MINISTRY OF TRANSPORT & CIVIL AVIATION

RAILWAY ACCIDENTS

REPORT ON THE COLLISION

which occurred on

30th June 1957

at

HERNE HILL

in the

SOUTHERN REGION

BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

1957

PRICE 1s. 3d. NET

MINISTRY OF TRANSPORT AND CIVIL AVIATION,
Berkeley Square House,
London, W.1.

16th October 1957.

SIR,

I have the honour to report for the information of the Minister of Transport and Civil Aviation, in accordance with the Order dated 2nd July 1957, the result of my Inquiry into the collision which occurred at about 9.3 a.m. on Sunday 30th June 1957 at Herne Hill, on the main line from Victoria to the Kent Coast in the Southern Region, British Railways.

The 8.55 a.m. express passenger train from Victoria to Dover Marine passed the Herne Hill distant signal at caution and the home signal at danger, and collided at a speed of about 30 m.p.h. with a light engine at the country end of the station. The starting signal had just been cleared for this engine and the brakes had been released for it to proceed to the Tulse Hill Branch line, when the fireman saw the express train approaching from the rear. He warned the driver who immediately opened the regulator, and the engine had started to move when the collision took place.

There was no derailment, but the light engine was pushed forward about 300 yards on to the Branch line, and its tender was badly damaged. The engine of the express stopped some 30 yards beyond the point of impact, and its front end also received considerable damage. Seven of the ten passenger coaches were slightly damaged.

There were some 270 passengers in the train and 19 of them complained of shock or bruises: two were taken to hospital but were not detained and the remainder received first-aid treatment at the station. The driver of the light engine sustained cuts and bruises and was admitted to hospital, but he was discharged on the following day.

An emergency call for ambulances was made by the station master, Herne Hill, at 9.10 a.m. and an ambulance arrived within five minutes. It left for King's College Hospital, Denmark Hill, at 9.35 a.m. with the two passengers and the driver of the light engine.

The Up and Down Fast lines and the Down Slow and Branch lines were blocked, and the Up Branch line was closed as a precautionary measure until it was ascertained that the light engine was not obstructing it. The Up Fast, Up Branch and Down Slow lines were re-opened for traffic at 10.0 a.m., the Down Fast line at 1.13 p.m. and the Down Branch line at 1.35 p.m., at which time normal working was resumed. A special train was provided to take the express train passengers to Dover Marine, and it left Herne Hill at 11.47 a.m. The cross channel steamer was held to await the arrival of this train.

The day was warm and the sun was shining brightly.

DESCRIPTION

The trains

The express train comprised ten passenger bogie coaches and a luggage van, and it was drawn by "Battle of Britain" class engine No. 34088 with 4-6-2 wheel arrangement, driven from the left hand side. The engine and tender weighed 133 tons in working order and the total weight of the train was about 495 tons.

The light engine belonged to the "Schools" class, with 4-4-0 wheel arrangement, and with its tender it weighed 110 tons. It also was driven from the left hand side.

The site and signalling

The sketch shows the layout and the relevant signalling arrangements at Herne Hill. The Down Victoria line, on which the express train was travelling, passes through Brixton on a right hand curve of 28 chains radius. Beyond the advanced starting signal the curvature is slightly to the left after which there is a right hand curve of 29 chains radius to Herne Hill. From Brixton the line is on a rising gradient to Herne Hill beyond which it climbs steeply to Penge Tunnel.

The Herne Hill Down Victoria line distant signal and the Brixton advanced starter are on the same post, which is on the left hand side of the track. The distant arm is 15 ft. and the advanced starter arm is 20 ft. above rail level. The signals first come into view from the right hand (fireman's) side of an engine passing through Brixton station at a distance of 280 yards and they can then be seen clearly against a background of trees. They come into view from the left hand (driver's) side of an engine at a distance of about 90 yards and remain in view until they have been passed. The Herne Hill home signals can first be seen on the left hand curve from the driver's side at a distance of some 600 yards and they remain in sight for 180 yards, but the background is not particularly good; shortly after that they can be seen clearly from the fireman's side and then again, at a distance of 90 yards, from the driver's side. The banner repeating signals on the platform can first be seen from the driver's side of an engine as it passes the home signals.

There is a permanent speed restriction of 25 m. p.h. through Brixton and of 45 m.p.h. through Herne Hill.

The signalling arrangements were renewed in 1956 when the box shown in the sketch was opened. It is of modern design and is equipped with a frame of 86 levers, 13 of which are spare. Levers Nos. 83-86, which are at the London end of the frame, work detonator placers on all the running lines, opposite to the box. The box is normally manned by two signalmen and there are two illuminated diagrams. Train operation is by Sykes closed lock and block. The usual electrical controls which are associated with these instruments are provided, and the following are relevant: —

(i) The plunger cannot be operated for a Down train from Brixton unless the arm of distant signal No. 72 is correctly at caution and the slot is normal, and unless the levers of home signals Nos. 71 and 73 are normal in the frame; track circuits AS and AT must also be clear. (Note: a modified overlap beyond the home signal is authorised). After a train has been accepted, the block instruments cannot be replaced to normal until lever No. 71 or 73 has been pulled and replaced in the frame. (A co-operative release is provided).

(ii) Down Fast home signal No. 71 cannot be cleared if track circuits AS, AT, AU or BB are occupied, or if signal No. 65 or No. 68 is "off". After being pulled, lever No. 71 is back-locked until track circuits AS and AT have been occupied. (There is also a co-operative release for this control).

The mechanical interlocking ensures that distant signal lever No. 72 can be pulled only after the levers of home signal No. 71 and starting signal No. 65 have been reversed; also, that lever No. 71 cannot be pulled when lever No. 59 is reversed (points set for the Down Slow) and that lever No. 65 can only be pulled with the facing junction point lever No. 58 in the normal position (for the Down Main).

The two banner signals on the Down Fast line Nos. 65/68R and 63RR1 work automatically and repeat the indications of starting signals Nos. 65 and 68 and Herne Hill intermediate home repeater signal No. 63R1 respectively. The banner repeaters are not controlled by track circuits.

Report and Evidence

At the time of the accident Signalman T. Foster and Signalman J. H. Shier were on duty in Herne Hill box; Lineman J. Green was also in the box. Foster and Shier normally worked the Down and Up traffic respectively. There is, however, no booking boy on a Sunday and Foster was doing this work also because the desk is nearer the London end of the box. Consequently, Shier was at times dealing with both Up and Down trains.

The two trains which passed over the Down Victoria line from Brixton and the Down Fast line through Herne Hill immediately before the light engine were the 8.44 a.m. from Victoria to Orpington, which left Herne Hill at 8.53 a.m. and the 8.46 a.m. from Victoria to Ramsgate. Foster dealt with both of them and at 8.55 a.m. he accepted from Herne Hill Sorting Sidings the 8.47 a.m. from Holborn Viaduct to West Croydon via Tulse Hill. Either he or Shier (it is immaterial which) acknowledged "Train Entering Section" at 8.56 a.m. and cleared the home signal (after the train had been stopped at it) for the train to enter the Down Slow platform line. Foster then went to the desk to record the block signals.

The light engine, which was travelling from Stewarts Lane Motive Power Depot to Eardley (also via Tulse Hill), was accepted from Brixton to the Down Fast line by Shier at 8.56 a.m. and "Train Entering Section" was received at 8.57 a.m. The engine was stopped at home signal No. 71 which was cleared as soon as the West Croydon train had arrived in the Down Slow platform at 8.59 a.m. The light engine then moved forward slowly to starting signal No. 68 arriving there at about 9.0 a.m. When it had occupied track circuit AT, signal No. 71 was replaced to normal and points Nos. 58 and 59 were set from the Down Slow line to the Branch and starting signals Nos. 67 and 66 were cleared for the West Croydon train which left at just before 9.0 a.m. The signals were then returned to danger, points No. 59 replaced to normal and starting signal No. 68 taken "off" for the light engine to proceed to the advanced starter No. 66 so that points No. 58 could be re-set for the main line and the signals cleared for the express to run through the station. The light engine did not move at once, and it had only just started towards the Branch line when the express ran into it at about 9.3 a.m. The express had been accepted from Brixton to the Down Fast line by Shier at 9.0 a.m. on arrival of the light engine, and "Train Entering Section" was received at 9.1 a.m.

Foster was still at the desk when Lineman Green drew his attention to the fact that the express was running past the home signal at danger. Foster looked up and saw that the engine of the train was almost opposite to the box; he tried to reach the detonator placer lever but by the time he had got to the end of the frame the train had passed. Shier also heard the lineman's remark. He and Foster both said that they saw the home signal at danger and the distant signal repeater indicating that the arm was at caution. They both thought that the train was travelling at the usual speed of a steam train running through the station. From observations this is 40-45 m.p.h.

As far as Foster could remember, distant signal lever No. 72 had not been worked for the 8.46 a.m. train; the signal had, however, certainly been cleared for the 8.44 a.m. train. He added that he always made a practice of looking at the repeater after replacing a distant signal lever in the frame, and that he did so on that occasion and saw that the arm was correctly at caution. Shier had not attempted to clear the distant or home signal for the express.

The accident occurred during a spell of hot weather and Foster had found it necessary to work the distant signal wire tensioners on most days, tightening the wire during the day-time and slackening it off again at night. He said, however, that he had not operated the tensioner for the Down Victoria distant on the morning of the accident and that the signal was functioning correctly. Shier and Foster had worked in the box for several months and they both stated that there had, to their knowledge, been no case of any "danger side" failure in any of the signalling equipment.

Lineman Green was just about to leave the box when he saw the express on the Down Victoria line passing the home signal at danger. He said that when he first saw the train the engine was opposite to the box and he, too, thought that it was travelling at the usual speed of a train running through the station. He checked the position of the home signal and distant signal levers and found them normal and he also saw that the distant signal repeater was correctly at the caution indication.

Passed Fireman F. J. Atkins was in charge of the light engine. After he had been stopped at Herne Hill home signal No. 71 it was cleared and he then drew forward very slowly to the starting signal No. 68 which was at danger. As he came near to it, he saw the 8.47 a.m. West Croydon train pass over the junction ahead to the Branch line. The starting signal was cleared almost immediately after he had stopped the engine, and he re-created the vacuum to release the brake. He had just completed doing this when he heard the fireman shout that there was a train coming on the same line. The fireman jumped off the footplate but Atkins immediately opened the regulator in an endeavour to keep the engine ahead of the oncoming train. The engine had, however, only just started to move when the collision occurred.

The driver of the boat train was J. W. Hawkes and the fireman was G. E. A. Stevens. Hawkes is 56 years of age and he entered the railway service in 1918 when 17 years old; he became a passed fireman at Stewarts Lane Motive Power Depot in 1941 and a driver in 1944. He had driven regularly over this main line. Stevens, who is 21 years old, joined the railway service in 1951 and became a fireman in 1953; he was in the Forces for two years from November 1954. He had worked as fireman to Hawkes for about 10 weeks.

Hawkes and Stevens signed on duty at 7.30 a.m. at Stewarts Lane on the day of the accident and took the engine, which they said was in good fettle, light to Victoria to be attached to the 8.55 a.m. train. The train left Victoria on time and had a clear run to Brixton. When passing through that station Hawkes asked Stevens "How many off?" (meaning the arms of the Brixton advanced starter and Herne Hill distant signals) and Stevens replied to the effect that both the signals were "off". Hawkes did not cross the footplate to verify the indication of the signals but said that when the engine passed them they were both clear. After passing the signals, Stevens began to put coal on the fire, and he did not look for the Herne Hill home signals. Hawkes, however, said that he looked out when the engine was about to pass the home signals and "made sure one of them was off". He had not seen them earlier when they came into view on the left hand curve.

As the engine neared the station Hawkes saw banner repeater No. 65/68R at clear and No. 63RR1 at caution, and he closed the regulator. Shortly afterwards, when the engine reached the platform, he saw the light engine ahead. He applied the brakes fully, but although he thought that the application reduced the speed of the train he could not avoid the collision.

Hawkes was questioned closely about the indications of the distant and home signals but he maintained that he had seen them in the clear position and that the arms were well "off". The extensive controls on these signals were explained to him but he would not accept suggestions that the sun might have made it difficult for him to see the signals, or that having been informed that the distant signal was clear he did not look either at that signal or at the home signal; he was also sure that nothing had distracted his attention at the critical time. He stated that on the previous day his work had been normal, and that he had had eight hours sleep that night and was not tired. He had nothing on his mind and he and Stevens were not talking at the time. Hawkes said that he could not remember the last occasion on which a fast train had been stopped "out of course" at Herne Hill.

Stevens said that he had just finished firing when passing through Brixton. The driver asked him about the advanced starting signal and Herne Hill distant signal, and he looked out from his side of the engine and saw both of them clear, and he told the driver "two off". Stevens was insistent that both the signals were clear and he also said that the arms were pulled well "off"; the sun was on his side of the engine but he was sure that it did not affect his view of the signals. Having seen the distant signal clear he assumed that the Herne Hill home signal also was "off" and he did not look for it and started to fire. He stated, however, that if the distant had been at caution, he would have looked out for the home signal.

Guard A. F. G. Knight was travelling in the ninth vehicle and said that the boat train was running normally through Herne Hill. It suddenly stopped "with a bang" throwing him to the floor. He had not noticed any brake application beforehand. The brake compartment in which he was travelling had neither side lights nor a periscope. He said that he had tried to look at the signals after leaving Victoria and did so again when passing through Brixton but could see nothing on account of the smoke and smuts from the engine.

Station Foreman T. O. Drury was on the Up platform at Herne Hill at the time of the collision. He saw the express entering the station at the usual speed of a train running through with a distant signal "off". He looked ahead at the starting signals and saw the Branch line signal was clear and also saw, for the first time, the light engine standing at it. He tried to attract the attention of the engine crew of the express but was unsuccessful, and it struck the light engine just after the latter had started to move forward. Mr. Drury said that he could not see the home signals.

Sub-Inspector A. E. Bing of the Signal Department said that after the accident he and Lineman Green examined the signalling equipment and tested the relevant interlocking and controls, and found them all in proper working order; they tested, in particular, the proving circuit on the distant signal arm. He said that he had not heard of any complaints by enginemen of the Down Victoria line signals.

Conclusions and Remarks

The interlocking and the signalling controls at Herne Hill are very complete and the Down Victoria line home and distant signal levers could certainly not have been pulled for the express. The arm of the distant signal could therefore have been clear only if it had not responded to the replacement of the lever when it was last operated or if the signal wire had been too tight; in the latter case the arm would have been only slightly raised and not well "off" as both the driver and fireman stated. In either case the proving control on the arm would have prevented Line Clear being given for the express, and there was evidence that this control, which is not complicated, was working correctly; also, the repeater in the signal box would have indicated the defect, and the two signalmen and the lineman were sure that it showed that the arm was correctly at caution. These three men said that they saw the home signal at danger.

Taking everything into consideration, I am satisfied that the Herne Hill distant signal was at caution and that the home signal was at danger when the express passed them without reduction of speed, and the accident was therefore the result of Driver Hawkes' failure to obey the indications of these two signals. In spite of his insistence to the contrary I have little doubt that, having been told by the fireman that the distant was "off", he did not trouble to look at it or at the home signal, and assumed that they were both "off" and that the line through the station was clear, as was usual for a train of this importance.

Fireman Stevens did look at the distant signal and I am unable to understand why he thought that it was clear. He knew the signals on the line and his eyesight is good. The distant is a conspicuous signal which is seen easily from the right hand side of an engine and there are no other signals in the vicinity with which it could be mistaken.

Hawkes' record has been clear for the last six years and Stevens also has a clear record.

The absence of side lights and a periscope did not make it easy for Guard Knight to observe signals as required by Rule 148(a) of the Rule Book. I do not, however, think that he made any real effort to comply with this rule when approaching Herne Hill.

The action of Passed Fireman F. J. Atkins who was in charge of the light engine was commendable. He knew that the express was approaching fairly fast and must have realised that a collision was inevitable, yet he remained on the footplate and opened the regulator in an endeavour to keep the engine ahead of the train. The fact that the engine was moving when the collision occurred undoubtedly reduced the severity of the shock, and the damage to the express. After the engine stopped, and in spite of having been cut and bruised and badly shaken, he endeavoured to turn on the injectors and to put out the fire.

The accident should have been prevented by the recently approved British Railways warning type of automatic train control. This section of the line is not, however, likely to rank high in priority for this equipment, especially as colour light signals are to be installed in the near future. Such signals have a more arresting aspect than semaphores and are located as near as possible to the driver's line of sight. Although they cannot be regarded as a substitute for automatic train control, they should make it less likely for errors of this type to be made.

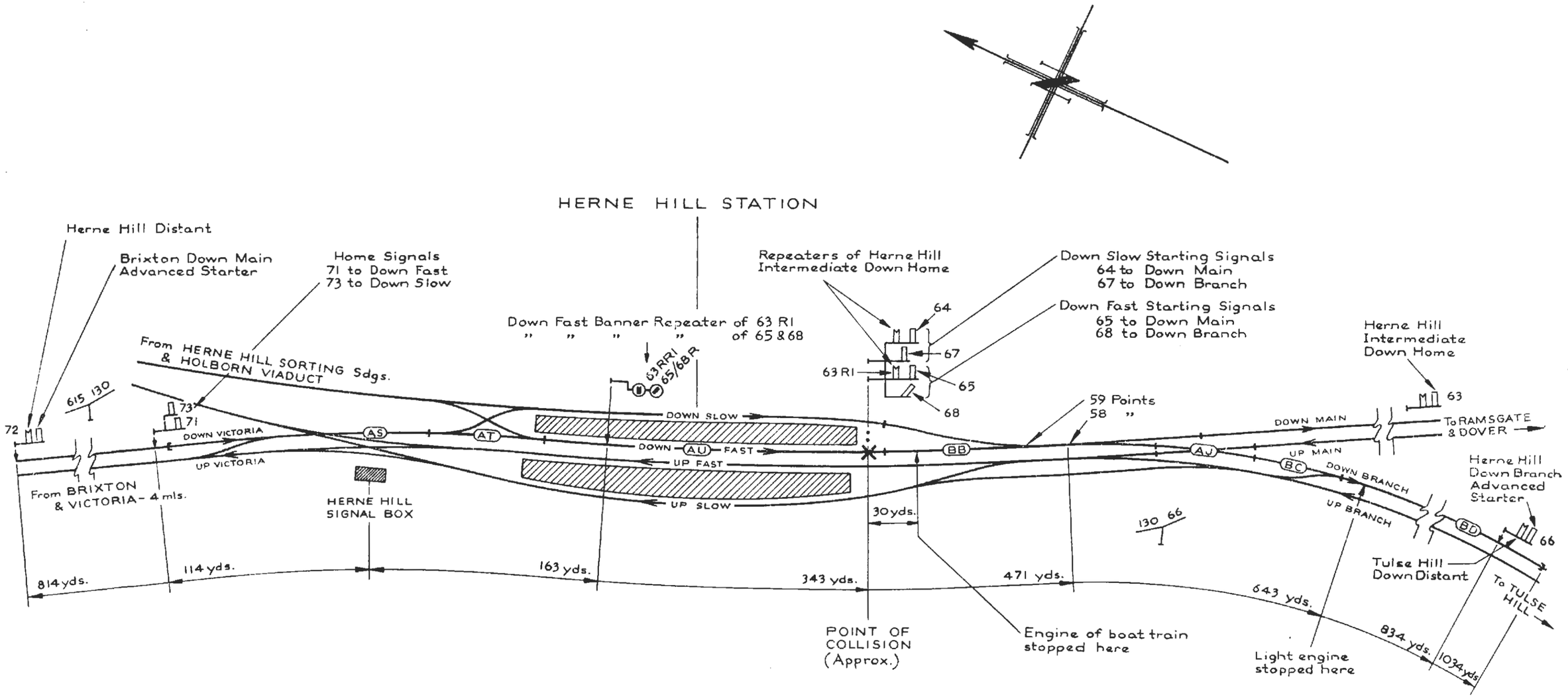
I have the honour to be,

Sir,

Your obedient Servant,

D. McMULLEN,
Colonel.

The Secretary,
Ministry of Transport and Civil Aviation.


HERNE HILL STATION
Herne Hill Distant
Brixton Down Main Advanced Starter
Home Signals
71 to Down Fast
73 to Down Slow
Repeaters of Herne Hill Intermediate Down Home
Down Slow Starting Signals
64 to Down Main
67 to Down Branch
Down Fast Starting Signals
65 to Down Main
68 to Down Branch
Down Fast Banner Repeater of 63 RI
" " " " of 65 & 68
63RRI 65/68R
64
67
63 RI
65
68
Herne Hill Intermediate Down Home
63
From HERNE HILL SORTING Sdgs. & HOLBORN VIADUCT
615 130
72
73
71
DOWN VICTORIA
UP VICTORIA
AS
AT
DOWN SLOW
DOWN AU FAST
UP FAST
UP SLOW
BB
59 Points
58 "
DOWN MAIN
UP MAIN
AJ
BC
DOWN BRANCH
UP BRANCH
To RAMSGATE & DOVER
Herne Hill Down Branch Advanced Starter
66
BD
From BRIXTON & VICTORIA - 4 mls.
HERNE HILL SIGNAL BOX
30yds.
130 66
Tulse Hill Down Distant
To TULSE HILL
814 yds.
114 yds.
163 yds.
343 yds.
471 yds.
643 yds.
834 yds.
1034 yds.
POINT OF COLLISION (Approx.)
Engine of boat train stopped here
Light engine stopped here

NOT TO SCALE