Photo: Andrew Muckley

Class "5" 4-6-0 No. 73042 awaiting departure from Waterloo

pitch past Liphook, but it was good work to register no greater fall in speed than from 47 to 40 m.p.h. on the concluding pull up to Haslemere Summit. The descent to Guildford includes much curvature, and although in past days the more venturesome of the Fratton drivers have been known to take the "Schools" up to nearly 90 m.p.h. here on occasions, generally one noted plentiful use of the brakes.

The second run, with a rebuilt "West Country" Pacific, was not so good in its uphill work, and again there was some most restrained running between Buriton Tunnel and Liss. But both drivers were improving on the point-to-point times laid down for the diverted trains, and one could not really expect more in the circumstances.

The third run had the advantage of passing Havant without stopping, albeit at very slow speed. Because of this the "BR5" 4-6-0, which now carries the name formerly on the "Urie Arthur" 4-6-0 No. 752, gained 2 min. on the Pacifics to Rowlands Castle. She remained about this much ahead of *Dartmoor* throughout to Haslemere, and in consideration of the moderate speed run between Petersfield and Liss the final climb was quite good. This engine also got a clear run through to Guildford, and without exceeding 72 m.p.h. managed to gain 7 min. on the special schedule over the 36.1 miles from Havant.

The fourth run somewhat naturally was in a different class altogether. It was made by a crack driver, working over his regular route, with an engine in first-class order; and this 4-4-0 was surpassed only by the unrebuilt "West Country" on the ascent to Buriton. The point-to-point times of the 90-min. Portsmouth non-stops were 18 min. to Petersfield; 31½ min. to Haslemere; and 45½ min. to Guildford—which timing was kept by the "BR5" 4-6-0 *Linette*. But my run on the "Schools" class 4-4-0 was also made on a Sunday, and because of signal checks in the early stages we had passed Havant 4½ min. late. With three permanent way checks to come the driver was going hard to make up some of the lost time; but one of the most extraordinary features of the run was his method of working the engine. Throughout from Portsmouth to Waterloo the cut-off was unchanged, at 29 per cent; all variations in power output were made by adjusting the regulator. Yet again nothing more than the first valve was used.

This method of working seemed to suit the engine to perfection, and once through Buriton Tunnel some tremendous running began. Peters-

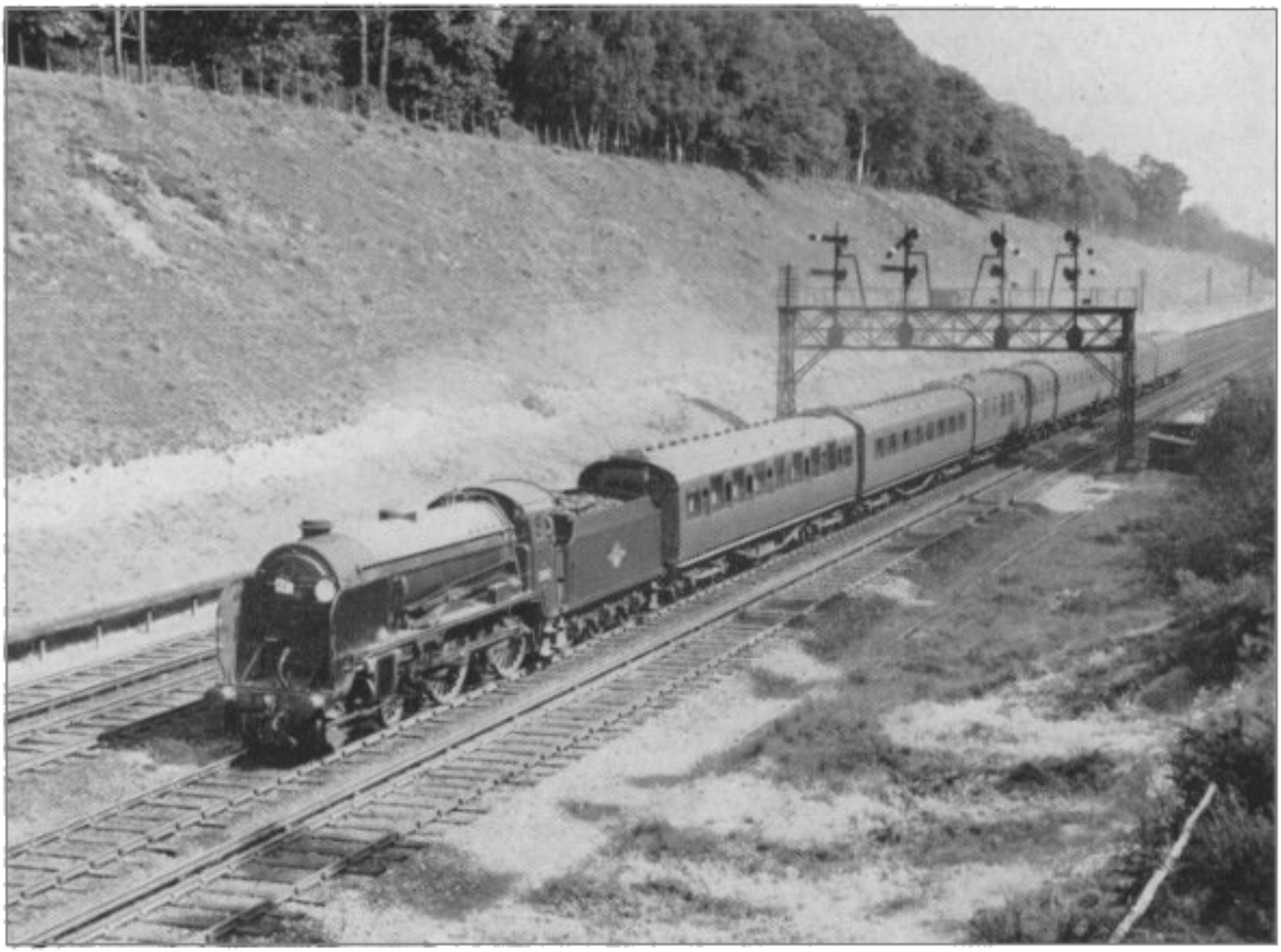

Photo: Derek Cross

"Schools" class 4-4-0 No. 30912, "Downside", near Brookwood in September, 1960, with the 12.42 p.m. Waterloo-Basingstoke train

Photo: G. D. King

"Terrier" 0-6-0 tank engine No. 32650 near Langston on the 5.5 p.m. Havant to Hayling Island in August, 1963

field was passed at 75 m.p.h., and a top speed of 83½ m.p.h. was reached at Stodham Crossing. Impetus from this took us up the sharp rise beyond Liss at a minimum of 52½ m.p.h.; there was a fine acceleration to 64½ m.p.h. beyond Liphook, and the final climb to Haslemere did not lower the speed below 48½ m.p.h.—still on 29 per cent cut-off and the first port of the regulator. By this time *Cheltenham* had gained 2½ min. on *Linette*; but two of the expected permanent way checks came before Guildford, and this robbed us of something of our advantage. Reverting to the "diversion" runs, although their running is not to be compared to what the "Schools" used to do in their hey-day on the Portsmouth expresses, they can be considered as very satisfactory in the circumstances.

While in the neighbourhood of Havant, I must mention the Hayling Island branch, worked so fascinatingly by the veteran Stroudley "Terrier" 0-6-0 tank engines. While many enthusiasts have taken photographs of those delightful little engines, Mr. D. W. Winkworth has also taken some logs of their running. The run of 4½ miles from Havant to Hayling Island includes the slow passage over Langston bridge. Once clear of that, however, the little engines used to go for it, good and hard.

The branch trains consisted of three modern coaches, weighing with passengers about 100 tons; but this was no mean tonnage for engines having cylinders 13 in. x 20 in., 4-ft. coupled wheels, and a total weight of about 25 tons. It was just about the same as they worked on the London suburban services of 80 years ago, when in their prime. No doubt there have been modifications to those original dimensions by now; the cylinder diameter is probably a little larger. But it is their extreme lightness that enabled them to be used over Langston bridge.

On August 6, 1960, when Mr. Winkworth took his notes, three of these engines were at work, Nos. 32640, 32650, and 32661. Schedule time for the non-stop run of 4.5 miles was 10 min., and in the down direction it was very closely observed on all three runs. Langston, 1.1 miles, was passed in times varying from 3 min. 8 sec. to 3 min. 20 sec., after which each engine got away to attain maximum speeds of 44 to 45 m.p.h. near North Hayling. The passing times at the latter place, 2.4 miles from Havant, were 5 min. 46 sec., 5 min. 43 sec., and 5 min. 46 sec. by engines 32640, 32650, and 32661 respectively. All three engines clocked into Hayling Island terminus within a few seconds of the scheduled 10 min. In the reverse direction engines 32640 and 32650 both made smart runs, with top speeds of 48 and 46 m.p.h.; but No. 32661 made an extraordinary start, passing North Hayling, 2.1 miles, in 4 min. 32 sec., and attaining no less than 53 m.p.h. before slacking for Langston bridge. On this run Havant was reached in 9 min. 17 sec.

Resuming my notes on main-line working, there are next two steam runs on the Brighton main line. The first, detailed in Table IV, is another fine trip on the 3.20 a.m. newspaper train from London Bridge, clocked from Earlswood onwards by Mr. M. W. G. Skinner. When I published a run on this train in my article for June, 1963, I commented on this gentleman's enthusiasm in rising so early in the morning, in order to log an interesting train. He wrote afterwards in a somewhat wistful vein, that it was not enthusiasm, but necessity in order to take up his railway duties at Brighton at the appointed hour! Nevertheless, from the many pleasant letters I have received from him it is evident that he *is* an enthusiast of the first water.

TABLE IV
SOUTHERN REGION: EARLSWOOD-BRIGHTON
Load: 1 coach, 10 vans; 220 tons tare, 275 tons full
Engine: Modified "West Country" 4-6-2
No. 34013, *Okehampton*

Dist.		Sch.	Actual	Speeds*
Miles		min.	m. s.	m.p.h.
0.0	EARLSWOOD	0	0 00	
1.85	Salfords		2 59	
4.1	Horley		4 58	67.5
7.7	THREE BRIDGES	10	7 49	75.7
10.0	*Balcombe Tunnel*		9 48	69.4
12.2	Balcombe		11 37	72.7
16.1	HAYWARDS HEATH ...		14 48	73.5
19.3	*Keymer Junc.*	24	17 20	75.8
21.95	Hassocks		19 32	72.3
24.5	*Clayton Box*		21 49	55.1
27.7	Preston Park		24 37	68.5
29.0	BRIGHTON	37	27 04	

* Average speeds from point to point

In sending me his logs he raises the question of the mileages quoted in the engine performances published in these articles, where sometimes there is disagreement between the published figures and those quoted in the railway working timetables. There are times, of course, when the official chainage, converted to decimals, gives figures such as 15.86. Is one to quote to two places of decimals, or round it off to the nearest tenth? Rounding off would make the above mileage 15.9; but over short distances such rounding off can give misleading values of the average speed. If one had, for example, two timing points the mileage of which, from the chainage, worked out at 14.74 and 15.86, the rounded-off mileage between them would be 1.2, whereas more precisely it is 1.12. If the distance were covered in a level 60 sec. the average speeds would work out at 67.2 and 72 m.p.h.!

Again, with exact chainages and two or three places of decimals the accuracy of the record can be completely lost if one does not time precisely to the point on the station at which the chainage is taken. An easy answer would be to say "the middle"; but then how does one regard stations with staggered platforms like Hatfield, Northallerton, Dunball, or some of those on the South Eastern line east of Tonbridge? With closely-spaced timing points I do not think there is any answer save to clock points like signalboxes or mileposts that can be pin-pointed.

If station-to-station times are used they should, strictly speaking, be taken over a fairly long distance so that the variation in mileage taken,

Modified and unrebuilt "Battle of Britain" Pacifics at Yeovil Junction on April 8, 1964. No. 34052, "Lord Dowding", was heading (below) the 1 p.m. Waterloo-Exeter express and (left) 34066, "Spitfire", the 11.30 a.m. Brighton to Plymouth train

Photos: John Clarke

or actual timing points, becomes of less consequence. For example, if through rounding off of the second place of decimals a distance becomes 7.2 instead of 7.12, a recorded time of 6 min. 0 sec. between them gives 72 m.p.h. instead of 71¼ m.p.h. The latter difference is practically down to the limits of accuracy to which the majority of recorders can get with an ordinary stop watch.

On the run detailed in Table IV the train was diverted to the Quarry line because of engineering work, and so called at Earlswood instead of Redhill. A very fast and undelayed run to Brighton followed, in which the driver recovered 10 min. on schedule. In this log, it will be seen that I have quoted distances to two places of decimals at Salfords and Hassocks, both of which are places where Mr. Skinner, from his long experience over this route, can pin-point his timings. In this relatively short run of 29 miles the train averaged 71.8 m.p.h. over the 25.85 miles from Salfords to Preston Park, and the average speed from start to stop was 64.5 m.p.h.—an excellent performance.

Mr. Skinner has also sent me details of a good run in the reverse direction, on the 12.14 p.m. Saturdays only train from Hastings to Birmingham, as between Brighton and Redhill. On this run the driver was a Three Bridges man, Sayers by name, and he began normally up to Clayton Tunnel. Then there was some very slow running down to Keymer Junction, very likely because he was sighting adverse signals in the distance. With colour-light signalling this is often the case, and a driver can regulate his speed so as to avoid a pronounced slowing down. He ran harder up the 1 in 264 gradient to Balcombe Tunnel than he had done downhill from Clayton. But then, presumably by that time getting clear signals, he put on a tremendous sprint from Three Bridges down to Horley. With an average speed of 77½ m.p.h. between these two stations the maximum was 80 m.p.h. sustained for a full mile north of Horley. This of course was nothing unusual for a Bulleid Pacific, but as Mr. Skinner remarks in his letter it was "Not bad for a summer holiday extra".

Lastly I come to the electrics, and again through the kindness of Mr. Skinner I am able to give details of some fine running between Redhill and Haywards Heath on the 12.28 p.m. train from Victoria to Brighton. In sending these runs to me my friend refers briefly to some others on which the performance was "spoiled", because the driver exceeded the speed limit of 75 m.p.h. laid down for multiple-unit stock over this line. On one journey, indeed, on an occasion which must remain unspecified, the 13.1 miles from Salfords to Copyhold Junction were covered in 10 min. 16 sec. —an average speed of 76.7 m.p.h. On the three runs tabulated, all with the "2HAP" stock, the averages over this same distance were 72.8, 71.2, and 73.5 m.p.h. The last-mentioned had the making of a very fast run; but the driver eased off after Balcombe so as not to exceed the speed limit.

I am afraid I have reached almost the end of this article without giving the electrics very much space in the way of detailed running notes. I feel, however, that this is just how the Southern Region authorities would wish it to be. Day-to-day variations, and the problems of individual engines and runs, have contributed much to the perennial interest of steam locomotive practice and performance. It is this variation that has been virtually eliminated on the electrified system of the Southern Region, and one now finds men talking about runs being "spoiled" if a driver goes faster than usual! This of course is an ideal state of affairs from the operating point of view, and it amply explains why the Southern, for all its sustained excellence and regularity, does not "hit the headlines".

TABLE V
SOUTHERN REGION: BRIGHTON-REDHILL
Load: 10 coaches, 350 tons gross
Engine: Unrebuilt "Battle of Britain" 4-6-2
No. 34057, *Biggin Hill*

Dist.		Sch.	Actual	Speeds*
Miles		min.	m. s.	m.p.h.
0.0	BRIGHTON	0	0 00	
1.3	Preston Park		4 02	
4.5	*Clayton Box*		8 42	41.2
7.05	Hassocks		11 48	49.4
9.7	*Keymer Junc.*	14	15 03	48.9
12.9	HAYWARDS HEATH	17½	18 29	55.9
16.8	Balcombe		22 45	54.9
19.0	*Balcombe Tunnel*		25 06	56.2
21.3	THREE BRIDGES	27½	27 20	61.5
24.9	Horley		30 07	77.5
27.15	Salfords		31 54	75.6
—			sigs.	
29.0	Earlswood		34 52	
29.9	REDHILL	39	37 11	

* Average speeds from point to point

TABLE VI
SOUTHERN REGION: REDHILL-HAYWARDS HEATH
Multiple-unit electric trains

Run No.		1		2		3	
Dist.		Actual	Av. Speed	Actual	Av. Speed	Actual	Av. Speed
Miles		m. s.	m.p.h.	m. s.	m.p.h.	m. s.	m.p.h.
0.0	REDHILL	0 00		0 00		0 00	
0.9	Earlswood	2 12		1 59		2 07	
2.75	Salfords	4 14	55.1	3 54	57.8	4 01	58.4
5.0	Horley	6 04	73.6	5 47	71.3	5 49	75.0
8.6	THREE BRIDGES	8 59	74.0	8 49	71.8	8 37	77.2
10.9	*Balcombe Tunnel*	11 03	68.5	11 00	63.2	10 38	68.7
13.1	Balcombe	12 51	73.3	12 47	73.8	12 25	73.8
15.85	*Copyhold Junc.*	15 03	74.9	14 58	75.3	14 43	71.8
17.0	HAYWARDS HEATH	16 35		16 31		16 13	