparable Companies to the L&SW, LB&SC and SE&C are difficult to find, but the Great Eastern Railway had similarities to the SE&C and the LB&SC if they are considered as one Company. The two Companies together had 1,330 locomotives, the Great Eastern 1,274. The GE averaged 16,687 miles per annum per locomotive with annual coal and maintenance costs of £380 and £288 per locomotive respectively. The overall cost per locomotive mile was 4.0 new pence compared with 3.40 for the two Companies. The North British Railway had some similarities to the L&SW, 1,058 locomotives, the L&SW 963. The NBR annual coal and locomotive costs were £387 and £206, locomotives averaged 16,652 miles per annum, resulting in a cost per mile of 3.60 new pence compared with the L&SW figure of 3.95 new pence.

1913 Southern Railways National ranking

The LB&SC had the equal lowest locomotive cost per mile of any British Railway with the Great North of Scotland Railway which had a very low maintenance cost. The second lowest was the SE&C, shared with the Great Southern and Western Railway of Ireland. The L&SW ranked equal 12th with the L&NW. The North British, Great Western, Midland, Great Northern of Ireland, Highland, Midland and Great Western, and the Caledonian Railways had better figures. The North Stafford, Great Eastern, Great Northern, Glasgow and South Western, Lancashire and Yorkshire, Furness, Great Central, North Eastern and the Taff Vale Railways were worse.

Whilst figures from Annual Reports should be treated with caution [How good was the data on which the figures were based? How creative was the interpretation? Creative accountancy was not invented by modern Business Schools] It does appear that the LB&SC, often considered a toy Railway with expensive habits and the much criticised SE&C could hold their heads up high when the daily operation of their locomotive fleets was assessed. Messrs. Stroudley, Kirtley, Billinton, Marsh and Wainwright and their teams did pretty well and so perhaps more critically did the operating staffs. The sad fact is the reflection it throws on the Management of the SE&C, with better judgement from them it would have been a fine Railway but past sins weighed heavily.

Chapter 11: London and South Western Railway from the Outbreak of War to the Grouping 1914-1923

At Midnight on August 4-5th, 1914 the London and South Western [and the other British Railway Companies] received a letter from R.H.Brown at the War Office informing them that he was commanded by H.M. the King to take over their Railway on behalf of the Government. "You will carry on as usual, subject to the instructions of the Executive Committee of which the President of the Board of Trade is President".

The L&SW had already earned the sobriquet "the Military line", and through its port at Southampton was immediately involved in the War effort as the British Expeditionary Force embarked for France. This necessitated an average of 70-75 daily trains to Southampton over a three weeks period with the peak around August 14th when 350 troop specials were handled in a 48 hours period. On all Railways, the onset of War virtually halted any progress in the areas of better schedules, improved locomotives and superior coaching stock. The L&SW was no exception, although with hindsight, it is perhaps surprising that despite the War effort the first phase of the third rail electrification project was initiated at the end of 1915. The new design supremo at Eastleigh had in 1913 produced his H15 Class 4-6-0's, ten of which were built at Eastleigh, entering service between January and September 1914. They were destined to be of inestimable use during the War years.

The H15 4-6-0 Class had 6 feet diameter coupled wheels and two outside cylinders [21 inches diameter by 28 inches stroke]. The boiler working pressure was 180 pounds per square inch and it had a total heating area of 2,286 square feet [1,759 square feet in the boiler tubes, 167 square feet in the firebox and 360 square feet in the superheater]. Four were supplied with a Robinson type Superheater, total boiler heating area 2,216 square feet [1,716 square feet in the boiler tubes, 167 square feet in the firebox and 333 square feet in the Superheater]. Four with Saturated steam, 2,192 square feet, [2025 square feet in the boiler tubes and 167 square feet in the firebox]. The firegrate area for all the Class was 30 square feet, the locomotives weighed between 79 and 81 tons, depending on boiler type, the large tenders weighed another 57½ tons. In June 1914, Drummond's ultimate folly, although in fairness to him he only had one locomotive built to the design, 4-6-0 No.335 emerged rebuilt from Eastleigh Works with an Eastleigh superheater type boiler fitted. This had a working pressure of 175 pounds per square inch and a total heating area of 2192 square feet [1,716 square feet in the boiler tubes and 308 square feet in the Superheater]. In other respects No.335 had been rebuilt to comply with the H15 Class.

D15 Nos. 464 and 465 and L12 Class 4-4-0's No.421 were rebuilt with superheated boilers during 1915, the remaining D15's were similarly modified in 1916 and 1917. No more L12's were dealt with until No.416 early in 1918.

L&SW Wartime timetables

The L12 boiler with superheater had a total heating area of 1,349 square feet [993 square feet in the boiler tubes, 161 square feet in the firebox and 195 square feet in the Superheater]. According to the L&SW the fitting of this boiler reduced the locomotive weight, by three-quarters of a ton. [The Southern Railway subsequently considered the locomotives to be two tons heavier than the L&SW stated].

The D15 boiler total heating area was 1,515 square feet [1,140 square feet in the boiler tubes, 144 square feet in the firebox and 231 square feet in the superheater tubes], The fitting of a superheated boiler increased the weight of the D15's by almost two tons, to 61½ tons. The new boiler working pressure was 180 pounds per square inch and the cylinders were 20 inches diameter.

The timetable naturally deteriorated as the War continued, initially express trains were trimmed with the overall timetable maintained in reasonable shape until 1917 when trains were slowed further and reduced in number.

There were five good weekday trains from Waterloo to Bournemouth and return in September 1915: 10.15 reached Bournemouth in 2 hours 33 minutes and the first stop at Eastleigh in 90 minutes - 12.30 took two minutes longer to Bournemouth with a first stop at Southampton in 100 minutes - 14.00 maintained its pre War excellence, non stop in 116 minutes to Christchurch and an arrival at Bournemouth ten minutes later - 16.50 and 18.55 took 2 hours 39 minutes and 2 hours 49 minutes to Bournemouth, both made their first stop at Winchester, in 84 and 86 minutes respectively.

The service in August 1918 consisted of only four supposedly fast trains, from Waterloo at 12.30, 14.00, 16.50 and 19.00 with overall times to Bournemouth of 2 hours 39 minutes, 2 hours 46 minutes, 2 hours 44 minutes and 2 hours 52 minutes respectively. The 12.30 made its first stop at Southampton in 103 minutes, the other three at Winchester in 88 minutes.

The Up 08.00, 10.12, 11.20 and 14.09 from Bournemouth in 1915 ran to Waterloo in 2 hours 33 minutes, 2 hours 35 minutes, 2 hours 38 minutes and 2 hours 37 minutes with intermediate stops at Brockenhurst, Southampton, Winchester and Vauxhall. The schedule from Winchester to Vauxhall varied from 75 to 78 minutes. The 17.15 from Bournemouth reached Waterloo in 2 hours 25 minutes including Southampton to Vauxhall non stop in 90 minutes. The 08.00, 11.20 and 14.12 in August 1918 ran to Waterloo in 2 hours 39 minutes, 2 hours 50 minutes and 2 hours 42 minutes respectively, 88 minutes from Winchester. The 16.02 took 2 hours 55 minutes, 91 minutes from Southampton.

The Portsmouth service suffered even more, there was one good Down train in 1915, the 18.40 ex Waterloo, which reached Portsmouth Town in 111 minutes with two stops en route. The 15.45 ex Waterloo took 2 hours 19 minutes with five stops and on Mondays only the 09.10 ran to the Town in exactly 2 hours with five stops.

L&SW the Wartime 14.00 Down

The Up 07.52 from Portsmouth ran from the Town to Waterloo in 2 hours 3 minutes with six stops, the 12.06 required another 11 minutes. On Mondays there was a 14.51 which, with three stops, reached Waterloo in one minute less than two hours. One Down train in 1918, the 15.45 ex Waterloo completed the journey to the Portsmouth Town in 2 hours 17 minutes with six stops en route and in the Up direction the 07.45 from the Town, also with six stops was 5 minutes quicker. The other trains stopped at all stations between Portsmouth and Woking completing the journey in about three hours.

The L&SW 4-6-0's, with the exception of the T14's were generally employed on freight and troop trains throughout the Wartime period. The Bournemouth service was mainly entrusted to the 4-4-0's and K.Paton whilst posted to Pirbright Camp noted that the D15 Class 4-4-0's had a monopoly of the Bournemouth trains with the exception of the usual T14 Class 4-6-0 on the 14.00 ex Waterloo. The 14.00, with its 116 minutes timing to Christchurch inevitably attracted some attention. Details of five journeys, recorded in 1915, suggest that despite Wartime conditions, lively performances still occurred. [Ref.1] Locomotives and weights were; T14 Class 4-6-0 No.462 with 210 tons - D15 Class 4-4-0 No.465 with 215 tons - T14 No.460 with 230 tons - D15 No.467 with 290 tons - T9 Class 4-4-0 No.282 with 235 tons. The actual and [Net times] from Waterloo to Christchurch were:- 126 minutes 13 seconds [117³/₄ minutes] - 118 minutes 33 seconds [113¹/₂ minutes] - 117 minutes 13 seconds [114 minutes] - 124 minutes 25 seconds [117 minutes] - 123 minutes 2 seconds [121 minutes].

The two records behind T14 Class 4-6-0's represented, by the normal standards of these locomotives, a poor and a good performance. Number 462 passed Clapham Junction in 7 minutes 21 seconds, reached a maximum of 60 miles per hour before Woking and fell away to 44 at MP31. Consequently the train was two minutes late passing Basingstoke, 56 minutes 7 seconds from Waterloo, the minimum after Basingstoke was 45 miles per hour and maximum 75 past Winchester. A bad signal check followed, Eastleigh was passed in 88³/₄ minutes, Southampton in 95 minutes 37 seconds, the continuation to Christchurch, 25.1 miles, was poor, 30 minutes 36 seconds. Number 460 with 20 tons more was 16 seconds quicker to Clapham Junction and two seconds slower to Woking, 29 minutes 40 seconds, but then the performance was far better. The minimum at MP31 was 51 miles per hour, the minimum after Basingstoke 49 and maximum at Winchester 82. Basingstoke was passed in 54 minutes 36 seconds, schedule 54 minutes, and Eastleigh in 78 minutes 50 seconds, schedule 79 minutes. There was a stop at Woodmill signal box, 81 minutes 48 seconds, which lasted 82 seconds, Southampton was passed in 89 minutes 3 seconds and Christchurch reached 28 minutes 10 seconds later.

The two runs, with the D15 Class 4-4-0's were typical. Number 465 passed Clapham Junction in 7 minutes 19 seconds, Woking in 29 minutes 16 seconds and with a minimum of 50 miles per hour at MP31 Basingstoke in 54 minutes 20 seconds.

L&SW the Wartime 14.00 Down

The minimum after Basingstoke was 49 miles per hour; there were then persistent signal checks due to a proceeding train, with the consequence it took 83½ minutes to pass Eastleigh. With a clear road afterwards two minutes was recovered, 35 minutes 1 second for the 30.8 miles from there to Christchurch, 27 minutes 21 seconds from Southampton.

Number 467 had a train of eleven eight wheelers, despite the heavier load it was only six seconds slower at Clapham Junction and Woking. Speed fell to 47 miles per hour at MP31, Basingstoke was passed in 55 minutes 18 seconds, [one and a quarter minutes late] with 46 the minimum afterwards, the average from Winchester to Eastleigh 72, the latter station passed in 86 minutes 20 seconds. It was then stopped at Woodmill box and further delayed by the necessity to take water at Southampton, completed in two and a half minutes. From the restart it passed Lyndhurst Road in 9 minutes 56 seconds, Brockenhurst in 18 minutes 9 seconds and stopped at Christchurch in 30 minutes 29 seconds. These two runs are representative of the good performances invariably achieved by footplate crews with the D15's.

The T9 Class 4-4-0 passed Clapham Junction in 7 minutes 26 seconds before a delay for a slight signal check, following which it was driven easily to Basingstoke, passed in 59 minutes 27 seconds, five and a half minutes late. There was another slight signal check after Battledown, suggesting it was running very closely behind a West of England train. Litchfield signal box, 56.3 miles, was passed in 70 minutes 20 seconds and the 48 miles from there to Christchurch run in 52 minutes 42 seconds. The speed near Winchester was 72 miles per hour and the time from Southampton to Christchurch, 29 minutes 46 seconds.

The schedule for the awkward 3.7 miles from Christchurch to Bournemouth, which included a mile at 1/99, was eight minutes. The T14 4-6-0's ran the stage in 8 minutes 43 seconds [No.462] and 8 minutes exactly [No.460]. D15 No.465 took 7 minutes 46 seconds and No.467 with 290 tons was 23 seconds slower. The small T9 performed well, 7 minutes 43 seconds. The times were in reverse order to the size of locomotive used.

R.E.Charlwood, whilst on holiday in Bournemouth in 1916, sometimes walked over to Christchurch and rode back on the through train from Birkenhead. The load on all four occasions was 330 tons. D15 Class 4-4-0 No.470, still fitted with a saturated steam boiler, on two occasions ran the first two miles, from the start, in 5 minutes 40 seconds and 5 minutes 44 seconds with average speeds on the 1/99 of 25 and 24 miles per hour. Superheated No 468 slipped badly initially and took 6 minutes 55 seconds for the first two miles reaching 18 miles per hour on the 1/99 whereas No.472 also superheated took 5 minutes 40 seconds, maintained 25 miles per hour and passed Boscombe, 2.5 miles, in 6 minutes 11 seconds. The maintenance of 25 miles per hour up the 1/99 required an EDHP OF 750-800. The D15's were working a roster that took them from Bournemouth to Oxford and return.

L&SW Cross Country to Salisbury

Although strictly outside the scope of this work, L&SW 4-4-0's ran over several cross-country routes radiating from Southampton and Bournemouth. On the 10.19 Cardiff to Southampton, a K10 Class "Grasshopper" 4-4-0 replaced the Great Western Railway two-cylinder 4-6-0 at Salisbury. The load was 290 tons, the climb out of Salisbury, difficult for this small 4-4-0 such that speed fell to 18 miles per hour on the 1/150. This train was liable for a conditional stop at Dunbridge and on this occasion an additional stop was also made at Dean reached in 19 minutes 56 seconds from the Salisbury start; extra stops became more common as the War in Europe continued. The initial three miles from the respective starts at Dean, Dunbridge and Romsey were run in 6 minutes 50 seconds, 6 minutes 28 seconds and 6 minutes 3 seconds. The K10 Class was not designed with 300 tons trains in mind. The load was reduced to 270 tons at Romsey. The run was timed at the end of 1917, at Romsey the train passed a northbound train, the 12.15 Portsmouth to Bristol which was hauled by a Great Western 32xx Class 4-4-0.

The 10.28 Bournemouth to Salisbury, one day in 1916 when it was hauled by an Adams 460 Class 4-4-0, at that time on the duplicate list, with 145 tons had a running time for the 28.1 miles from Wimborne to Salisbury of 54 minutes 43 seconds. The scheduled six stops were observed, plus an additional one at Alderbury Junction halt, the overall schedule, including time spent at stations, was 60 minutes. The elderly 4-4-0 attained 22 miles per hour up the 1/99 and 1/75 starting from Verwood, the first mile was run in 3 minutes 25 seconds and starting from Downton, up 1/100, the first mile took 3 minutes 42 seconds. [Ref.2]

A D15 Class 4-4-0 on the southbound Birkenhead service in 1916 with 315 tons ran the initial five miles to Radley from the Oxford start in 8 minutes 35 seconds and passed through at 45 miles per hour. It passed Didcot East Box, 10.7 miles, in 14 minutes 44 seconds after speed had been reduced for the curve. There was a PWR slack after this followed by a maximum of 61 miles per hour. Following a signal check before, Reading station was finally reached in 36 minutes 46 seconds, schedule 37 minutes.

R.E.Charlwood commenced his holiday in Bournemouth with an, "enlivening", run from Waterloo. The locomotive was T14 Class 4-6-0 No.446, the train, "overflowing", Charlwood had to sit in a middle seat and found timing the run difficult, he reckoned the Gross load at 260 tons. Clapham Junction was passed in seven minutes exactly, Woking in 27 minutes 17 seconds, the average over the last two miles up to MP31 was 51 miles per hour and Basingstoke in 51 minutes 27 seconds. The 10.3 miles from Basingstoke to Micheldever were run in 11 minutes 5 seconds, including the adverse gradient before Wootton, followed by an average of 76 miles per hour between Winchester and Eastleigh. Southampton was passed in 81 minutes 35 seconds from Waterloo, not surprisingly after this vigour the locomotive was eased. There was a stop for signals at Brockenhurst and a PWR slack at New Milton with the result Christchurch was reached two minutes late. The Net time, with due allowance for the checks, probably 109-110 minutes.

L&SW Adams 4-4-0's to the rescue

The enthusiasm on the footplate continued unabated after Christchurch. They passed Boscombe in 5 minutes 35 seconds from the restart.

A T14 Class 4-6-0 on the 14th June of the same year, still carrying a saturated steam boiler, with ten bogie coaches, ran unchecked to Christchurch in the same time as No.446. Intermediate times were: Woking 29¼ minutes - Basingstoke 55 minutes - Southampton 88½ minutes. The Southampton to Christchurch time with 280 tons was the same as the T9 with 235 tons. The T14's were considerably improved by superheating, before that relative to their size they were poor machines. The T9's at a later date were also considerably improved with superheating, but they were good in their saturated form.

All railway enthusiasts enjoy a locomotive for whatever reason being replaced by an older or smaller one, which then performs well, enabling them to champion the underdog and bemoan the comparatively poor performances of more modern machines. In 1916 an L12 Class 4-4-0 with a heavy 375 tons train on the 12.30 Down failed at Surbiton and was replaced by a Jubilee Class 0-4-2 No.624 which ran the 12.4 miles to a stop at Woking in 23 minutes 24 seconds. An Adams T3 Class 4-4-0, No.465 replaced the Jubilee at Woking and ran the 55.8 miles from Woking to the next stop at Southampton in 72½ minutes. Inevitably with such a load the start was slow, the 8.9 miles to Farnborough took 17¾ minutes; the average from there to Winchfield was 48 miles per hour, Basingstoke was passed in 36 minutes 5 seconds and Micheldever in 51 minutes 50 seconds. The crew then let the elderly locomotive run down the long descent towards Southampton, the average from Micheldever to Winchester was 72 miles per hour and from there to Eastleigh 74. Three more carriages were added to the train at Southampton, increasing the load to 460 tons Gross, No.465 took this big train to the next stop at Brockenhurst in 22 minutes 50 seconds. The 12.30 ex Waterloo was allowed 100 minutes to the first stop at Southampton [the T3 virtually kept the Woking to Southampton schedule, albeit not the sectional timings] and 20 minutes from there to Brockenhurst.

The T3 Class 4-4-0 No.465 returned on the 17.15 from Bournemouth Central. [The portions to and from Weymouth at this time were hauled by Jubilee Class 0-4-2's and the smaller 4-4-0's. Larger locomotives worked between London and Bournemouth, if working from Bournemouth West they hauled the train into the bay at Bournemouth Central, then replaced the Weymouth locomotive and worked the combined train to Waterloo]. The T3, with 275 tons kept the 19 minutes schedule from Brockenhurst to Southampton with five seconds to spare and passed Eastleigh from the restart in ten and a half minutes. The climb was rather laboured, the average from Eastleigh to Winchester 36.5 miles per hour and to Micheldever only 31.5, 55¼ minutes to a special stop at Basingstoke.

Number 465 was replaced at Basingstoke by another Adams 4-4-0, T6 Class No.682. Both locomotives were allocated to Basingstoke depot.

L&SW the rebuilt T14's

The change of locomotives was presumably for operational reasons. Number 682 ran from Basingstoke to a stop at Vauxhall in 49 minutes 55 seconds, the schedule allowed 90 minutes from Southampton to Vauxhall. The T6 averaged 62 miles per hour from Winchfield to Farnborough, passed Woking in 25 minutes 5 seconds [the 5.3 miles from Woking to Byfleet were run at an average of 71] and Surbiton in 36 minutes 20 seconds. The time to Clapham Junction was 45½ minutes after which there was a slight check for signals. The gentleman who timed these two runs, on a day trip to Brockenhurst, can hardly have anticipated a day spent travelling behind Adams Class 4-4-0's let alone 25 miles run at speeds in excess of 70 miles per hour.

The Adams Jubilee Class 0-4-2's and the various 4-4-0's continued with the haulage of semi-fast trains throughout the L&SW system.

As the War continued, loads increased. There is a record with T14 Class 4-6-0 No.443 and 14 coaches including a Dining car on the 18.43 from Bournemouth. The start from Southampton was excellent, Eastleigh passed in 9 minutes 50 seconds, an average from there to Winchester of 44 miles per hour, after which the average to Micheldever was only 39. If the 4-6-0 worked at a level of performance equivalent to a steady 42 miles per hour between Eastleigh and Winchester, this entailed an EDHP of 800-850. The T14 Class boiler, in their rebuilt form, had a working pressure of 175 pounds per square inch and a total heating area of 1,707 square feet [1,280 square feet in the boiler tubes, 158 square feet in the firebox and 269 square feet in the superheater]. The locomotive weighed 76 tons, the tender 60 tons. Basingstoke was passed in 44 minutes 52 seconds from Southampton; the 28.7 miles on to Weybridge took 26 minutes 27 seconds and after severe signal checks, after Weybridge, at Surbiton and Clapham Junction, Vauxhall reached in 99 minutes 57 seconds, 90 minutes Net, schedule 92 minutes.

The gentleman who recorded this stated in his letter [Ref.3] that "it was easily the best run I have had of a series on this train from Southampton to Basingstoke". Good though this performance was, a D15 Class 4-4-0 could have equalled it, probably one with a saturated steam boiler and certainly one with a superheater. Frank Box, about this time noted No.466 with a train of 14 bogies run unchecked from Southampton to Surbiton in 79 minutes 25 seconds, schedule 84 minutes. A similar time to what No.443 could have achieved with a clear run after Weybridge.

The D15 Class 4-4-0's like the four cylinder T14's were capable of high speed running, although one suspects that the ride was not as good. Number 464, with superheater and a 360 tons train on the 18.00 ex Weymouth from a start at Basingstoke passed, Hook, 5.6 miles, in 7 minutes 37 seconds, Farnborough, 14.6 miles, in 16 minutes 19 seconds and Woking, 23.4 miles, in 24 minutes 13 seconds. The average over the next 5.3 miles to Weybridge was 76 miles per hour and Surbiton 35.9 miles from Basingstoke was passed in 34 minutes 39 seconds. The 40 miles per hour slack through Clapham Junction was then observed meticulously.

L&SW to Bournemouth in 1918 and 1919

The Vauxhall stop was made in 45 minutes 54 seconds, six minutes less than schedule and inside even time for the 46.5 miles from Basingstoke.

By the end of 1916 due to the continuing effects of Wartime conditions persistent late running was the norm. A new reduced timetable was introduced on November 19th 1916 with further changes on the first day of 1917. Whilst the L&SW maintained some fast trains as late on in the War as any Railway Company, it was conversely after the War one of the more recalcitrant in restoring services to anything approaching pre War excellence. Three of the four main express trains in 1918 to Bournemouth ran to the first stop at Winchester in 88 minutes, the fourth to Southampton in 103 minutes. There was with an overall 60 miles per hour speed limit.

C.J. Allen received a number of logs to Southampton and Bournemouth from late 1918 to mid 1919 from correspondents. Eleven to Winchester included: one hauled by an Adams T3 4-4-0, one by a T9 Class 4-4-0, seven by D15 Class 4-4-0's, one by a D15 piloted by a T9 and one by an N15 Class 4-6-0.

The original drawings for Mr. Urie's N15 Class 4-6-0 were produced in 1916, but Wartime priorities precluded construction at Eastleigh until 1918, the first, No.736, entered service in August. The N15, although similar to the H15 Class, carried a different boiler and larger diameter driving wheels, [6 feet 7 inches]. They had two outside cylinders [22 inches diameter, 28 inches stroke]. The boiler working pressure was 180 pounds per square inch, the total heating surface 2,186 square feet [1,716 square feet in the boiler tubes, 162 square feet in the firebox and 308 square feet in the superheater]. The fire grate area was 30 square feet and the locomotive weighed 78 tons, the tender another 57 tons.

The Adams T3 No.682 even, with an easy 88 minutes schedule, had a challenge with 345 tons. It passed Clapham Junction in 8 minutes 45 seconds before a bad signal check. Recovery was slow, 57 miles per hour at Esher, 39 minutes 10 seconds to Woking, 30 minimum at MP31 and no higher than 45 before Basingstoke, passed in 75 minutes 10 seconds. Speed fell again to 30 miles per hour after Worting Junction and with a maximum of 66 on the ensuing descent Winchester was reached 14 minutes 10 seconds late. The T9 No.731 had 375 tons, 13 coaches "full to the gunnels". Clapham Junction was passed in 7 minutes 40 seconds, Woking in 34 minutes and Basingstoke in 68 minutes 10 seconds. The average over the next two and a half miles to Worting Junction was 43 miles per hour, the minimum afterwards about 31 and the Winchester arrival was exactly five minutes late.

The D15 Class 4-4-0's on seven occasions had trains of between 325 and 380 tons. The easy nature of the schedule can be appreciated by reference to No.472, which with 325 tons kept time exactly. This involved a time of eight and a quarter minutes to Clapham Junction, minima of 36½ miles per hour at MP31 and 38 after Worting Junction followed by a maximum of 61 before the Winchester stop.

L&SW D15 performance in 1918 and 1919

Number 469, with a similar load reached Winchester three and a quarter minutes early, it passed Clapham Junction in 7 minutes 55 seconds, reached 60 miles per hour before Woking, the minimum at MP31 was 38 and the time to Basingstoke 60 minutes 40 seconds. Speed fell to 32 miles per hour afterwards and was allowed to rise to 69 before the stop, the actual time from Waterloo 84 minutes 43 seconds. The D15 Class 4-4-0's ran to or within the 88 minutes schedule on all seven occasions. The heaviest train, 380 tons taken by No.471, passed Clapham Junction in 7 minutes 40 seconds and Woking in 31 minutes 50 seconds, the minimum at MP31 was around 38 miles per hour and the Woking to Basingstoke time 28 minutes 40 seconds, 65 seconds less than No.469. The average from Farnborough to Winchfield was 53 miles per hour, Worting Junction was passed in 64 minutes, Micheldever 11 minutes later and, after a signal check, Winchester reached in 84¾ minutes, probably 83¾ minutes Net. Number 463 piloted by T9 Class No.118 made the quickest actual journey in the series, 84 minutes 35 seconds but with two locomotives and 350 tons the task was an easy one.

The N15 Class 4-6-0 No.739 with 395 tons arrived at Winchester five seconds within schedule. The maximum before Woking was only 52 miles per hour, the minima at MP31 and after Worting Junction 39 with an intermediate maximum of 50 at Fleet and 66 maximum before the Winchester stop. As a comparison to the above superheated T14 Class 4-6-0, with 360 tons ran to Winchester in 91 minutes 23 seconds. It passed Woking in 35 minutes 5 seconds, fell to only 44 miles per hour at MP31 but then to a miserable 29 after Worting Junction. [Ref.4]. Number 471, with 380 tons and the N15 ran their respective trains to the next stop at Southampton in 17 minutes 50 seconds and 17½ minutes, times to pass Eastleigh were 9 minutes 50 seconds and 9 minutes 32 seconds, the 60 miles per hour limit observed each time.

The 12.30 ex Waterloo, allowed 103 minutes to the first stop at Southampton, on two occasions had a superheated D15 Class 4-4-0 with 345 tons and a superheated L12 Class 4-4-0 with 375 tons. The D15 passed Clapham Junction in 8 minutes 4 seconds, Woking in 32 minutes 38 seconds, Basingstoke in 62 minutes 21 seconds, Winchester in 87 minutes 11 seconds and reached Southampton, almost one minute early in 102 minutes 9 seconds. The L12 was 16 seconds slower to Clapham, 32 seconds behind at Woking, 69 seconds adrift at Basingstoke and 90 seconds down at Winchester. Southampton was finally reached 10 seconds behind schedule after a faster finish than the D15.

A D15 Class 4-4-0 No.468 achieved a better performance than these with 370 tons some months later. There were delays initially resulting in a time of 22 minutes 35 seconds to pass Surbiton and 36 minutes 31 seconds to Woking. The 55.7 miles from there to Southampton stop were then run in 65¼ minutes, minimum speeds were 45 miles per hour at MP31 and 48 after Worting Junction, the maximum 70 at Winchester.

L&SW between Southampton and Bournemouth 1918 and 1919

Three journeys between Southampton and Bournemouth involved, an N15 Class 4-6-0 No.741 with a light train of 245 tons, another N15 No.739 with 395 tons and D15 Class 4-4-0 No.467 with 345 tons and afford some interesting comparisons. The two heavy trains both stopped at Brockenhurst. The N15 passed Redbridge in 5 minutes 42 seconds, Lyndhurst Road, 6.1 miles, in 10 minutes 22 seconds, the D15 was 37 seconds slower to Redbridge, 35 seconds to Lyndhurst and at Brockenhurst reached in 20 minutes exactly was only four seconds down. Maxima before Brockenhurst were 55 miles per hour by the N15 and 58 by the D15. Again on leaving Brockenhurst the N15 demonstrated its better starting characteristics, climbing up to Sway in 6 minutes 37 seconds and reaching the next stop at Christchurch in 16 minutes 50 seconds. The D15 needed 33 seconds longer to pass Sway, was through Christchurch in 17 minutes 7 seconds after a maximum of 62 miles per hour and made its scheduled stop at Boscombe in 21 minutes 3 seconds. N15 No.741, with the light train passed Redbridge in five and a quarter minutes, Brockenhurst in 18¾ minutes, following which there was a stop for signals resulting in the 41 minutes schedule to Bournemouth being exceeded by two minutes.

A non stop run from Waterloo to Bournemouth with a superheated T14 Class 4-6-0 and 310 tons produced some good running. Times to Clapham Junction and Surbiton were 7 minutes 55 seconds and 18 minutes 41 seconds before a bad slowing for signals at Hampton Court Junction, it needed 36 minutes 3 seconds to clear Woking. The 23.4 miles from Woking to Basingstoke were run in 26 minutes 42 seconds with an average of 57 miles per hour between Farnborough and Winchfield and Basingstoke to Winchester in 20 minutes 23 seconds, Eastleigh was passed in 89½ minutes before further delays for signals. The final stage from Southampton to Bournemouth was completed in 35 minutes 49 seconds, the final arrival in 135 minutes 14 seconds from Waterloo, 128 minutes Net, schedule for this special working is not known.

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Two journeys in the Up direction, on the 08.00 and 11.20 from Bournemouth illustrate loads typical in the 1918/1919 period. The 08.00 was hauled by D15 Class 4-4-0 No.472 with 370 tons, increased to 390 tons at Southampton, the 11.20 weighed 350 tons entrusted to a Saturated T9 Class 4-4-0 No.773. The 08.00 stopped at Brockenhurst, Southampton and Winchester, two minutes were lost on the initial 22 minutes schedule to Brockenhurst. Christchurch was passed in 7 minutes 4 seconds and Sway in 18 minutes 9 seconds, the average between Hinton Admiral and Sway was 44 miles per hour and the final approach to Brockenhurst was very slow, possibly due to adverse signals at Lymington Junction. The 11.20 stopped at Christchurch, reached by the T9 in 7 minutes 36 seconds. The 3.3 miles uphill to Hinton Admiral were run in seven and three quarter minutes, the average on to Sway was 40 miles per hour and Brockenhurst was reached in 20 minutes 17 seconds, the schedule 20 minutes. The D15, starting from Brockenhurst ran the 11.0 miles to Redbridge in 14 minutes 43 seconds, the T9 was 34 seconds slower, the stops at Southampton effected in 18 minutes 40 seconds and 20 minutes 17 seconds, respective schedules 19 and 20 minutes.

L&SW T9 vs D15 Southampton to Waterloo

Both trains were allowed 20 minutes from Southampton to the next stop at Winchester. The D15 with a good start, 10 minutes 35 seconds to Eastleigh was 52 seconds ahead of schedule at Winchester, the T9, 32 seconds behind at Eastleigh, lost 40 seconds on the stage. On leaving Winchester the T9 attained 35½ miles per hour on the 1/252, EDHP of 560-610 and passed Litchfield in 20 minutes 40 seconds, No.472 with 34½ and an EDHP of 600-650 was five seconds quicker. Despite the heavy trains both locomotives maintained schedule on this section, Worting Junction, 16.3 miles passed in 27 minutes 48 seconds by the D15, 63 seconds longer by the T9. Signals checked the D15 to 20 miles per hour after Worting Junction, both then ran the 23.4 miles from Basingstoke to Woking in 23 minutes 43 seconds. The T9 reached 65 at Farnborough and fell to 53 at MP31, the D15 63 and 56 at the same two points. Maxima between Woking and Surbiton were 67 and 68 miles per hour, the T9 ran this stage in 11 minutes 57 seconds, the D15 in five seconds less. The T9 passed Clapham Junction in 75 minutes 42 seconds and after a signal check stopped at Vauxhall one second ahead of the 81 minutes schedule from Winchester, 79¼ minutes Net. The D15 checked by signals at Raynes Park, passed Clapham Junction in 76¼ minutes and stopped at Vauxhall in 80 minutes exactly, 77 minutes Net. The D15 gained time over the T9 on one stage, it picked up speed better on the level stretch after Litchfield Box but Mr. Drummond would have been pleased to see his early 4-4-0 design handling a 350 tons train so competently.

Nine Elms drivers and firemen held a partial unofficial strike over the August Bank Holiday weekend in 1919, with the result that D15 Class 4-4-0 No.472 had to work 17 coaches, 450 tons Gross from Basingstoke to London. It passed Farnborough in 17 minutes 35 seconds and ran the 21.2 miles on to Surbiton in 21 minutes 35 seconds, [20 minutes 18 seconds and 21 minutes 4 seconds on the previous two runs]. The 46.5 miles from Basingstoke to Vauxhall were completed in 52 minutes 25 seconds, schedule 54 minutes. D15 No.469 on another occasion with 345 tons from Southampton passed Eastleigh in 10 minutes 4 seconds, stopped at Winchester in 20 minutes 25 seconds, attained 38 miles per hour on the 1/252 after the Winchester restart and passed Basingstoke in 29 minutes 5 seconds. It then with a completely clear road and without exceeding the 60 miles per hour limit passed Clapham Junction in 75 minutes 49 seconds and reached Waterloo in 83¼ minutes, schedule 88 minutes which included for a stop at Vauxhall.

The 17.25 from Southampton included through coaches from Hamworthy Junction via Ringwood. T9 Class 4-4-0 No.301 with 295 tons ran from Winchester to the next stop at Micheldever, 8.5 miles, in 16 minutes 39 seconds with 38 miles per hour attained on the 1/252 and from there to Basingstoke, 10.3 miles in 16 minutes 37 seconds, with 35 reached in three miles from the start. A loss of half a minute on each of these two stages was more than recovered by running from Basingstoke to Waterloo in 51 minutes 48 seconds, 50¾ minutes Net, schedule a generous 57 minutes. Clapham Junction was passed in 46 minutes 54 seconds and the Farnborough to Surbiton stretch run in 20 minutes 29 seconds.

L&SW Portsmouth Direct in 1919

Although train weights in the 1918/1919 period were on occasions very heavy the schedules were generous even making allowance for the 60 miles per hour speed limit. The L&SW began gingerly in 1919 to improve its timetable, the June 1st edition included four good trains to Portsmouth. The 09.50, 12.50, 15.50 and 18.50 ex Waterloo were allowed 42 or 43 minutes to the first stop at Guildford and 63 minutes from there to the next at Fratton. In the Up direction the timing from Fratton to Guildford was 66 minutes.

An S11 Class 4-4-0 No.440 on the 09.50 with 285 tons, despite the theoretical advantage of its 5 feet 7 inches diameter driving wheels made a slow start, 8 minutes 10 seconds to Clapham Junction. It passed MP10 in 17 minutes 10 seconds, persistent signal checks caused the next nine miles to Weybridge to take 16 minutes 39 seconds, Woking in 41 minutes 43 seconds and reached Guildford seven and three quarter minutes late in 50 minutes 44 seconds, 45 minutes Net. The load was increased at Guildford to 315 tons and an Adams Jubilee Class 0-4-2 taken as pilot to Haslemere. The two locomotives were through Godalming in 8 minutes 38 seconds and ran the 8.5 miles from there up to Haslemere in 21 minutes 18 seconds with a minimum of 18½ miles per hour on the 1/80. The Jubilee was detached at Haslemere in one minute 48 seconds and No. 440, from the restart passed Liss, 8.5 miles, in 11 minutes 6 seconds without exceeding the 60 miles per hour speed limit although it touched 65 before Buriton bank. Speed fell to 18 miles per hour on the 1/100 and 1/110 up to Buriton siding, Havant, 23.5 miles from Haslemere, was passed in 32 minutes and Fratton reached in 42 minutes 21 seconds from Haslemere. The total time from Guildford to Fratton, including that spent whilst detaching the pilot locomotive was 73¾ minutes, a loss on schedule of ten and three quarter minutes. [Ref.5]

A T9 Class 4-4-0, No.704 with 300 tons from Guildford on the 12.50 ex Waterloo passed Godalming in the same time as the double headed 09.50. Speed fell to 20 miles per hour up the first gradient to MP38, passed in 15 minutes 22 seconds, 15 seconds quicker than the 09.50 and to 11 on the 1/80 up to Haslemere. The final two and a half miles occupied 9 minutes 40 seconds. Liss was passed in 39¼ minutes, the minimum at Buriton was 24 miles per hour, Havant in 58 minutes 37 seconds and Fratton reached in 69 minutes 3 seconds after a bad signal check before, 68 minutes Net.

An S11 Class 4-4-0 No.404 from with 235 tons passed Havant in 11 minutes 1 second from the Fratton start, fell to 14 miles per hour on the 1/80 before Buriton, [the 5.0 miles from Rowlands Castle to Buriton took 12 minutes 39 seconds]. It passed Haslemere in 52¾ minutes and reached Guildford in 69 minutes 55 seconds.

T9 Class 4-4-0 No.719, with 275 tons performed better, three seconds longer to pass Havant after a signal check at Bedhampton. The minimum at Buriton was the same, but the running on the lower section of the bank quicker, the time over the 5.0 miles was 46 seconds less. Haslemere was passed in 50 minutes 10 seconds at a minimum of 26 miles per hour.

L&SW N15's on the Bournemouth route

Guildford was reached in 66¼ minutes, 65½ minutes Net after 63 miles per hour maximum. The time to pass Woking from the restart was 10 minutes 19 seconds and without exceeding 59 miles per hour to Clapham Junction 32 minutes 37 seconds, after signal checks and to the stop at Waterloo 41 minutes 49 seconds, over a minute inside schedule.

The N15 Class 4-6-0's were increasingly used on the Bournemouth trains. Number 738 with 355 tons checked initially by signals at Vauxhall, passed Clapham Junction in 8 minutes 19 seconds from Waterloo and averaged 53 miles per hour from Surbiton to Woking where there was a check to 20. It accelerated to 42 miles per hour at MP 31, [an EDHP of 650-700], the time to Farnborough was 46 minutes 50 seconds and reached Basingstoke, the first stop in 64 minutes 25 seconds, schedule 62 minutes. The lost time was recovered on to Winchester, Litchfield Box, 8.4 miles passed in 14 minutes 2 seconds after 40 miles per hour at the top of the 1/249 [an EDHP of 690-740], the stop effected in 25 minutes 43 seconds without exceeding 60, schedule 28 minutes. The 19 minutes schedules from Winchester to Southampton and on to Brockenhurst were both improved on by three-quarters of a minute and the 17 minutes from Brockenhurst to Christchurch exceeded by three-quarters of a minute. The final stage to Bournemouth was run in the good time of 7 minutes 5 seconds, the schedule a somewhat optimistic six minutes, particularly with a 355 tons train.

A 300 tons relief train run eight minutes ahead and entrusted to a Saturated L12 Class 4-4-0 frustrated N15 Class 4-6-0 No.738 on the Sunday 18.00 from Bournemouth. The N15, with 345 tons, passed Redbridge in 34 minutes 50 seconds and after various signal checks stopped at Southampton one minute behind schedule, 41 minutes 16 seconds, 39 minutes Net. The schedule from Southampton was an ample 106 minutes non stop, the N15 completed the course 38 seconds under this time despite being continually checked by signals from the Southampton start to Micheldever, 96½ minutes Net. It should perhaps be emphasised that a T9 could keep this schedule.

C.J.Allen, at the end of 1919 made four return journeys from Waterloo to Southampton. What he referred to as his "turn up and see what happens approach". The four Down trains were hauled by N15 Class 4-6-0's Nos.737 and 739 and D15 Class 4-4-0's Nos.468 and 472; loads were 220, 290, 320 and 320 tons. The actual and [Net] times to Southampton from Waterloo were; 101 minutes 15 seconds [98 minutes] - 108 minutes 5 seconds [103 minutes] - 104 minutes 50 seconds - 105 minutes 10 seconds. The trains concerned were the 13.30, a relief to the 10.30 on Christmas Eve and the 12.30 twice, the schedule 103 minutes. Allen noted the variability of the locomotive performance, particularly with the D15's. He also observed the locomotives were capable of running to Southampton easily in 100 minutes, but in practice required five minutes more, thereby arriving two minutes late. He was probably witnessing what inevitably happens when scheduled speeds are lowered and footplate crews take a relaxed view of running requirements.

L&SW Interval service

C.J.Allen recorded three Up runs, two on the 16.41 from Southampton, allowed 91 minutes to the stop at Surbiton and one on the 14.40 non stop to Waterloo. The 16.41 on each occasion weighed 275 tons, on the first L12 Class 4-4-0.No.430 plus an N15 as a pilot took 92 minutes 55 seconds, 85 minutes Net, on the second L12 No.430 on its own required 90 minutes 25 seconds, 86 minutes. On the non stop service to Waterloo a D15 Class 4-4-0, with a light train of 220 tons, passed Surbiton in 87¾ minutes, 85 minutes Net. The only time a locomotive appears to have been extended in any way was when the L12 Class 4-4-0 [recently rebuilt with superheater] after observing a PWR slack between Eastleigh and Winchester accelerated to 43 miles per hour on the 1/252, an EDHP of 575-625.

The November 16th 1919 timetable did not include any main line improvement in speeds, in fact the four fast trains on the Portsmouth route had their schedules eased between Guildford and Fratton. In the Down direction four and a half minutes was added to the schedule and in the Up direction two minutes, a minute was taken off between Waterloo and Guildford in both directions. The new timetable did however continue the development of an interval timing approach already pioneered by the L&SW. There were by this time seven standard interval departures from Waterloo: On the hour - West of England, eight minutes past the hour - Guildford via Cobham, 20 minutes past the hour - Woking and various stations beyond, Half past the hour - Bournemouth, 45 minutes past the hour - Leatherhead Line and 50 minutes past the hour - Portsmouth.

By the summer timetable of 1921 [introduced on the 10th July] the L&SW services were fully systemised on an interval basis. The Bournemouth service consisted of trains from Waterloo at 07.30 and then every half past the hour from 09.30 to 19.30. Commencing with the 10.30 each even hour departure ran to Bournemouth in two and a quarter hours with the one stop at Southampton. The L&SW had up to this timetable undertaken less post War acceleration of its express trains than any other major British Railway. Although these new Bournemouth timings were overall five percent slower than those prevailing before the War, trains were heavier, usually nine coach sets including a Dining Car. There were trains to Portsmouth hourly from 07.50 to 18.50 and then 21.50 [08.50, 10.50 and 14.50 ran on Saturdays only]

During the last two years of the individual existence of the L&SW, some good locomotive performances were recorded on the Bournemouth line. All the L12 Class 4-4-0's were fitted with superheaters from 1918 to 1922, after the initial trials with No.421 and performed well on the Bournemouth trains. Number 424 with 270 tons on the 10.30 Down was through Clapham Junction in seven and a half minutes, reached 61 miles per hour before Woking, fell to 48 at MP31, touched 61 at Farnborough and passed Basingstoke in 56 minutes. The minimum after Worting Junction was 40 miles per hour and with 70 attained before Winchester, it reached Southampton, one and a half minutes early, in 90 minutes 30 seconds. The train, after reduction to 155 tons at Southampton, passed Brockenhurst in 17½ minutes.

L&SW to Bournemouth 1921 and 1922

Number 424 passed Christchurch, 25.1 miles, in five seconds under the half-hour. The finish to Bournemouth was leisurely, possibly adverse signals were sighted, schedule from Southampton to Bournemouth 36 minutes.

L12 Class No.417 with 310 tons was ten seconds quicker to Clapham Junction, at 40 miles per hour this could be the difference between a recorder sitting at the front of the train and another sitting at the rear. The time to Woking was 27 minutes 50 seconds, the maximum 65 miles per hour before, such vigour was rewarded with a severe signal check and to Basingstoke 56 minutes 20 seconds. The minimum after Worting Junction was 45 miles per hour and with nothing higher than 66 at Winchester, Southampton was reached 50 seconds inside schedule, 88 minutes Net. Brockenhurst was passed in 18 minutes 5 seconds from the restart, with a maximum of 65 miles per hour before and a minimum afterwards of 53 at Sway. This excellent running resulted in Christchurch passed in 29 minutes 20 seconds and Bournemouth reached 40 seconds early in 35 minutes 20 seconds. [Ref.6]

Two runs behind D15 Class 4-4-0's make an interesting comparison, the first with a typical winter load, 280 tons, the second with a summer one, 380 tons. With the lighter one, [Ref.7] on the 12.30, Clapham Junction was passed in 7 minutes 29 seconds and Woking in 30 minutes 7 seconds, one minute late. Succeeding passing times were: Basingstoke - 57 minutes 47 seconds, Litchfield Box - 68 minutes 49 seconds, Winchester - 78 minutes 37 seconds, Eastleigh - 84 minutes 40 seconds, schedule 83 minutes, Southampton reached in 92 minutes 22 seconds, 22 seconds late.

Number 467 with the heavier train was 30 seconds slower to Clapham Junction, with a maximum of 59 miles per hour it was through Woking in 32 minutes 20 seconds, over three minutes behind schedule and Basingstoke in 61 minutes 10 seconds. The minimum after Worting was 39 miles per hour and with a maximum of 71 after Winchester, Eastleigh was passed five and a quarter minutes late and Southampton reached in 96 minutes 40 seconds from Waterloo. Thirty seconds gained on schedule between Basingstoke and Southampton with 380 tons. Continuing to Bournemouth, Brockenhurst was passed in 20 minutes 40 seconds, Christchurch in 33 minutes 25 seconds and with a smart finish the Bournemouth stop effected in 38 minutes 5 seconds. The locomotive lost six and three quarter minutes between Waterloo and Bournemouth, but hauled over six times its own weight plus a 49 tons tender. Number 467 developed an average EDHP between Woking and Basingstoke of 590-640, the comparative figures for L12 Class 4-4-0's Nos.424 and 417 were 540-590 and 575-625. Honours to the smaller L12's, although in practice it probably was a result of footplate crew performance, the crew of No.467 could have kept the schedule if they had driven the locomotive harder, rather than as if they would for a normal loaded train.

The Up journey from Bournemouth to Waterloo, probably easier than the Down, is perhaps more interesting, the long unbroken gradient from Southampton is an ideal stretch for comparisons of locomotive performance.

L&SW Up from Bournemouth 1921 and 1922

A T9 Class 4-4-0 No.303, with 370 tons almost kept the initial 37 minutes schedule from Bournemouth to Southampton. The small saturated engine then fell to 35 miles per hour at Micheldever and was eight and a quarter minutes late at Basingstoke, 50 minutes 12 seconds from Southampton. Speeds afterwards were 68 miles per hour at Hook, 71 at Byfleet, the time to Surbiton 85 minutes 17 seconds. The late running train then experienced further delays, a PWR slack for bridge repairs at New Malden and a signal check at Clapham Junction, resulting in a 16½ minutes late arrival at Waterloo.

L12 Class 4-4-0's Nos. 416 and 428 had normal loads, 275 and 280 tons respectively. Number 416 made a smart start from Bournemouth, 5 minutes 55 seconds to Christchurch, 61 miles per hour round the curve through the station, 45 minimum at Sway, Brockenhurst passed at 70 and Totton cleared in 29 minutes 10 seconds. The Southampton arrival was two and a half minutes early, 35 minutes 35 seconds. The restart from Southampton was also good, driver characteristic no doubt, nine minutes to Eastleigh passed at 52 miles per hour.

Number 428 by comparison was 48 seconds slower to Eastleigh and ran the 17.3 uphill miles to Litchfield in 25 minutes 12 seconds whilst No. 416 took only 23 minutes 35 seconds. The ultimate sustained speed on the bank in both instances was 41 miles per hour. Times to Basingstoke were 42½ minutes and 44 minutes 25 seconds, from there to Woking 21 minutes 25 seconds and 21 minutes 29 seconds. Number 416 reached a maximum of 70 miles per hour on this stretch and fell away to 64 at MP31, the comparative figures for No. 428 66 and 64. Both reached a maximum of 75 miles per hour after Woking, No.416 passed Surbiton in exactly 75 minutes, No.428 was delayed by a PWR slack before Esher and No.416 continuously by signals all the way from Surbiton to Waterloo. Number 416 arrived at Waterloo over seven minutes late, 99 minutes 40 seconds, unchecked from Surbiton it could have been two to three minutes early. Number 428 also checked at New Malden for the bridge repairs and by signals at Clapham Junction took 92 minutes 40 seconds from Southampton, 90 minutes Net.

An L12 No.431 with a heavier train of 310 tons starting from Bournemouth made a good start, six and a half minutes to Christchurch, passed at 61 miles per hour and 43 minimum after New Milton. Brockenhurst was passed in 19 minutes 55 seconds and the Southampton arrival was to schedule, 35 minutes 50 seconds. Eastleigh was passed in 9 minutes 10 seconds from the restart at 53 miles per hour before a check to 38. This was followed by acceleration to 42 miles per hour on the 1/254, at Basingstoke it was only 20 seconds late, 42 minutes 20 seconds, [Eastleigh to Litchfield, including time lost by the signal check took 24 minutes 10 seconds]. After Basingstoke No.431 attained 66 miles per hour at Hook and 69 and passed Surbiton in 76¾ minutes. This was followed by the apparently inevitable signal checks and a six minutes late Waterloo arrival, 97 minutes 55 seconds actual, 91 minutes Net. The Winchester to Litchfield average was 42.3 miles per hour.

L&SW Down semi-fast's 1921 and 1922

The L12 developed an EDHP of 640-690 for a period of over twenty minutes when climbing up to Litchfield.

A D15 Class 4-4-0 with 265 tons ran from Bournemouth to a stop at Brockenhurst in 23 minutes 14 seconds, a loss on schedule of one minute and a quarter, speed fell to 30 miles per hour at Sway. Another half a minute was lost on the succeeding 20 minutes schedule to Southampton. Starting from there on the 92 minutes non stop schedule to Waterloo, the times to Eastleigh and Litchfield were 10 minutes 7 seconds and 34 minutes 27 seconds, the maintained speed 40 miles per hour and to Basingstoke and Surbiton 43 $\frac{3}{4}$ and 76 $\frac{3}{4}$ minutes. There was a slight signal check at Clapham Junction, the stop at Waterloo made one and a half minutes late, 93 minutes 38 seconds actual, 92 minutes Net, overall a poor performance.

N15 Class 4-6-0 No.736 with 320 tons ran from Bournemouth to Southampton in 36 minutes 40 seconds. From the restart it passed Eastleigh in 10 minutes 20 seconds, averaged 43 miles per hour from Winchester to Litchfield, Basingstoke in 42 minutes 25 seconds and Surbiton in 77 minutes 25 seconds and reached Waterloo in 95 minutes 35 seconds, three and a half minutes late, 93 minutes Net. Honours again were with the L12 Class.

The semi-fast trains although easily timed often loaded heavily.[Ref.8] The 09.30 ex Waterloo stopped at Surbiton, Basingstoke and Winchester before Southampton, schedules for the respective stages were 20, 44, 26 and 19 minutes. D15 Class 4-4-0 No.470, with 340 tons ran to Surbiton in 19 minutes 4 seconds. From the restart it passed Woking in 15 minutes 51 seconds, ran the 12.2 miles from there to Fleet including the adverse grades up to MP31 in 13 minutes 23 seconds, averaged 60 miles per hour to Hook and reached Basingstoke one minute early, 42 minutes 57 seconds. On the next sector Litchfield box was passed in exactly 15 minutes and the stop at Winchester made in 25 $\frac{1}{2}$ minutes. The final stage to Southampton was run in 17 minutes 25 seconds. The scheduled running time from Waterloo was 109 minutes, the actual time 104 minutes 56 seconds.

An N15 Class 4-6-0 had a heavier train, 375 tons, times were 19 minutes 20 seconds to Surbiton, 48 minutes 7 seconds to Basingstoke and 26 $\frac{1}{2}$ minutes to Winchester, the N15 was a quarter of a minute slower to Litchfield than the D15. To Winchester against a scheduled running time of 90 minutes the N15 had taken 93 minutes 57 seconds, there was a transformation afterwards, Eastleigh passed in 9 minutes from the restart and Southampton reached in 17 minutes 3 seconds. Was there a change of footplate crew at Winchester?

The 13.30 ex Waterloo stopped at Basingstoke and Winchester. A superheated L12 made a good start, taking into account the heavy 395 tons train, 7 minutes 40 seconds to Clapham Junction and 12 minutes 15 seconds to Wimbledon. There was a PWR slack at Raynes Park, Woking passed four and a half minutes late, 34 minutes 30 seconds after which speed fell from 51 miles per hour at Woking to 41 at MP31.

L&SW Up semi-fast's from Southampton 1921 and 1922

The Basingstoke arrival was five and a quarter minutes late, schedule 58 minutes. The 1/249 up to Wootton, after the restart from Basingstoke, was climbed at 37 miles per hour, Litchfield Box passed in 16 minutes 38 seconds and the time to Winchester half a minute in excess of the 28 minutes schedule.

Trains leaving Southampton, in the Up direction at 12.33 [11.21 ex Bournemouth], 14.22, [13.19 ex Bournemouth] and 16.22 [15.19 ex Bournemouth] stopped at Eastleigh, Winchester, Basingstoke and Waterloo. The schedules for the successive stages were 11, 14, 28 and 54 minutes.

A superheated D15 with 300 tons lost one minute on the initial stage to Eastleigh which it recovered with a time of 12 minutes 20 seconds to Winchester. From the restart it passed Litchfield Box in 17½ minutes and reached Basingstoke exactly to schedule. Even time was almost achieved to Surbiton, 35.8 miles from Basingstoke in 35 minutes 58 seconds, Woking had been passed in 24 minutes 46 seconds, the average was 72 miles per hour from there to Weybridge and 66 on to Hampton Court Junction. Clapham Junction was passed 12 minutes after Surbiton including the slowing for the New Malden PWR slack and with a signal check the final arrival at Waterloo was in 54 minutes 53 seconds, 51 minutes Net.

Superheated L12 No.420 with 330 tons ran to Eastleigh in the same time as the D15, was 19 seconds quicker to Winchester and attained 40 miles per hour on the gradient up to Litchfield, where it was five seconds behind the D15. However with 65 miles per hour before Worting Junction it stopped at Basingstoke over one minute early, 26 minutes 55 seconds. Starting from Basingstoke, Hook was passed in 7 minutes 50 seconds with 67 miles per hour attained afterwards, MP31 passed at 60, Brookwood at 69 and Woking at 70 in 24 minutes 35 seconds. Subsequent times were Surbiton 37 minutes 10 seconds, Clapham Junction 48 minutes 55 seconds after observing the New Malden PWR slack and Waterloo in 56¾ minutes after a signal check, 52 minutes Net. Including the 52 minutes Net the running time for the L12 with 330 tons was 103 minutes compared with schedule, 107 minutes. The locomotive developed an EDHP of 625-675 before Litchfield.

Although in these examples the superheated L12 Class 4-4-0's appeared to perform better than the superheated D15 Class 4-4-0's, this reflects timetable requirements and Driver characteristics, even dare one say idiosyncrasies. O.S.Nock published some performances timed by the Reverend L.A.Garrard. [Ref.7] D15 Class No.470, with 440 tons averaged 40.5 miles per hour from Winchester to Litchfield Box, with a minimum of 39½, an EDHP of 775-825. It then with this very heavy train passed Clapham Junction in 87¾ minutes, a loss on schedule of only three and three quarter minutes. Before this No.470 had brought the train from Bournemouth to Southampton in 35 minutes 20 seconds, which included a time of six and three quarter minutes to Christchurch passed at 60 miles per hour, a minimum as high as 41 at New Milton and a time of 20 minutes 29 seconds to Brockenhurst.

L&SW Superheating the T9's

Although further N15 Class 4-6-0's were built and the mixed traffic S15 Class 4-6-0's with 5 feet 7 inches diameter driving wheels introduced, the Drummond 4-4-0's remained the mainstay of the Bournemouth/Weymouth and Portsmouth services. Indeed the need for the larger locomotives elsewhere was such that when D15 No.470 was despatched from Bournemouth depot to Eastleigh for a General Overhaul in January 1921, saturated T9 Class 4-4-0 No.313 took its position in the Top Link. Likewise when No.472 was withdrawn from service, the replacement was T9 No.702. At times there were not even sufficient Drummond 4-4-0's, on January 24th 1921 for instance Adam's Class X2 4-4-0 No.594 worked the 11.30 Waterloo to Bournemouth and returned on the 17.15 ex the West station. [Number 594, was allocated to Basingstoke depot and may have been substituted for a failed locomotive]. At the other end of the scale from October 1920 the 05.40 Waterloo to Bournemouth and the return 10.15 ex Bournemouth West were diagrammed for an N15 Class 4-6-0, hardly an arduous duty.

The two saturated T9's allocated to Bournemouth were certainly not kept on lighter duties. There is a record of No.313 working a 390 tons train to Southampton in 96 minutes from Waterloo, a loss on schedule of only four minutes. Number 702 worked the Birkenhead through train as far as Oxford, the train consist was, five Great Western Railway corridor coaches, one L&SW Restaurant Car and five L&SW coaches, probably 350 tons.

Although Urie reportedly fitted boilers with superheaters to the T9 Class 4-4-0's to improve their effectiveness on intermediate duties, he was probably also aware of the above happenings. Irrespective of the reasons he instigated rebuilding of the T9's in 1921 and the first locomotive left Eastleigh Works in April 1922. The T9's in their rebuilt form had two inside cylinders, 19 inches diameter by 26 inches stroke. The boiler working pressure was 180 pounds per square inch and the total heating area 1,258 square feet [921 square feet in the boiler tubes, 142 square feet in the firebox and 196 square feet in the Superheater]. The locomotive weighed 51 tons. The superheater was an Urie design, essentially a Robinson one with changes to facilitate easy maintenance; such approaches were typical of Urie, a sound and pragmatic engineer.

Seven main line locomotives were allocated to Dorchester in 1922 concurrent with the introduction of through engine workings from there to Waterloo. [The portions to or from Bournemouth West were detached or attached at the Central station. There were by this time only two Up trains and one Down that travelled from London to Weymouth by "Castleman's Corkscrew"]. These changes resulted in the majority of London trains being hauled by L12 and D15 Class 4-4-0's to and from Dorchester, with Adam's or Drummond 0-4-4 Tank's, K10 Class 4-4-0's and Jubilee Class 0-4-2's used over the 7.0 miles between Dorchester and Weymouth. The 07.35 ex Weymouth was an exception, an L12 or D15 worked light engine from Dorchester depot to Weymouth and then hauled the train through to Waterloo, 143 miles, with five intermediate stops in an overall time of 3 hours 25 minutes.

L&SW Dorchester to Wareham

The Reverend L.A.Garrard [Ref.4] timed L12 Class 4-4-0's No.431 twice and No. 434 once, over the Dorchester to Wareham section. The trains were light, 120 tons, and on the favourable gradients, speeds of 80, 75 and 82 miles per hour were attained. Number 431 made the fastest run, with the highest speed at Wool and despite a signal check at Worgret Junction reached Wareham one and a quarter minutes inside the 17 minutes schedule. The other two runs were completed in 16 minutes 35 seconds and 16 minutes 50 seconds. These fast runs continued a tradition of high speeds between Moreton and Wool, Rous Marten timed a T9 over this stretch, in 1899 it will be remembered at 80 miles per hour. The Reverend Garrard timed an Adams T3 Class 4-4-0 No.558 with 170 tons when Wool was passed in 11 minutes 15 seconds from the Dorchester start at 75 miles per hour and the stop at Wareham affected in 16¼ minutes.

The Portsmouth Line in 1921, with the altered schedules i.e. slightly slower between Guildford and Fratton and quicker between Guildford and Waterloo on the fast trains, witnessed an improvement in punctuality partly because of these changes and partly because train weights were reduced. [Ref.11] For example a superheated L12 Class 4-4-0, with a six coach train including a restaurant car c.190 tons, on the 09.50 ex Waterloo, ran to Guildford in 40 minutes 25 seconds, schedule 41 minutes. Intermediate passing times were, Clapham Junction - 7 minutes 20 seconds, Surbiton - 17 minutes 23 seconds and Woking - 31 minutes 11 seconds. Witley was passed from the Guildford restart in 15 minutes 43 seconds and with an average of 31 miles per hour over the next 4.5 miles, Haslemere in 24 minutes 26 seconds. Without exceeding 60 miles per hour on the downhill sections, the time to Rowlands Castle was 53 minutes 32 seconds and after a PWR slack at Havant, Fratton was reached in 66 minutes 58 seconds, one minute late.

An L11 Class 4-4-0 No.57 with saturated steam boiler on the 17.50 from Portsmouth, again with 190 tons, passed Havant in ten and a half minutes from the Fratton start and reached Guildford in 67 minutes 20 seconds, schedule 68 minutes. Intermediate times were Petersfield - 29 minutes and Haslemere - 47 minutes 50 seconds. Woking was passed in 9 minutes 50 seconds from Guildford, Surbiton in 24 minutes 48 seconds and despite an average from Weybridge to Surbiton of only 49 miles per hour, Clapham Junction in 35 minutes 7 seconds. This left eight minutes for the final stretch and a punctual arrival, in practice there was a stop for one minute at West London Junction and the arrival was 45 seconds late, 42 minutes Net.

The Portsmouth service in October 1922 consisted of twelve daily departures from Waterloo at 50 minutes past the hour from 05.50 to 21.50. The 09.50, 12.50 and 15.50 stopped only at Guildford between Waterloo and Fratton, the overall time to Portsmouth was two minutes under two hours. The 18.50, with as addition stop at Haslemere was allowed four minutes extra. The 17.50 ran only as far as Godalming and was preceded by a 17.40, which served all stations after Guildford. The 16.50 gave a 73 minutes service to Haslemere with stops at Guildford and Godalming.

L&SW the October 1922 Timetable

It stopped at all stations after Haslemere and reached Portsmouth Town in 2 hours 19 minutes from Waterloo.

There were departures from Portsmouth Harbour at 08.00, 10.00 and 14.00. The 08.00, 2 hours 4 minutes overall from the Town station to Waterloo, stopped at Fratton, Havant, Petersfield and Guildford, the other two with stops at Fratton and Guildford only, 117 and 119 minutes respectively. The 12.23 from the Town station [12.15 ex the Harbour] stopped at Fratton, Havant, Petersfield, Haslemere, Godalming and Guildford with an arrival at Waterloo in 2 hours 13 minutes. The 17.50, ex the Harbour after the stop at the Town station, ran to Waterloo in 118 minutes with stops at Fratton and Guildford.

There were three trains from Waterloo in October 1922, the 12.30, 16.30 and 18.30, to Bournemouth Central in two hours and a quarter, split times were 92 minutes to Southampton and 36 minutes from there to Bournemouth. All three continued to Weymouth, reached at 15.56, 19.54 and 21.53. The 05.40 [descendent of the 05.50 of thirty years previous] with eight stops reached Bournemouth in 3 hours 8 minutes and continued to Weymouth, 4 hours 23 minutes from Waterloo. The 08.30 ran to Weymouth in 4 hours 7 minutes with stops at Surbiton, Woking, Winchester, Eastleigh, Southampton, Brockenhurst and Bournemouth, arrival 11.23. The 11.30, 13.30, 15.30 and 17.30 stopped at Basingstoke, Winchester, Eastleigh, Southampton, Brockenhurst and Christchurch, overall time to Bournemouth Central one minute under three hours, the 17.30 made an additional stop at Woking. The 09.30 stopped additionally at Surbiton and Boscombe but omitted Eastleigh and reached Bournemouth in 3 hours 8 minutes. The 19.30, to Bournemouth in 3 hours 26 minutes, stopped at Basingstoke, Winchester, Eastleigh and all stations after St. Denys. The best trains to Bournemouth in 1914 took exactly two hours but the average of all journey times in 1922 was an improvement.

In the Up direction, the 07.35, 09.20, 13.18 and 17.20 ex Weymouth all ran from Bournemouth to Waterloo with the one stop at Southampton. Departure times from Bournemouth were at 08.45, 10.35, 14.35 and 18.35, from Southampton at 09.20, 11.18, 15.18 and 19.18, with arrivals at Waterloo at 11.00, 12.50, 16.50 and 20.50. The 07.39 from Bournemouth Central stopped at Brockenhurst, Southampton and Winchester from where it ran non stop to Waterloo in 78 minutes. The 09.21, 11.21, 15.19 and 17.21 from Bournemouth Central, all originated at the West station, made stops at Boscombe, Christchurch and Brockenhurst before Southampton. They departed there at 10.22, 12.22, 16.18 and 18.23, stopped at Eastleigh, Winchester and Basingstoke with arrivals at Waterloo at 12.22, 14.20, 18.26 and 20.20, the 16.18 made an additional stop at Surbiton. The L&SW had moved a significant way in its endeavours to establish an interval based timetable on its long distance routes, these timetables were to form the basis for services for many years to come.

The maintenance of these services in 1922 relied heavily on good performances with the Drummond 4-4-0's.

L&SW through Services to other Railways

The through trains to other Railways in 1922 consisted of the: 09.45 ex Bournemouth West, which left the Central station at 10.00 and after stops at Boscombe and Christchurch, reached Southampton at 10.47. After a further stop at Winchester it ran non stop to Oxford in 91 minutes - 10.30 ex Bournemouth West [10.43 from Central] stopped at Boscombe, Christchurch and Brockenhurst before Southampton left there at 11.42, reached Portsmouth at 12.49, after a stop at Fareham and continued to Brighton - 11.50 ex West [12.03 from Central] reached Southampton after stops at Boscombe and Christchurch at 12.48, departed six minutes later and with stops at Eastleigh, Winchester, Basingstoke and Reading West reached Oxford at 15.08.

The 08.22 ex Portsmouth, stopped at Fratton, Cosham, Eastleigh, Shawford and Winchester before Basingstoke, left there at 10.00 and reached Oxford, after further stops at Reading West and Didcot at 11.26. There were trains from Portsmouth to Salisbury via both the Eastleigh and Southampton routes, which continued to various Great Western destinations. There was considerable competition for traffic to Manchester, Birkenhead, York and Newcastle from the Somerset & Dorset Joint Railway, although the L&SW 50 percent ownership of this concern must have influenced some strategic thoughts and from Southampton by the Midland and South Western Railway.

The M7 Class 0-4-4 Tank's throughout the existence of the L&SW in the 20th Century remained at the forefront of the London Suburban Service. Electrification replaced many steam locomotive duties in the inner Suburbs, resulting in a cascade of motive power: the M7's for example supplanted many older Adams locomotives. The Stephenson Locomotive Society visited the locomotive depot at Strawberry Hill on September 24th 1921. They travelled to Twickenham by the Saturday 13.54 ex Waterloo, allowed 25 minutes for the journey including the stop at Richmond. The train left Waterloo three minutes late and the M7, with its train of two four coach bogie sets, c.220 tons Gross, passed Clapham Junction in 7 minutes 18 seconds at about 37 miles per hour, Barnes, 7.1 miles, in 11 minutes 37 seconds and reached Richmond in 15 minutes 3 seconds. It left 40 seconds later [the schedule allowed 19 minutes from Waterloo to Richmond departure] and ran the 1.7 miles to Twickenham in 5 minutes 25 seconds. Although the M7 Class was often faulted for poor acceleration, the ability to bowl along at 45-50 miles per hour with 200 tons trains in the Suburbs confirmed the competence of this 25 years old design.

The L&SW when it joined the Southern Group possessed a good fleet of locomotives, ran scheduled services which whilst eschewing some of the more individual exciting timings of previous years provided a balanced frequent timetable and had a clear policy towards electrification.

Chapter 11: References and Notes

- Ref. 1 Railway and Transport Monthly. Vol. XI p.179 [RTM]
 Railway Magazine Vol. XXXIX p.392-3 [RM]
- Ref. 2 [RTM] Vol. XVI
- Ref. 3 [RM] Vol. XL
- Ref. 4 [RTM] Vol. XVIII
- Ref. 5 [RTM] Vol. XIX p. 245
- Ref. 6 [RM] Vol. XLIX & Vol. LI
- Ref. 7 Locomotive News Vol. XIII R.A.H.Weight [LN]
- Ref. 8 [LN] Vol. XIII
- Ref. 9 The London and South Western Railway. O.S.Nock. Ian Allan.
 1965.
 It is assumed that the run by D15 Class No. 470 was made under
 L&SW auspices but Nock quotes in his book runs that clearly
 occurred after the formation of the Southern Railway eg a
 journey behind superheated T9 Class No.336. This locomotive
 was fitted with a superheater in the spring of 1923. The run behind
 No.470 with 440 tons was quoted by C.J.Allen in the
 Railway Magazine in 1924, from Southampton to Waterloo. [RM]
 Vol. LIV.
- Ref 11 [LN] Vol. XII

Chapter12: London, Brighton and South Coast Railway from Onset of War to the Grouping 1914-1923

The onset of War did not dramatically effect LB&SC passenger services so much as those of the L&SW and SE&C Railways. The LB&SC involvement was possibly more varied, Newhaven and Littlehampton harbours were used extensively for Military traffic and many Territorial Army camps were within the Company's domain, including Burgess Hill, Crowborough, Eastborne, Haywards Heath, Horley and Uckfield. A feature in the early stages of the War was the provision of special trains on Sundays enabling relatives to visit family members who had enlisted.

The 1914 summer timetable coincided with the opening of the Ashurst spur, avoiding reversal at Groombridge and the provision of an additional eight through trains from London to Crowborough. Existing through trains were accelerated by between seven and ten minutes.

Brighton, in the September 1915 timetable had eight weekday non stop trains. The 11.00, 15.10 and 18.35 ex Victoria and the 17.00 ex London Bridge in 60 minutes, the other four were allowed five minutes more. There were five trains which made one stop, overall times were two in 65 minutes, the others in 70, 72 and 75 minutes. Eastborne had four trains, which stopped only at Lewes, the 11.15 ex Victoria and the 17.05 ex London Bridge took one and a half hours, the other two took one and five minutes longer. There were good semi-fast trains, the 09.00 ex Victoria, with five intermediate took 103 minutes and the 10.00, with one less stop was one minute quicker.

The ravages of War were reflected in the August 1918 Timetable, fewer and much slower trains. There were three non stop services to Brighton [two in 75 minutes the third in 77] and three one stops. The best trains to Eastborne were the 17.05 ex London Bridge in 102 minutes including the one stop at Lewes and the 15.20 and 17.20 ex Victoria 107 minutes with an additional stop at Polegate; others took two hours or more.

There were seven non stop trains between Brighton and London in September 1915. The 12.20, 13.20 and 17.45 ran to Victoria in the level hour, two took 65 minutes and two 70 minutes [The Mondays 08.10 reached London Bridge in 65 minutes]. There were three one stops, the 15.15 to Victoria in 65 minutes, the other two required 70 and 71 minutes. Eastborne had two non stop trains to London, the 09.35 and 11.45 in 85 minutes to Victoria, two with one stop to London in 90 minutes and 95 minutes and the 14.25 with stops at East Croydon and Clapham Junction in 95 minutes. The 07.30 ex Eastborne stopped at Haywards Heath, Three Bridges, Horley, South Croydon and East Croydon and reached London Bridge in 101 minutes, the same time as the 21.30 with only three stops.

The 21.30 spent additional time at Haywards Heath, where the through coaches from Brighton were attached.

LB&SC Timetables September 1915 and August 1918

The number of non stop trains between Brighton and London by August 1918 had reduced to two, the 08.04 to Victoria in 77 minutes and the 12.30 in 81 minutes. The three Morning Business trains made one stop and took 77, 78 and 79 minutes respectively. There were three trains with three intermediate stops, 82 minutes overall by one, 83 minutes by the others. If one had the temerity, or even the tenacity, to visit Brighton for the day there were two return Evening trains, they offered Pullman facilities and the time to appreciate them. The 18.33 ran non stop to Haywards Heath, stopped at all succeeding stations to Purley, then East Croydon and Clapham Junction and finally arrived at Victoria after 2 hours 8 minutes. The 21.50 was better, all stations to Haywards Heath, East Croydon and Victoria in 95 minutes. This train afforded the inhabitants of Wivelsfield a service to London in 68 minutes complete with Pullman comfort. The fastest train from there to London before the War, the 14.20 ex Brighton stopped at all stations to Haywards Heath, ran fast to Clapham Junction and arrived Victoria 15.48, 64 minutes from Wivelsfield, the next quickest time was 69 minutes, with a change of trains at Haywards Heath.

Wartime schedules often caused the least damage to the minor stations. There were by comparison only two trains from Eastborne to London inside two hours. The 08.23 stopped at Haywards Heath, Balcombe and East Croydon, with a London Bridge arrival at 10.13, the 09.40 with stops at Lewes, Haywards Heath and East Croydon was one minute slower.

The Portsmouth service if anything suffered even more. There were four good Down trains in September 1915: 08.55 ex Victoria to Portsmouth Town in 2 hours 10 minutes with six stops - 11.35, non stop from Clapham Junction to Fratton, was nine minutes quicker - 13.35 allowed 11 minutes more stopped additionally at Chichester and Havant - 16.50 ex London Bridge, called at Arundel, Chichester, Havant and Fratton and reached Portsmouth Town in 2 hours 6 minutes. There was no train inside three hours to Portsmouth in August 1918. There were five Up trains in 1915, which ran to London in 2 hours 22 minutes or less. The best, the 16.50 reached Victoria in exactly two hours with stops at Fratton, Chichester and Horsham. The 08.47 with five stops, was allowed an extra seven minutes and the 19.08, with seven stops, 2 hours 14 minutes. The 09.30 and 12.15, with seven and six stops respectively took 2 hours 22 minutes and 2 hours 20 minutes. In 1918, the 09.30 from Portsmouth, with seven stops ran to Victoria in 2 hours 38 minutes, the 13.54, with three extra stops was 20 minutes slower, all others took over three hours.

LB&SC locomotive performance during the first two years of the War, with challenging schedules and increasing train weights, was on occasions good, particularly on the London to Brighton service. The 1915 summer timetable omitted very few of the extra trains of previous years and indeed in September of that year third class Pullman cars were introduced.

LB&SC Performance to Brighton 1915 and 1916

Despite the exigencies of War a Press demonstration was organised for Friday September 10th to “show off” the new Pullman coaches. A train consisting of three third Class Pullman Cars with a bogie brake at each end of the train, probably 145 tons Gross, ran non stop to Worthing in 78 minutes from Victoria, Preston Park passed in 60½ minutes. The locomotive, I3 Class 4-4-2 Tank No.24, then ran round the train at Worthing and continued to Brighton. Number 23, of the same Class then hauled the train to Eastborne non stop in 40 minutes and after reversal to London in 95 minutes. The LB&SC, despite Military Traffic requirements maintained a clear road throughout the day.

Locomotive work in the years 1915 and 1916 on the Brighton service was inevitably something of a “curate’s egg”. A return journey on the Sunday Pullman in 1915, with a B4 Class 4-4-0 in each direction perhaps represented a level of poor performance not tolerated before the War. [Ref.1] Number 66 with 285 tons, passed Clapham Junction in 6 minutes 21 seconds, was then delayed by signals and took 32 minutes 50 seconds to Quarry. The average speed from there to Hassocks, passed in 58 minutes 25 seconds, was slightly less than 60 miles per hour, and with a PWR slack at Preston Park the Brighton arrival was ten and a quarter minutes late, 64 minutes Net. On the return journey No.54, with identical load, arrived back at Victoria nine and three quarter minutes late. The start from Brighton was competent, Haywards Heath passed in 17 minutes 12 seconds but then signal checks and a signal stop resulted in 33 minutes 35 seconds to Three Bridges. The train after Three Bridges had a clear road to Victoria, Quarry passed in 11 minutes 42 seconds, East Croydon in 20 minutes 11 seconds from the restart after the signal stop, Net time Brighton to Victoria reckoned at 61¾ minutes.

The Railway & Transport Monthly published details of 15 other journeys, which appear to have been “turn up and go”. [Ref.2]. Ten of them were made on the 60 minutes non stop schedule between Victoria and Brighton. The only on time arrival at Brighton was one Sunday in 1915 with the “Belle”. An I3 Class 4-4-2 Tank No.87, with 290 tons, passed Clapham Junction in 5 minutes 51 seconds and after a maximum of 50 miles per hour at Streatham Common, East Croydon in 16 minutes 16 seconds. The minimum at Quarry Box, passed in 26 minutes 39 seconds was 44 miles per hour, 73 the maximum past Horley, the minimum at Balcombe 49, the time to Preston Park 57 minutes 13 seconds and after a slight signal check 26 seconds early at Brighton. This performance reinforces the quality of the superheated I3 Class 4-4-2 Tank design, probably 700-750 EDHP both up to Quarry and Balcombe.

An H1 Class Atlantic No.41 with a heavy train, 346 tons Tare, probably at least 375 tons Gross, lost three minutes including a PWR slack at Quarry. The minima uphill were 45 miles per hour at Quarry and Balcombe and the maxima downhill 67 at Horley and 68 at Keymer Junction. H1 Class 4-4-2 No.39, with a lighter train, 260 tons, was five and a half minutes late, including a stop for signals at Keymer Junction. Minima at Quarry and Balcombe were 44 and 50 miles per hour, the maximum at Horley 70.

LB&SC Performance to Brighton in 1915 and 1916

B4 Class 4-4-0's hauled trains on four occasions, actual journey times were 71¾, 69½, 62 and 60¾ minutes with 288, 270, 288 and 235 tons respectively. Number 61 with the lightest train, probably 250 tons Gross on the 15.10 ex Victoria in 1916, ran slowly initially, 17½ minutes to East Croydon and a minimum of 41 miles per hour afterwards. The 29.1 miles from Earlswood to Brighton stop were then run in 29½ minutes with 72 miles per hour attained at both Horley and Keymer Junction. Number 73 with 288 tons, 310 tons Gross, ran from Earlswood to Brighton in 29¾ minutes with 68 miles per hour attained twice and a minimum of 47 entering Balcombe Tunnel. The other two runs were poor, the Net time on each occasion 67 minutes.

H2 Class Atlantic No.425 with a light train, 220 tons, passed East Croydon in 15 minutes 10 seconds and Quarry in 25 minutes 23 seconds, a bright start. This was followed by a prolonged PWR slack and a signal check resulting in a four and a half minutes late arrival at Brighton. Two runs behind Baltic [4-6-4] Tank No.328 were poor, having regard to its size. On the weekday 11.00 ex Victoria with 330 tons, the initial start was slow, 18 minutes to East Croydon, 45 miles per hour minimum at Quarry and with a PWR slack after 32 minutes 17 seconds to pass Earlswood. The remaining distance to Brighton was then run in 29 minutes 34 seconds with maxima of 70 and 72 miles per hour at Horley and Keymer and an intervening minimum at Balcombe Tunnel of 48. On the second occasion with 270 tons the start was better, East Croydon 17 minutes 21 seconds including a PWR slack, Earlswood 30 minutes 40 seconds and Haywards Heath 46 minutes 53 seconds. There were then signal checks and a five minutes late arrival at Brighton.

The 13.55 ex Victoria stopped at Clapham Junction and was allowed 58 minutes from there to Brighton. Locomotives on four journeys were H2 Class Atlantic, I3 Class 4-4-2 Tank No.78 and H1 Class Atlantic's Nos.40 and 37, the respective loads 255, 250, 240 and 260 tons. Actual times to Clapham Junction were 6 minutes 41 seconds, 6 minutes 42 seconds, 6 minutes 54 seconds and 7 minutes 32 seconds. The H2, from the Clapham start, passed East Croydon in 12 minutes 3 seconds, at 49 miles per hour, accelerated on the 1/264 to 50 before a check for signals, passed Quarry Box in 23 minutes 42 seconds and attained 69 at Earlswood. Signal checks at several locations resulted in an arrival five minutes. The H1 No.40 fell from 47 to 45 miles per hour up to Quarry, passed Earlswood in 27¾ minutes and with no higher speed than 67 afterwards was 37 seconds late at Brighton. Number 37 was 72 seconds slower to Earlswood, it fell to 37 miles per hour at Quarry, after this pedestrian start speeds were 73 and 72 miles per hour at Horley and Keymer, the minimum at Clayton 54, and it reached Brighton in 57 minutes 1 second. The Earlswood to Brighton time was 28 minutes 2 seconds, the average 63.2 miles per hour to Preston Park.

Superheated I3 Class 4-4-2 Tank No.78, fell to 36 miles per hour up to Quarry, did not exceed 65 on the favourable sections and lost three minutes. Even these splendid locomotives could lose time, whether due to poor steaming or indifferent driving is not known.

LB&SC Performance from Brighton 1915 and 1916

Timekeeping from Brighton to London was considerably better, out of sixteen published journeys six arrived to time or early. B4 Class 4-4-0's hauled six 60 minutes non stops. Number 73 on the Sunday 17.00, with 275 and 288 tons, 310 tons Gross on the second, ran to Victoria in 59 minutes 51 seconds and 60 minutes 31 seconds. On the first it passed Haywards Heath in 16 minutes 57 seconds after a severe PWR slack before the station and accelerated to 48 miles per hour on the 1/264 to Balcombe, an EDHP of at least 630-680. The maximum at Horley was 70 miles per hour. With the heavier train it attained 41 miles per hour on the initial gradient to Clayton, was through Haywards Heath in 17½ minutes, fell to 48 at Balcombe and reached 68 at Horley. East Croydon was passed in 46½ minutes after 67 miles per hour at Purley.

Another B4 Class 4-4-0, No.66 on two occasions, with 270 and 345 tons, reached 68 and 63 miles per hour at Keymer Junction and fell away to 43 and 41 at Balcombe. Times to Haywards Heath were 18 minutes 18 seconds and 19 minutes 18 seconds, the final arrivals at Victoria were four and a half and five minutes late, maximum on the second was 68 miles per hour. The 12.20 ex Brighton often loaded heavily, B4 No.61 noted twice with 330 and 370 tons, attained 37 and 36 miles per hour at Clayton, the subsequent minima at Balcombe and Quarry were 43 and 44 and 38 and 46. Times to East Croydon were 54½ minutes and considering the load, a very creditable 50 minutes 10 seconds. Signals delayed both trains before Victoria, it was probably asking the impossible for a B4 to keep the 60 minutes schedule with 370 tons.

I3 Class 4-4-2 Tank's featured on four occasions. Number 22, with 235 tons, attained 47 miles per hour at Clayton, 67 at Keymer Junction, passed Earlswood in 32 minutes 32 seconds, after a minimum of 51 at Balcombe and maximum of 68 at Horley, East Croydon in 45 minutes 17 seconds and reached Victoria 40 seconds early. Number 81, with a similar load, was 45 seconds slower to Clayton Tunnel, reached 70 miles per hour at Keymer, fell to 47 at Balcombe, attained 70 at Horley and was 52 seconds behind at Earlswood. It passed East Croydon in 45 minutes 34 seconds before bad delays. Number 87 with 260 tons attained 45 miles per hour at Clayton passed in an identical time to No.81, reached 67 at Keymer, fell to 48 at Balcombe, rose to 68 at Horley, fell to 44 at Quarry and passed East Croydon 68 seconds adrift of No.81, with a clear road Victoria was reached 15 seconds late. Number 26 with 265 tons, was six seconds behind No.87 at Haywards Heath and passed Quarry in exactly the same time, 38 minutes 38 seconds.

All four runs were recorded in 1916, those behind Nos. 22 and 81 on the same day. Numbers 87 and 22 were with the mid-day "Belle", Nos. 81 and 26 on the 15.50, allowed 57 minutes to the stop at Clapham Junction. They show the I3 Class with 250 tons trains could comfortably maintain the 60 minutes schedule and a high level of footplate competency two years into the War. The locomotives developed an EDHP of 650-700 at Clayton Tunnel.

Two runs with larger Tank's, J Class 4-6-2 Tank No.325 and L Class 4-6-4 Tank No.327 produced similar levels of performances.

LB&SC Performance from Brighton 1915 and 1916

Number 325, with 220 tons on the 15.50 passed MP17 in 39 minutes 50 seconds from Brighton, comparable times for three of the I3 runs were 38¼, 39 minutes 9 seconds and 39 minutes 24 seconds. Number 327 on the same train with 230 tons took 39 minutes 24 seconds. Locomotives were driven quite correctly to maintain schedule and no more, attempts to regain lost time during this period were unusual. Number 327 was badly delayed after Quarry; No.325 reached Victoria in 62¼ minutes.

With hindsight it is surprising that the 60 minutes schedule [or Clapham Junction equivalent] was still in force after two years of War. The best run in the series, not taking locomotive size into account was by H1 Class 4-4-2 No.37 with 290 tons. Haywards Heath passed in 16 minutes 40 seconds, minima at Balcombe and Quarry 50 and 44 miles per hour, East Croydon in 44 minutes 53 seconds and the arrival at Victoria one minute early.

The 12.30 ex Brighton's schedule to the first stop at East Croydon was 48 minutes. The locomotives on two days with 190 tons were B2X Class 4-4-0's No's 206 and 210. They passed MP 46, adjacent to Clayton Tunnel, in 9 minutes 19 seconds and 8 minutes 27 seconds at 40 and 43 miles per hour and Haywards Heath in 18 minutes 19 seconds and 17 minutes 8 seconds, minima at Balcombe were 46 and 52. Number 206 lost two minutes to East Croydon, 50 minutes 4 seconds, whereas No.210 improved on schedule by one minute, 46 minutes 57 seconds. Number 206 recovered the lost time onwards to Victoria [14¾ minutes]. A B4 Class 4-4-0 No.73 on the 12.30 with only 115 tons ran to East Croydon in 46¾ minutes. It passed Three Bridges in 25¼ minutes and continued from East Croydon to Victoria in 14¾ minutes. One day a B4 was asked to haul 370 tons from Brighton to Victoria in 60 minutes, the next 115 tons to East Croydon in 48 minutes. B2X Class No.210 developed an EDHP of 460-510 when climbing to Clayton and Balcombe.

The third Class Pullman carriages after their introduction in 1915 were utilised on Sundays on the Eastborne service, schedule 90 minutes non stop. Departure time from Victoria was at 10.40 and a portion for Worthing was slipped at Haywards Heath. On the first public trip on September 12th 1915, I3 Class 4-4-2 Tank No.24 left with 320 tons and passed Clapham Junction in 6 minutes 21 seconds and East Croydon in 17 minutes 33 seconds after 50 miles per hour at Streatham Common. It was routed from the Through to the Local lines and back between East Croydon and Stoats Nest incurring some loss of time. Number 24 then ran well up to Quarry, the last four miles timed at 43, 42, 40½ and 40 miles per hour. Speeds up the last six miles up to Balcombe were 54, 49, 48, 45½, 45½ and 46 miles per hour. Subsequent times were; Haywards Heath - 51 minutes 8 seconds, where the load was reduced to 230 tons, Keymer Junction - 54 minutes 25 seconds, Lewes - 65 minutes 57 seconds, Polegate - 83 minutes 3 seconds, after PWR slacks at both Berwick and Glynde and the Eastborne arrival 89 minutes 34 seconds.

The I3 Class 4-4-2 was apparently opened out on the last three miles up to Balcombe Tunnel; it developed an EDHP of 700-750.

LB&SC A Wartime journey to Portsmouth

The 09.40 ex Victoria was allowed 103 minutes to Eastborne including stops at Clapham Junction, East Croydon, Earlswood, Lewes and Polegate, with a portion slipped at Haywards Heath. B2X Class 4-4-0 No.202 entrusted with 265 tons, reduced to 170 tons after the slip, predictably lost time on every stage on this tightly timed schedule. On a non stop service from Eastborne B2X No.202, with 190 tons, reached Victoria one minute late. Passing times from Eastborne were; Polegate - 7 minutes 9 seconds, Lewes - 22 minutes 4 seconds, Keymer Junction - 36 minutes 1 second, East Croydon - 73 minutes 20 seconds and Victoria 86 minutes 9 seconds, minima at Balcombe and Quarry were 41 miles per hour. The 60 minutes non stop schedule from Brighton allowed 47 minutes from Keymer Junction passed at speed to Victoria. Number 202 ran the distance in 50 minutes with a start at 20 miles per hour after observing the junction speed restriction.

The 60 minutes non stop timings were suspended at the beginning of 1917 and in May the schedules were curtailed further with respect to both speed and frequency, Portsmouth and Eastborne were left with very poor services. Wartime had arrived with a vengeance on the LB&SC railway disruption was now increasingly common.

O.J.Morris [Ref.3] recounted an experience when travelling in August 1917. There had been a "terrific air raid the night before" and at Victoria he was told there would be no trains to Portsmouth until 09.20. He therefore elected to take the 07.20 to East Croydon, hauled by a D Class 0-4-2 Tank, which reached there at 07.40. He crossed platforms and joined a Brighton train headed by an H2 Class Atlantic No.422, which completed its journey at 10.30 after stopping at every station. Morris waited there for an hour and then caught a train that stopped at all stations to Fratton where he alighted at just before one o'clock. Morris recounted that on one occasion in September 1918 when travelling Up to London from Portsmouth speed fell at one stage of the journey to six miles per hour, presumably between Horsham and Dorking.

Recovery of the timetable after the War had finished was, again with hindsight, rapid, although no doubt it did not appear so at the time. C.J.Allen wrote in August 1919 that the LB&SC had restored the great bulk of its pre-war trains, but not to pre-war times save on the Portsmouth route.

The LB&SC like other Railways developed, as the Century advanced, rosters such as to achieve higher percentage operating times in revenue service. Sometimes this inevitably involved the use of smaller locomotives on major express trains, a not ideal but pragmatic outcome. Thus a B4 Class 4-4-0 or an I3 Class 4-4-2 in 1916 hauled the 15.10 ex Victoria rather than an Atlantic or larger tank locomotive as part of a roster which included a working from Brighton to Victoria via Oxted. Also the converse applied, the largest passenger locomotives often seen on fairly humdrum duties, a Baltic tank, No.327 usually, worked the 06.20 ex Brighton, non stop to Haywards Heath, all stations to East Croydon, then Norwood Junction and New Cross Gate, London Bridge reached at 08.15.

LB&SC Practice and Performance in 1919

A quick turnaround and the 4-6-4 Tank returned on the 09.07, which with five intermediate stops reached Brighton at 10.40. A D3 Class 0-4-4 Tank No.378 by contrast frequently hauled the 05.55 Hastings to London Bridge allowed five minutes under three hours for the 76 miles with 17 intermediate stops.

Three "Gladstone" Class 0-4-2's were allocated to Brighton early in 1919, one of which regularly worked the 17.10 Hastings to London Bridge, after Polegate regularly 250 tons. One of the four "Gladstone's" allocated to Tunbridge Wells, invariably worked the 16.05 London Bridge to Eastborne. A working, taking in much of the LB&SC system diagrammed for a B4 Class 4-4-0 involved: 06.23 Brighton to Chichester reached at 07.43 - 08.45 Chichester to Victoria via Midhurst arrival 11.58, [this routing enabled the locomotive to leave Chichester without turning - 16.50 Victoria to Brighton via Oxted and Eridge, with stops at East Croydon, Sanderstead, Warlingham and all stations, Brighton, 19.29. The locomotive travelled a sedate 160 miles in a 13 hours 6 minutes period, 7 hours 12 minutes of that time spent in revenue service.

Locomotive performance at this time was far from scintillating, the timetables demanded little, although the trains were often heavy. An example, from the A.C.W.Lowe collection of logs, details the running of the 13.55 Victoria to Brighton. An I3 Class 4-4-2 Tank No.78 with 310 tons Tare, 350 tons Gross, many passengers were standing, ran to the first stop at Clapham Junction in 6 minutes 5 seconds. The schedule, 66 minutes from there to the next stop at Preston Park, was maintained, East Croydon passed in 14 minutes 40 seconds, minimum at Quarry 40 miles per hour and the maxima at Horley and Wivelsfield 57 and 55. The short run from Preston Park to Brighton took three and three quarter minutes.

C.J.Allen made return journeys to Brighton and Eastborne before the reintroduction of the 60 minutes London to Brighton schedule. [Ref.4] On the 10.40 ex Victoria, allowed 65 minutes to Brighton, B4 Class 4-4-0 No.61 had 236 tons Net, which Allen calculated as 285 tons Gross, he counted 720 passengers in the eleven eight wheeled coaches. Time to Brighton was 65 minutes 5 seconds, passing times, 18 minutes to East Croydon, 30 minutes 5 seconds to Quarry Box and 62 minutes 10 seconds to Preston Park following which there was a slight signal check. Maxima were 65 miles per hour after Earlswood and 72 after Haywards Heath. He returned on the "Southern Belle", hauled by an H2 Class Atlantic with 415 tons. The speed at Clayton was 40 miles per hour, the minimum at Balcombe 47, maximum at Horley 72 and Quarry was passed in 40³/₄ minutes from the start. There were signal checks all the way to Victoria, not surprisingly the schedule to Victoria was 70 minutes, with a clear road the finish would have been in less than 65 minutes.

His trip to Eastborne was made on the 11.55 ex Victoria, hauled by "Gladstone" Class 0-4-2 No.180 with 270 tons. The elderly lady struggled with such a load, passing times to Clapham Junction, East Croydon and Quarry were, seven and three quarters minutes, 22 minutes and 36 minutes, where it was five minutes late.

LB&SC to Eastborne and back in 1919

Speed reached 65 miles per hour at Earlswood, before a PWR slack delayed the train further and the Three Bridges stop was affected in 49 minutes 5 seconds, 47½ minutes Net, the schedule was 45 minutes. The Gladstone attained 35 miles per hour up the to Balcombe Tunnel from the restart, passed Haywards Heath in 12 minutes 10 seconds at 64, observed the Keymer Junction slack at 30 and attained 66 maximum down the favourable grades to Lewes. It stopped there in 28¾ minutes from Three Bridges, a further loss on schedule of two and three quarter minutes and lost another 85 seconds against the 23 minutes schedule for the final stage to Eastborne. The actual running time from Victoria to Eastborne was 102 minutes 15 seconds, 100¾ minutes Net equivalent to a non stop run to Eastborne in 91 to 92 minutes. A Gladstone could do better than this with 270 tons.

The return journey was made on the 14.22 ex Eastborne, a 265 tons train headed by B2X Class 4-4-0 No.318 on a schedule to the first stop at East Croydon of 77 minutes. Number 318 passed Lewes in 22 minutes 40 seconds and after a signal check, Keymer Junction in 38 minutes 25 seconds. The maximum at Horley was 64 miles per hour followed by a minimum at Quarry of 35 resulting in an East Croydon arrival three and a half minutes late, 80 minutes 35 seconds, 79 minutes Net. The London Bridge portion was detached at East Croydon and with the reduced load three minutes of the arrears were recovered to Victoria, with start to stop times of 11 minutes 10 seconds to Clapham Junction and 5 minutes 50 seconds to Victoria.

Although 1919 was the year in which the LB&SC began to restore pre-war competitive services, the spirit of co-operation engendered, during the War with some competing Railway Companies endured. For the Derby Day, and Oaks Day Race traffic of that year, the LB&SC ran a service from Victoria to Epsom Downs with departures at 20, 15, 10 or five minutes intervals depending on passenger demand, at varying times of the day. There was no LB&SC service to Epsom Downs from London Bridge, potential travellers were confronted with a sign, "To the Epsom Race trains", directing them to the SE&C booking office, where they could obtain tickets to travel on that Company's trains to Tattenham Corner.

One of the first LB&SC services curtailed during the War, to Portsmouth was also one of the first improved afterwards. Was this an attempt to steal a march on the L&SW, its enemy for many decades? Cooperation with the SE&C was perhaps possible, with the L&SW a step too far. Perish the thought.

The Portsmouth train that attracted most attention was the 11.35 ex Victoria, non stop to Fratton, 84.4 miles, in 110 minutes. The combination of slacks through stations, at junctions and frequent sharp gradients gained this route the reputation as the most frustrating route of similar length, emanating from any London Terminal. There was a tendency, amongst observers, to overestimate the difficulties of the route. The Royal Train, when travelling to Portsmouth ran this way, allowed exactly two hours to Portsmouth Harbour Signal Box, where a pilot man was picked up.

LB&SC to Portsmouth in 1919 and 1921

The Royal Train schedule from passing Leatherhead to Chichester was the same as for the 11.35, i.e. 60 minutes. Royal Train schedules were established, with the certainty they could be maintained.

Five journeys on the 11.35, the first four recorded in 1919, [Ref.5] and the last a C.J.Allen day out in 1921 indicate the difficulties. The locomotives and loads were: B4 Class 4-4-0 No.72 with 290 tons - B4 No.42 with 220 tons - B4 No.70 with 165 tons - I3 Class 4-4-2 Tank No.22 with 190 tons - B4 No.67 with 160 tons.

Number 73, with its heavy train, nine bogie coaches plus two Pullman Cars, lost time badly. Streatham South Junction, 6.5 miles was passed in 13 minutes 52 seconds, speed fell to 20 miles per hour on the 1/96 and 1/86 before Sutton, passed in 24 minutes 22 seconds and Dorking, 24.8 miles, in 41 minutes 55 seconds. The minimum on the 1/100 before Holmwood was 25 miles per hour and the maximum before Horsham, on the subsequent descent, 63. No.73 was eight and a half minutes late at Horsham, 62 minutes 34 seconds, the 22.2 miles from there to Arundel were run in 26½ minutes and a stop was made at Chichester to take water, 102 minutes 6 seconds from Victoria, schedule 92 minutes. [Assuming the tender contained 2,800 gallons of water when the train left Victoria, in practice it may have been virtually full i.e. 3,000 gallons, and the driver was careful at Chichester, there was still 300 gallons remaining, the coal consumption was c.45lbs coal per mile, perhaps as much as 50lbs.] A train of nearly 300 tons was probably too much for a B4 over this route. Number 73, after 2 minutes 34 seconds taking water, ran the 15.2 miles, mainly level, to Fratton in 20 minutes 46 seconds, overall time including time spent at Chichester, was 126 minutes 26 seconds.

Number 42, with the usual summer formation of six bogie coaches plus two Pullmans, 220 tons, passed Streatham Junction in 13¼ minutes and Sutton in 23 minutes 5 seconds. The minimum before Sutton was 25 miles per hour and at Holmwood 26, the maximum before Horsham passed 4 minutes 20 seconds late, 64. The stretch to Arundel took three seconds under 25 minutes, at Chichester it was 3 minutes 23 seconds late and after a slight signal check it reached Fratton in 114 minutes 19 seconds, 113 minutes Net.

With the normal winter load of 160 tons, No.70, delayed in the initial stages by signal checks, passed Streatham South Junction in 19 minutes 5 seconds. Minima afterwards were 29 miles per hour before Sutton and 41 at Holmwood, maxima 65 before Horsham and 62 before Arundel. This stretch was run in 24 minutes 8 seconds, the lateness was one and three quarter minutes at Chichester and the final arrival at Fratton on time, to be pedantic four seconds late. The 77.9 miles from Streatham Junction to the Fratton stop occupied 92 minutes, Victoria to Fratton 104 minutes Net.

The I3 No.22 with 190 tons was checked by signals after Clapham Junction, passed Streatham Junction in 14 minutes 35 seconds, Sutton in 24¾ minutes and Horsham in 59 minutes 10 seconds, five and a quarter minutes late.

LB&SC to and from Portsmouth in 1919 and 1921

The continuation to Arundel occupied 26¼ minutes, at Chichester the train was five and a half minutes late and another two minutes were lost on to Fratton, 117 minutes 40 seconds. Speeds were, 29 miles per hour minimum before Sutton, 37 minimum both on the rise after Epsom and after Dorking, 61 maximum before Horsham and 47 minimum at Pulborough, No.70 was travelling at 50 here. It is likely the Driver of No.22 was concerned about his water supply, [despite the much-lauded economy of the I3 Class]; 84.4 miles with a tank capacity of 2,110 gallons represented a significant challenge. If the locomotive used 2,000 gallons on this trip, i.e. 22 gallons of water per mile, probably 30 to 31lbs of coal per mile, this is a similar figure to that recorded when operating the Brighton and Worthing services over a more favourable route. It can also be appreciated that the driver on passing Chichester with perhaps only 400 gallons of water remaining would have run very gently from there to Fratton. His loss of time, two minutes, on this stage was far less than if he had taken water at Chichester, bearing in mind time lost in decelerating for the stop and accelerating away from it. Conversely, if he had run harder before Chichester he perhaps would have had more than enough time to take water. As with the SE&C and the attempt to use 2-6-4 Tank No.790 on the non stop service to Dover, the use of tank engines, however economical on 80 miles non stop runs was not a practical proposition.

Allen's run with No.67 and the winter formation indicates the speeds and times required to maintain the 110 minutes schedule. Clapham Junction in 5 minutes 40 seconds, Sutton in 20¾ minutes after a signal check at Streatham Junction, a minimum of 30 miles per hour before Sutton and Horsham passed 40 seconds ahead of schedule after a minimum of 30 after Dorking and a maximum of 64. The continuation to Arundel was run in 23 minutes 20 seconds, at Chichester the train was one and three quarter minutes early, the time to Fratton exactly to schedule, 107 minutes Net.

The 15.15 from Portsmouth Town schedule allowed ten minutes from Fratton to Havant [6.4 miles], 53 minutes to Horsham [40.6 miles] and 34 minutes on to Sutton [25.3 miles]. The last, bearing in mind this section included the four and a half miles before Ockley graded adversely, over a mile at 1/90, the balance at 1/100 and speed restrictions through Dorking, Leatherhead and Epsom was a challenge. Sutton to Victoria was allowed 25 minutes.

A B2X Class 4-4-0 No.207 with 215 tons on the 15.15 ran to Havant in 10 minutes 25 seconds, then passed Chichester, 8.8 miles, in 12 minutes 8 seconds, ran the 10.0 miles from Arundel Junction to Pulborough in 11 minutes 55 seconds and stopped at Horsham in 53 minutes 48 seconds. There were signal checks on the approach to the station; Net time was two minutes less. Dorking was passed in 21 minutes 23 seconds from Horsham, the initial 2.05 miles to Warnham took 4 minutes 18 seconds, the 6.45 miles from there uphill to Holmwood another 11 minutes 32 seconds. After signal checks before Epsom five minutes were lost to Sutton, 37½ minutes Net. Streatham South Junction, 5.5 miles, was passed in 9 minutes 57 seconds from the restart before signal checks.

LB&SC from Portsmouth in 1919 and 1921

An I3 Class 4-4-2 Tank No.24 with a lighter train 165 tons ran to Havant in 10 minutes 10 seconds; was a second slower to Chichester than No.207 and gained considerably afterwards. The minima at the three mini summits between Pulborough and Horsham; one and a quarter miles at 1/100 after Pulborough, one and a half miles after Billinghamurst and at Itchingfield Junction were 43, 49 and 47 miles per hour, The time to Horsham was 49 minutes 48 seconds, from Arundel Junction to Pulborough 11 minutes 38 seconds and to the stop at Horsham 26 minutes 40 seconds. Warnham and Holmwood were passed from Horsham in 3 minutes 54 seconds and 14¾ minutes with a minimum of 26 miles per hour on the 1/90. Signal checks were then such that the train lost nine and three quarter minutes to Sutton, actual time 43 minutes 13 seconds, probably 36 minutes Net. Streatham South Junction was passed in 9 minutes 23 seconds from the Sutton restart.

B4 Class 4-4-0 No.68 with 235 tons ran to Havant in 10 minutes 29 seconds. The restart was slow, 13 minutes 1 second to Chichester before matters improved, 23 minutes 5 seconds to Arundel Junction, 11 minutes 37 seconds from there to Pulborough and 27 minutes 52 seconds to the Horsham stop. Fifty minutes 57 seconds overall from Havant, minima at the three summits were 38, 44 and 45 miles per hour. Times from Horsham to Warnham, Holmwood and Dorking were 4 minutes 6 seconds, 14 minutes 51 seconds and 20 minutes 4 seconds, Sutton was reached unchecked in two and three quarter minutes over schedule. Number 68 passed Streatham South Junction in 10 minutes 37 seconds from the restart before signal checks.

Whilst locomotive performance on these three runs was reasonable, poor operating procedures compounded the delays, although perhaps if the trains had been on time at Streatham they would have been afforded a clear path to Victoria. The three trains left Portsmouth 13 minutes late, on time and one minute late, arrivals at Victoria were 38, 13 and 13 minutes late.

The 16.45 from Portsmouth stopped at Fratton, Chichester and Horsham, scheduled start to stop times from Fratton onwards were 19, 41 and 52 minutes, the second and third stages were 31.8 & 37.3 miles respectively. A B4 Class 4-4-0 No.73 with 230 tons lost four and a half minutes to Horsham with times to Chichester and Horsham of 21 minutes 37 seconds and 42 minutes 50 seconds, the time from Arundel Junction to Pulborough was 11 minutes 42 seconds and to Horsham 28¼ minutes. After this poor performance the start from Horsham was good, despite the locomotive slipping in the early stages, times to Warnham, Holmwood and Dorking were 4 minutes 8 seconds, 13 minutes 37 seconds and 18 minutes 46 seconds. This involved speeds of 34 miles per hour minimum on the 1/90 and a maximum of 65 on the descent. Sutton was passed in 34 minutes 23 seconds, a loss against schedule of 83 seconds and Victoria reached in 52 minutes 40 seconds. This was a challenging schedule for a saturated steam 4-4-0 with 230 tons.

Motive power on the Eastborne service in 1919 varied.

LB&SC to and from Eastborne in 1919

The Sunday 10.40 Victoria to Eastborne non stop schedule was 95 minutes, a B4 Class 4-4-0 No.70 with 185 tons, maintained this easily with an overall time of 93 minutes 42 seconds. It passed East Croydon in 18½ minutes, [ran Local line from Windmill Bridge Junction to Stoats Nest], Keymer Junction in 57 minutes and Lewes just inside 71 minutes.

The weekday 09.03 ex Victoria schedule was more demanding: seven minutes to the first stop at Clapham Junction, 14 minutes to East Croydon, 18 minutes for the 11.8 miles to Earlswood, 39 minutes for the 28.4 miles to Lewes, 17 minutes to Polegate and 8 minutes for the final stage to Eastborne, running time 103 minutes and five intermediate stops. An I3 Class 4-4-2 Tank No.24 with 280 tons kept time on the first two stages, 6 minutes 49 seconds and 13 minutes 53 seconds. Passed Quarry at 38 miles per hour and lost 34 seconds to Earlswood. Haywards Heath was passed in 20 minutes 37 seconds from the restart after a minimum of 45 miles per hour at Balcombe Tunnel. The load was reduced to 147 tons there by slipping and Lewes reached in 37 minutes 21 seconds. The next two stages took 16 minutes 58 seconds and 6 minutes 53 seconds, total running time from Victoria to Eastborne 100½ minutes.

A B4 Class 4-4-0 No.73, with 290 tons, reduced to 157 tons at Haywards Heath on the 09.03 ex Victoria, ran the six stages in: 8 minutes 10 seconds - 16 minutes 35 seconds - 20 minutes 33 seconds with a minimum of 32 miles per hour at Quarry - 39 minutes 24 seconds - 17 minutes 26 seconds - 7 minutes 6 seconds, total running time 109 minutes 22 seconds. On a Bank Holiday weekend I3 Class 4-4-2 Tank No.87 with 245 tons as far as Polegate, was badly delayed by signals following a late start from Victoria and further delayed as far as Earlswood after which there was a clear road. Three Bridges, 7.7 miles, was passed in 10 minutes 40 seconds from Earlswood, speed fell to 45 miles per hour at Balcombe Tunnel, rose to 61 at Haywards Heath and after observance of the Keymer Junction slack Lewes was reached in 35 minutes 57 seconds. The final two stages were run in 17 minutes 34 seconds and 7 minutes 3 seconds with the load reduced to 127 tons at Polegate. Number 87's running time from Earlswood to Eastborne was 60½ minutes compared with 61¼ minutes by No.24, the schedule 64 minutes.

Motive power on three occasions with trains scheduled non stop from Eastborne to East Croydon in 77 minutes, was B4 Class 4-4-0 No.70, H2 Atlantic No.424 and B2X Class 4-4-0 No.209, respective loads 210, 170 and 190 tons. The initial times to pass Polegate were 8 minutes 15 seconds, 8 minutes 5 seconds and 7 minutes 50 seconds and to subsequent points: Lewes - 22 minutes 42 seconds, 23 minutes 1 second and 23 minutes 34 seconds, Keymer Junction - 35 minutes 50 seconds, 37 minutes 35 seconds and 38 minutes 4 seconds, Three Bridges - 50 minutes 40 seconds, 51 minutes 55 seconds and 54 minutes 20 seconds. The B4 encountered a rainstorm after Three Bridges, passed Quarry slowly in 66 minutes 17 seconds, was checked by signals at South Croydon and stopped at East Croydon in 76 minutes 22 seconds from Eastborne.

LB&SC reintroduction of Brighton 60 minutes schedule

The Atlantic, apparently, "killing time", after Three Bridges, was through Quarry in 65¾ minutes and effected the stop in 75 minutes 8 seconds. The B2x was quoted as taking it very easy after Keymer, although as it passed Quarry in 67 minutes 3 seconds and stopped at East Croydon only 43 seconds late this would constitute a creditable performance for one of these not very capable locomotives. The 77 minutes schedule was undemanding for the larger locomotives.

The B4 continued, from East Croydon to Victoria on a 17 minutes schedule, it ran the distance in 15 minutes 20 seconds, the time to Clapham Junction 11 minutes exactly. On the other two occasions the train was destined for London Bridge and a Victoria portion was detached at East Croydon. These weighed 95 and 101 tons, they were hauled to Victoria by D Class 0-4-2 Tank's Nos.258 and 235 which ran the 7.8 miles to the stop at Clapham Junction in 11 minutes 53 seconds and 12 minutes 33 seconds.

The 60 minutes non stop schedule between London and Brighton, reintroduced in 1920, reawakened interest in LB&SC locomotive performance. C.J.Allen, [Ref.6] published details of five Down runs in the winter of 1920/1. One he timed himself, the others were by Major Myers and P.E.Holder, the loads in all cases 240 tons. Locomotives were L Class 4-6-4 Tanks Nos.327 and 328, H2 Class Atlantic No.422 twice and a B4 Class 4-4-0.

The Baltic tanks with these comparatively light trains made good times, Clapham Junction passed in 5 minutes 53 seconds and 5 minutes 27 seconds, the second reached 60 miles per hour before Streatham Common, this enterprise rewarded with a signal check. They passed Quarry in 25 minutes 40 seconds, at 44 miles per hour and 27 minutes 52 seconds. The second passed East Croydon in 15 minutes 40 seconds, reached 55 miles per hour on the 1/264 before a PWR slack at Coulsdon. Passing times and speeds, on the first run were: East Croydon - 15 minutes 25 seconds, Earlswood - 28 minutes 55 seconds, Horley - 67 miles per hour, Balcombe - 53 minimum, Haywards Heath - 74 maximum [followed by another PWR slack at Keymer Junction, Brighton - arrival 25 seconds late, 58 minutes Net. Number 327, after the initial checks: Earlswood - 30 minutes 52 seconds, Horley - 69 miles per hour, Balcombe - 58 minimum, Haywards Heath - 75, Clayton Tunnel - 56 minimum. There was a signal check between Preston Park and Brighton, the final time 59 minutes 18 seconds, 54 minutes Net, the 27.7 miles from Earlswood to Preston Park were run in 25½ minutes.

On the two occasions with H2 Class 4-4-2 No.422, Clapham Junction was passed in 5 minutes 47 seconds and 5 minutes 55 seconds and East Croydon in 16 minutes 20 seconds and 16 minutes 3 seconds. Minima at Quarry were 43 and 42 miles per hour, on the first 75 was attained at Horley, Three Bridges passed in 35 minutes 55 seconds, Balcombe at 52, Haywards Heath at 75 and Keymer Junction in two seconds under 47 minutes. There was a stop for signals before Preston Park, Brighton reached four and three quarter minutes late, 58 Net.

LB&SC from Brighton in 60 minutes

On the second speeds and times were: 72 miles per hour at Horley, 51 at Balcombe, 37 minutes 24 seconds to Three Bridges, 75 after Haywards Heath and 48 minutes 44 seconds to Keymer Junction. The minimum at Clayton Tunnel was 51 miles per hour and with a final 67 at Preston Park the Brighton arrival ten seconds early. The B4 Class 4-4-0 took 6 minutes 20 seconds to clear Clapham Junction and after a PWR slack at Balham, 17 minutes 20 seconds to East Croydon, it attained 50 miles per hour on the 1/264 after the station. With a minimum of 46 miles per hour at Balcombe, a further PWR slack before Preston Park the Brighton arrival was 3 minutes 35 seconds late, 60¾ Net. These five timings were on the 11.00 or 15.10 ex Victoria.

An H1 Class 4-4-2 No.41 on two runs from Brighton with 240 tons passed Haywards Heath in 15 minutes 31 seconds and 15 minutes 50 seconds, after maxima of 70 and 71 miles per hour. The minima at Balcombe were 55 miles per hour on both occasions, times to Three Bridges 25 minutes 4 seconds, passed at only 30 through a signal check and 24 minutes 7 seconds at 67, to Earlswood 33 minutes 2 seconds and 31 minutes 21 seconds. The minima at Quarry were 50 and 47 miles per hour, the times 36 minutes 24 seconds and 34 minutes 48 seconds. East Croydon was passed in 44 minutes 26 seconds and 43 minutes 45 seconds, Victoria reached in 59 minutes 21 seconds, after signal checks, and 60 minutes 10 seconds following slow running, 55 and 57 minutes Net.

An H2 Class 4-4-2 No.425 on two occasions passed Clayton in 8 minutes 5 seconds and 8 minutes 10 seconds, attaining 48 miles per hour each time. Times to Haywards Heath were 16½ and 15¾ minutes, the minima at Balcombe 54 and 48 miles per hour, maxima at Horley 73 and 71 and to Earlswood 32 minutes 10 seconds and 31 minutes 35 seconds. There was a PWR slack after Earlswood on the first, Quarry passed in 36 minutes 55 seconds at 46 miles per hour, East Croydon in 47 minutes after a signal check and Victoria reached 68 seconds late, 58 minutes Net. On the second the time to Quarry was two minutes less with speed falling to 43 miles per hour and despite signal checks at East Croydon the arrival at Victoria was 35 seconds inside schedule, 57 minutes Net.

The fifth Up run, timed by C.J.Allen from the footplate was an occasion for Driver Green apparently to set out to impress his guest. Baltic, 4-6-4, Tank No.328 reached 48 miles per hour at Clayton, passed in 8¼ minutes, 75 at Keymer Junction, passed Haywards Heath in 15 minutes 21 seconds, fell to 58 at Balcombe, attained 77 at Horley and achieved the fast time to Earlswood of 29 minutes 50 seconds. The locomotive working was eased after this, although with 67 miles per hour at Purley the time to East Croydon was only 41¾ minutes and Victoria was reached in 58 minutes 25 seconds, Allen reckoned 55½ minutes Net. The 60 minutes schedule, with trains of only 240 tons, was an easy proposition for the Atlantics and Baltic Tank's.

The B4 Class 4-4-0's could time the trains with 240 tons as R.A.H.Weight observed behind No.47 when Brighton was reached in 59 minutes 5 seconds.

LB&SC B4 Class 4-4-0's and rebuilds

This locomotive was fitted with a new boiler and extended smoke-box in 1915. It passed Clapham Junction in five and three quarter minutes and East Croydon, after signal checks, in 15 minutes 36 seconds. The minimum at Quarry was 44 miles per hour, the maximum at Horley 74, at Three Bridges 52 and at Keymer Junction 72, passed in 48¼ minutes. Weight stated this was "by far his best experience of a B4". [Ref.7] B4 No. 54 on the 10th October 1921 worked the Brighton excursion in both directions and ran ahead of schedule with a 230 tons train. In the Up direction the time from passing Preston Park to entering Quarry tunnel was 39¾ minutes, better than schedule, a Gladstone 0-4-2 could have achieved the same. [Ref.8]

The B4 Class 4-4-0's however were unequal to some duties, particularly on the Portsmouth route, let alone the proposed improved schedules. Number 46 was fitted in 1918 with an I3 Class 4-4-2 Tank type superheater with extended firebox and new 19¾ inches diameter cylinders. In retrospect this seems a logical cause of action, the I3 Class with superheated boilers were more economical than the B4's and performed better. In 1921 No.44 was fitted with a boiler with slightly larger diameter tubes, one and three quarters inches compared with one and five eighths, 20 inches diameter cylinders and eight inches diameter piston valves. This boiler was also fitted to some of the I3's. The next modification to the B4 Class produced the B4X design, purportedly with the specific intention of accelerating the Portsmouth service. The design mated 20 inches diameter cylinders with a K Class 2-6-0 type boiler. This boiler had a working pressure of 180 pounds per square inch and a total heating area of 1,573 square feet [1.157 square feet in the boiler tubes, 139 square feet in the firebox and 279 square feet in the superheater]. The B4X weighed 58 tons and the tender another 39 tons, two were in service at the formation of the Southern Railway and another ten rebuilt in 1923 and 1924.

The B4X design was never entirely successful and certainly did not transform the B4 Class. It has been suggested that the provision of larger piston valves would have been a panacea. The LB&SC and subsequently the Southern Railway would have been better served if the Class had been simply fitted with an I3 Superheated boiler and larger cylinders as per No.44. It has been claimed that No.44 was a first rate machine [Ref.9] and the B4X's never reflected the promise it showed.

A typical B4 Class 4-4-0 duty in 1921 was the 17.45 Victoria to Worthing, which stopped at Balcombe, Haywards Heath, Preston Park and Hove. [Ref.10] Number.65 with seven eight wheelers and one first Class Pullman, probably 200 tons Gross was delayed by a PWR slack at Streatham Common and a signal check at East Croydon. Consequently it required 27 minutes to pass Stoats Nest and then the 18.5 miles from there to Balcombe were run in 21 minutes, which secured an on time arrival. The short stage to Haywards Heath took six minutes, the subsequent stages to Preston Park, Hove and Worthing 13½, four and a half and 13½ minutes, including a severe signal check at Shoreham. Net and actual running times from Victoria to Worthing were 79 and 85½ minutes, schedule 89 minutes.

LB&SC heavier trains 1921 and 1922

The larger locomotives began to justify their existence in 1921 and 1922 as train weights increased. C.J.Allen published five runs on the Brighton 60 minutes schedule [Ref.11] with typical loads of the time. Down, 4-6-4 Tank No.333, on two occasions with 350 tons reached Brighton in 59¾ and 62¾ minutes. On the first it passed East Croydon in the excellent time of 14¾ minutes with a minimum of 45 miles per hour after Clapham Junction and a maximum of 58 at Streatham Common. The time to Quarry was 25 minutes 5 seconds and with no higher than 69 miles per hour at Horley, 66 at Keymer Junction, minima of 50 and 45 at Balcombe Tunnel and Clayton, to Keymer Junction 47 minutes 25 seconds and to Brighton to time. There were signal checks before and after East Croydon on the second run, the time to Quarry was 30 minutes 50 seconds and from there to Preston Park 26 minutes exactly. Maxima were 72 miles per hour at Horley, 75 at Keymer Junction and 66 before Preston Park, intermittent minima 50 and 60 at Balcombe and Clayton. The time from Haywards Heath pass to Brighton was 13 minutes 35 seconds, Net time Victoria to Brighton 58 minutes, with a start as quick as the first run, 57 minutes.

Three journeys in the Up direction featured, H1 Class 4-4-2 No.41 with 330 tons, H2 Class No.422 with 305 tons and Baltic Tank No.333 with 350 tons. Speeds at Clayton tunnel were 48, 45 and 44 miles per hour followed by maxima of 75, 71 and 71 at Keymer Junction; Haywards Heath was passed in 16 minutes 20 seconds, 16 minutes 25 seconds and 16 minutes 50 seconds followed by 56, 56 and 53 miles per hour minima at Balcombe. The H1 following delays for signals at Three Bridges and Earlswood took 39 minutes 10 seconds to pass Quarry, reached 69 miles per hour at Purley, passed East Croydon in 47 minutes 35 seconds before further signal checks led to a five minutes late arrival at Victoria, 57 minutes Net. The H2 with a clear road as far as East Croydon and speeds of 75 miles per hour at Horley, 53 minimum at Quarry and 69 at Purley passed through the station in 44 minutes 5 seconds. Signal checks caused the last 10.3 miles to take nearly 20 minutes, the arrival was four minutes late, 57½ minutes Net. The Baltic reached 69 miles per hour at Horley, fell to 50 at Quarry before being checked to 45 for signals at Stoats Nest, passed East Croydon in 46¼ minutes and reached Victoria three quarters of a minute behind schedule, 59½ minutes Net. The footplate crews and their locomotives were up to the task, the system management was not so good. The H1 Atlantic developed an EDHP of 800-850 on the rise to Clayton and probably 900-950 before Balcombe.

A B4 Class 4-4-0 No.43 on the Eastborne service with 300 tons, schedule to Lewes the first stop 67 minutes, with the 15.20 ex Victoria arrived 80 seconds late. The lost time occurred in the initial stages, times to East Croydon and Quarry were 18 minutes 50 seconds and 31 minutes 25 seconds where No.43 fell to 33 miles per hour. After Quarry speeds were 64 miles per hour at Horley, 66 before slowing for the Keymer Junction slack, 41 minimum at Balcombe Tunnel and 62 maximum after the Keymer slack. The 23 minutes schedule from Lewes to Eastborne was kept with five seconds to spare, this would have been with a reduced load.

LB&SC Stoudley locomotives 1919 to 1922

The 15.20 conveyed Seaford portion detached at Lewes, although no mention of this was made in the original account. [Ref.12] A B4 on the 17.10 ex Eastborne with 220 tons, schedule to Victoria 90 minutes, lost three and three quarter minutes. Passing times were: Lewes - 22 minutes exactly, Keymer Junction - 37 minutes 50 seconds, East Croydon - 77³/₄ minutes, the final stage from East Croydon was run swiftly, without a signal check at Grosvenor Road, Victoria in 91¹/₂ minutes, another poor B4 performance. .

The larger Express passenger locomotives, the Atlantics, Baltics and Pacific Tanks, served the LB&SC well in the last two years of the Company's separate existence as did the older Stroudley designed locomotives. The last time a Terrier 0-6-0 Tank was used in the London area on Motor Train service occurred in 1920, although they continued to work high daily mileages in the Country areas. For instance one started work at Brighton at 06.05 and finished there 14¹/₂ hours later after handling 15 passenger trains and covering 180 miles. This included, travelling to Three Bridges [via Lewes, Horsted Keynes and East Grinstead], Uckfield, Seaford and Haywards Heath [from Lewes]. On Mondays and Thursdays an extra trip from Lewes to Berwick and back was included increasing the daily distance to 195 miles.

The D Class 0-4-2 Tank's were similarly used, one, often No.262, worked the 07.00 Dorking to London Bridge and then to Brighton via Horsham with a change of crew at Dorking and a wait at Horsham. It departed from Brighton at 13.55, waited just over an hour at Horsham and reached Victoria at 18.08. Victoria was left again at 19.20, with the through coaches for Portsmouth attached to the main train from London Bridge at Sutton. The 19.20 ran from Clapham Junction to Sutton non stop. The D then worked light engine to Epsom and returned again to Victoria before finally working the 22.58, which reached Dorking at Midnight. The locomotive then retired to the depot to be prepared for the following day, the daily passenger mileage was 209 plus light engine miles including three from Sutton to Epsom.

The Gladstone 0-4-2's often handled heavy trains; one regularly hauled the 19.30 Brighton to Victoria, schedule 78 minutes with stops at East Croydon and Clapham Junction. This often exceeded 300 tons, particularly if it included a Worthing portion complete with Pullman Car in addition to the two Cars that started from Brighton.

The October 1922 timetable almost equalled pre War excellence. There were non stop trains to Brighton at: 11.00, 11.40, 15.10, 16.30, 17.35, 18.35 and 00.05 from Victoria, 17.00 ex London Bridge [the 11.00, 15.10, 17.00 and 18.35 to Brighton in the even hour, the others allowed five minutes longer except for the 15.40, which slipped a Worthing portion at Haywards Heath and took 70 minutes]. The 13.00 ex Victoria stopped at Haywards Heath and reached Brighton in 75 minutes, the 13.55, 20.35 and 22.00 with one stop, at Clapham Junction, Haywards Heath and East Croydon respectively in 70 minutes. The 14.00 and 16.00 ex London Bridge, one stop each at Redhill and Horley respectively, took 72 and 73 minutes.

LB&SC the October 1922 Timetable

Semi-fast services left from London Bridge for Eastborne at 06.15 [four intermediate stops and an overall time of 111 minutes], 14.00 [three stops and 111 minutes], 16.05 [three stops 110 minutes] and 17.05 [one stop 90 minutes], the 17.05 included a portion for East Grinstead slipped at Horley. There were trains from Victoria to Eastborne at, 09.00 [five stops, 113 minutes], 09.45 [three stops, 105 minutes], 11.55 [two stops, 100 minutes], 15.20 [one stop, 94 minutes] 17.20 [one stop, 91 minutes], and 18.40 [one stop, 95 minutes]. There were slip portions detached from other trains: 16.30 ex Victoria at Three Bridges, which with further stops at Balcombe, Lewes and Hampden Park, reached Eastborne in 110 minutes - 17.55 ex London Bridge at Haywards Heath, which with stops at Lewes and Polegate, took 103 minutes - 22.00, ex Victoria, after a stop at East Croydon, at Haywards Heath, which with one further stop at Lewes, reached Eastborne at 23.40. The 20.35 furnished a 104 minutes service with a change of trains at Haywards Heath, the 21.31 ex Haywards Heath ran to Eastborne in 48 minutes including stops at Lewes, Polegate and Hampden Park.

Through trains ran to Worthing during the evening business period in addition to the service afforded by slip portions. The 17.08 ex London Bridge ran to its first stop at Preston Park in 64 minutes via Redhill and reached Worthing in 83 minutes. [The W.T.T. allowed 31 minutes to pass Redhill]. The 17.55 was allowed three minutes longer to Preston Park and reached Worthing in 92 minutes. The 11.40, 13.55, 15.40 and 18.40 ex Victoria, slipped portions at Haywards Heath, which reached Worthing in 85, 95, 85 and 95 minutes respectively.

There were non stop trains from Brighton to Victoria at 08.05 [with an extra service at 08.10 on Mondays only], 09.45, 12.20, 13.20 and 17.45, the last three to Victoria in 60 minutes, the others in 70, 72 and 70 minutes respectively. The 08.48 ran non stop to London Bridge in 62 minutes. The 07.10 and 08.15 stopped at East Croydon and reached London Bridge in 69 and 70 minutes, the 09.20, with the one stop at Haywards Heath took 73 minutes. The 11.00, 15.40 and 19.30 stopped at East Croydon and Clapham Junction, overall times to Victoria were 77, 75 and 78 minutes respectively. The 17.05, 18.05 & 22.00 semi-fast's made five, three and three stops en route with overall times to Victoria of 89, 85 and 77 minutes.

The main trains to London from Eastborne were at 07.30, 08.33, 09.30, 11.45, 14.35, 17.10 and 21.25: the 11.45 and 17.10 ran to Victoria in 90 minutes non stop – the 07.30, with stops at Three Bridges, Horley, South Croydon and East Croydon reached London Bridge in 100 minutes – the 08.33 took 92 minutes with a stop at Haywards Heath – the 09.30 to Victoria with a stop at Haywards Heath in 95 minutes – the 14.25 stopped at East Croydon and Clapham Junction, arrival Victoria 16.02 – the 21.25 stopped at Lewes reached Haywards Heath in 46 minutes, change of train gave an arrival at Victoria at 23.17. The best train from Hastings to London, the 08.15, ran non stop from Bexhill to Lewes in 30 minutes and after further stops at Balcombe and East Croydon reached London Bridge at 10.15.

LB&SC the October 1922 Timetable

There were departures for London from Worthing Central at 07.00, 08.35 and 12.35 to London Bridge, overall times of 97, 79 and 106 minutes. The 07.55, 09.43 and 14.25 ran to Victoria in 97, 79 and 108 minutes. The 07.55 did not run on a Monday, its path to London being taken by the 08.10 ex Brighton. These trains left Hove at - 07.18, 79 minutes to London Bridge with stops at Hassocks, Burgess Hill and East Croydon - 08.09, non stop to Victoria in 73 minutes - 08.50, non stop to London Bridge in 64 minutes, - 10.03, 74 minutes to Victoria with one stop at East Croydon - 13.07, 76 minutes to London Bridge with the East Croydon stop - 14.47 to Victoria in 90 minutes with stops at Haywards Heath, Redhill, East Croydon and Clapham Junction..

The Newhaven Boat train ran to and from Victoria. The 10.00 ran to the Harbour station in 83 minutes with stops at East Croydon [departure 10.19] and Lewes [11.12] The 20.20 stopped East Croydon [20.39], Lewes [21.33] and reached the Harbour 21.45. The Harbour departures were at 06.25, to East Croydon in 69 minutes and Victoria in 90 minutes and 16.48, two stops Lewes at 17.00 and East Croydon 17.54, overall five minutes less to Victoria.

The four best trains to Portsmouth were the: 08.55 Victoria to Portsmouth & Southsea, in 2 hours 16 minutes with stops at East Croydon, Horsham, Arundel, Chichester and Fratton, a portion for Bognor was slipped at Barnham Junction - 11.35 and 13.35 ex Victoria, non stop to Fratton in 110 minutes, Portsmouth five minutes later - 16.50 ex London Bridge, 2 hours 11 minutes with stops at Horsham, Chichester, Havant and Fratton, Bognor portion slipped at Barnham Junction. The 18.15 ex Victoria ran to Bognor, [yet to be designated a Royal resort], in 100 minutes for the 66.5 miles with stops at Horsham, Arundel and Barnham Junction.

The two fastest trains from Brighton to Portsmouth left at 09.40 and 11.20, both stopped at Hove, Worthing, Chichester and Fratton, the 11.20 additionally at Ford Junction. Overall times for the 44.6 miles to Portsmouth and Southsea were 70 and 80 minutes. The 11.20 included the through coaches to Cardiff and Bournemouth, the first part then left Portsmouth at 13.00 and reached Salisbury at 14.27, the second part, departed ten minutes later and reached Bournemouth at 15.22. In the eastbound direction the through train left Portsmouth at 16.20 and with the same stops as Westbound reached Brighton in 82 minutes. The inaugural train ran on July 10th 1922. On the occasion of the official Press visit, on arrival at Brighton it consisted of: two LB&SC eight wheeled vehicles from Bournemouth, two L&SW vehicles from Ilfracombe and four Great Western Railway coaches, including a Luncheon car from Cardiff. There were two other semi-fast trains from Portsmouth to Brighton, the 10.00 in 70 minutes with stops at Fratton, Chichester, Worthing and Hove and the 17.45 in 75 minutes with additional stops at Havant and Shoreham.

The fastest trains from Portsmouth to London were: 08.45 Portsmouth and Southsea to London Bridge arrival 10.55 after stops at Fratton, Havant, Chichester, Barnham Junction and Arundel -

LB&SC the October 1922 Timetable

11.00 to Victoria in 2 hours 10 minutes, stops at Fratton, Havant, Chichester and Horsham - 15.39 stopped additionally Sutton and Clapham Junction not Chichester, required two minutes more - 16.50 to Victoria in two hours, stops at Fratton, Chichester and Horsham. The 07.18 ex Bognor, ran via Hove and after stops at Angmering and West Worthing left Worthing Central at 08.35 [see previous] The 15.15 to Victoria, took one and three quarter hours with stops at Barnham Junction, Arundel, East Croydon and Clapham Junction.

There were semi-fast trains to Tunbridge Wells and Eridge at: 11.05 and 20.05 ex Victoria to Eridge in 68 and 67 minutes with stops at Clapham Junction, East Croydon, Oxted and Edenbridge - 18.06 omit Oxted stop Eridge in 67 minutes - 16.44 omit Clapham Junction stop, 71 minutes. The 15.45 ex Victoria, 56 minutes to Eridge non stop, portion slipped at Ashurst to Tunbridge Wells in 66 minutes after stop at Groombridge. The 15.45 gave best times of the day to both Eridge and Tunbridge Wells. The 16.20 ex London Bridge and the 16.50 ex Victoria took 86 and 88 minutes to Tunbridge Wells, stopped all stations from Sanderstead. Of the Eridge trains, the 15.45 ran to Brighton, the others as far as Uckfield, the 11.05, 15.45 and 18.06 included through carriages for Eastborne via Heathfield detached at Eridge.

In the Up direction: 08.55 from Eridge, 08.32 ex Uckfield, with stops at Edenbridge, Oxted and East Croydon ran to London Bridge in 69 minutes - 11.23 from Eridge, 10.20 ex Brighton, the same stops to East Croydon and then after a stop at Clapham Junction reached Victoria at 12.35 - 09.22 from Eridge, 08.05 ex Brighton, to Victoria in 58 minutes non stop.. The 09.22 and 11.23 included through carriages from Eastborne via Heathfield, attached at Eridge, the third set of Eastborne coaches travelled Up on the 14.07 from Eridge which stopped at all stations as far as Sanderstead and reached Victoria at 15.45. There were two semi-fast trains from Tunbridge Wells: the 09.28, all stations as far as Cowden, then Edenbridge, Oxted, East Croydon and Clapham Junction, Victoria in 78 minutes - 20.48, all stations to Oxted and then the same stops as the 09.28, 82 minutes to Victoria. The LB&SC had given up on the Tunbridge Wells to London traffic one suspects.

The LB&SC joined the Southern Railway in good shape, its locomotive fleet was workmanlike, its passenger services reasonable, its policy with respect to electrification established and it was destined to have virtually no impact at all on the Southern Railway's operating strategy. It was a favourite amongst Railway enthusiasts for the very reason that Brighton was to have scant influence on Southern Railway locomotive design, the variety of its locomotive fleet.

The variety of locomotives used is illustrated by observations made at Lewes over a half an hour period one summer Evening in 1922. [Ref.13] At 17.23 D3X Class 0-4-4 Tank No.396 arrived with the 17.03 Brighton to Seaford. This connected with the 16.05 ex London Bridge, which arrived at 17.24 hauled by an I3 Class 4-4-2 Tank No.22. The 16.05 was followed by the Down "Sunny South Express" hauled from Brighton by E5 Class 0-6-2 Tank No.568.

LB&SC half an hour at Lewes 1922

Number 568 was running twenty minutes late. Two minutes later the 17.10 ex Eastborne, non stop to Victoria, passed through behind B4 Class 4-4-0 No.70 followed three minutes later by the Up Newhaven Boat Train, running over half an hour late with H1 Class 4-4-2 No.38. The 17.15 Brighton to East Grinstead arrived at 17.37 behind an E4 Class 0-6-2 Tank and three minutes later D Class 0-4-2 Tank No.219 brought in the 17.10 from Haywards Heath. The 15.45 Victoria to Brighton via Uckfield, which had detached an Eastborne portion at Eridge, due at 17.35, arrived five minutes late behind a B2X Class 4-4-0 No.314. Eight minutes later a D3 Class 0-4-4 Tank arrived with the 17.35 Seaford to Brighton.

In 1923 Major Myers wrote an article for the Railway Magazine as a retrospect of the Brighton Main Line from 1898 to 1923. Of the earlier locomotives, he considered the Gladstone 0-4-2's to have always been good performers, the B2 Class 4-4-0's he rated inferior to the Gladstone's, although "Bessemer" was a good one and the B4 Class 4-4-0's were excellent for their time, initially there was little work hard enough for them. He regarded the B4's as less economical than the Gladstone's. As an earnest of Gladstone ability he cited one with a 300 tons train on the 15.40 ex Brighton. Thirty-nine miles per hour attained up to MP46 [Clayton Tunnel], 64 touched at Keymer Junction followed by a minimum of 44 at Balcombe Tunnel, Horley passed at 65 and the minimum at Quarry 40. With easy running subsequently the stop at East Croydon effected in 50 minutes 39 seconds.

Major Myers article summarised 1,049 runs [a run was defined as per Pattinson i.e. a journey of at least 10 miles between stops. A journey on a train from Victoria to Brighton with stops at East Croydon, Redhill and Haywards Heath represented four runs].

The locomotives he travelled behind most were: B4 Class 4-4-0's. 330 runs, time lost due to locomotive performance, or lack of it, on 27 occasions, average train weight 263 tons. In comparison on 41 runs with I3 Class 4-4-2 Tank's with saturated steam boilers time was lost on ten occasions, average load was 234 tons. The I3 Class 4-4-2 Tank's fitted with superheated boilers only lost time on four out of 105 runs with average train weights of 239 tons. The average start to stop run speeds for the B4's, Saturated I3's and Superheated I3's were 45.4, 46.7 and 48.7 miles per hour respectively.

Major Myers recorded 196 runs behind Gladstone 0-4-2's with 16 instances of time booked against the locomotive with an average load of 237 tons. The B2 Class 4-4-0's, with average train weights of 221 tons, earned one black mark in 17 outings and the B2X Class 4-4-0's 15 out of 84 with average loads of 263 tons. The average run speeds for the Gladstones, the B2's and the B2X's were 44.4, 44.4 and 46.2 miles per hour. Comparisons are not necessarily odious but they can mislead.

The H1 and H2 Class Atlantics averaged actual speeds of 48.9 and 49.9 miles per hour on 129 and 74 occasions respectively.

LB&SC twenty five years of performance

On only one occasion could time be booked against either Class although it should be emphasised that the average train weights, 247 and 252 tons, were similar to those handled by the smaller Classes.

The two J Class 4-6-2 Tank's and the L Class 4-6-4 Tank's appeared 24 and 21 times, the respective average speeds were 48.8 and 49.2 miles per hour. There was no loss of time attributable to the locomotives, average train weights were 265 and 299 tons, average run lengths for the Baltics were 49.4 miles suggesting that 20 of the runs were on London to Brighton or return non stop trains.

The figures are interesting and give a view of a Railway which ran its trains to time, particularly during the latter years. Also the new designs kept more than abreast with requirements, despite improved schedules and heavier trains locomotives had more power in reserve. Major Myers gave average times, presumably Net, of 58 minutes 17 seconds for 113 Down non stop journeys and 57 minutes 12 seconds on 89 Up journeys. The actual time taken for all his runs was 47,283 minutes compared with a schedule of 47,520 minutes.

Chapter 12: References and Notes

- Ref. 1 Railway & Transport Monthly [RTM] Vol. X. p.184
- Ref. 2 [RTM] Vol. X11 p.171 & Vol. XVIII p.235-240
- Ref. 3 Locomotive Notes [LN] Vol. VIII.
- Ref. 4 Railway Magazine [RM] Vol. XLVIII
C.J.Allen refers to No.61 as a rebuilt 4-4-0 but at this time it was a standard B4 with a saturated steam boiler.
- Ref. 5 [RTM] Vol. XX & [RM] Vol. XLVIII
- Ref. 6 [RM] Vols. XLVII & XLVIII
- Ref. 7 Railway World [RW] Vol. 23, N.Harvey
- Ref. 8 [LN] Vol. X
- Ref. 9 [RW] Vol. 16, M.Joly
- Ref.10 [LN] Vol. X
- Ref.11 [RM] Vol. LI
- Ref.12 [RM] Vol. LI p.345-351
- Ref.13 Trains Illustrated. Vol. VII. B.C.Vigor. The author has added further details and two minutes to the times quoted by Vigor.

Chapter 13: South Eastern and Chatham Railway from the Outbreak of War to the Grouping 1914-1923

The outbreak of War immediately affected the SE&C Railway; from the 3rd August 1914 Continental services via Dover were rerouted to Folkestone. Folkestone was then utilised by the Military from October 1914 and from November 1915 became solely a Military Port. The effect of War commencing during the Summer Holiday Season on an essentially passenger carrying Railway which then had to cope with a major increase in freight traffic, can be imagined. This was also a Railway experiencing a shortage of motive power. Indeed in the autumn of 1913 and spring of 1914 it borrowed fifteen geriatric 2-4-0's from the Great Northern Railway, for use on secondary routes.

There were significant reductions in passenger services in October 1914, April 1915, December 1916 and May 1918. Statistics indicate how SE&C business changed during the War period. Over a three years period Business travel to and from London reduced by about 35 percent. Seaborne goods traffic from 1913 to 1917 according to A.D.Jones, the outdoor locomotive Superintendent, increased by 150 percent. Total passenger miles reduced by 29 percent, goods and mineral train miles increased by almost 50 percent.

The South Eastern and Chatham had one major advantage; its duplication of routes. The suicidal 19th century scrap between the South Eastern and the London and Chatham Dover Railways for market share and the joint Committee's failure to face up to reality gave the military authorities a plethora of alternative routes and stations. One of the few major improvements initiated by the Joint Committee was the new Marine Station at Dover opened for ambulance traffic in January 1915 and utilised entirely by the Military until the resumption of the Dover to Ostend ferry service in January 1919.

The benefit of duplicate routes was emphasised in the aftermath to the major earth slip in Folkestone Warren on December 19th 1915. At the time the earth slip was considered as severe as that of 38 years previous, the Folkestone to Dover line remained closed until August 1919. Although it has been stated frequently that the closure of the line was not a National disaster, it impacted on passenger services and locomotive rosters significantly. One of the initial reactions to cutting of direct railway links between what were essentially the Royal Navy ports of Folkestone and Dover was the instigation of an express passenger service between Dover Priory and Folkestone by other routes. The trains ran via the Elham Valley line to Canterbury, then Minster Junction and to Dover via Deal. The distance from Folkestone to Dover via the direct route was 6.5 miles, by the emergency one 50 miles. The Elham Valley line was a product of the SE's defensive measures to forestall the LC&D intention to construct the Alkham Valley line to gain access to Folkestone.

A train from Folkestone to Dover via the diversionary route climbed for two and three quarter miles at 1/90 after passing Cheriton Junction.

SE&C Effects of the Folkestone Warren Landslide

Further climbs were a mile at 1/104 and 1/86 before Bridge and six miles up from Deal to the summit east of Gunton tunnel. Much of the six miles were at 1/72, [there was actually a short stretch as steep as 1/64]. In the opposite direction, starting from Dover, a train initially faced one and a half miles at 1/105 up to Buckland Junction, followed by a further two and three quarter miles at 1/71 to the summit at the Eastern end of Gunton Tunnel. Between Canterbury and Folkestone there was a climb of almost three miles, actually 1.4 miles at 1/70 and 1/77 and 1.3 miles at 1/183 between Hambledon Junction and Bridge and a mile at 1/121 past Bishopbourne.

Shortly after the earth slip occurred, three daily trains were initiated between Folkestone and Dover. They started from Folkestone Junction, stopped at Folkestone and Shorncliffe, ran non stop from there to Canterbury, next stop Minster, the 17.20 continued from there to Dover Priory reached after a stop at Deal, at 18.49. The other two trains terminated at the Harbour station and were slower after Minster. The service in the reverse direction was not as quick, although the 05.00 from Dover Pier, with the same stops as the Eastbound 17.20 from Folkestone reached Shorncliffe in 83 minutes. All three trains in this direction also ran without stopping over the Elham Valley line. From April 3rd 1916 the service between Folkestone and Dover was decelerated and the number of trains reduced.

The main service affected by the earth slip was that from London to Dover via Ashford. The distance from Ashford to Dover via Folkestone was 20.5 miles, via Canterbury and Deal 44½ miles and it included the heavy gradients on each side of Gunton tunnel. The through train from the Great Western Railway ran from Ashford to Deal with only the one stop at Canterbury and then stopped at all stations on to Dover. The 21.45 ex Charing Cross, for two months in 1916 ran from Ashford to Dover with a single stop at Minster Junction. There were three non stop trains a day between Canterbury and Deal. In 1917, all eight trains between Ashford and Canterbury continued to Deal, seven on further to Dover. There was a shuttle connecting service between Minster Junction and Margate with stock made up of the old six wheeled carriages previously used before closure on the Greenwich Park branch service. This collection of vintage rolling stock was usually hauled by R Class 0-4-4 Tank No.66 or R1 Class 0-4-4 Tank, No.703.

Despite the reductions in scheduled passenger services in the autumn of 1914 there were a few new initiatives. A SE&C locomotive in October 1914 commenced a daily working to Brighton, the trains concerned, the 08.27 ex Ashford, which reached Brighton at 11.07 after stops at all stations and the 13.55 ex Brighton, which made its sedate way back in exactly two and a half hours. An F1 Class 4-4-0, fitted with the Westinghouse Brake was specially diagrammed to this 121 miles stroll.

The reduction in Suburban service frequency led to some overcrowding on certain trains and in order to alleviate the problem longer trains were employed.

SE&C the September 1915 Timetable

Larger locomotives appeared on some trains on the Mid Kent, Caterham and Redhill routes. A Borsig built L Class 4-4-0 hauled the 17.20 London Bridge to Caterham [first stop Purley in 22 minutes] and returned to London on the 21.05 ex Caterham. The J Class 0-6-4 Tank's, after not surprisingly failing to meet the challenge of the 12.00 Hastings to Cannon Street were employed on Suburban trains. One hauled the heavy [a photograph of No.614 shows the locomotive at the head of the train standing beyond the platform at Addiscombe] 07.33 Croydon, Addiscombe Road to London Bridge [Ref.1]. The J's also worked from Redhill to Reading and Tonbridge, in 1915 one usually hauled the 13.10 ex Reading due Cannon Street at 15.46.

The September 1915 Timetable [prior to the land-slip] still provided a good service to Dover and the Kent Coast Resorts, although there were no Boat trains. There were trains from Charing Cross to Dover at: 09.05 [London Bridge 09.13], with stops at New Cross and Tonbridge reached Ashford at 10.35 and Dover at 11.33 after stopping at all intermediate stations - 11.05 with additional stops at Hither Green and Paddock Wood and a conditional stop at Headcorn was 12 minutes slower overall to Dover - 15.00, after stops at Waterloo and London Bridge ran from there to Ashford in 71 minutes and with further stops at Sandling and Shorncliffe and the two Folkestone stations gave an overall time from to Dover of 2 hours 10 minutes, the train reached Deal at 17.32 and continued as an all stations service to Margate Sands, arrival 18.39 - 16.25 ran into Cannon Street, departed at 16.34, 88 minutes non stop to Folkestone with an 18.15 arrival at Dover Harbour, it continued to Canterbury West via Minster, arrival time 19.24 by this roundabout route, 107 miles from Charing Cross - 17.25 and 19.05 both made 13 stops and reached Dover in 2 hours 40 minutes - 21.45, in and out of Cannon Street and with 14 stops, two of which were conditional, required nine minutes more.

The through train from the Great Western Railway departed Reading General 14.45, stopped at Guildford and reached Redhill in 74 minutes. It left Redhill at 16.02, reached Tonbridge 27 minutes later, ran from there to Ashford in 30 minutes, after a further five stops, reached Dover at 17.57 and terminated at Deal 24 minutes later. There was one train from London via Redhill, the 07.40 ex Cannon Street, all stations between East Croydon and Ashford except for a 27 minutes non stop run from Redhill to Tonbridge.

Hastings was served by connections at Tonbridge from the 09.05 and 11.05 ex Charing Cross, the 10.39 ex Tonbridge ran to Hastings in 66 minutes with five stops and the 12.11 with one less stop was nine minutes quicker. The 15.45 ex Charing Cross ran non stop from Cannon Street to Tunbridge Wells Central in the smart time of 48 minutes, from there to the next stop at West St. Leonards in 40 minutes and with a further stop at St. Leonards reached Hastings at 17.30. The 16.50 ex Charing Cross [17.00 from Cannon Street] had the same schedule to Tunbridge Wells, then stopped at Robertsbridge, 18.11, St. Leonards 18.30 and arrived Hastings 18.35. The 17.25 ex Charing Cross left London Bridge 11 minutes later, ran non stop to Sevenoaks in 31 minutes and stopped at all stations to Wadhurst where it terminated at 18.49.

SE&C the September 1915 Timetable

The rear part detached at Tonbridge ran to Dover Harbour. There was one train from Victoria, the 21.30, first stop Sevenoaks in 36 minutes, Tunbridge Wells reached at 22.28 and with further stops at Robertsbridge and all subsequent stations Hastings at 23.22.

The 06.30 from Dover Harbour [05.55 ex Deal on Mondays] ran to Tonbridge, with intermediate stops at Folkestone Central and Ashford, in 86 minutes. At Tonbridge, it connected with the 07.05 ex Hastings, all stations to Robertsbridge, Tunbridge Wells and Southborough, left at 08.15, stopped at Sevenoaks, reached London Bridge at 09.00 and Cannon Street five minutes later. The 07.00 ex Dover Harbour, with 12 stops, ran to Cannon Street in the same time i.e. 2 hours 35 minutes, from Sevenoaks to Cannon Street in 30 minutes. The 08.05 from Dover Harbour [07.39 ex Deal] ran non stop from Folkestone Central to Cannon Street in 90 minutes, arrival 10.00. It was followed four minutes later by a train from Folkestone, which with five stops reached Cannon Street at 10.34, the last stop Paddock Wood, from there to Cannon Street 54 minutes. The 09.15 ex Dover Harbour left Folkestone Central 58 minutes later, stopped all stations to Ashford, then Paddock Wood from where it ran to Cannon Street in 49 minutes, arrival 11.40. On Mondays there was a 10.00 ex Deal, 10.25 from Dover Harbour, 10.40 from Folkestone, non stop in 82 minutes to London Bridge and Charing Cross arrival at 12.12.

There were semi-fast trains at 12.35 and 16.15 from Dover, 16 and 19 stops respectively, to Cannon Street and Charing Cross in 2 hours 43 minutes and 3 hours 3 minutes. The 14.15 from Dover connected with the 14.10 ex Margate which ran via Redhill and finally reached London Bridge at 17.45 and Charing Cross nine minutes later. The 16.56 from Dover Priory [16.40 ex. Deal] stopped at all stations to Ashford and then ran via Maidstone [32 minutes from Ashford, 48 minutes from there to the next stop at Hither Green] and reached London Bridge at 19.27. The final Up train, the 19.55 ex Dover Harbour, made five stops and reached London Bridge in 2 hours 5 minutes.

There were Business services from Hastings at 08.05, 08.35 and 08.56: the first stopped at all stations as far as Crowhurst, then Robertsbridge and Tunbridge Wells with departure from there at 09.00 and the Cannon Street arrival at 09.45 - the second with the same stops was allowed two minutes more over the final stage - the third served all stations to Tunbridge Wells, then ran from there to London Bridge in 47 minutes and terminated Charing Cross at 11.07. During the day trains left Hastings at 12.00, 14.00, 15.50, 18.07 and 21.00, they stopped at all stations to Tonbridge, overall journey times from Hastings to Cannon Street were between two and a half hours and 2 hours 51 minutes. The 19.12 and 19.55 both stopped four times before Tunbridge Wells, the first reached London Bridge at 21.00 and Charing Cross 12 minutes later, after stops at Orpington and New Cross, the second at 19.55 after a stop at Southborough, connected with the 19.55 ex Dover Harbour at Tonbridge. The Up Victoria train left at 17.00, stopped all stations to Crowhurst, then Tunbridge Wells and Herne Hill and reached Victoria at 18.44.

SE&C the September 1915 Timetable

The first Margate and Dover train from Victoria via the ex LC&D route left at 09.15, it ran from Herne Hill to Chatham non stop in 43 minutes and reached Dover Priory in 2 hours 16 minutes after stops at Sittingborne, Faversham, Canterbury East and Kearsney. The Margate portion reached there at 11.45. The 10.45 ex Victoria ran Herne Hill to Faversham in 63 minutes, then stopped all stations and reached the resort at 12.54. The 12.15 ex Holborn Viaduct [two minutes later from St. Pauls] after ten stops reached Margate at 14.48, the Dover Harbour portion, after eight stops arrived there at 15.02. The 14.17 and 15.25 ex Victoria ran to Margate in 2 hours 38 minutes and 97 minutes respectively, ten stops on the first and only one on the second, Westgate, 90 minutes from Victoria. The 16.23 ran to Dover, first stop Rochester, Dover in 2 hours 51 minutes. The longstanding 17.10 ex Holborn Viaduct stopped at St. Pauls and then Margate 95 minutes later, a portion slipped at Faversham followed all stations to Margate. The 17.30 ex Victoria was a semi-fast service to Faversham. The 18.12 ex Charing Cross, London Bridge at 18.24, Chatham at 19.16, ran from there to Margate in 45 minutes, with a portion slipped at Faversham. The 19.45 ex Victoria, semi-fast to Dover Harbour, reached there in 2 hours 37 minutes with eleven stops and Margate in 2 hours 32 minutes.

The Up 07.38 and 08.07 from Dover Harbour and Margate both stopped at all stations to Faversham where they combined and ran non stop to Charing Cross in 68 minutes, arrival 10.01. There was a Mondays 09.02 Margate to St Pauls, non stop in 95 minutes. The 09.30 ex Dover Harbour stopped at the Priory, Kearsney, Canterbury East, 36 minutes later at Chatham, 45 minutes later at Herne Hill and reached Victoria in 2 hours 10 minutes. The 10.15 from Margate, stopped at Westgate, ran from there to the next stop at Herne Hill in 93 minutes and arrived at Victoria at 12.15. The 12.01, 14.12 and 15.43 from Margate with 13, seven and eight stops reached Victoria in 2 hours 46 minutes, 2 hours 16 minutes and Holborn Viaduct in 2 hours 34 minutes respectively. The 12.01 ran non stop from Rochester to Victoria in 58 minutes, the 15.43 from Chatham to Herne Hill in 48 minutes. There were connections from Dover Harbour at 11.45, 13.55 and 15.38. The 17.22 from Margate maintained the non stop 90 minutes booking to Victoria, the 18.03 and 19.35 with connections at 17.55 and 19.25 from Dover Harbour, reached Victoria at 20.32 and 21.56 with nine stops en route.

The fastest time between Ashford and Margate in the Down direction was 67 minutes by the 13.00 from Ashford with six stops, in the reverse direction the 19.09 from Margate took 71 minutes with six stops.

There were some reductions in both frequency and speed on the Caterham and Reading service since the outbreak of War. The average time to Dorking from London Bridge between 16.23 and 18.52 was 59 minutes. The 16.23 and 17.24 ran to Redhill the first stop in 32 and 34 minutes and continued all stations to Reading, the 18.02, to Merstham in 32 minutes, the 18.52 made stops at East Croydon, Purley and all stations to Chilworth. The 09.37 gave the best time between London Bridge and Reading i.e. 2 hours 38 minutes.

SE&C the August 1918 Timetable

There were six morning trains from Dorking, culminating in the 10.02, average journey time to London Bridge 57 minutes. The best were the 08.54 [08.30 ex Chilworth], 54 minutes to London Bridge with stops at Boxhill, Betchworth and Reigate [departure 09.11] and the 10.12, [08.45 ex Reading, to Redhill in 93 minutes with ten stops] stops at Reigate, Redhill and Purley, 50 minutes.

The SE&C August 1918 Timetable was a mere shadow of its former self. C.J.Allen in 1917 [Ref.2] said the "SE&C has practically no decent schedule except Sandling Junction to Tonbridge in 41 minutes on the Morning Folkestone Express". On the South Eastern Main Line the 09.10 ex Charing Cross [09.20 from London Bridge] reached Ashford at 10.53, after a stop at Tonbridge, Folkestone Junction at 11.42 and Dover Harbour at 13.02 via Minster and Deal. The 11.00 ran via Maidstone, 53 minutes from Hither Green to Maidstone, 36 minutes from there to Ashford, reached at 12.53 and Folkestone an hour later. The 17.00 Victoria to Walmer also used the Maidstone route, 67 minutes to the first stop at Maidstone, 36 minutes on to Ashford and with stops at Canterbury West, Sandwich and Deal the overall time was two minutes under three hours.

The 15.00 ex Charing Cross stopped at London Bridge, Tonbridge, Ashford, Sandling Junction, stations after and reached Folkestone Junction in 2 hours 26 minutes. The 16.30 ran non stop to Ashford in 87 minutes [before the War it reached Dover in only three minutes more] and with stops at all stations afterwards arrived at Folkestone Junction in 2 hours 47 minutes from Charing Cross. The 17.25 ex Charing Cross completed the journey to Folkestone Junction in three minutes over three hours, the 19.15 with eleven stops in exactly three hours, marginally beaten by the 22.10 ex London Bridge, which with nine stops and two conditional took 11 minutes less over the slightly shorter distance. The 22.00 connected at Ashford with the 00.50 to Dover, 88 minutes with four intermediate stops. The best time from London to Dover by this route was 3 hours 37 minutes by the 16.30 ex Charing Cross.

Hastings was still accorded a reasonable service: 10.45 ex Charing Cross, London Bridge 10.51, 53 minutes to Tonbridge, another 62 minutes to Hastings with stops at Tunbridge Wells and West St Leonards - 15.50, 53 minutes to first stop Tonbridge, 65 minutes to Hastings with stops at Tunbridge Wells, Wadhurst and West St. Leonards - 17.05 ex Cannon Street, 64 minutes to Tunbridge Wells and after Robertsbridge and West St. Leonards Hastings in 117 minutes - 17.25 ex Cannon Street ran to Wadhurst, arrival 18.55, London Bridge to Sevenoaks 40 minutes - 18.00 ex Charing Cross, London Bridge 18.05, stops at Sevenoaks and Tonbridge reached Tunbridge Wells at 19.17, all stations to Hastings, 20.35. There were trains from Hastings at: 08.00, three stops to Tunbridge Wells, 58 minutes, then non stop to Cannon Street 56 minutes - 09.10, three stops to Tunbridge Wells, 50 minutes, then with a stop at Tonbridge 63 minutes to London Bridge, Charing Cross 11 minutes later - 16.45, stops at West St. Leonards and Tunbridge Wells, London Bridge in 108 minutes and Charing Cross 11 minutes later. No others trains ran between Hastings and London in less than two hours.

SE&C the August 1918 Timetable

The Chatham section service had suffered several major decelerations, the last in May 1918. At the end of the War there were five Down trains non stop from Victoria to Rochester or Chatham in 59 or 60 minutes. The best time to Margate was by the 17.10 ex Holborn Viaduct, [17.12 from St. Pauls] which ran from St Pauls to Faversham in 85 minutes, stopped all stations to Ramsgate and reached Margate in 2 hours 23 minutes, the Dover connection arrived at the Priory station at 19.53. The 10.45 ex Victoria stopped Herne Hill, ran non stop to Faversham in 77 minutes, the respective portions from there to Margate and Dover served all stations and reached their destinations at 13.12 and 13.58. The fastest train to Dover was the 09.20 ex Victoria which with five stops, reached the Harbour in 2 hours 35 minutes, the next quickest, 18.15 from Cannon Street, 2 hours 43 minutes with six stops, the Margate portion reached there in 2 hours 35 minutes.

Deal and Walmer, on Fridays had an evening train, with a corresponding Up Monday morning working. The Down left Charing Cross at 17.00, the Up Deal at 06.00 and Walmer at 06.05. The Up train ran from Deal to Ashford in 57 minutes with stops at Sandwich and Canterbury, then via Maidstone with an allowance of 73 minutes over the final stage from Maidstone to Victoria, the overall average speed of this "special express" was 34 miles per hour.

The best train from Folkestone to London, the 07.55 ran from Ashford to Cannon Street in 82 minutes, overall time Folkestone to Cannon Street 2 hours 10 minutes. The next quickest was the night train at 01.45, which made the traditional stops at Staplehurst and Tonbridge and was three minutes slower, all others required in excess of two hours and a half. The 08.10 ex Dover Harbour achieved the best time to London Bridge via Minster and Ashford, 3 hours 46 minutes. The best on the Chatham route, the 09.10 ex the Harbour, reached Victoria in 2 hours 35 minutes with four stops. The 07.25 served all stations as far as Faversham, ran non stop from there to Cannon Street, after combining with the 07.49 ex. Margate and was a minute slower, arrival 10.01. The other six trains ran from Dover to London in about 3 hours, the 09.35 stopped at most stations as far as Bromley and finally reached Victoria in 4 hours 2 minutes, a triumphant average of 19½ miles per hour. Margate was better served, the 07.12, with four stops took 2 hours 3 minutes to Cannon Street; the 10.13 with two less stops was two minutes quicker, the same time as the 17.17 with only the one stop at Chatham.

The good citizens of Dorking were still offered five evening trains from London Bridge commencing at 16.23 and finishing at 19.33, the average journey time however had declined to 70 minutes. The best trains were the 16.18 from Cannon Street, non stop London Bridge to Redhill in 35 minutes and the 17.20, non stop London Bridge to Coulsdon South in 28 minutes, overall times between London Bridge and Dorking 62 and 65 minutes. There were five trains from Dorking, commencing with the 07.25 and finishing with the 09.12, average time to London Bridge 65 minutes, best 56 minutes by the 08.30 ex Chilworth, which stopped at Betchworth and Reigate, then non stop to London Bridge in 40 minutes.

SE&C performance between Folkestone and London in 1915

The maintenance of these business trains, bearing in mind the amount of extra Military traffic travelling via Redhill and the available alternative LB&SC route between Dorking and London, is surprising. The number of trains on the Redhill Reading route increased from 1913 to 1918 by 63 percent.

Despite the Military track occupancy in the early years of the War, there were still occasions when the standard of locomotive performance on the Dover and Kent Coast routes approached pre War levels.

The "Imperial A" expresses for VIP's ran on demand, at thirty minutes notice from Charing Cross to Folkestone. These were light formations, one saloon and one bogie brake and were given absolute precedence on the Railway, 283 ran during the War years, typically on August 14th 1914 Viscount French was hastened down to Dover in 80 minutes. In addition to these prestigious services the SE&C ran 101,872 specials [excluding empty stock workings] between August 15th 1914 and December 31st 1918, according to Field Marshall Haig, [average 60-70 trains every day for over four years].

Scheduled passenger services inevitably loaded heavily as frequency reduced, eg 16.25 ex Charing Cross routinely twelve bogie coaches in 1916 as far as Ashford where a portion was slipped, a heavy haulage proposition for an E Class 4-4-0. Train weights in 1915 were still reasonable, two Monday morning journeys on the 10.40 Folkestone [10.00 ex Deal] involved loads of 215 and 205 tons [Ref.3].

E Class 4-4-0's Nos.732 and 502 arrived at Cannon Street 2 minutes 20 seconds and six and a half minutes late, schedule 82 minutes, Net times were within schedule. Number 732 passed Ashford in 19¾ minutes, averaged slightly over 60 miles per hour onwards to Paddock Wood, was slowed by signals before Tonbridge and ran the uphill 13 miles to Knockholt in 19 minutes 10 seconds. Hither Green [62.8 miles] was passed in 74 minutes 50 seconds. Number 502 made a quicker start, Ashford, 18 minutes 40 seconds, 61.5 miles per hour average to Paddock Wood, 44 minutes 25 seconds to Tonbridge [40.4 miles from Folkestone]. Tonbridge to Knockholt took 21 minutes 10 seconds and at Hither Green No.502 was actually ten seconds behind No.732. An L Class 4-4-0 No.776 was quicker from Tonbridge to London Bridge, although with only 195 tons on the 21.18 from Tonbridge [19.55 ex Dover]. It climbed to Knockholt in 19 minutes 40 seconds from the Tonbridge start and passed St. Johns, 24.0 miles, in 29 minutes 35 seconds, the average from Knockholt to St Johns was 67 miles per hour, which would suggest the maximum was around 80. The stop at London Bridge was made in exactly 35 minutes from Tonbridge, a gain on schedule of seven minutes.

A round Sunday trip [Ref.4] involved poor timekeeping. L Class 4-4-0 No.771 with 260 tons on the 10.02 ex Charing Cross climbed to Knockholt at 35 miles per hour after the Hither Green stop, passed Sevenoaks in 23 minutes 47 seconds, Tonbridge after a signal check in 32 minutes 9 seconds and reached Ashford in 69 minutes after further checks, 62 minutes Net as per schedule.

SE&C Wartime performance between Herne Hill and the Medway Towns

The 16.52 from Dover, double headed by E Class 4-4-0's Nos.505 and 574 with 280 tons, took almost 32 minutes to pass Tonbridge from the Ashford start and ultimately lost four and a half minutes against the 71 minutes booking to London Bridge.

Good locomotive performances occurred on the Chatham section, particularly between Herne Hill and the Medway Towns. The 17.30 ex Victoria, 17.41 from Herne Hill was allowed 43 minutes to Rochester Bridge the next stop. A reboilered Kirtley M3 Class 4-4-0 No.474, with 190 tons, attained 28 miles per hour at Sydenham Hill passed in 5 minutes 3 seconds and reached Rochester in 39 minutes 17 seconds. Speeds were 54 miles per hour maximum, before Bromley, 37 on the 1/95 to Bickley, 61 at St Mary Cray, 39 at Swanley, 67 maximum on the falling grades to Farningham Road, 36 minimum on the long rise to Sole Street and 64 before the Rochester stop. The schedule for the 19.45 ex Victoria, 19.57 from Herne Hill, was 44 minutes to Chatham the next stop. A reboilered M3 No.483, with 225 tons, reached 26 miles per hour on the 1/101 before Sydenham Hill and passed the station in 5 minutes 11 seconds, subsequent speeds at the same locations as for No.483 were 50, 37, 59, 41, 65, 34 and 65. Rochester Bridge station was passed in exactly 40 minutes and the stop at Chatham made one and a half minutes ahead of schedule, 42 minutes 38 seconds.

The 14.17 ex Victoria, 14.27 from Herne Hill, schedule to Rochester [29.75 miles] was 42 minutes. E Class 4-4-0 No.491, with 225 tons, attained 29 miles per hour at Sydenham Hill, 4 minutes 52 seconds, before signal checks at Beckenham Junction. It took 12 minutes 53 seconds to pass Bromley South. Subsequent speeds were 62 miles per hour at St. Mary Cray, 47 at Swanley, 70 at Farningham Road, a minimum of 48 at Sole Street and 65 before slowing for the Rochester Bridge curve, time to Rochester 39 minutes 42 seconds, 38½ minutes Net. A D Class 4-4-0, on the same train with 220 tons, ran from Herne Hill to Rochester unchecked. It passed Sydenham Hill in 4 minutes 36 seconds at 30 miles per hour and with a maximum of 57 before, Bromley South in 11 minutes 51 seconds. Speeds afterwards were 63, 45, 69, 41 and 62 miles per hour at the same locations as No.491, time to Rochester 38 minutes 28 seconds. D Class No.738 with a heavier train, 275 tons, passed Sydenham Hill in exactly 5 minutes at 28 miles per hour. Subsequently 54, 39, 62, 44, 68, 37 and 66 miles per hour, two minutes early at Rochester, 39 minutes 53 seconds.

The 09.15 ex Victoria, 09.27 from Herne Hill, was allowed 43 minutes to the next stop at Chatham. A D class 4-4-0, with 200 tons, attained 31 miles per hour on the initial 1/101, was through Sydenham Hill in 4 minutes 36 seconds, followed by signal checks before Beckenham and later experienced further checks at Fawkham Junction, Cuxton Road signal box, Rochester Bridge and Rochester. As a consequence of these checks Chatham was reached 5 minutes 19 seconds late, however between the checks No.728 ran well, speeds were 64 miles per hour at St. Mary Cray, 49 at Swanley and 73 at Farningham Road, 38 minutes Net Herne Hill to Chatham.

SE&C immediate post War performance

The M3 Class 4-4-0's developed EDHP'S of 500-550 and 525-575 respectively on the initial gradient up to Sydenham Hill. The best performances by a Wainwright 4-4-0 were, D No.738 with 275 tons, an EDHP of 700-750, No.728, with 200 tons, 600-650 and No.733, with 220 tons, 625-675. The larger E Class 4-4-0, No.491 developed a slightly lower power output at Sydenham Hill but outperformed the smaller 4-4-0's up to Sole Street. [Ref.5]

Immediately after the end of the War [Ref.6] E Class 4-4-0 No.497 with 297 tons Tare, probably at least 320 tons Gross, on the 10.45 ex Victoria improved on the 77 minutes schedule from Herne Hill to Faversham by half a minute. Minimum speeds were 21 miles per hour at Sydenham Hill, 20 at Bickley and 25 at Sole Street. In the Up direction, another E Class, No.491 on the 15.15 from Dover had a substantial train, c.385 tons from Faversham. It ran the first stage to Sittingborne as per schedule in 12 minutes 52 seconds and lost two minutes on the 17 minutes allowance from there to Chatham, 19 minutes 2 seconds. Rochester Bridge was passed in three and three quarter minutes from the Chatham restart, Sole Street in 20 minutes 58 seconds at 17 miles per hour and Victoria reached in 60 minutes 58 seconds, a gain of one minute from Chatham.

An L Class 4-4-0 No.771 on the South Eastern Section, with 290 tons and the 09.10 ex Charing Cross, gained over two minutes against the 51 minutes schedule from London Bridge to Tonbridge. It passed New Cross in 6 minutes 43 seconds, fell to 26 miles per hour on the climb up to Knockholt, Sevenoaks in 37 minutes 53 seconds and reached Tonbridge in 48 minutes 40 seconds. Number 763, with 280 tons, on the 16.55 from Folkestone lost over a minute from Ashford to Paddock Wood, 28 minutes 18 seconds and another minute on the next stage to Tonbridge, 10 minutes 3 seconds. It was badly delayed by signals between Tonbridge and Sevenoaks. The Sevenoaks to Orpington and continuation to London Bridge stages took 14 minutes 18 seconds and 16 minutes 53 seconds start to stop, schedules 15 and 19 minutes. Rail travel at the end of the Great War had become a leisurely and at times frustrating exercise.

The SE&C issued its new Timetable of June 16th 1919. This placed it amongst the first of the U.K. Railway Companies to attempt a return to pre-War speeds. In addition to significant accelerations, it introduced new trains. Margate and Ramsgate ex Victoria at 09.10, 10.15, 11.30, 14.00, 15.15 and 19.00 and at 17.05 ex Holborn Viaduct, Folkestone 10.00, 11.00, 16.00 and 19.00 ex Charing Cross. The Hastings line had 15.40 and 21.20 ex Charing Cross to Hastings and 16.40 to Bexhill. There was a 20.25 Victoria to Dover with corresponding Up trains.

A novelty in the new timetable was the 10.15 ex London Bridge Low Level, which ran to Redhill in 36 minutes, including a stop at East Croydon, where, through carriages from Reading were attached, [these left Reading at 09.30 and after three stops reached Redhill at 10.45]

SE&C Revival of a mid Victorian Express

The combined train left Redhill at 10.54 and ran non stop to Ashford in 54 minutes, where it divided, one part for Margate reached there at 13.00 after stops at Canterbury West, Minster Junction & Ramsgate Town, the other for Folkestone. [The Folkestone to Dover line was not reopened, after the landslide in the Warren, until August 17th 1919]. There were two other Morning trains from London Bridge Low Level to Tonbridge via Redhill. The 07.50 ran the 19.9 miles from Redhill to Tonbridge the next stop in 25 minutes after which it stopped at all stations to Ashford. The 09.33 also ran from Redhill to Tonbridge in 26 minutes, a portion detached at Redhill ran from there to Reading in 90 minutes with six intermediate stops.

The return train from Margate Sands to London via Redhill left at 15.10 and reached Ashford at 16.15, where it joined with the portion from Folkestone. The combined train ran to the next stop at Redhill in 62 minutes, made a further stop at East Croydon and reached London Bridge at 18.15. The Reading portion left Redhill at 17.45 and gently made its way to the biscuit town in 110 minutes. There was a train at 15.45 from Reading that arrived Redhill at 17.10 after six stops. This connected with the 16.48 from Tonbridge which left Redhill at 17.18, after a three minutes stop and following a stop at East Croydon terminated at London Bridge at 17.58. There were three non stop trains per day between Redhill and Tonbridge and two in the opposite direction. The hardest schedule, taking into account the adverse gradients was the 09.55 from Tonbridge, to Redhill in 25 minutes. This train, after a three minutes stop at Redhill, ran from there to London Bridge including a stop at East Croydon in 32 minutes.

The Railway & Transport Monthly greeted the 10.15 ex London Bridge Low Level as the revival of a Mid Victorian Express and the return train at 15.10 from Margate, with its slower overall schedule as the revival of a service with mid Victorian speeds. In practice the main difference between the two trains was the Down one spent five minutes at the Redhill and Ashford stops in total whereas the Up train dallied for twenty one minutes. The overall time from London Bridge Low Level to Margate was 165 minutes, 185 minutes in the Up direction.

C.J.Allen, after suffering the deprivations of Wartime schedules, sampled the new SE&C accelerated timings in July 1919. He was granted the opportunity by F.H.Dent, the Company's General Manager. [Ref.7] The 13.30 ex Charing Cross allowed 90 minutes non stop to Folkestone weighed 215 tons on Allen's trip and was hauled by a D Class 4-4-0 No.740. Knockholt was passed in 28³/₄ minutes from Charing Cross at 32 miles per hour and Tonbridge in 42 minutes 40 seconds after a maximum of 71 before the slowing for the curve preceding the station. Speed recovered to 64 miles per hour at Paddock Wood, there was a slight check for signals at Marden, Ashford was passed in 71 minutes 20 seconds where a 90 tons portion was slipped, and after a signal check at Smeeth, Folkestone was reached in 88 minutes, 86¹/₂ minutes Net. In the Up direction L Class 4-4-0 No.763 had 255 tons on the 17.00 from Folkestone and maintained schedule comfortably.

SE&C performance after the 1919 accelerations

It passed London Bridge in 85¼ minutes, schedule 85 minutes, including a PWR slack before Ashford and signal checks before New Cross. The L reached 40 miles per hour on the rise to Westenhanger, a maximum of 64 between Paddock Wood and Tonbridge and passed Knockholt in 67 minutes 55 seconds from Folkestone at 36, Tonbridge to Knockholt took 20½ minutes.

Allen made his trip to Hastings on the 15.40 ex Charing Cross and returned on the 19.10 ex Hastings. In the Down direction L Class 4-4-0 No.773 had a light train, 190 tons and passed Knockholt in 27 minutes 40 seconds at 32 miles per hour after a slight check at Chelsfield. The time to Sevenoaks was 33¾ minutes, passed at 51 miles per hour, after 65 had been reached at Dunton Green. The Maximum before Tonbridge was 66 miles per hour, the station passed at 35 in 41 minutes 35 seconds and Tunbridge Wells in 50½ minutes, afterwards the maximum was 71 at Etchingham. With easy running onwards, the stop at St. Leonards was made in 84 minutes 20 seconds; schedule from Charing Cross 85 minutes, Allen reckoned the Net time was 82 minutes. Number 773 had an even lighter train, 150 tons. Starting from Crowhurst it attained 64 miles per hour at Robertsbridge, passed Etchingham in 13 minutes 25 seconds at 62 and then arrived two and a half minutes late at Tunbridge Wells due to a signal check at Wadhurst, schedule 30 minutes. The continuation to London Bridge, schedule 50 minutes, was completed in 48 minutes 5 seconds with a minor signal check at Grove Park.

The 09.10 Victoria to Margate was subject to a slowing at Rochester, consequent to the fire on the Medway Bridge on June 29th, and a special stop at Chatham. D Class 4-4-0 No.747 with 280 tons passed Herne Hill in exactly 9 minutes, fell to 27 miles per hour at Sydenham Hill, to 33 at Bickley, reached 61 at Farningham Road, fell to 31 at Sole Street and stopped at Chatham in 51 minutes 5 seconds. Net time 50½ minutes compared with a schedule passing time of 48 minutes. From the restart it passed Sittingborne in 16 minutes 25 seconds at 60 miles per hour and Faversham in 25 minutes 5 seconds where a slip was made reducing the load to 175 tons. The maximum at Birchington was 71 miles per hour and after a PWR slack it reached Margate in 49 minutes 20 seconds, 48 minutes Net from Chatham. In the Up direction on the 11.54 from Whitstable, schedule to Victoria 84 minutes, an extra stop was made at Chatham. D Class 4-4-0 No.747 with 190 tons ran from Whitstable to the Chatham in 29¾ minutes, the maximum at Sittingborne was 66 miles per hour, minimum 48 at Newington and a final maximum of 64 at Rainham. Rochester Bridge was passed in three minutes and a quarter from the restart and with a minimum of 27 miles per hour on the 1/100, Sole Street in 12 minutes 20 seconds. The maximum at Farningham Road was 68 miles per hour, Bromley was passed in 31 minutes 35 seconds after a signal check, there was a brief signal check at Shortlands before diversion via the Catford loop, despite which Victoria was reached in 51¼ minutes. The Chatham stop lasted 2 minutes 20 seconds; the total time from Whitstable to Victoria was 83 minutes 20 seconds, an indication of the generosity of the 84 minutes schedule, rather than the quality of the locomotive performance.

SE&C New Maunsell locomotives and rebuilds

Two months after the new timetables came into force W.J.Scott observed that the Folkestone and Hastings trains usually entrusted to L Class 4-4-0's, kept time comfortably. By contrast the Wainwright 4-4-0's struggled with the Kent Coast trains, particularly losing time on the 90 and 92 minutes non stop timings to and from Margate. [Ref.8]. Two hundred tons appeared to be the heaviest train with which time could be maintained. Plus ca change!

The SE&C continued improving its train services up to the formation of the Southern Railway, although sensibly it eased the schedules of some of the Kent Coast Expresses. Concomitant with this, the new Locomotive Chief, Richard Maunsell introduced more locomotives. Maunsell and his team commenced design work on a six couple passenger Tank in 1914, but owing to the exigencies of war the first one, No.790 did not enter service until June 1917. Number 790, a 2-6-4 Tank, had 6 feet diameter coupled wheels and two outside cylinders, 19 inches diameter by 26 inches stroke. The boiler had a working pressure of 200 pounds per square inch and a total heating area of 1,729 square feet [1,391 square feet in the boiler tubes, 135 square feet in the firebox and 203 square feet in the superheater]. The firegrate area was 25 square feet and the total locomotive weighed 82½ tons. The coal capacity was two and a half tons and water capacity 2,110 gallons. Thirty-nine days after No.790 entered service, a 2-6-0 tender version of the locomotive emerged from Ashford Works. This was N Class 2-6-0 No.810, dimensions were the same as the 2-6-4 Tank except the driving wheel diameter, reduced to 5 feet 6 inches. The reduced wheel diameter reflected the intention that they were intended for heavy freight traffic, although in practice over the next half century they found favour as general mixed traffic locomotives. Eleven more of the Class were built at Ashford before 1923.

The SE&C decided towards the end of the War that when normal services were restored, Boat Train traffic would be handled entirely at Victoria station. This involved running over the LC&D lines in South London and the Suburbs even if the South Eastern route via Tonbridge was used. The L Class 4-4-0's were too heavy for the LC&D routes. The Wainwright E Class 4-4-0's were considered capable of hauling 250 tons trains, 50 tons short of the predicted requirement. Maunsell was therefore effectively set the task of designing a locomotive, which combined the power characteristics of an L Class 4-4-0 and the weight of an E Class 4-4-0. E Class 4-4-0 No.179 was modified / rebuilt at Ashford Works during a three months period in the winter of 1918/1919. Number 179 was tested for some months and after several attempts to provide adequate piston valves and some modifications to the mechanical lubricators, ten more locomotives were rebuilt by the Beyer Peacock Company. They entered service between February and September 1920. The E1 Class, as the rebuilt E's were designated, had 6 feet 6 inches diameter coupled wheels and two inside cylinders, 19 inches diameter by 26 inches stroke. The boiler working pressure was 180 pounds per square inch, the total heating area 1,528 square feet [1,150 square feet in the tubes, 127 square feet in the firebox and 251 square feet in the superheater, [No.179 had 23 square feet less area in the superheater].

SE&C Testing the rebuilt 4-4-0's

The achievement of Maunsell and his team was to fit a boiler with a superheater to an E Class locomotive, without increasing the overall locomotive weight. [Official figures show an increase of a quarter of a ton but weight calculations were such that the difference was probably more theoretical than real]. Ten D Class 4-4-0's were similarly modified, by Beyer Peacock, in 1921, in this case the increase in weight was one and a quarter tons, to 51¼ tons. These later locomotives, plus two more at Ashford in 1922, following the success of the earlier ones, were rebuilt in an attempt to provide adequate power for the Kent Coast services.

H Holcroft comprehensively described the testing and performance of the rebuilt 4-4-0's on Boat Train duties in Volume II of his "Locomotive Adventure". [Ref.9]. He provided details of eleven footplate trips between Victoria and Dover [or in the reverse direction] made between November 29th and December 24th 1921. On nine occasions the train weighed between 281 and 294 tons Tare, on the other two 250 and 275 tons. The overall times from Victoria to Dover on six runs were between 99¾ and 105½ minutes, on the Up runs they varied between 105¼ and 110½ minutes. Although undoubtedly the presence of a "notable" on the footplate would have had either a calming influence on the more exuberant footplate crews or conversely induced a sense of urgency amongst the more soporific, the variations between particular efforts is very noticeable.

The best Down performance was with E1 Class 4-4-0 No.19 and 281 tons on December 6th. Signal checks delayed the train initially, Knockholt passed in 34½ minutes from where the 60.1 miles to Dover were run in 65¼ minutes with a slight delay for signals at Chart, overall probably 96 minutes Net. Although difficult to interpret, it appears the E1 performed the equivalent of a maintained 50 miles per hour on the 1/280 before Westenhanger, an EDHP of 725-775, [Holcroft gave 36½ minutes for the 35.9 miles Tonbridge to Sandling]. Allowing for the work done in accelerating from 30 miles per hour at Tonbridge and the effect of the slight signal check at Chart, this required a maintained EDHP of 600-650 for over thirty minutes. The boiler pressure only fell slightly, 175 to 170 pounds per square inch, with both injectors on for the last ten minutes, controls mainly at half regulator and thirty per cent cut off.

The best Up run was with No.19 on the 29th November, with 281 tons probably 300 tons Gross, when it reached Victoria in 105¼ minutes. The average from Ashford to Tonbridge was 65 miles per hour and from there to Knockholt 34. The locomotive was driven vigorously; full regulator and 30 percent cut off as far as Folkestone where boiler pressure fell to 140 pounds per square inch, the cut off was then lengthened to 33 but reduced back to 30 at Sandling, still with the regulator full open. This setting was maintained until slowing for the Tonbridge slack, pressure recovered to 175 pounds per square inch at Sandling and held to Tonbridge. The cut off was lengthened to 35 percent after Tonbridge, boiler pressure dropped to 140 pounds per square inch by Sevenoaks and the second half of the rising grades to Knockholt were taken with the regulator half open and the cut off set at 33 per cent.

SE&C Comparative Tests, D1 vs L vs K in 1922

Holcroft made further observations in 1922, including a comparison of the D1 and E1 Class 4-4-0's during June, August and September. He deduced that the E1's were more suited to hauling 300 ton Boat Trains, but not surprisingly there was very little in it. The performances in 1922 will be reviewed later but were similar to his experiences in 1921 although no individual run was as good as the previous best. An interesting observation was on January 31st, when No.511 with 300 tons ran via the Chatham route and reached Dover Marine in 107½ minutes from Victoria, including signal checks at Brixton, Bickley and Rainham. The performance up the adverse gradients to Sole Street was excellent, Swanley Junction to Sole Street run in nine and a quarter minutes. The difficult 25.3 miles from Faversham to Dover Priory took 34 minutes, with obviously gentle running through Canterbury and a minimum of around 30 miles per hour before Shepherdswell.

In October and November 1922, Holcroft witnessed from the footplate a series of trials behind K Class 2-6-4 Tank No.790, L Class 4-4-0 No.761 and D1 Class 4-4-0 No.735. The trains involved were the 08.40 from Ashford, [according to the W.T.T. the schedule to the first stop at Paddock Wood was 24 minutes, then 9 minutes to the next stop at Tonbridge, 15 minutes on to Sevenoaks and 29 minutes over the final stage to London Bridge] and the 18.00 Down [stops at Sevenoaks, Tonbridge and Ashford, schedules 30, 10 and 32 minutes].

Holcroft was at pains to point out that the L. Class 4-4-0 No.761 was regarded as the star Class performer, by the running Department and that a second set of tests were carried out with D1 No.735, as it was not considered in "good nick" the first time. [Even in his eighties when writing "Locomotive Adventure" Holcroft had difficulty in conceding that the Wainwright/Surtees designed L Class 4-4-0's were in practice very competent machines] The D1 was noted running easily between Tonbridge and Ashford, whereas the L was worked with long cut offs. Train weights varied from 203 to 251 tons in the Up direction and from 221 to 278 tons in the Down.

Number 761, in the Down direction on six runs with average loads of 246 tons, achieved average times of 18 minutes pass to pass over the 11.6 miles uphill from New Cross to Knockholt and 29.85 minutes start to stop between Tonbridge and Ashford, the comparative times for the D1 No.735, with 260 tons average were 19 and 31½ minutes over the same two sections. The best individual efforts were 17¼ minutes from New Cross to Knockholt by the D1 with 265 tons and 29¼ minutes from Tonbridge to Ashford by the L with 253 tons. K Class No.790 with 247 tons average produced average times of 18 minutes over the New Cross to Knockholt section and on the only unchecked run from Tonbridge to Ashford 30½ minutes.

Number 761, in the Up direction with 224 tons average ran the 21.2 miles from Ashford to the first stop at Paddock Wood in 24.5 minutes and from the restart at Tonbridge to Sevenoaks in 13.9 minutes. Number 735 with 223 tons produced average times of 24.3 and 13.9 minutes.

SE&C the October 1922 Timetable

The best time to Paddock Wood was 22½ minutes by No.735, with 203 tons and from Tonbridge to Sevenoaks 13 minutes by No.761 with 203 tons and No.735 with 216 tons. The Tank on three occasions, with average loads of 215 tons, recorded times of 25.2 and 14.9 minutes over these two sections.

The coal consumption overall per train mile during the tests was 55 lbs. for No.761, 59 lbs. for No.735 and 51 lbs. for No.790, expressed as pounds per ton mile, 0.166lbs.for No.761, 0.185lbs for No.735 and 0.162lbs.for No.790. Although Holcroft implied that the D1 was superior to the L, in practice the tests suggested that Maunsell had succeeded with the D1 and E1 rebuilds in producing a locomotive design of similar power and efficiency to the L within the weight confines of the LC&D route. The SE&C at the end of its existence had 47 express inside cylinder 4-4-0's with superheated boilers, including the two fitted with superheaters before the War by Wainwright.

The SE&C timetable for October 1922, whilst still reflecting the importance of the Continental services now recognised the growth in ordinary passenger traffic to Folkestone and Dover. The first fast service of the day on the South Eastern main line was the 09.15 ex Charing Cross, 09.23 from London Bridge, which with stops at Tonbridge and Ashford, arrived Folkestone Central at 11.25 and Dover Marine 24 minutes later. The 09.45 ex Victoria, after a stop at Bromley South continued to Ashford in 74 minutes including a two minutes stop at Maidstone, it reached Folkestone at 11.49, after two further stops and finally Dover Priory at 12.12. The 11.00 ex Charing Cross, 11.07 from London Bridge, also ran via Maidstone and reached Ashford in 92 minutes from London Bridge including stops at Hither Green and Maidstone. The 11.15 ex Charing Cross ran non stop to Sandling Junction in 84 minutes and reached Folkestone eight minutes later. The 13.25 ex Charing Cross was non stop to Folkestone in 85 minutes and terminated after four further stops at Deal at 15.36. A portion slipped at Ashford on weekdays stopped all stations to Margate Sands, on Saturdays it only stopped at Canterbury West [87 minutes from Charing Cross], Ramsgate Town [112 minutes from Charing Cross] and reached Margate at 15.25.

During the afternoon there were departures from Charing Cross at 15.00, 16.05 and 16.30. The 15.00 reached Folkestone in exactly two hours, [the W.T.T. gave one minute less] with six intermediate stops, running time 101 minutes - the 16.05 ran non stop to Folkestone in 80 minutes - the 16.30 non stop over the 43.4 miles from London Bridge to Headcorn in 56 minutes and then with three further stops reached Folkestone in 102 minutes - the 16.30 included through coaches for Hythe and Sandgate, detached at Ashford. The Business trains left Cannon Street at 17.12 and 17.44. The first, a Bexhill train stopped at Tonbridge in 42 minutes and included three coaches detached there. They ran to the next stop at Ashford in 28 minutes, an average speed of 57 miles per hour and finally reached Folkestone at 18.47. The second stopped five times before Tonbridge [reached at 18.38], after a five minutes stop ran fast to Ashford, stopped at all stations afterwards and reached Folkestone at 19.50.

SE&C the October 1922 Timetable

There presumably was a logical reason for the Chelsfield, Knockholt, Dunton Green and Sevenoaks stops before the fast run from Tonbridge to Ashford. Earlier in 1922 it left Cannon Street at 17.42, omitted Chelsfield but served all stations between Tonbridge and Ashford and reached Folkestone at 20.20.

The three Evening trains from Charing Cross left at:- 17.15, non stop London Bridge to Maidstone 59 minutes, then Ashford, Sandling Junction and Folkestone Central, Folkestone Junction in 2 hours 10 minutes - 19.00, the second daily train with the recently introduced 80 minutes booking to Folkestone, average speed 52.5 miles per hour - 21.30 stopped at London Bridge, Tonbridge, Ashford and Shorncliffe and reached Folkestone Central in 106 minutes, through carriages for Hastings were detached at Tonbridge. Prior to the introduction of the summer timetable the 21.30 was a Hastings train which reached Tonbridge two minutes sooner and from where a detached portion ran to Folkestone with an arrival seven minutes later. Although the 80 minutes schedule to Folkestone was the exciting booking from a locomotive performance standpoint, many shorter runs were tightly timed. All the Folkestone trains bar one continued to Dover Priory or Dover Marine, the 09.45, 11.00, 11.15, 13.25, 16.05, 16.30 and 19.00 also served Deal and Sandwich. The best time to Deal was one minute over two hours by the 19.00 ex Charing Cross, the 16.05 was two minutes slower.

The through train from the Great Western Railway departed from the General station at Reading at 13.15 and ran to Redhill in 80 minutes including stops at North Camp and Guildford. It left Redhill at 14.42 and reached Deal at 17.00 after stops at Tonbridge, Ashford, Folkestone Central, Dover Marine, Dover Priory and Walmer. A portion for Margate detached at Ashford [departure 15.58] ran to the Sands station with stops at Canterbury and Ramsgate.

On the Chatham section there was an 07.40 ex Victoria on Mondays which ran to Chatham in 50 minutes. The first Express, the "Cliftonville", 09.00, ran to Margate in 95 minutes. The 09.20 reached Dover Marine in 132 minutes with five stops, 49 minutes to Chatham the first stop. The 10.40 stopped at Bromley South, Faversham at 11.56 and all stations to Margate reached in 2 hours 5 minutes. The 14.08 ran fast to Rochester, made eight further stops and was 18 minutes slower overall. "The Granville" left at 15.15 on a 92 minutes non stop schedule to Margate and was followed five minutes later by another train, first stop Sittingborne in 62 minutes, next Faversham, then all stations to Margate reached 37 minutes after the "Granville". The 16.20 ran non stop to Chatham in 52 minutes and after eight further stops reached Dover Priory at 18.55. The "City Expresses" left Holborn Viaduct at 17.05 and 17.10. The first ran non stop to Margate in 95 minutes, the second, after a St. Pauls stop, from there to Whitstable in 87 minutes, and then after serving all stations reached Margate in exactly two hours from Holborn Viaduct. The 18.12 ex Cannon Street ran to Margate in 101 minutes with an intermediate stop at Faversham at 19.25. The last semi-fast, the 20.30 ex Victoria made its first stop at Chatham in 50 minutes and with seven more stops reached Margate in 136 minutes.

SE&C the October 1922 Timetable

There were nine weekday trains from London to Hastings in less than two hours. The 09.15, 10.40 and 14.08 ex Charing Cross all stopped at London Bridge, Sevenoaks, Tonbridge and Tunbridge Wells, schedules to Tonbridge, including the Sevenoaks stop, were 47, 42 and 49 minutes. The first two then stopped at Crowhurst and all stations to Hastings, overall times were 117 minutes and 114 minutes. The 14.08 with stops at Robertsbridge and all subsequent stations had an overall time to Hastings of exactly two hours from Charing Cross. The 15.40 ex Charing Cross, 82 minutes to the first stop at St. Leonards, reached Hastings in one hour and a half. [The W.T.T. gave passing times to Tonbridge and Tunbridge Wells of 40½ minutes and 49½ minutes from Charing Cross, the only Down Hastings train scheduled so exactly].

The 17.05, 17.12 and 18.16 all left from Cannon Street: the first reached West St. Leonards in 85 minutes including a two minutes stop at Tunbridge Wells, [split times 51 and 32 minutes] and terminated at Hastings in 95 minutes - the second, first stop Tonbridge in 44 minutes then Tunbridge Wells, Robertsbridge, Battle & Sidley, terminated at Bexhill at 18.54 – the third London Bridge to Tunbridge Wells in 48 minutes, then Wadhurst, Battle and all stations to Hastings, arrival 19.59. The last two evening trains, 19.30 and 21.30 ex Charing Cross, ran non stop to Tunbridge Wells, then with stops at Crowhurst and all stations to Hastings in one and three quarter hours overall and with additional stops at London Bridge and Tonbridge plus five stops between Tunbridge Wells and Hastings in ten minutes more respectively.

Maidstone East had two semi-fast services in addition to the Folkestone trains routed that way, the 14.12 ex Victoria took 62 minutes with a stop at Bromley, the 21.55 with further stops at Wrotham and Malling was five minutes slower.

There were six Business trains to Dorking, commencing with the 16.20 ex Cannon Street and finishing with the 18.27 ex Charing Cross, average time from London Bridge 57 minutes. The 16.20 ran London Bridge to the first stop at Redhill in 31 minutes and reached Dorking in 52 minutes. The 16.48, 16.50 from London Bridge with stops at Purley and Reigate reached Dorking at 17.39 and continued to Reading, arrival 19.10. The 17.23 [17.24 in the W.T.T.] allowed 35 minutes to Redhill was then booked over the 6.2 miles from Reigate to Dorking in eight minutes. The three later trains all ran non stop from London Bridge to Coulsdon South [the first two in 26 minutes the other in 25] and then stopped at all stations, they terminated at Aldershot, Ash and Reading respectively.

The best train to Caterham took 43 minutes from London Bridge.

There were some semi-fast's on the North Kent Line, two ran from London Bridge to Dartford in 26 minutes, a third in 30 minutes. The 16.12 ex Cannon Street, 16.15 from London Bridge ran to the next stop at Gravesend in 34 minutes and then reached Chatham at 17.08 after a stop at Strood. The 18.20 ex Cannon Street ran via Sidcup, allowed 18 minutes to there and another 18 minutes to the next stop at Gravesend.

SE&C the October 1922 Timetable

The first Express of the day from Dover Priory to London via the South Eastern Main Line, the 07.48 ran to Cannon Street in 112 minutes, non stop from Sandling to London Bridge in 87 minutes. At Ashford it passed the 07.25, which followed at 08.39 on an 85 minutes schedule to Cannon Street with four intermediate stops. The 08.27 stopped four times before Ashford, left there at 09.17 and reached London Bridge at 10.42 [Charing Cross seven minutes later] after a three minutes stop at Maidstone. The 09.12 made two additional stops before Ashford, then stopped further at Paddock Wood and Tonbridge and was allowed 91 minutes to London Bridge. The 10.15 ex Deal, 10.37 from Dover Priory ran from Folkestone Central to Charing Cross non stop in 80 minutes [arrival 12.20]. The 12.41 ex Deal left Dover Priory at 13.07, made three stops before Ashford, ran to the next stop at Tonbridge in 31 minutes and reached Charing Cross in three hours overall from Deal after a further stop at London Bridge.

The 16.47 ex Dover Marine reached Charing Cross at 18.30 after an 80 minutes run from Folkestone, the 17.05, after stops at Folkestone Central, Shorncliffe, Ashford, Maidstone, Otford and Hither Green reached London Bridge at 19.39 and Charing Cross 13 minutes later. The 19.45 and 21.10 ex Dover Marine with 11 and 14 stops had overall times to Charing Cross of 2 hours 50 minutes and 2 hours 34 minutes. The 21.10 departure was tightly timed to Tonbridge: 20 minutes Folkestone Central to Ashford and 30 minutes from there to Tonbridge, it then stopped eleven times and took another 79 minutes to reach to Charing Cross.

The through train to the Great Western Railway, which like the eastbound one included through coaches for the London and South Western Railway [detached or attached at Guildford], started from Deal at 09.10 and after stops at Walmer and both Dover stations left Folkestone Central at 10.05. The Ashford departure was at 10.34, the next two stages to Tonbridge and Redhill were allowed 31 and 26 minutes, Redhill was left at 11.37 and following two further stops Reading General was reached at 13.00. The Margate portion left there at 09.25, Ramsgate Town 13 minutes later and with a stop at Canterbury arrived at Ashford at 10.23 where it was attached to the main train.

The first service from Margate to London via the Chatham route left at 06.56, stopped at all stations as far as Chatham and was allowed 49 minutes onwards to London Bridge. The 07.20 served all stations to Whitstable, departed there at 07.53, made one further stop at Gravesend, [08.36 to 08.38] and reached London Bridge at 09.16. Both of these trains continued from London Bridge to Cannon Street. The next departure from Margate was the "City Express" at 08.05, this stopped at all stations to Faversham and ran from there to the next stop at London Bridge in 76 minutes, the 09.00 ran non stop to Victoria in 102 minutes. There were two afternoon fast's from Margate, the "Thanet Express" and the "Cliftonville" which left at 15.19 and 17.20, the first stopped at Herne Bay and then ran from there to Victoria in 86 minutes, the second was non stop from Margate in 98 minutes.

SE&C the October 1922 Timetable

The 09.08, 11.33, 13.50, 15.30 and 17.50 departures from Dover Marine provided a semi-fast service to the Medway towns and a fast one on to London. The 09.08 reached Victoria at 11.28, with three stops before Canterbury, 35 minutes from there to the next stop at Chatham and another 45 minutes to Herne Hill. The other four made 14, 10, six and nine stops between Dover and Chatham and left Chatham at:- 13.47, Rochester to Victoria non stop in 56 minutes - 15.32, Chatham to Bromley South in 41 minutes - 17.03, Chatham to Victoria in 53 minutes - 19.37, Chatham to Victoria in 55 minutes.

There were semi-fast's from Maidstone East to London at 09.13, [Victoria in 67 minutes with stops at Otford & Bromley South], 14.36 and 16.45, [60 minutes, with a stop at Bromley South].

Eight trains a day ran from Hastings to London in less than two hours, departures at 07.36, 08.10, 08.55, 09.45, 11.00, 14.30, 16.53 & 19.10 with another from Bexhill at 09.06. The first two served all stations to Crowhurst and reached Cannon Street in 99 & 98 minutes from Hastings after a stop at Tunbridge Wells, 47 & 48 minutes from there. The 08.55 ran to Charing Cross, arrival 10.29, with stops at St. Leonards, West St. Leonards, Wadhurst and London Bridge, the last stage run in 49 minutes. The Bexhill train had an overall time to Cannon Street of 94 minutes with stops at Sidley, Robertsbridge and Tunbridge Wells, 45 minutes to Cannon Street. The other five stopped all stations to Crowhurst. The 11.00 stopped at Robertsbridge and Tunbridge Wells, the other four omitted the Robertsbridge stop. The 09.45 served Tonbridge and London Bridge, the other four ran Tunbridge Wells to London Bridge in 53, 52, 51 & 50 minutes, overall times from Hastings to London Bridge were 118, 110, 106, 103 & 100 minutes.

There was one semi-fast from Reading to London via Redhill, the 09.08 [to Redhill in 95 minutes with nine stops]. Dorking had seven Business trains to London, commencing 07.25 and finishing 09.54, average time to London Bridge 60 minutes. [Five stopped six times or more between Dorking and London Bridge. The quickest were: 08.55, [07.55 ex Aldershot], stops at Box Hill, Betchworth and Reigate, non stop to London Bridge in 35 minutes, arrival 09.48 and 09.21, London Bridge 10.10, after stops at Reigate, Redhill and Coulsdon [to London Bridge in 22 minutes, 17 minutes from Purley Junction to London Bridge, faster than any LB&SC train]. The best Caterham train, the 09.10, with stops at Purley and East Croydon took 35 minutes to London Bridge.

A new service from Manchester to the Kent Coast was introduced on June 12th 1922: southbound Kensington Addison Road to Chatham non-stop in 59 minutes, Whitstable 34 minutes later, Margate 17.38 and [as with most trains terminated] Ramsgate 19 minutes later - northbound Ramsgate Harbour departure 11.00, Margate at 11.20, stops at all three stations before Herne Bay, left at 11.56 and Kensington arrival 13.35 after a stop at Chatham [split times 32 and 65 minutes].

SE&C London to London via Redhill and Tonbridge

The SE&C had few trains with journeys longer than 90 miles, Minster to Charing Cross via Dover and Folkestone, 96 miles was one, London, Redhill, Tonbridge, Maidstone, Gravesend and London another. Charing Cross to Charing Cross was 99¾ miles, Cannon Street to Cannon Street two and a half miles less. In the clockwise direction the 07.44 ex Cannon Street stopped six times before Gravesend, left there at 08.42 and with subsequent stops at Strood, Maidstone West, Yalding, Paddock Wood, Tonbridge, Redhill, Coulsdon, Purley and East Croydon reached London Bridge at 11.00. The 19.9 adversely graded miles between Tonbridge and Redhill scheduled in the smart time of 24 minutes, the average running speed from Gravesend to London Bridge was 37 miles per hour. The W.T.T. prescribed that water could be taken, by the locomotive, at Maidstone. The 14.40 ex Cannon Street stopped five times before Gravesend, omitted the Yalding stop but additionally three times between Tonbridge and Redhill, then only at East Croydon before London Bridge, reached at 17.58. These trains were often hauled by Maidstone based F1 Class 4-4-0's.

In the anti-clockwise direction the 09.33, ex London Bridge Low Level, stopped four times before Redhill, departure 10.22, then Tonbridge, Paddock Wood, Maidstone, [for ten minutes so that water could be taken], Strood and Gravesend, reached at 12.07. There were four further stops before Charing Cross, arrival 13.05. The 15.13 ex Charing Cross made five stops before Redhill, continued non stop to Tonbridge, made five more before Maidstone where it waited 19 minutes whilst locomotives were changed. The train then served all stations to Gravesend, ran from there to London Bridge the next stop, in 36 minutes and terminated at Charing Cross at 19.21. These semi-fast services were an interesting concept although one wonders how much revenue was generated between Redhill and Maidstone.

The Boat Train traffic, although perhaps not accorded the same status as before the War, remained important. The advertised Daily services in October consisted of: 09.15 Victoria to Folkestone, 97 minutes to the Harbour siding, Harbour arrival 11.00 - 11.00 [usually with a relief at 10.50] and 14.00, to Dover Marine in 103 minutes via Tonbridge - 20.00 was allowed 115 minutes. These schedules applied with maximum train weights of 300 tons Tare, except for the 14.00 limited to 285 tons. Two extra bogie coaches could be added to the train, if "passengers presenting themselves", provided the train was double headed. There were additional conditional slots in the W.T.T., in February 12th 1922 for example, from Victoria at 08.00, 08.20, 08.30, 13.50, 14.04, 14.30, 19.55 and 21.00. All these paths were via Tonbridge and Ashford, schedule to Dover Marine varied from 106 to 115 minutes.

There were scheduled departures from Dover Marine to Victoria at 08.25, 14.10 and 17.45 with overall times of 112, 105 and 105 minutes respectively and from Folkestone Harbour at 21.00 allowed 100 minutes to Victoria.

The Flushing Service now sailed from Folkestone with a connecting train from Victoria, departure 08.50.

SE&C Boat train paths from February 12th 1922

The coaches for the incoming Flushing boat [W.T.T. specified "equal 6"] left the Harbour station at 07.40, spent three minutes reversing at the Junction sidings and reached the Central station at 07.50. They were attached to the 07.10 Sandwich to Cannon Street, which left Folkestone Central at 08.10 and with stops at Sandling and London Bridge ran to Cannon Street in 90 minutes.

The Up Boat trains were subject to the vagaries of the cross Channel sailings and consequently there were a large number of conditional paths provided. If a train was required to leave either Dover Marine or Folkestone Harbour between 21.30 and 05.00 on a weekday, it was started as soon as possible on a 105 minutes schedule from Dover to Victoria via Tonbridge, if via the Maidstone route the allowance was 119 minutes. The passing times from Dover were Folkestone Junction ten minutes, Ashford 28 minutes, Tonbridge 55½ minutes, Knockholt 67 minutes, Bickley Junction 84 minutes and Herne Hill 97 minutes. If it started from Folkestone Harbour the schedule allowed five minutes to the Junction sidings, three minutes to attach the train engine and the same time to Victoria i.e.103 minutes total from Harbour to Victoria.

Trains routed via Maidstone East were allowed 58 minutes to pass that station from the Dover start, 81 minutes to Otford, 97 minutes to Bickley Junction and 110 minutes to Herne Hill. It is not obvious why a train diverted via Maidstone was allowed an extra minute from passing Herne Hill to the Victoria stop.

There were [commencing 08.15 and finishing 21.30] on weekdays 46 conditional paths, each allocated an even number, the 08.15 was No.2 and the 21.30 No.98, there were no Nos.42, 84 and 90. The Sunday paths were given odd numbers, there were no Nos.21, 41, 61, 81 and 83 and from 10.10 to 14.00 they departed as required and ran via Tonbridge. There were three paths via Maidstone, the 14.50, 15.50 and 16.30 from Dover, allowed two hours to Victoria. The 16.15, 17.10, 18.10, 18.55, 19.20, 20.05 and 20.35 ran via Chatham, times to Victoria varied from 115 to 130 minutes; the 16.15, 17.10 and 18.10 were the quickest. The remaining 36 paths were via Tonbridge, schedules varied between 105 and 130 minutes, six had the 105 minutes, Nos.82, [20.25] 86, 92, 4, 6 and 8. Numbers 2 to 16 inclusive included for possible stops at Folkestone [to attach a Harbour portion] and at Herne Hill [to detach a Mail portion for Holborn Viaduct]. The 16.30 from Dover also allowed for a Folkestone stop.

Normality, with respect to Special traffic, resumed rapidly after the end of the War. The Derby Race Meeting of 1919 was served by trains from both London Bridge and Charing Cross at 20 minutes intervals, although when traffic was slack the trains from Charing Cross stopped at London Bridge High Level. Most trains were hauled by 4-4-0 tender locomotives [Ref.10]. On Derby day itself in 1922, May 31st, there were 50 special trains to Tattenham Corner, including some made up of Main line carriage stock emanating from Hastings, Ramsgate, Dover, Chatham and Reading. Two Pullman car specials ran from Charing Cross and Cannon Street, respectively hauled by N Class 2-6-0's Nos. 812 and 817.

SE&C Introduction of the rebuilt 4-4-0's on Boat Trains

Number 811 of the same Class worked a train of L&SW stock, the usual 0-6-0 and 0-4-4 Tank's appeared on the other services plus L Class 4-4-0 No.773 and J Class 0-6-4 Tank No.611.

The most interesting aspect of Post War SE&C locomotive performance was the introduction of the rebuilt D1 and E1 Class 4-4-0's. Holcroft's writings provide exhaustive information on these excellent locomotives, particularly the previously mentioned comparative observations between D1 and E1's on Boat Trains between Mid June and Mid September 1922. He deduced that the D1's steamed more consistently, whereas the E1's rode, climbed the gradients and accelerated better. He compared speeds at Sevenoaks tunnel in the Up direction and Sydenham Hill and Bickley in the Down. His conclusion with respect to acceleration was based on comparative times from Victoria to Herne Hill and from the Tonbridge slack to Paddock Wood. He concluded that the E1's were marginally more suitable for the operation of 300 tons Boat Trains than the D1's. Six of the thirteen Down runs observed reached Dover in 103 minutes or less, double heading was employed twice, No.273 pilot to No.507 and No.591 to No.507, with 351 and 381 tons respectively.

Holcroft described eleven Up journeys, three completed in less than 107 minutes to Victoria, four within 112 minutes and within 115 minutes. Two, with several signal checks, took 117¼ and 119 minutes. The best were with E1 Class 4-4-0 No.504 and 280 tons on the 15th and 16th June, 105 and 106 minutes. Tonbridge was passed exactly to time on both days, 56½ minutes from Dover, one and a half minutes was lost on the exacting 21½ minutes schedule from there to Knockholt, the train was the 14.15 from Dover. The nearest any train came to keeping the Tonbridge to Knockholt timing was on August 31st when No.507 took 22 minutes. In terms of punctuality only three were with the 105 minutes schedule, on the 15th and 16th June and on the 27th when D1 No.735 with 279 tons lost two minutes. The others were all with the 110 minutes schedule, one arrived 30 seconds early, one 30 seconds late, the other six between one and a quarter and nine minutes late as already noted.

The Kent Coast trains were always a locomotive challenge before the War and even after the introduction of the more powerful D1 Class 4-4-0's strict punctuality remained a rarity. The first record of a rebuilt locomotive on the Kent Coast is with E1 No.504 on the 07.06 from Margate with 310 tons. [Ref.11] The crew completed the initial short stage to Westgate ten seconds inside the four minutes schedule, dropped 50 seconds on the sharp four minutes hop to Birchington and regained exactly the same amount against the 12 minutes to the next stop at Herne Bay. They then lost another minute on the seven minutes to Whitstable, recovered 70 seconds to Sittingborne [schedule 22 minutes] with 60 miles per hour attained after Faversham. Half a minute was lost on the 16 minutes schedule to Chatham despite attaining 33 miles per hour on the 1/110 and 56 before the Chatham stop. Rochester Bridge was passed in 3 minutes 25 seconds from the Chatham restart, with a maximum of 33 miles per hour after on the climb to Sole Street.

SE&C performance on the Kent Coast trains 1919

The minimum at Sole Street, passed in 15 minutes 20 seconds was 27½ miles per hour, the maximum at Farningham Road was 69 and after signal checks Hither Green was passed in 40 minutes 20 seconds and Cannon Street was reached two and three quarter minutes late, 52 minutes 40 seconds from Chatham, 48 or 49 minutes Net. The attainment of 33 miles per hour on the 1/110 after the start from Sittingborne and 27½ on the 1/100 to Sole Street required EDHP's of 850-900 and 750-800 respectively. The correspondent commented on the absence of sparks showering down on the train, the norm with the D Class 4-4-0's, a similar observation to that made by Holcroft when comparing a rebuild with an L Class 4-4-0.

E1 Class 4-4-0 No.504 performed at a level beyond the capabilities of a D. In practice, even allowing for the fact that in 1922 the unrebuilt D's hauled many of the trains, the general level of performance on the Kent Coast remained uninspiring. Some examples will serve to illustrate the point which in fact may well represent better examples of every day running.

A D Class 4-4-0 No.740 in 1919, [Ref.12] with 265 tons and D No.731, with 270 tons ran non stop from Victoria to Margate in 99½ minutes and 104¾ minutes respectively. The train on each occasion, the 09.10 had a 92 minutes schedule; Net times were computed as 95 and 97½ minutes. Maxima at Farningham Road were 65 and 66 miles per hour were followed by minima of 37 and 40 at Sole Street. On the second with the load reduced to 140 tons by slipping at Faversham, 68 miles per hour was reached near Herne Bay.

A D Class 4-4-0 No.737 with a heavy 300 tons train on the 15.15 ex Victoria ran well to pass Rochester Bridge in 49 minutes 3 seconds and reach Margate in 98 minutes 42 seconds, 95 minutes Net, after a signal check at Chatham, unfortunately the schedule was 90 minutes. A D driven well could keep the 90 minutes schedule with 200 tons but not with 50 percent more. Another D ran poorly on the same train with 265 tons, 109½ minutes with nine minutes accounted for by two signal checks. Number 491, with 320 tons was ten minutes late at Faversham, the slip portion reached there in 79 minutes 49 seconds from Victoria.

The picture was similar in the Up direction. D Class 4-4-0 No.591, with an enormous train of 380 tons, ran from Margate to a stop at Chatham in 57 minutes 3 seconds, where a Great North of Scotland designed 4-4-0 No.677, was attached as pilot. The double headed train passed Sole Street in 20 minutes and reached Victoria in 67 minutes 51 seconds, the train, the 17.20 from Margate was allowed 100 minutes to Victoria, actual running time almost 125 minutes plus time spent attaching the pilot at Chatham. On another occasion, with the normal 285 tons load, No.591 passed Faversham in 26 minutes 17 seconds, seven minutes quicker than with the 380 tons and after signals at Chatham ran well up to Sole Street falling from 33 to 27 miles per hour. There were further signal checks before Victoria reached in 104 minutes 18 seconds, 99 minutes Net, the D developed an EDHP of 675-725 on the climb to Sole Street.

SE&C performance on the Kent Coast trains 1920

The 15.20 from Margate was allowed 16 minutes to the first stop at Herne Bay and 105 minutes overall to Victoria, a D Class 4-4-0 No.737 with 270 tons took 18 minutes 56 seconds and 94 minutes 25 seconds from Herne Bay without any out of course checks. It fell to 24 miles per hour at Sole Street and took 66 minutes 32 seconds to pass Swanley from the Herne Bay start, schedule 58 minutes. The 11.00 ex Ramsgate, 11.20 from Margate, allowed 84 minutes from Whitstable to Victoria, with D Class No.496 and 310 tons, took 100 minutes exactly, 90 minutes Net. Speed fell to 22 miles per hour at Sole Street passed in 51 minutes 37 seconds from the Whitstable start. Number 747, with 200 tons, on the same train completed the course in 89¼ minutes, 85 minutes Net, with a minimum of 27 miles per hour at Sole Street, passed in 47 minutes 40 seconds. It is hardly surprising the SE&C eased schedules on many of the Kent Coast trains in 1920.

The 15.15 in 1920 [Ref.12], schedule 92 minutes to Margate, loaded to 290 tons was headed by E1 Class 4-4-0 No.179. The actual time to Margate was 98 minutes 25 seconds, maxima 68 miles per hour at Farningham Road, 66 at Sittingborne and 65 at Herne Bay. The rebuilt E performed no better than the D Class No.737 the previous year, the driver perhaps so used to arriving six or seven minutes late at Margate thought this was the schedule. On the 17.20 from Margate, E Class 4-4-0 No.176 with 315 tons passed Sole Street in 61½ minutes at 24 miles per hour before a PWR slack before Swanley and a signal check at Herne Hill. Victoria was reached 1 minute 50 seconds late, schedule 100 minutes, Net time 96 minutes.

The following year [Ref.13] D Class 4-4-0 No.741, with 285 tons ran to Margate in 99 minutes with a minute lost through a signal check, schedule 92 minutes. In the Up direction D No.493 with a similar load required 103 minutes 20 seconds from Margate to Victoria, schedule 98 minutes.

Two runs timed between Chatham and London show that on occasions D Class 4-4-0's were driven enthusiastically. The 17.50 ex Dover Marine was allowed 54 minutes from Chatham to Victoria. Number 736, with 200 tons, passed Rochester Bridge in three and a quarter minutes and with a minimum of 30 miles per hour, Sole Street in 14 minutes 35 seconds. The maximum at Farningham Road was 74 miles per hour, the time to Bickley Junction, passed at 64 miles per hour 29¾ minutes. Despite severe signal checks afterwards it reached Victoria in 52½ minutes, 47 minutes Net. The 06.40 ex Ramsgate, 08.16 from Chatham [schedule 48 minutes to London Bridge].with No.247 and 270 tons was 90 seconds slower to Sole Street where it fell to 22 miles per hour., it then attained 74 at Farningham Road, passed St Mary Cray in 28 minutes 25 seconds, Chislehurst in 31 minutes 55 seconds, and reached London Bridge three and a quarter minutes within schedule.

A return visit to Margate in 1921 indicated an improvement in performance, apparently brought about by the now regular use D1 Class 4-4-0's. [Ref.14]. The 15.15 ex Victoria headed by D1 Class 4-4-0 No.494 with 315 tons experienced signal checks initially at Beckenham Junction.

SE&C Kent Coast schedules. How difficult?

It reached 68 miles per hour at Farningham Road and fell to 39 at Sole Street. It was three and three quarter minutes late at Chatham, 51 minutes 40 seconds and lost another two minutes on to Margate. In the Up direction D1 No.246, with 310 tons, passed Faversham in 27 minutes 20 seconds [schedule 25 minutes], Sittingborne in 35 minutes 20 seconds at 65 miles per hour [schedule 33 minutes] and Rochester Bridge in 49 minutes 5 seconds [schedule 48 minutes]. The minimum at Sole Street was 28 miles per hour and with a maximum of 66 at Farningham Road the train was "on time" at Swanley, 72 minutes 40 seconds from Margate. A signal check at Beckenham Junction to 30 miles per hour led to a half a minute late arrival at Victoria, 96 minutes Net. The rebuilt 4-4-0's could keep time with 300 tons but with scant margin for any out of course delays.

In assessing the difficulties of some of the Kent Coast schedules it is apposite to consider Mr. Holcroft's Boat Train footplate trip on the 31st January with E1 Class 4-4-0 No.511 and 300 tons. Passing times were; Herne Hill eight and a half minutes, Swanley 28¼, Sole Street 38½, Chatham 48½, Sittingborne 63 and Faversham 70. The corresponding times for the 15.15 ex Victoria, the "Granville", were 9, 27, 37, 48, 60 and 68 minutes. Number 511, allowing for signal checks at Brixton, Bickley and Rainham, maintained the "Granville" schedule with 300 tons. Whether this was occasioned by Holcroft's presence on the footplate or the Boat Train crews simply ran harder is open to conjecture. The locomotive was worked at a 26 percent cut off, extended to 33 on the rise to Sydenham Hill with the regulator one third to one half open.

The Folkestone and Dover schedules, on the South Eastern route, could and usually were maintained, without Herbert Holcroft on the footplate, much of the running was entrusted to the L Class 4-4-0's before the introduction of the D1 and E1's. An L, No.777 in 1919 with 235 tons, on the 13.30 ex Charing Cross ran to Folkestone in 86 minutes 10 seconds, schedule a generous 90 minutes. There were delays for signals between Charing Cross and London Bridge, it then reached 51 miles per hour at New Cross, fell to 32 minimum at Elmstead and passed Knockholt in 27 minutes 57 seconds at 34. New Cross to Knockholt took 18 minutes 38 seconds. It was one minute early at Tonbridge, [after 72 miles per hour maximum at Hildenborough], 41 minutes 6 seconds and easily gained three more minutes afterwards. . .

The 11.00 ex Charing Cross had an 86 minutes schedule to the first stop at Sandling. L Class 4-4-0 No.763 with a heavy train, 365 tons was delayed initially and passed New Cross in 11 minutes 9 seconds. The uphill stage to Knockholt was run in 21 minutes 56 seconds and Tonbridge passed in 46 minutes 17 seconds. The running after this, even allowing for the load, was poor, Sandling reached in 92 minutes 50 seconds with 48 seconds of the lost time regained against the 8 minutes schedule to the next stop at Folkestone. L No.761 with a more normal load of 265 tons on the same train, also delayed initially, passed New Cross in 11 minutes 35 seconds. The uphill stage took 18 minutes 32 seconds with minima of 32 miles per hour at Elmstead and 38 at Knockholt.

SE&C Performance on the South Eastern Main Line 1919 to 1921

Easy running subsequently sufficed to achieve a three quarters of a minute early arrival, with another 15 seconds gained on to Folkestone. In 1920 an L Class 4-4-0 No.765, with 265 tons on the 16.00 ex Charing Cross ran to Folkestone in 89 minutes, schedule 90 minutes. [Ref.12] The New Cross to Knockholt time was 18½ minutes and the maxima afterwards 71 miles per hour at Hildenborough, 61 between Tonbridge and Ashford and 66 before the Folkestone stop, the minimum at Westenhanger 50.

A D Class 4-4-0 No.742, on the 19.25 from Folkestone with 200 tons was checked by signals on the first stage to Ashford. From the restart Tonbridge was passed in 31 minutes 40 seconds and Sevenoaks at 35 miles per hour, in 40 minutes. It reached a maximum at Dunton Green of 60 miles per hour, fell to 41 at Knockholt and reached London Bridge one minute early, 69 minutes 5 seconds from Ashford, 68½ minutes Net.

The 90 minutes schedule between Folkestone and Charing Cross was, as in the Down direction ample. An L Class 4-4-0 No.761 in 1919 with 280 tons was through Ashford in 17½ minutes and Tonbridge in 46½, with a maximum of 65 miles per hour at Smeeth. The minimum after Tonbridge was 29 miles per hour, Grove Park was passed in 75 minutes 6 seconds, after which with continuous signal checks Charing Cross was reached two and a half minutes late, 87 minutes Net. On another occasion L No.775, with 285 tons was over two minutes slower to Ashford, was checked by signals slightly at Marden, badly at Tonbridge, Hildenborough and Sevenoaks and finally stopped briefly at Polhill tunnel. The last stage from Knockholt to Charing Cross, including a brief stop before the station, occupied 22 minutes, the arrival five minutes and a quarter late, probably 87 minutes Net. A generous schedule counts for nothing without a clear road.

The 14.20 from Folkestone schedule was even more ample, 90 minutes to the first stop at London Bridge. L Class 4-4-0 No.778 with a light train, 200 tons, was stopped by signal before Ashford, it passed the station in 21¼ minutes, ran the Ashford to Tonbridge stage in 27¾ minutes and the uphill stage from there to Knockholt in 18¾ minutes, with a minimum of 34 miles per hour before Sevenoaks. The Net time to Knockholt from Folkestone was only 63 minutes, persistent signal checks caused a three and a half minutes late arrival at London Bridge, the Net time 82 minutes or less.

Two trains to Folkestone from Charing Cross had an 85 minutes schedule by 1921. On the 16.00 L Class 4-4-0 No.761 with 260 tons passed New Cross in 8 minutes 5 seconds at 55 miles per hour and Knockholt 17¼ minutes later. Speed fell to 32 miles per hour at Elmstead, rose to 43 at Orpington, fell to 34 at Knockholt, reached 68 at Dunton Green, fell to 57 entering Sevenoaks Tunnel and finally touched 77 at Hildenborough. The reward for this activity was a signal stop before Tonbridge at MP29, 37 minutes 50 seconds from Charing Cross. After a 35 seconds stop Westenhanger, 35.2 miles was passed in 38¼ minutes, 76 minutes 40 seconds from Charing Cross, with 65 miles per hour attained twice between Tonbridge and Ashford.

SE&C performance on the South Eastern Main Line

There were then further delays but the Net time was only 78 minutes.

The 13.30 was allowed 90 minutes to Folkestone and L Class 4-4-0 No.778 with 225 tons [150 tons after the Ashford slip] arrived 2 minutes 10 seconds early, maximum 67 miles per hour. A Boat Train journey around the same time, the first part of the 11.00 ex Victoria with recently rebuilt E1 Class 4-4-0 No.497 and 215 tons, gave a three and a half minutes early arrival at Dover Marine, 99 minutes 25 seconds. [Ref.13] Despite signal checks at Herne Hill and Bickley, Knockholt was passed in 29 minutes 40 seconds at 32 miles per hour, 66 was reached three times, Hildenborough, Staplehurst and before Folkestone, the minimum at Westenhanger was 51 and the Tonbridge to Sandling time 38 minutes 25 seconds.

The 17.00 from Folkestone [schedule 85 minutes to Charing Cross] with L Class 4-4-0 No.781 and 245 tons made a slow start to Ashford, 19½ minutes and only reached 64 miles per hour by Paddock Wood before a bad signals check past Tonbridge. It passed Knockholt in 68¾ minutes, attained 67 miles per hour at Hither Green, by then too much time had been lost and reached Charing Cross in 90 minutes 5 seconds, 86 minutes Net.

The 17.10 Cannon Street to Hastings in 1921, stopped on the Through line at Tonbridge to detach three coaches which were then worked to Folkestone non stop, 94 minutes overall from London. A journey by this train provided a contrast in motive power [Ref.14]. Motive power as far as Tonbridge on two occasions was L Class 4-4-0 No.776 with 290 tons, the times to the stop on the through road at Tonbridge 43¾ minutes and 42 minutes 10 seconds. Speeds on the second run were 26 miles per hour at both Elmstead and Knockholt, 61 and 67 at Dunton Green and Hildenborough. On a third run a Borsig built L [Nos.772-781] had 360 tons and lost 24 seconds on the 44 minutes schedule from Cannon Street to Tonbridge. The recorder noted feeble work up to Knockholt but vigorous running past Hildenborough.

The three coaches left at Tonbridge, after departure of the main train to Hastings were scheduled over the 40.5 miles to Folkestone in 44 minutes. On the first occasion a Kirtley M1 Class 4-4-0 No.635, built in 1880 took over. There was an initial signal check before Paddock Wood, passed in 7 minutes 55 seconds, a further bad check at Pluckley, and Ashford in 31 minutes 25 seconds. Number 635 was through Westenhanger in 40 minutes exactly and after another signal check stopped at Folkestone in 47 minutes 20 seconds, 43¼ minutes Net. Motive power next time was B1 Class 4-4-0 No.17, which ran the course in 42 minutes 13 seconds. Maxima were 66 miles per hour at Headcorn and 62 before the Folkestone stop, the average over the 34.5 miles from Paddock Wood to Shorncliffe was 62. The recorder of this run on another occasion noted a fast start to Paddock Wood, six and a half minutes, but then signals intervened. Passing times in the W.T.T. were six and a half minutes to Paddock Wood and 27 minutes to Ashford. The combined times of the two 4-4-0's, L No.776 to Tonbridge and B1 No.217 from there to Folkestone were less than 85 minutes.

SE&C Rebuilt Stirling's on the South Eastern Main Line

A third run featured F1 Class 4-4-0 No.232, initially delayed by signals, it passed Paddock Wood in eight and a half minutes and from there was slower, Paddock Wood to Ashford in 21 minutes 2 seconds compared with 20 minutes 35 seconds for the B1. Speed fell away up to Westenhanger, Sandling Junction was passed in 40 minutes 36 seconds and with a further signal check Folkestone was reached two and a half minutes late, 44 minutes Net. The load on all three runs was c.100 tons.

Holcroft rode on the footplate of F1 Class 4-4-0 No.232 with the usual three coaches in August 1922, the train then stopped at Ashford, schedule 28 minutes from Tonbridge, [57 miles per hour average]. The F1 passed Paddock Wood in seven minutes exactly and reached Ashford in 27 minutes 55 seconds. The maximum at Headcorn was around 70 miles per hour; the time from Headcorn pass to Pluckley pass was 5 minutes exactly, ten seconds less than No.232 on the previous run and 15 seconds less than the B1 when the maximum was 66 miles per hour.

There was a continuous improvement in locomotive performance on the South Eastern Main line during the last two years of the SE&C's independent existence. Two articles published in 1922 furnish a reasonable impression of the performance of the superheated 4-4-0 locomotives. [Ref.14]

The 85 minutes schedule between Charing Cross and Folkestone was reduced further to 80 minutes, the 16.05 and 19.00 ex Charing Cross and the 11.00 and 17.10 from Folkestone ran to this ambitious schedule. Earlier in the year the 16.00 one day left Charing Cross five minutes late on the 85 minutes schedule with L Class 4-4-0 No.761 and 250 tons. New Cross was passed in eight and a half minutes, the uphill stretch from there to Knockholt took 16 minutes 10 seconds, there was a PWR slack to 20 miles per hour at Dunton Green, 75 was attained before Tonbridge with the station passed in 39 minutes. The 26.6 miles from there to Ashford took 26 minutes 24 seconds, with an average of 65 miles per hour from Paddock Wood to Headcorn and the final Ashford to Folkestone stage 14 minutes 11 seconds. The overall time from Charing Cross to Folkestone was 79 minutes 35 seconds and allowing two minutes for the PWR at Dunton Green.77½ minutes Net.

Later in the same year, L Class 4-4-0 No.761 with a lighter train, 220 tons but now operating to the new schedule, was 15 seconds quicker between New Cross and Knockholt. This required 37 miles per hour minimum at Elmstead, 48 at Orpington and a final minimum of 41 at Knockholt, the station was passed in 24 minutes 20 seconds from Charing Cross. Number 761 was then after 69 miles per hour at Dunton Green, a minimum of 53 at Sevenoaks and a final maximum of 76 at Hildenborough, through Tonbridge in 37 minutes 5 seconds. A PWR slack near Headcorn spoilt the fast stretch between Tonbridge and Ashford, although with 65 miles per hour either side of the slack and a time of 14 minutes 55 seconds over the final stretch from Ashford to Folkestone, it still contrived an arrival 20 seconds inside the 80 minutes schedule, the Net time was probably 78 minutes Net.

SE&C performance on the South Eastern Main Line 1921 and 1922

An L Class 4-4-0 No.761 in the opposite direction, with 220 tons again passed Ashford in 16¾ minutes at 72 miles per hour, then slowed for a PWR slack and afterwards attained 69 before Tonbridge, which was passed one minute late, 41 minutes 55 seconds from Folkestone. At Knockholt it was only ten seconds late, 17¾ minutes from Tonbridge, at New Cross on time, 71 minutes 5 seconds and the final arrival at Charing Cross 30 seconds late. 79 minutes Net. Speeds after the Tonbridge slack were 44 miles per hour on the short level stretch after the curve, a minimum of 37 entering Sevenoaks tunnel, a maximum of 62 at Dunton Green, a final minimum of 46 at Knockholt and a maximum at Hither Green of 71. The L developed an average EDHP of 675-725 between Tonbridge and Sevenoaks.

The Boat trains as noted already were mainly entrusted to E1 Class 4-4-0's with E Class 4-4-0's deputising occasionally. E1 No. 506 on the 08.30 ex Victoria had a featherweight train, 145 tons and ran to Folkestone Junction in 87½ minutes. Tonbridge was passed in 43½ minutes, the continuation to Ashford run in 26½ minutes including a PWR slack to 15 miles per hour at Marden after 72 at Paddock Wood.

An E Class 4-4-0 No.315, in the Up direction with 315 tons on the 17.55 from Dover virtually maintained the 110 minutes schedule to Victoria. It reached 37½ miles per hour on the initial rise to Westenhanger, an EDHP of 500-550, 68 before Headcorn, there was a slack at Marden and passed Tonbridge ten seconds inside schedule, 60 minutes 20 seconds from Dover. It was almost two minutes late at Knockholt [83 minutes 54 seconds], previously it fell to 28 miles per hour before Sevenoaks tunnel, accelerated to 30 in the tunnel and fell from 54 to 31 up to Knockholt [it appears that the boiler pressure fell at the end of the climb]. The maximum at Orpington was 64 miles per hour and after a signal check at Beckenham Junction, Victoria was reached in 110½ minutes, c. 107 minutes Net, the average EDHP between Tonbridge and Knockholt was 600-650, a good performance for an E in its original Wainwright/Surtees form.

A series of nine Boat train records from Folkestone make an interesting comparison with the performance of No.315. The normal schedule from the Harbour station to Victoria was 105 minutes, including Harbour to the Junction sidings five minutes and Sandling Junction passed in 13 minutes after the arrival at Folkestone Junction. Six runs involved E1 Class 4-4-0's Nos.179, 507, 19, 165, 511 and 511 with 350, 320, 360, 300, 300 and 310 tons respectively. The starts varied considerably, on occasions, as was not infrequent with Boat trains, they would depart a few minutes early once all the passengers were on board, the Drivers presumably anticipating adverse signals when this happened, ran gently initially. The times to Sandling Junction were 11, 12¾, 11½, 12, 12¼ and ten and three quarter minutes from Folkestone Junction. Between Ashford and Tonbridge No.511 made the fastest running with 300 tons, 24 minutes 40 seconds. The next fastest, No.507 took exactly two minutes more, although on this occasion there had been a bad signal check before Ashford.

SE&C performance on the South Eastern Main Line 1921 and 1922

Locomotives on occasions were worked hard between Tonbridge and Knockholt. Number 507 ran the distance in 19 minutes and No.19 with 360 tons took 80 seconds longer. Unfortunately no speeds are available but they probably developed EDHP's of 775-825 and 810-860 between Tonbridge and Sevenoaks.

As an earnest of the merit of these two runs, the best observed by Holcroft between Tonbridge and Sevenoaks appears to have been by No.506 with 300 tons, some three months after the formation of the Southern Railway when the time from Tonbridge to Knockholt was 20¼ minutes. On this occasion there had been severe steaming problems early in the run but the safety valves lifted before Tonbridge and remained open as far as the entrance to Sevenoaks tunnel. Although Holcroft did not record the control settings on this run, on another occasion when the time was slightly slower they were, half open regulator and 35 percent cut off. Nos.507 and 19 were probably being driven on full regulator and 35 percent cut off. Holcroft noted a time of 24¾ minutes from Ashford to Tonbridge [No.19 on 29/11/1921 with 300 tons] achieved with the regulator half open and 30 percent cut off. The actual times of the six runs between Folkestone Junction and Victoria were 102½, 101, 105 minutes, 100 minutes 58 seconds, 95 minutes 45 seconds and 96 minutes 35 seconds; 99½, 95, 96, 99, 94 and 96 minutes Net.

Three runs with E Class 4-4-0's, Nos.157, 514 and 175 with 270, 250 and 350 tons produced overall times of 100 minutes 20 seconds, 99 minutes 20 seconds and 103½ minutes from Folkestone Junction to Victoria, 99, 98½ and 101 minutes Net. Number 157 was through Ashford in 21½ minutes, No.514 was one minute quicker, times on to Tonbridge were 28¾ minutes and 28 minutes 40 seconds respectively, average speeds between Pluckley and Headcorn slightly exceeded 60 miles per hour in each case. The Tonbridge to Sevenoaks stage was run in 15¼ and 15 minutes 5 seconds after which both trains were delayed by a PWR slack at Dunton Green. Number 175, with the heavier train passed Smeeth in 18 minutes, suffered a signal check and ran the Ashford to Tonbridge stage in 28½ minutes. The uphill stage to Knockholt took 24 minutes, taking into account the ten percent heavier load, a similar performance to No.315 on the Dover to Victoria Boat Train.

The SE&C assiduously courted Business traffic, particularly on the Hastings to London route and specifically Season ticket revenue. Four Down journeys in 1919 exhibit a varying level of performance [Ref.15]. L Class 4-4-0 No.773, with a mini train of 95 tons on the 11.00 ex Charing Cross, ran to the first stop at Tunbridge Wells in three and three quarter minutes less than the 52 minutes schedule despite two signal checks. The minimum at Elmstead was 40 miles per hour. The L gained another two and a half minutes on the next stage to Crowhurst, 27 minutes 23 seconds with a maximum at Robertsbridge of 68 miles per hour. The actual running time to West St Leonards, including slowing down and restarting from the two stops, was 82 minutes 47 seconds, 79 minutes Net a considerable gain on schedule, this was with the Sunday train, allowed 90 minutes.

SE&C performance on the Hastings trains 1919-1922

The weekday 15.40 ex Charing Cross was allowed 85 minutes to the first stop at St. Leonards. L Class 4-4-0 No.775 with 170 tons took 87 minutes 19 seconds after a signal check at West St. Leonards. It passed New Cross in 8 minutes 34 seconds, Knockholt in 25 minutes 2 seconds at 40 miles per hour, touched 68 before Tonbridge and then passed through the station in 38 minutes 37 seconds, after which matters were taken easily. Subsequent times were, Tunbridge Wells 47 minutes 7 seconds and Crowhurst 74 minutes 53 seconds after a PWR slack before Robertsbridge, overall 78 minutes Net. These schedules, with light trains and an L at the front end were generous.

A D Class 4-4-0 No.57 on the 09.05 ex Charing Cross [09.13 from London Bridge] had a reasonable load, 290 tons. There were signal checks before New Cross, passed in 8 minutes 28 seconds, speed fell to 28 miles per hour at Elmstead and to 30 at Knockholt passed in 29 minutes 48 seconds. Further signal checks resulted in a five and a half minutes late arrival at Tonbridge, schedule 44 minutes. After the detachment of the Folkestone portion at Tonbridge No.57 was left with only 100 tons despite which another one and a half minutes was lost on the ten minutes schedule to the next stop at Tunbridge Wells. Two minutes and a half were then regained on the 33 minutes schedule to Crowhurst. A D Class 4-4-0 No.727 with 200 tons on the 09.10 relief lost 20 minutes between Charing Cross and Hastings.

Four records in the Up direction, three starting from Hastings, one from Tunbridge Wells, and all with L Class 4-4-0's produced a more consistent pattern. Number 773, with 270 tons on the 17.00 ex Hastings lost 70 seconds over the 3.1 miles from West St. Leonards to the next stop at Crowhurst [schedule seven minutes] and another minute to Tunbridge Wells [schedule 33 minutes]. The maximum before Robertsbridge was 62 miles per hour and the minimum at Frant 30. Number 775 with 145 tons on the Weekdays 19.10 ex Hastings took 7 minutes 17 seconds from West St. Leonards to Crowhurst and 31 minutes 49 seconds from there to Tunbridge Wells, with a minimum of 33 miles per hour before Frant. Number 774 with 220 tons, on the 11.00 ex Hastings ran from Crowhurst to Tunbridge Wells in 35 minutes 7 seconds.

All four trains were scheduled from Tunbridge Wells to Charing Cross non stop in 50 minutes. L Class 4-4-0 No.773 passed New Cross in 39 minutes 54 seconds, this required 33 miles per hour sustained on the 1/122 before Sevenoaks Tunnel and 62 maximum after Knockholt. Charing Cross was reached 48 minutes 22 seconds following signal checks after New Cross. Number 775, checked after Tonbridge and before New Cross lost 53 seconds, Net times for both runs were 47½ minutes. Number 774 took 48 minutes 14 seconds with 35 miles per hour up to Sevenoaks tunnel and a minimum of 44 at Knockholt. The time to Knockholt from the start was 26 minutes 16 seconds, one minute less than No.773 after which it did not exceed 59 miles per hour. Number 780, starting from Tunbridge Wells with 225 tons, ran down to Tonbridge in 7 minutes 25 seconds, attained 43 miles per hour after the Tonbridge slack and fell to 38 at Sevenoaks Tunnel,

SE&C performance on the Hastings Trains 1919-1922

Number 780 passed Knockholt in 24 minutes 38 seconds from Tunbridge Wells and reached Charing Cross in 49 minutes after several signal checks, with a clear road the Tunbridge Wells to Charing Cross stage could have been run in 44 minutes. Number 780 developed an EDHP of 675-725 up to Sevenoaks tunnel, a similar figure to No.773 with 270 tons.

Five journeys on the 15.40 ex Charing Cross in 1920 featured a variety of motive-power; [Ref.16] L Class 4-4-0 No.772 with 190 tons, E Class 4-4-0 No.159 twice with 210 and 190 tons, D Class 4-4-0 No.487 with 265 tons and a Stirling B1 Class 4-4-0 with 190 tons. Actual overall times to St Leonards were; 87 minutes - 86 minutes 9 seconds - 85 minutes 6 seconds - 88 minutes 10 seconds - 87 minutes 40 seconds. The 15.40 was regularly delayed at West St. Leonards by the LB&SC 15.25 ex Brighton due to depart from St. Leonards at 16.52.

The L ran the New Cross to Knockholt section in 17 minutes 25 seconds including a PWR slack to 30 miles per hour. Speed rose to 49 miles per hour at Orpington and fell to 40 at Knockholt. Tonbridge was passed in 39 minutes 35 seconds, after 75 miles per hour maximum at Hildenborough and Tunbridge Wells in 49 minutes 10 seconds with 34 attained on the 1/95 before. The time to Etchingam was 64 minutes 5 seconds, passed at 72 miles per hour and to Crowhurst, after a PWR slack 76 minutes 20 seconds. The reward for this vigorous running was a long stop awaiting the departure of the LB&SC train, Net time from Charing Cross to St. Leonards was 79 minutes.

E Class 4-4-0 No.159, on two occasions fell to minima of 30 and 31 miles per hour at Elmstead and passed Knockholt in 30 minutes 13 seconds and 30 minutes 31 seconds at 33 and 37. It attained 33 and 30 miles per hour on the rising grades before Tunbridge Wells and 75 near Robertsbridge on the first run, Net times were 83¾ and 84 minutes. The D Class 4-4-0 No.487 with the increased load at a holiday period, lost three and three quarter minutes. The time to Knockholt was 32 minutes 38 seconds passed at 33 miles per hour and the minimum before Tunbridge Wells 26.

The rebuilt Stirling climbed well out of London, successive miles up at 1/120 past Elmstead run at 37.5, 35, 33.3 and 33 miles per hour, an EDHP of 500-550. Despite delays in the early stages it passed Tonbridge in 42 minutes 5 seconds and Tunbridge Wells in 51 minutes 57 seconds after a minimum of 29 miles per hour before the station. The time to Crowhurst was 80 minutes 42 seconds, after another PWR slack and a slight signal check the arrival was two and three quarter minutes late, probably 83 to 84 minutes Net. The rebuilt Stirling's performed well, although drivers invariably restrained them downhill, making timekeeping even more difficult. When the 17.05 ex Cannon Street schedule to the first stop at West St. Leonards was 87 minutes, B1 No.443 on one occasion ran exactly to time, 87 minutes 10 seconds. This schedule was considerably easier than the 15.40, equivalent to 91 minutes from Charing Cross to St. Leonards, six minutes slower than the 15.40.

SE&C performance on the Hastings trains 1919 -1922

Some summer Saturday trains ran non stop to Warrior Square; loads were heavier than weekdays, schedules commensurately slower. L Class 4-4-0 No.768 with 300 tons was delayed by signals leaving London on the Local line. It fell to 24 miles per hour at Knockholt, 23 before passing Tunbridge Wells in 62 minutes and reached Warrior Square in 102 minutes 20 seconds, schedule 102 minutes. Number 776 with 320 tons on the 17.10 ex Cannon Street fell to 23 miles per hour both up to Knockholt and before Tunbridge Wells reached one and three quarter minutes late, schedule 56 minutes.

The 19.30 ex Charing Cross was an F1 Class 4-4-0 duty, the schedule to Hastings was one and three quarters of an hour including stops at Tonbridge, Tunbridge Wells, Crowhurst, West St. Leonards and St. Leonards. Number 84 with 190 tons reached Hastings one minute early, it kept the 42 minutes schedule to Tonbridge and lost two minutes on the 10 minutes to Tunbridge Wells. There was a good start from Tunbridge Wells, Wadhurst passed in 8 minutes 40 seconds. Number 249 with ten tons less reached Tonbridge in 46½ minutes, [three and a half minutes lost by a signal stop at St Johns] ran the next stage in 11 minutes 10 seconds with 30 miles per hour on the 1/95 and arrived at Hastings two minutes late. It developed an EDHP of 525-575 between Tonbridge and Tunbridge Wells. On another occasion No.209 with 290 tons lost three minutes to Tonbridge, another F1 was attached and the two locomotives ran to Tunbridge Wells in 10 minutes 6 seconds. From the restart, No.209 passed Wadhurst in 10 minutes 47 seconds and reached Hastings seven minutes late. The Stirling 4-4-0's, with less than 200 tons, could maintain the fastest schedules on the Hastings line which was certainly not the case on the Folkestone and Kent Coast routes. The 19.30, allowing for the stops, was timed as quickly as the 15.40.

L Class 4-4-0's often worked the daytime Hastings semi-fasts and seldom required extending, with the exception of the Tonbridge to Tunbridge Wells stage, to maintain time. The 09.05 ex Charing Cross [09.13 from London Bridge] was allowed 15 minutes longer from Charing Cross to Hastings than the 19.30. L Nos.767 with 190 tons and 771 with 260 tons both arrived at Hastings on time. Number 771 ran to Tonbridge in 43½ minutes, with one minute lost by a signal check and on to Tunbridge Wells in 12 minutes 5 seconds with an attained 28 miles per hour, No. 767 took 11 minutes 41 seconds, loads were reduced at Tunbridge Wells to 110 and 150 tons.

The 13.45 ex Charing Cross stopped additionally at Sevenoaks. Three runs featured L Class 4-4-0's, Nos.774, 767 and 768 with 230, 230 and 280 tons. Times from London Bridge to Sevenoaks were 29 minutes 59 seconds, 34 minutes 41 seconds and 35 minutes 9 seconds [32½ minutes Net]. Loads were reduced to 124, 118 and 149 tons Tare at Tonbridge and times on to Tunbridge Wells were 9 minutes 38 seconds, 9 minutes 56 seconds and 11 minutes 22 seconds, schedule an optimistic nine minutes. The driver of No.768 [or perhaps crews were changed at Tunbridge Wells] made up for his desultory performance by passing Wadhurst in 7 minutes 44 seconds from the restart. All three trains reached Hastings on or slightly ahead of time.

SE&C performance on the Maidstone route 1919-1922

The 15.50 ex Charing Cross made its first stop at Tonbridge and after a further stop at Tunbridge Wells served all stations to Hastings. L Class 4-4-0 No.766 with 230 tons ran to Tonbridge in 41 minutes 39 seconds with 34 miles per hour minimum at Elstead, 47 at Orpington and a final minimum at Knockholt of 38. The New Cross to Knockholt time was 16 minutes 40 seconds. There was a change of footplate crew at Tonbridge [No.766 was allocated to Tonbridge depot] and from the restart a minute was lost on the apparently generous 12 minutes schedule to Tunbridge Wells plus a further two minutes on the stopping train section to Hastings. The experienced recorder, R.E. Charlwood, had some caustic comments to make on the subject of driver vagaries.

There was an extra Business mid-day service on Saturdays, the 13.05, which made the same stops as the 13.45 plus Hildenborough and was usually a heavy train. L Class 4-4-0 No.767 with 330 tons ran to Sevenoaks in 33 minutes 16 seconds, with a minimum of 27 miles per hour at Elmstead. The load was reduced by 100 tons at Tonbridge, the time from there to Tunbridge Wells 11 minutes 33 seconds with 29 miles per hour attained on the 1/95. Later in the journey starting from Robertsbridge the locomotive reached 33 miles per hour on the initial level stretch and sustained this speed on the following 1/100, an EDHP of 675-725, the same as before Tunbridge Wells. Battle, 6.0 miles from Robertsbridge, was passed in 9 minutes 53 seconds and the stop at Crowhurst effected in 13 minutes 21 seconds, schedule 15 minutes. Number 768 on another Saturday had 360 tons from London, reduced to 250 tons at Tonbridge. The train was ten minutes late at Tunbridge Wells mainly due to a signal stop at Orpington, which cost four minutes and the need because of the length of the train, as with No.767, to draw up twice at the Hildenborough stop. The final arrival at Hastings was five and a half minutes late.

A return journey to Maidstone illustrates a typical Kirtley or Stirling 4-4-0 duty at this time. Kirtley M3 Class 4-4-0 No.466, with 100 tons was initially badly delayed by signals and lost over seven minutes on the 20 minutes schedule from Victoria to the first stop at Bromley South. The 29 miles from there to Maidstone were then run in 37 minutes 19 seconds, schedule 39 minutes. There was a PWR slack at St. Mary Cray with the result that the first 6.8 miles to Swanley took 11 minutes 14 seconds, the next 6.7 miles to Otford were run in 7 minutes 40 seconds and Wrotham, 18.7 miles from the start was passed in 26 minutes 19 seconds. In the opposite direction on the 16.45 from Maidstone, an F1 Class 4-4-0 with the usual 100 tons ran to the Bromley stop in 37 minutes 46 seconds, schedule 39 minutes and cut the 20 minutes schedule to Victoria to 16 minutes 58 seconds.

Some London to Folkestone trains also ran via Maidstone. The 17.00 ex Folkestone Junction, 18.32 from Maidstone East, had a D Class 4-4-0 No.742 with 195 tons and passed Swanley, 22.2 miles from Maidstone, in 35 minutes 32 seconds and after a slight PWR slack reached Hither Green three minutes inside the generous 52 minutes schedule.

SE&C the K Class 2-6-4 Tank

The SE&C fast passenger services were entrusted to 4-4-0's, with the exception of the 0-4-4 Tank's on the Caterham service and the J Class 0-6-4 Tank's, although neither Class handled any of the fastest trains. In 1919 a J was used at times on the Saturday 13.05 ex Charing Cross to Hastings and on the weekdays 17.25 to Wadhurst, they purportedly kept time. This contrasts with the situation in 1914 when they were diagrammed for the 12.00 from Hastings to London and were found to be too slow on the more favourable stretches of the route.

The other notable exception to the 4-4-0 dominance was the solitary 2-6-4 Tank No.790. It regularly in 1920 performed a duty consisting of: 03.45 newspaper train Cannon Street to Folkestone - 08.16 Folkestone Junction to London, which included Pullman Cars in the formation and ran Ashford to London Bridge non stop in 69 minutes - 16.18 Cannon Street to Dorking from where it returned "light engine" to Redhill - 18.12 Redhill to Tonbridge - 19.38 Tonbridge to Cannon Street.

There is a report that No.790 was used to replace a D Class 4-4-0 on the 17.57 Cannon Street to Tonbridge via Redhill in the spring of 1922 before the track between Redhill and Tonbridge was declared "unsuitable for such a locomotive to run at speed" [Ref.17]. The 17.57 at that time stopped at all stations from Redhill to Tonbridge, allowed 37 minutes overall [there were four extra minutes between Redhill and Nutfield for "attaching purposes"] for the 19.9 miles including stops. The 18.12 train in 1920 was allowed 35 minutes and elicited no complaints concerning No.790. The issue perhaps centred on the 18.49 Redhill to Guildford which was worked by a L&SW locomotive and crew with a SE&C pilot. The 18.49, the return working of the 17.34 Waterloo to Redhill via Guildford, usually hauled by a M7 Class 0-4-4 Tank connected with the 17.57 ex Cannon Street at Redhill. It appears that for whatever reason, the appearance of No.790 adjacent to a L&SW locomotive was deemed inappropriate. Number 790 reportedly worked its various rosters satisfactorily. It has already been noted that on the tests carried out in October to November 1922 No.790 was more economical than the D1 and L Class locomotives although a poorer timekeeper.

The SE&C entered the Southern Railway with an excellent range of 4-4-0's and designs with potential, the N Class 2-6-0's and the 2-6-4 Tank No.790. It also passed on a major section of railway that after nearly a quarter of a century of the Management Committee's existence was still unable to accept a locomotive of greater axle weight than a D1 or E1 Class 4-4-0.

The SE&C bequeathed to the Southern Railway the locomotive design team that would serve the new Company for 15 years. To the end the SE&C never failed to interest, whilst it had failed to instigate any electrified mileage despite grandiose plans, its chief electrical engineer would shortly assume the role of New Works electrical engineer for the Southern Railway.

Chapter 13: References and Notes

- Ref. 1 Journal of the Stephenson Locomotive Society Vol.XX p.10
The caption by the photograph states that the J Class No.614 was hauling the 07.33, which after a stop at Woodside ran non stop to London Bridge, arrival 07.59 and reached Cannon Street four minutes later. In 1915 the train left two minutes earlier, stopped additionally at Clock House and arrived at London Bridge and Cannon Street two minutes later than previously. The 07.33 stopped at Elmers End, Clock House and Ladywell reaching London Bridge at 08.00. It was a heavy train and the last train on which Workman's fares applied.
- Ref. 2 Railway Magazine. [RM] Vol. XL p.145
- Ref. 3 [RM] Vol. XXXVII p.390-1 C.J.Allen quoting correspondents
- Ref. 4 Railway and Transport Monthly [RTM] Vol. XVIII p.174
- Ref. 5 [RM] Vol. XLV p.186-90 Allen quoting correspondents
- Ref. 6 [RTM] Vol. XVIII. p. 41
- Ref. 7 [RM] Vol. XLV p. 189-92 C.J.Allen
- Ref. 8 [RTM] Vol. XIX.p. 159-60 W.J.Scott.
- Ref. 9 Locomotive Adventure Volume II. H.Holcroft. Ian Allan Ltd. 1965
Herbert Holcroft was born in 1882. He served an apprenticeship at the Stafford Road Works of the Great Western Railway. In 1906 he joined the Swindon Drawing office and most famously is credited with the overall design of the 43xx 2-6-0 locomotives utilising standard Churchward "building blocks". Under Maunsell he was one of two principal Technical Assistants. A.F.Cook in an obituary in 1973 said "He is one of the few Railwaymen in this country who can be said to have been a locomotive designer"
- Ref. 10 [RTM] Vol. XIX p. 64-5
- Ref. 11 [RM] Vol. XLVII p. 114 Allen quoting a correspondent
- Ref. 12 [RM] Vol. XLVII p. 310-14 C.J.Allen
- Ref. 13 [RM] Vol. XLIX p. 257-9 C.J.Allen
- Ref. 14 [RM] Vol. LI p. 186-90
- Ref. 14 Locomotive News Vol. X & Vol. XI
- Ref. 15 [RTM] Vol. XIX
- Ref. 16 [RM] Vol. XLVIII & RTM Vol. XXI
- Ref. 17 D.L.Bradley, Locomotives of the South Eastern & Chatham R.C.T.S. 1967

VOLUME: 1 INDEX.

Events:

Ascot Race Traffic, 68,
Coronation Fete, 1911, 130, 131, 158, 159,
Epsom Race Meetings inc. Derby Day, 111, 212, 249-9,
Folkestone Warren earth slip, Dec. 1919, 227,
Lewes, half an hour in 1922, 224,
Maundy Thursday Bournemouth Service, 68, 80,
Medway Bridge Fire, June 1919, 238,
Railway Companies [Accounts and Returns] Act 1913, 197-189.
Royal Trains, 212-3,
Salisbury Accident, 1906, 70,
Strikes: Nine Elms footplate crews, August 1919, 191,
 Coal 1912, 122, 127,
Pullman Cars, Third Class, inauguration on LB&SC 1915, 206, 209,
Swanage and Weymouth Excursions, long nonstop runs 79, 80,
Through Working Ashford to Brighton, 1914, 228,
Traffic Survey, L&SW December 1900, 74,
World War one: Special Trains, 181, 204, 227, 243:
 Bombs, O.J.Morris journey to Portsmouth August 1917, 210,

Locomotives:

London and South Western:

Beattie. J. 231 Class 2-4-0 [1866]
 No.236. 1,
Beattie. J. "Centaur" 2-4-0 [1868] 1,
 No.95 2, - No.96 2-3,
Beattie. J."Volcano Class 2-4-0 [1871]
 No.31. 5,
Adams 46 Class 4-4-2 [1879 as 4-4-0, rebuilt 1883], 96,
Adams "445" Class 4-4-0 [1883], 6, 96,
 No.445, 6, 80, - No.447, 81, - No.451, 5, -No.454, 6,
Adams 415 Class 4-4-2Tank, 11
 No.0106, 96,
Adams "460" Class 4-4-0 [1884], 5, 6, 80, 185,
 No.472. 5, - No.473, 75, - No.474, 80, - No.475, 77,
Adams A12 "Jubilee" Class 0-4-2 [1887], 10, 11, 96, 192, 199,
 No.540, 74, - No.624, 186,
Adams T1 Class 0-4-4Tank [1888], 11, 199,
 No.8, 11
Adams X2 Class 4-4-0 [1890], 6,
 No.582. 6, 7, 14, - No.584, 8, 75, - No.593, 8, - No.594, 199,
Adams T3 Class 4-4-0 [1892], 9,
 No.558, 200, - No.564, 186, - No.571, 9, 84,
Adams T6 Class 4-4-0 [1895], 9
 No.682, 186-8, - No.683, 9, - No.685, 9
Drummond M7 Class 0-4-4Tank [1897], 12, 68, 95-6, 199, 202, 262,
 No.49, 95, - No.129, 95, - No.323, 95, - No.328, 95,

Drummond T7 Class 4-2-2-0 [1897], 12, 75, 76,
No.720, 73, 75-6, 83,
Drummond C8 Class 4-4-0 [1898], 12
Drummond T9 Class 4-4-0 [1899], 12, 13, 72, 74, 76, 87, 96,
No.114, 82, - No.118, 189, - No.119, 93-94, - No.281, 73,
No.282, 83-4, - No.285, 79, - No.286, 79, 83, - No.287, 78,
No.300, 76, - No.301, 191, - No.302, 73-4, - No.303, 196, - No.304, 84,
No.310, 79-80, - No.311, 87, 90, - No.313, 72, 75, 199, - No.314, 75,
No.702, 199, - No.703, 13-4, - No.704, 94, 192, - No.705, 73,
No.708, 72, - No.709, 77, - No.711, 14, - No.715, 72,
No.719, 14, 192-3, - No.721, 14, - No.722, 72, 84-5, 94,
No.724, 78, 83, - No.728, 79, - No.729, 72-3, No.730, 77,
No.731, 188, - No.773, 72-73, 83, 190, 191,
Drummond E10 Class 4-2-2-0 [1901], 76,
No.369, 92-3, - No.370, 83, 92-93, - No.371, 92, - No.373, 90, 92-93,
Drummond K10 Class 4-4-0 [1901], 71, 185, 199
No.380, 78, 81,
Drummond L11 Class 4-4-0 [1903], 71,
No.157, 200, No.440, 192,
Drummond S11 Class 4-4-0 [1903], 71,
No.400, 84, No.404, 192,
Drummond L12 Class 4-4-0 [1904], 71, 73, 74, 77, 78, 79, 96, 181-2, 186,
189, 193, 197, 199-200,
No.415, 75, 77, - No.416, 181, 196, - No.417, 195, - No.418, 81, 89,
No.419, 91, - No.420, 198, - No.421, 82, 181, 194, - No.422, 81, -
No.423, 82, - No.424, 79-80, 194, 195, - No.426, 61, - No.428, 92, 196,
No.429, 89, - No.427, 82, - No.430, 194, - No.431, 200,
No.432, 82, 196-7, - No.433, 77, - No.434, 91, 200,
Drummond F13 Class 4-6-0 [1905], 86,
Drummond E14 Class 4-6-0 [1907], 86, 181,
Drummond G14 Class 4-6-0 [1908], 86,
No.455, 88, 91,
Drummond P14 Class 4-6-0 [1910], 86,
Drummond T14 Class 4-6-0 [1911], 86-7, 183, 186, 189-90.
No.443, 88, 187, 189, - No.444, 90, - No.445, 87, 88, 91, - No.446, 185-
186, - No.459, 87, - No.460, 183-4, - No.462, 183-4,
Drummond D15 Class 4-4-0 [1912], 71, 72, 87, 90, 181-3, 185, 187-9, 195,
197-9,
No.463, 88, 188, - No.464, 181, 187, - No.465, 88, 181, 183-4, -
No.466, 92, 187, - No.467, 89, 90, 92-3, 183-4, 190, 195, -
No.468, 89-90, 92-3, 184-5, 189, 193, - No.469. 92, 189, 191,
No.470, 184-5, 197-9, - No.472, 188, 190-1, 193, 199,
Urie H15 Class 4-6-0 [1914], 181,
Urie N15 Class 4-6-0 [1918], 188, 194, 197, 199,
No.736, 197, - No.737, 193, - No.738, 193, - No.739, 189,
No.741, 190,
Urie S15 Class 4-6-0 [1920], 199,

London Brighton and South Coast:

Stroudley "Belgravia" Class 2-4-0 [1872], 52,

No.201, 52,

Stroudley A1 Class 0-6-0Tank [1872], 108-9.

No.646, 108, - No.668, 108,

Stroudley D1 Class 0-4-2Tank [1873], 51, 108, 210,

No.1, 55, - No.2, 56, - No.16, 50, - No.25, 50, 60, - No.28, 104, -

No.221, 55, - No.229, 225, - No.230, 55, - No.234, 60, - No.235, 217,

No.246, 129, - No.255, 129, - No.258, 217, - No.287, 55, - No.288, 61,

No.293, 55, - No.298, 129, - No.355, 55, - No.358, 55, - No.362, 56,

Stroudley "Lyons" D2 Class 0-4-2 [1876], 48

No.302, 47 - No.304, 50, - No.305, 55, 57, - No.309, 55,

Stroudley Singles inc. G Class 2-2-2 [1877], 48, 55, 103, 107, 116,

No.325, 52, 57, 58, 107, - No.327, 59, - No.329, 63, 116, - No.332, 57,

No.333, 57, - No.335, 62, - No.336, 60, 62, - No.338, 63, -

No.342, 60-62 - No.345, 48, 62, 116, - No.347, 62,

No.348, 47, 65, 107, - No.349,

61, 108, - No.350, 65,

Stroudley "Richmond" Class 0-4-2, 49,

No.208, 50, - No.209, 50, - No.210, 50, 56, - No.211, 50, 56,

Stroudley "Gladstone" B1 Class 0-4-2 [1882], 49, 53, 103, 104, 106, 116-8,

225,

No.173, 54, 56, - No.174, 53, 55, 63, 106, - No.176, 52,

No.177, 57, 64, - No.178, 52, 54-5,

No.179, 53, 54, 59, 63, 106, 107, 117, 118, -

No.180, 52, 54-5, 63, 211-2, - No.181, 51, 53, - No.183, 104,

No.184, 104-5, - No.185, 56-7, 104, - No.186, 52, 54-5, 107,

No.187, 52, 54-5, 63, - No.188, 58, - No.189, 53,

No.190, 50, 51, 51,54, - No.191, 54-7, - No.192, 52,

No.193, 53-4, 104, 105-6, - No.194, 57, 64, 117, - No.195, 55, 57-8,

No.196, 48, 61, - No.199, 48, 50-1, - No.200, 51, 53, - No.215, 48,

No.216, 48, 50-1, 53, 101-2, - No.217, 104, - No.218, 48, 53, 56,

No.219, 50-1, 53, 63, - No.220, 50, 105-6, 127,

Stroudley "West Brighton" Class 0-6-2Tank [1891], 67,

Billinton D3 & D3X Class 0-4-4Tank [1892], 55-6, 127, 225,

No.367, 59, - No.372, 52, 60, - No.378, 211, - No.389, 59,

No.390, 104, - No.392, 60, - No.396, 224,

Billinton E3 Class 0-6-2Tank [1894], 67, 100,

Billinton B2 & B2X Class 4-4-0 [1895], 61-2, 118, 123-4, 225,

No.201, 127, - No.202, 210, - No.206, 64, 209, - No.207, 214-5, -

No.209, 216-7, - No.210, 209, - No.213, 65, - No.314, 225,

No.315, 61-2, - No.318, 212,

Billinton E4 Class 0-6-2Tank [1897], 67, 100, 108-9, 225,

Billinton B4 Class 4-4-0 [1899], 57, 66, 100, 103, 116, 118, 124-5, 127, 207,

210, 217-8, 225,

No.42, 213, - No.43, 220-1, - No.44, 104, 219, - No.46, 118, 219, -

No.47, 219, - No.49, 101-2, - No.51, 104, 121, - No.54, 101,

No.55, 101, - No.56, 104, - No.61, 127, 207-8, 211,

No.65, 122, 127, 219, - No.66, 208, - No.67, 104, 213-4,

No.68, 102-3, 206, 215, - No.70, 101, 103, 213-7, 225,

[B4 cont'd]No.72, 104, 121, 213, - No.73, 57, 207-9, 215-6, - No.74, 104,
Billinton E5 Class, 0-6-2Tank, [1902], 100, 105, 111, 129,
 No.404, 129, - No.568, 224-5,
Marsh H1 Class 4-4-2, [1905], 109, 118, 124-7, 225-6,
 No.37, 109, 122, 207, 209, - No.38, 109-10, 225, - No.39, 119, 128, 296,
 No.40, 111, 125, 207, - No.41, 121-2, 128, 206, 218, 220,
Marsh I1 Class 4-4-2Tank [1906], 111,
 No.6, 127, - No.10, 126,
Marsh I2 Class 4-4-2Tank [1907], 112,
 No.14, 129, - No.19, 129,
Marsh I3 Class 4-4-2Tank [1907], 112-3, 118, 124, 129-30, 210, 225,
 No.21, 112-3, 126, - No.22, 112-3, 118, 208, 213-4, 224,
 No.23, 126, 206, - No.24, 126, 206, 209, 215-6, - No.26, 127, 208,
 No.28, 119, - No.78, 207, 211, - No.81, 208,
 No.87, 118, 126, 206, 208, 216,
Marsh I4 Class 4-4-2Tank [1908], 112,
 No.35, 122,
Marsh J Class 4-6-2Tank, [1910], 115, 118, 125, 226,
 No.325, 115, 120, 124, 208-9, - No.326, 115, 120, 124,
Marsh H2 Class 4-4-2 [1911], 115, 22-7, 207, 211, 225-6,
 No.422, 119, 125, 210, 217-8, 220, - No.424, 216-7,
 No.425, 125, 207, 218, - No.426, 122,
Billinton K Class 2-6-0 [1913], 115,
Billinton L Class 4-6-4Tank [1914], 115, 118, 226,
 No.327, 120, 209-10, 217, - No.328, 207, 217-8, - No.333, 220,
Billinton B4X Class 4-4-0 [1922], 219,

London Chatham and Dover:

Martley "Tiger" Class 2-4-0 [1861 as Crampton 4-4-0] rebuilt as 2-4-0 Martley
then Kirtley [1878]
 No.21, 44, - No.22, 44,
Martley "Echo" Class 4-4-0 [1862 as Crampton 4-2-0] rebuilt as 4-4-0 Martley
then Kirtley [1884], 39, 44,
 No.29, 39,
Martley "Dawn" & "Bluebelle" 2-4-0 [1862] rebuilt Kirtley [1882], 32-3,
Martley "Reindeer" Class 2-4-0 [1865] rebuilt Kirtley [1881], 33,
Martley "Scotchmen" Class 0-4-2Well Tank [1866] rebuilt Kirtley [1884]
 No.84, 38, - No.92, 38, - No.96, reNo.555, 140,
Martley "Adrian" Class 0-6-0, 38-9,
 No.131, 39,
Martley "Enigma" Class 2-4-0 [1869] rebuilt Kirtley [1882], 33, 41, 151,
 No.50, 33, - No.52, 37, 38, 42,
Martley "Europa" Class 2-4-0 [1873] rebuilt Kirtley [1890], 33,
 No.55, 36-7, - No.54, 43, - No.56, 33, 41, - No.57, 33, - No.58, 40,
Kirtley B Class 0-6-0 [1876], 36-7,
Kirtley M Class 4-4-0 [1877], 32,
 No.157, 37, - No.158, 37, - No.159, 37, - No.160, 37, 39, - No.161, 37,
Kirtley M1 Class 4-4-0 [1880], 32, 38,
 No.176, 42-3, reNo.635, 254, - No.177, 36, 41, 43-4, - No.178, 43,

Kirtley M2 Class 4-4-0 [1884], 32,
No.179, 41, - No.180, 41, - No.181, 36, 43, - No.182, 37, 43, - No.185,
43-4,

Kirtley M3 Class 4-4-0 [1890], 32, 133,
No.3 reNo.462, 139, - No.4, 133, 138, reNo.463, 151, -
No.7 reNo.466, 261, - No.8, reNo.467, 149, - No.12, 42, 138,
No.13, 38, 40, 42, - No.14, 40, 138, - No.15, 35-38, 40,
reNo.474, 149, 235-6, - No.16, 40, 45, 138, - No.17, 35-6, - No.19, 138,
No.20, 36-40, 43, 138, - No.24, 138, reNo.483, 235-6, - No.25, 35,
No.26 reNo.485, 138, - No.117, 39, - No.187, 39, 40, 43,
No.188, 35, 39, - No.189, 36, 43, - No.190, 42, - No.191, 42, 44,

South Eastern:

Cudworth "118" Class 2-4-0 [1859], 28-9,
No.88, 29-30, - No.30, 30, - No.63, 30,

Cudworth "Mails" Class 2-2-2 [1862],
No.204, 16,

Watkin "Ironclad" Class 2-4-0 [1876],
No.272, 21

Stirling A Class 4-4-0 [1879], 28-9,

Stirling Q Class 0-4-4Tank [1881],
No.58, 28-9, - No.146, 29,

Stirling F & F1 Class 4-4-0 [1883], 16-7, 24, 27, 30, 133, 159, 228, 247, 261,
No.2, 22, No.20, 151, - No.43, 25-6, - No.60, 24, 27, - No.72, 26, -
No.79, 26-7, - No.84, 260, - No.91, 26, - No.94, 26, - No.116, 17, 22, -
No.120, 25, - No.130, 25-6, - No.133, 22, - No.138, 24, - No.139, 24-5, -
No.140, 24, - No.149, 26, - No.156, 23, - No.172, 24, - No.198, 6-7, 22,
No.197, - No.199, 23, - No.203, 24-5, - No.205, 17, 26-7, - No.206, 22,
No.209, 260, - No.210, 22, - No.215, 22, - No.214, 17, 23, - No.222, 22,
No.232, 255, - No.240, 24, - No.241, 24-5, - No.249, 260,

Stirling B & B1 Class 4-4-0, 30-1, 66, 133, 259,
No.21, 149, - No.217, 154, 254, - No.443, 31, 149, 259, - No.453, 139,
No.456, 139, - No.458, 149, 151,

South Eastern and Chatham:

Pickersgill G Class 4-4-0 [1900], 134,
No.677, 250,

Wainwright R1 Class 0-4-4Tank [1900],
No.703, 228,

Wainwright D Class 4-4-0 [1901], 134, 158, 235-6, 250,
No.57, 258, - No.75, 139, 146, - No.247, 147, 251, - No.487, 259, -
No.490, 143-4, - No.492, 148-9, - No.493, 157, - No.496, 251, -
No.501, 147, - No.502, 143, 144-5, - No.509, 145, - No.549, 145, -
No.574, 145, 153, 235, - No.577, 155, 157, - No.586, 151,
No.591, 250, - No.726, 143, - No.727, 139, 144, 258, - No.728, 235-6,
No.730, 137, 155, 157, - No.731, 155, 250, - No.732, 145, 234,
No.734, 139, 249, - No.736, 143, 156, 251, - No.737, 137, 152, 250-1,
No.738, 235-6, - No.740, 146, 237, 250, - No.741, 251,
No.742, 252, 261, - No.745, 139-40, 147, - No.746, 155,
No.747, 238, 251, - No.748, 155, - No.750, 143,

Wainwright H Class 0-4-4Tank [1904], 262,
Wainwright E Class 4-4-0 [1906], 134, 140, 147, 152-3, 158, 234, 239,
 No.19, 142, - No.36, 147, - No.67, 143, 147, - No.156, 144, -
 No.157, 145, 157, 257, - No.159, 144, 259, - No.160, 145, 152, -
 No.163, 141, - No.166, 141, - No.175, 142, 147-8, 257,
 No.176, 141, 143, 251, - No.179, 142, - No.273, 142, 144, 148,
 No.275, 156, - No.315, 146, 256, - No.347, 146,
 No.491, 143, 235-6, 250, - No.497, 236, - No.502, 234,
 No.504, 147, 151, 156-7, - No.505, 234, - No.506, 147,
 No.507, 144, 152, 153, - No.511, 143-4, 152,
 No.514, 144, 146-7, 152, 156, 257, - No.515, 147, 151, - No.547, 149,
Wainwright S/H E Class 4-4-0 [1912], 144,
 No.36, 143-4, - No.275, 144, 147,
Wainwright J Class 0-6-4Tank [1913], 150, 262,
 No.207, 150, - No.611, 249, - No.614, 229,
Wainwright L Class 4-4-0 [1914], 150, 229, 239,
 No.761, 241-2, 252-3, 255, - No.762, 236, - No.763, 237-8, 252, -
 No.765, 253, - No.766, 261, - No.767, 260-1, -No.768, 260-1,
 No.771, 234, 236, 260, - No.772, 257, 259, - No.773, 238, 249, 258,
 No.774, 258, 260, - No.775, 253, 258, - No.776, 234, 254,
 No.777, 252, - No.778, 253-4, 260, - No.779, 150, - No.780, 258-9,
 No.781, 254,
Maunsell K Class 2-6-4Tank [1917], 239,
 No.790, 214, 241-2, 262,
Maunsell N Class 2-6-0 [1917], 239, 262,
 No.810, 239, - No.811, 249, - No.812, 249, - No.817, 249,
Maunsell E1 Class 4-4-0 [1919], 239, 249-50, 262,
 No.19, 240, 256-7, - No.165, 257, - No.179, 239, 251, 256-7, -
 No.497, 254, - No.273, 249, - No.504, 249-50, - No.507, 249, 256-7,
 No.511, 241, 252, 256-7,
Maunsell D1 Class 4-4-0 [1921], 240, 249, 262,
 No.246, 251, - No.494, 251, - No.591, 249, - No.735, 241-2,

Locomotive Tests:

Adams X2 Waterloo to Bournemouth return July 1891. 7-8,
Billinton, B4 No.70, London Bridge to Brighton return, 1902, 102-3,
Coal Returns, August 1911, 93,
Drummond, T9's Nos. 281 & 302 vs. 4-2-2-0 No.720 Sept 1905
Marsh H1 4-4-2 Trial 1906, 110,
Marsh I3 S/H vs Saturated Autumn 1908, 112-113,
Maunsell DI & E1 comparisons, 1922, 241, 249,
Maunsell, K, L & D1 trials, Oct/Nov 1922, 241-2, 262,
Stroudley D Tank's & G Singles 1883, 62,
Wainwright D & E Ashford to Tonbridge, May 1906, 140,

Personnel:

Adams, William, 10, 11,
Allen, C.J. 71, 74, 87, 123, 128, 142, 145-6, 156-7, 188, 193-4, 210-1,
213-4, 217-8, 20, 232, 237,
Billinton, L.B. 111, 115, 120, 177,
Billington, Robert, 61, 100, 102, 109, 115, 180,
Bond, F.S. 104-6,
Box, Frank E. 70-1, 187,
Bradley, D.L. 6, 9, 73,
Burton-Alexander, J.T. 133,
Charlwood, R.E. 79, 83, 152, 184-5,
Cox, Driver, LB&SC, 121,
Dent, F.H. 237,
Drummond, Dugald, 11-2, 67, 71-2, 75-6, 86-7, 96-7, 177,
Fay, Sir Sam, 12-3
Fellows, Cannon R.B, 18,
Foxwell, E. 47, 149,
French, Viscount, 234,
Gairns, J.F. 83, 149, 151,
Garrard, L.A. 198, 200,
Green, Driver, LB&SC, 218,
Hallett, E.S. 127,
Holcroft, H. 240, 249, 252, 257,
Holder, P.E. 217,
Ivatt, H.G. 109,
Jones, A.D. 227,
Kirtley, William, 32, 66, 133, 180,
Long, M.F. 116, 130,
Lowe, A.C.W. 211,
Lusted, Driver, LB&SC, 107,
Marsh D.E. 109, 111-2, 115, 120, 177, 180,
Mascelyne, J.N. 116,
Maunsell, R.E.L. 150, 177, 239-40,
Morris, O.J. 210,
Myers, Major, 101-3, 117, 217, 225-6,
Nock, O.S. 198,
Paton, K. 183,
Pattinson, J. Pearson 1, 22-27, 29-30, 35-45, 47-56, 225,
Pont, Driver, LB&SC, 111,
Rous-Marten, 8, 14, 21, 22, 31, 33, 64-5, 72, 78, 81-2, 101, 103, 110,
111, 134, 137-8, 142-3, 146, 148, 200,
Scott, W.J. 94, 119, 138, 152, 153, 239,
Stirling, James, 16, 30-1, 66, 133,
Stroudley, William, 46, 109, 180,
Surtees, Robert, 66, 122, 134, 177,
Tompsett, Driver, LB&SC, 101,
Vallance, Driver, LB&SC, 110,
Vickery, J.F. 140,
Wainwright, Harry S. 66, 133-4, 150, 177, 180,
Warner, Surrey, 68,

Weight, R.A.H. 217,
Williamson, A.G. 108,
Willis, Alfred, 138,
Young, Drivere, LB&SC, 101,

Railway Companies, Others

Great Central, 71,
Great Eastern, 130, 179,
Great North of Scotland, 134,
Great Northern, 70-1, 109, 159, 170-1, 173
Great Western, 20, 30, 85, 130, 135-7, 159, 162-3, 170, 175, 178-9, 185,
202, 229, 243, 245,
London and North Western, 70, 130, 171, 178-9, 246,
Midland, 137, 158, 170-1, 173, 178-9,
North London, 130,

Routes:

London and South Western::

Alton to Gosport via Fareham, 67,
Alton to Winchester, 85,
Basingstoke to Oxford, 185, 199, 202,
Bournemouth to Salisbury via Fordingbridge, 74, 185,
Bournemouth to Weymouth, 14, 69-70, 74, 78-81, 96, 199-200,
Portsmouth to Salisbury via Southampton, 67, 202,
Portsmouth to Eastleigh, 202,
Southampton to Salisbury, 194,
Wareham to Swanage, 95-6, 161-2,
Waterloo to Alton, 94-5, 163, 187,
Waterloo to Bournemouth/Weymouth via Ringwood 2, 4, 8, 69, 79-80,
96, 161, 178, 199,
Waterloo to Bournemouth via Sway 1-10, 12 – 15, 67, 69-83, 85-93, 94,
96, 161, 181-91, 193-9, 201-2,
Waterloo to Portsmouth, 9, 10, 70, 83 -5, 93-4, 182, 192-4, 200-1,
Waterloo to Reading (and branches), 11, 70, 163, 202,

London Brighton and South Coast:

Brighton to Portsmouth, 60, 210-11, 223,
Brighton to Eastborne & Hastings, 128-30,
Eridge to Eastborne, 167-8, 224,
L'Bge/Vict. to Brighton, 46-55, 64-5, 67, 99, 101-127, 164-5, 178,
204-11, 217-20, 221-2,
L'Bge/Vict. to Brighton via Horsham, 221,
L'Bge/Vict. to Eastborne & Hastings, 46, 47, 56, 57, 100, 104, 114-5,
126, 164-6, 178, 204, 209-11, 215-7, 220-2
L'Bge/Vict. to East Grinstead, 167-8,
L'Bge/Vict. to Newhaven, 55, 57-58, 123, 164-6, 223,
L'Bge/Vict. to Portsmouth via Mid Sussex, 46-7, 60, 61-64, 99-100, 108,
114, 115, 128, 166, 167, 178, 205, 210-15, 223-4,
L'Bge/Vict. to Eridge via Ashurst Spur, 167, 204, 211, 224,
L'Bge/Vict. to Tunbridge Wells West, 47, 59, 115, 167, 224,

L'Bge/Vict. to Worthing, 101, 106, 121-2, 164, 219, 222-3,
South London Line, 130,
Tunbridge Wells to Brighton, 60, 167-8, 211, 221,
Victoria to Seaford via Horsted Keynes & Haywards Heath, 59,

London Chatham and Dover:

St. Pauls to Herne Hill, 38,
Victoria to Ashford via Sevenoaks and Maidstone, 44,
Victoria to Dover via Chatham, 33-41, 45,
Victoria to Queenborough via Sittingborne, 34-5,
Victoria to Ramsgate via Chatham, 33-36, 41-44,

South Eastern:

Charing Cross to Chatham Central, 28-9,
Charing Cross to Dover via Tonbridge, 16 -18, 21-25, 27, 31,
Charing Cross to Dover via Chatham, 152,
Charing Cross to Eastborne via Tonbridge, 17-8, 27,
Charing Cross to Hastings, 17, 26-7,
Charing Cross to Maidstone, 28-9,
Charing Cross to Margate via Ashford & Canterbury, 19-21, 25, 27,
Charing Cross to Redhill, 30
Redhill to Reading, 20, 29-30,

South Eastern and Chatham:

Ashford to Margate via Canterbury, 169, 173, 242,
Ashford to Dover via Minster, 228, 232-3,
Charing Cross to Charing Cross via Redhill & Maidstone, 147,
Charing Cross to Dover & Margate via Tonbridge, 135-7, 139, 140-8,
169-70, 229-30, 232-8, 241-3, 245, 252-6, 262,
Charing Cross to Hastings, 135-6, 149, 173-5, 229-30, 232-3,
238, 244, 246, 257-62,
Charing Cross to Tonbridge via Redhill inc. Caterham branch, 135, 169,
171, 175-6, 229, 231, 236-7, 262,
Folkestone to Dover via Elham Valley & Minster, 227-8,
Holborn Viaduct to Margate & Ramsgate, 135-6, 140, 155-8, 172,
173, 236, 243, 249-51,
London to Dover via Maidstone, 135, 136, 148-9, 169-72, 230, 233,
242-4, 248, 261,
Mid Kent Line, 229,
North Kent Line, 176, 244,
Redhill to Reading, 135-6, 159, 175-6, 229, 231-4, 243-6, 262,
Victoria to Crystal Palace, 158-9,
Victoria to Dover via Tonbridge, 135-6, 143-7, 169-71, 239-41, 247-9,
256-7,
Victoria to Dover via Chatham, 135-8, 151-3, 169-72, 231-2, 235-6, 241,
245, 248, 252,
Victoria to Hastings, 135, 136-9, 149, 173-4, 230, 238,
Victoria to Margate & Ramsgate, 135, 140-1, 153-158, 172-3, 231-2,
236, 239, 243, 245, 250-2,
Victoria to Queenborough via Chatham, 151,

Timetables:

London and South Western:

July 1897, 8,
Summer 1899, 13-4
June 1905, 69,
W.T.T. 1907, 79,
W.T.T. 1909, 79,
June 1909 83, 85,
June 1914 161-4,
September 1915, 182,
November 19th 1916, 188,
August 1918, 182,
June 1919, 192,
November 16th 1919, 194,
Summer 1921, 194,
October 1922, 200-2,
Interval departures, 194,

London Brighton and South Coast:

September, 1845, 46,
September 1849, 46,
November 1885, 46.
July 1897, 46,
June 1905, 99,
Summer, 1912, 114,
June 1914, 164-8,
September 1915, 204-5,
Autumn 1918, 204-5,
October 1922, 221-4,

London Chatham and Dover:

November 1885, 33,
July 1897, 33,

South Eastern:

November 1885, 1-8, 20-1,
July 1897, 18-21,

South Eastern and Chatham:

June 1905, 135-6,
April 1910, 136-7,
June 1914, 168-176,
October, 1914, 227,
April 1915, 227,
September 1915, 229-31,
December 1916, 227,
May 1918, 227,
August 1918, 232-4,
June 16th 1919, 236-7,
October, 1922, 242-47,