

# SOMERSAULT

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SIGNALLING RECORD SOCIETY OF VICTORIA INC



*This marvelous post at Clifton Hill controlled movements from Nos 2 and 3 Roads to either the Epping or Hurstbridge lines. The two arms on the lefthand doll were for movements from No 2 Road to Epping (top arm) or Hurstbridge (bottom arm). The two arms on the righthand doll applied similarly for No 3 Road. Since these moves were very rarely made, the signals on Post 25 were very rarely used except when trains were terminating at Clifton Hill, as they were on the date this photo was taken (20 January 1991). Post 25 was described as a bracket post but the actual construction was two straight masts joined by a light platform. Post 25 had existed in this form since Clifton Hill was resignalled in 1901, but it is likely that the original post was a wooden post. It is not known when the lattice mast was provided. The Home signals on Post 25 were fitted with reversers in 1926 in conjunction with the provision of automatic signalling between Clifton Hill B and Northcote Loop Junction and lever locking and track control between Clifton Hill B and Westgarth. Clifton Hill B signalbox can be seen in the background. The post was abolished with the resignalling of Clifton Hill in 1992 but was apparently sold complete to an enthusiast.*

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### MINUTES OF MEETING HELD FRIDAY MARCH 16, 2001,

AT THE SURREY HILLS NEIGHBOURHOOD CENTRE, 1 BEDFORD AVENUE, SURREY HILLS

Present: - J.Black, W.Brook, G.Candy, J.Churchward, B.Crosby, G.Cumming, C.Gordon, W.Johnston, K.Lambert, D.Langley, B.McCurry, A.McLean, J.McLean, A.Ratcliffe, P.Silva, A.Wheatland & R.Whitehead.

Apologies: - I.Chan, B.Cleak, G.Cleak, C.French, A.Hinde, T.Murray, G.O'Flynn, L.Savage, B.Sherry, R.Smith & A.Waugh.

The President, Mr. David Langley, took the chair & opened the meeting @ 22:01 hours, following the completion of the Annual General Meeting.

Minutes of the February 2001 Meeting: - Accepted as read. W.Johnston / R.Whitehead. Carried.

Business Arising: - Nil.

Correspondence: - Payment for issues of The Signalling Record had been sent to the S.R.S.U.K.

Circular SWD/2001 was received from the Office of the Manager Rail Safety, Victrack Access. The circular describes the alterations to rail safety management within Victoria. The SRSV was amongst the organisations listed in the official distribution for the circular. W.Brook / C.Gordon. Carried.

Reports: - In response to a question from Alex Ratcliffe, the Secretary was able to advise that more than 50% of subscription renewals had been received so far.

General Business: - Wilfrid Brook drew the meetings attention to an item in a recent ARHS Members Newsletter whereby the ARHS plans to publish a series of definitive rail histories on a number of subjects including signalling & safeworking. Peter Silva was able to clarify the plans of the ARHS in regard to a publication on signalling & safeworking. Glenn Cumming noted that he was aware that a manuscript / text for a Victorian signalling book was in existence but was unsure of its current status. Alex Ratcliffe asked who owned the copyright over Clear Normal Speed by the late John Sinnatt. It was believed that the ARHS as publisher still owned the copyright for Clear Normal Speed.

Keith Lambert reported that four new crossovers would be commissioned at Franklin Street next weekend. There will not be any diamond crossings. The crossovers will allow movements from the Country Passenger Yard to the Through Suburban Lines, restoring connections that were removed in 1983.

Keith Lambert advised that the local control panel was still in place at Victoria Park. Control of Victoria Park was transferred to Metrol on 26.12.1983 when Metrol was commissioned.

Keith Lambert noted that preliminary works for the Jolimont - Victoria Park re - signalling are proceeding.

Chris Gordon noted that road works were taking place in the vicinity of the New St hand gates at Brighton. Bob Crosby requires a red lens for a kerosene hand lamp. Can any member help ?

Chris Gordon described the recent alterations at Ararat involving new signals & track circuits in addition to electrically locking the siding points.

David Langley described the track & signal alterations on the Appleton Dock Line to be commissioned in the near future.

Reports were received concerning proposals for CTC on portions of the SG Line between Newport & Pyrenees Loop, namely Newport - Gheringhap & Maroona - Pyrenees Loop.

Meeting closed @ 22:20 hours.

The next meeting will be on Friday 18 May, 2001 at the Surrey Hills Neighbourhood Centre, 1 Bedford Street, Surrey Hills, Victoria.

## SIGNALLING ALTERATIONS

*The following alterations were published in WN 08/01 to WN 13/01. The alterations have been edited to conserve space.*

*Dates in parenthesis are the dates of publication, which may not be the date of the alteration.*

- 09.03.2001 **Balmattum** (TS 1023/01, WN 11/01)  
As from 9.3., the siding is book out of service due to track condition.
- (19.03.2001) **Spencer Street No 1 - Procedure for crossing the track** (SW 4/2001, WN 10/01)  
An asphalt vehicle crossing crosses all the main lines on the Up side of Spencer Street No 1 Box. This crossing provides road access to the Car Sidings.  
Prior to approach the crossing from the Bank sidings (B track area) the person in charge of the movement to the Car Sidings must obtain permission from the Yard Master. The person in charge of the movement must then contact the Signaller at Spencer Street No 1 who will ensure that it is safe for the movement to proceed and that all signals protecting the crossing are at Stop. The Signaller must also obtain permission for the movement from the Yard Master.  
If the movement is from the Car Sidings, the person in charge must obtain permission from the Signaller who will ensure the movement's safety and ensure that all signals protecting the crossing are at stop.  
The Signaller will then unlock the manually operated boom barrier using the 4D key. The person in charge must place a flagman on each side of the crossing to display a red hand signal and walk across the crossing with the movement. If more than one vehicle is to cross the track then each vehicle must cross separately.  
Once the movement has been completed the person in charge must inform the Signaller that the crossing is clear and that normal train running may resume.
- (19.03.2001) **Spencer Street No 1 - Simultaneous operation of Dwarfs 12, 48, and 53** (SW 3/01, WN 10/01)  
As a result of a risk assessment, it is not permitted to switch out the Bank Sidings with Dwarfs 12, 48, and 53 at proceed and the Leading Shunter directing train movements in the area without the Signaller's involvement.  
It is permitted to switch out the Bank Sidings with Dwarfs 48 and 53 at proceed and Dwarf 12 at Stop. But if it is necessary to place Dwarf 12 at proceed, Dwarfs 48 and 53 must be restored to Stop.
- 24.03.2001 **Franklin Street** (TS 25/01, WN 12/01)  
From 2000 hours Saturday, 24.3., Automatics 483, 554, and 807 on the Up and Down Through Suburban Lines between Spencer Street and North Melbourne were converted to LED signals.
- 26.03.2001 **Spencer Street No 1** (SW 2/02, WN 10/01)  
From 0400 hours Monday, 26.3., running movements may be made from the bi-directional Main Country line via Leads S and V towards the West Yard. Diagram 03/01 replaced 21/94.  
To allow this, Points 86 and 132 were fitted with M3 point machines. Points 86 lead from the bi-directional Main Country line to the East and Centre Yards. Points 132 are the junction of Leads S and V. Dwarfs 153 and 155 were converted to Home signals. Home 153 applies from V Lead towards the platforms and is situated 26 metres on the Down side of the former Dwarf. Home 155 applies from S Lead towards the platforms and is situated 10 metres on the Down side of the former Dwarf. Both new Home signals are mounted at ground level and only show medium and low speed aspects. Push buttons were provided to select the Low Speed aspects for the signals.  
An annunciator is provided to announce the approach of a train on the bi-direction Main Country line.
- 31.03.2001 **Ringwood - Heatherdale** (WN 13/01)  
From Saturday, 31.3., the A light of Up Automatic L772 was lowered to bring the light below the cross arm of the overhead structure, and the light units of Up Automatic L760 were reversed to improve sighting.

*The following alteration was overlooked last year:*

- 04.10.2000 **Nullawil - Australian Bulk Alliance Grain Outloading Facility** (SW 153/00, WN 41/00)  
On 4.10., a new grain loading facility was commissioned on the Down side of Nullawil at 333.7 km (via Bendigo). The loader is situated over the main running line and all trains passing through or working at the loader must be in possession of a current train order for the section Wycheproof Block Point - Sea Lake Block Point. A speed limit of 25 km/h applies through the grain loading facility.  
Standard Location Boards ('Nullawil Outloader') are situated 2500 metres from the loader in each direction and Notice Boards lettered 'All trains 25 kph until clear of outloader' 1000 metres from the loader. An indicator is provided at the entrance to the outloader in each direction to indicate that the loading platform and chute are retracted. The indicator will show a green light if it is safe for the train to pass, but NO light will be shown if the loading chute or platform is lowered.  
Should a train approach the outloader and the green indicator light is not displayed, the Driver must bring the train to a stand and contact the ABA staff via local radio. If the local ABA staff cannot be contacted, the Driver must contact the Train Controller who will inform the ABA and the Freight Australia North West Regional Manager.  
When it is necessary to perform maintenance activities on the outloader, the loading operator must obtain permission from the Train Controller. The details must be recorded on the train graph and in the ABA Out Loader Order Book. A train or track machine must not be permitted to enter the Wycheproof Block

Point - Sea Lake Block Point section until the Train Controller is advised that the maintenance has been completed. This advise must also be recorded on the train graph and in the Order Book.

Trains may load at Nullawil in three ways. Trains may reverse at Berriwillock Siding and load on either the Up or Down journey. Trains may reverse at Nullawil siding provided it is clear and the wagon block does not exceed 331 metres in length. With the third method, the leading locomotive is detached and placed in the siding. The train is then moved forward using the second locomotive until clear of the points and the first locomotive is attached to the rear. The train is then hauled back until it is clear of the points when the second locomotive is placed in the siding. The train is then pushed until the train is clear of the points and the second locomotive can be placed on the train. The train is then propelled to the outloader.



*Clifton Hill A Box was brought into service on 10 October 1901 with the extension to Princes Bridge. The contract to construct the box was let on 24 May 1901 to T. Wood for £216/12/7. The box was a standard C1 design with an operating floor 20' long by 12'3" wide. The operating floor was 8' above the nominal rail level. The box contained a 30 lever Rocker frame. Although taken out of use on 11 May 1992, the box is still in existence as it was boarded up, complete, when it was abolished.*

# JOLIMONT TO CLIFTON HILL

(Continued from March 2001)

## CLIFTON HILL B

The opening of the direct line from Princes Bridge on 10 October 1901 required an expansion of facilities at Clifton Hill, though the basic station remained recognisable afterwards. The major change was the provision of a second platform on the former goods siding. (Clifton Hill was to have been closed for goods from 8 June 1901, but this was subsequently deferred.) All three roads through the station became running lines and the station was fully interlocked from two new signalboxes at Ram-sden Street (Clifton Hill A) and Heidelberg Road (Clifton Hill B).

The contract for the new signalbox at Heidelberg Road was let on 24 May 1901 to W. Barry who tendered £239/14/3. The box was brought into service with the enlarged station and extension to Princes Bridge on 21 October 1901. It contained a 48 lever No 6 Pat-tern Rocker frame (8 spare).

One interesting feature of the new layout were the short engine sidings located at the north end of the yard in the triangle between the North Fitzroy and Heidelberg lines. Siding A ran from the North Fitzroy line and was brought into service on 21 October. Siding B ran off the Heidelberg line and may not, in fact, have existed as the Weekly Notice states that "This Disc [on the lefthand mast of Post 27] and Siding B will not be brought into use till further notice." Siding B was never mentioned again. Siding A, however, was subsequently known as the 'Loco Siding'. The asphalt and base of the water crane situated in this siding can still be seen today.

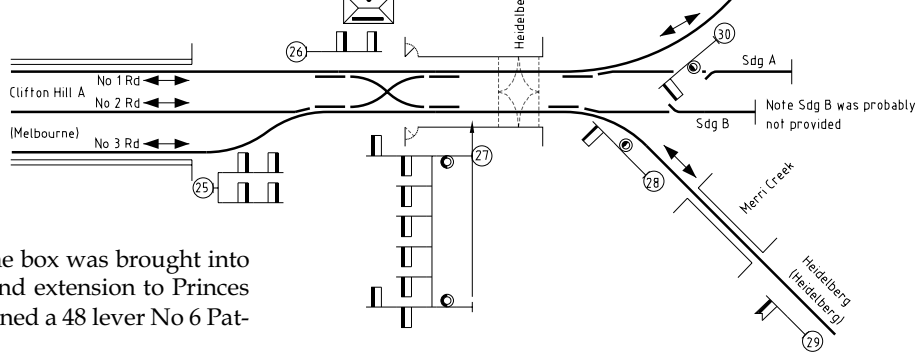
The December 1901 WTT shows there were 49 local services to Clifton Hill; the engines of which would use the loco siding, if only to run around. By comparison, there were only 25 trains per day to the Heidelberg line and only 4 passenger trains per day (5 on Saturday) on the North Fitzroy line. The North Fitzroy trains originated at Spencer Street and ran via North Fitzroy to terminate at Clifton Hill. Until 1904 there was no connection at North Fitzroy between the Whittlesea line and the Clifton Hill line and so the Res-ervoir suburban service continued to run via Royal Park and North Fitzroy.

A platform indicator was provided on 2 April 1903. Worked by lever 36, this showed which platform the next city bound train would depart. The pulley in the Down plat-form wall for this indicator is still in situ.

The Northcote Loop was opened on 5 December 1904. This provided the missing con-nection allowing trains to run from Princes Bridge via Clifton Hill to the Whittlesea line. The suburban service on the Whittlesea line was altered to run via Clifton Hill. It also ap-pears that most of the Clifton Hill locals were extended to North Fitzroy to continue to

provide that station with a reasonable service. The next WTT I have is from December 1909 which shows roughly equal number of trains for North Fitzroy (27), the Res-ervoir line (28) and the

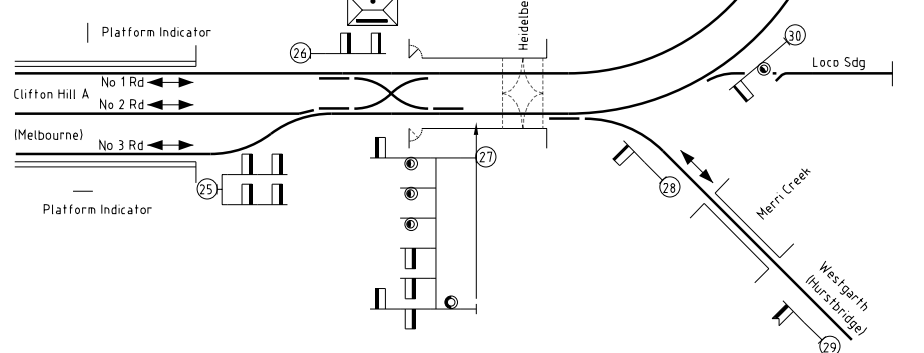
Clifton Hill B 1901  
(Based on WN 17/01)



Heidelberg line (30). There were also still fourteen Clifton Hill locals - these may have been run to allow engines to be serviced away from the congested Princes Bridge yard. There were still 10 local trains in the December 1913 WTT, but they had all disappeared by the December 1916 WTT and were never restored.

There were no recorded alterations at Clifton Hill B for the opening of the Northcote Loop - mainly because the double track initially ended at Plenty Road. The resulting short section of single track between Clifton Hill B and C boxes was probably controlled by the Signalman at B Box using slots on the signals at C Box and a bell to co-ordinate actions. It is barely possible that the Electric Staff was used on this short section, but the train would have cleared the section before the Signalman could get back to the box from the staff exchange platform. In any case, the double track was extended from C Box to B Box on 16 April 1905. Safeworking then became Double Line Block with the section being Clifton Hill B - Northcote Loop Junction. The new Up line was taken off the Heidelberg line. The Loco Siding was retained but now

Clifton Hill B 1913  
(Based on WN 8/13 & 219/05)



trailed into the Up Northcote Loop line. The levers for Siding B were recorded as being removed at this time.

Acceptance of trains from Northcote Loop Junction under Block Rule VI was formally authorised at Clifton Hill B from 28 May 1909. (Previously the use of this rule had been generally permitted at double line block posts; subsequently it was generally prohibited except at certain locations - Clifton Hill B being one.) Permission to use Block Rule VI for trains from Northcote Loop Junction was subsequently withdrawn in late May 1914.

The three set back arms on Post 27 (the rightmost arms applying from the Down line) were replaced by discs in late October 1909. The three station roads were track circuited in February 1912 and the remaining Up Homes on Post 27 were fitted with reversers.

The Heidelberg line was duplicated between Westgarth and Alphington on 8 December 1912 and the single line Electric Staff section became Clifton Hill B - Westgarth from that date. The large instruments were subsequently replaced by miniature instruments in August 1916.

In preparation for electrification, the signal bridge (Post 27) was replaced by new Posts 27, 28, and 30 on 27 October 1920. From this date Up passenger trains from Northcote Loop Junction or Westgarth had to use No 2 Platform as it was no longer possible to signal Up trains into No 1 platform. The Loco Siding was abolished at the same time; the siding, of course, had no purpose with the new electric service. The electric service - to North Carlton, Reservoir, and Heidelberg - was opened on 18 September 1921. The new electric service levels were roughly twice that of the old steam service. The daily services in December 1924 were (steam services in December 1916 in brackets): North Fitzroy 56 (24); Reservoir 71 (36); and Heidelberg 67 (34).

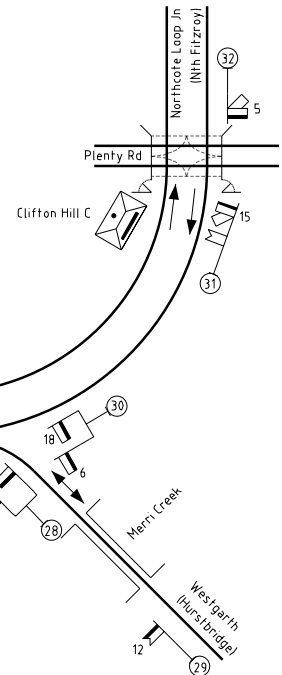
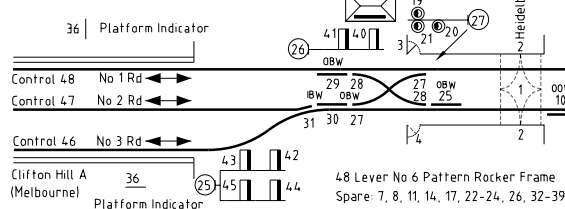
The number of trains to Northcote Loop Junction undoubtedly severely delayed traffic on Plenty Road; particularly as the cable tram crossed the line. (Electric tram crossings are expensive to maintain and must be traversed at low speed; imagine the problems at a cable tram crossing where the train must be supported over the cable vault as well.) It is not surprising that this crossing was replaced by an underbridge in the middle twenties. The underbridge cost nearly £40,000 and was shared between the Railways, the Tramways Board, and the Northcote City Council.

The first signalling alteration for the underpass was carried out on 20 May 1925 when a works siding was provided. The Works Siding was on the Down side of the line and led from a set of facing points in the Down North Fitzroy line. New Posts 27B and 28B were provided to control movements to and from the siding. The Works Siding became the new Down line over the

bridge on 26 July 1925 and the following day the former Down line became a Works Siding. Posts 28B and 31 were relocated. Control of the Down Starting signal by Clifton Hill C was removed. The new Up line came into service on 23 Au-

### Clifton Hill B 1920

(Based on 1923 BoS & 1925 box diagram)

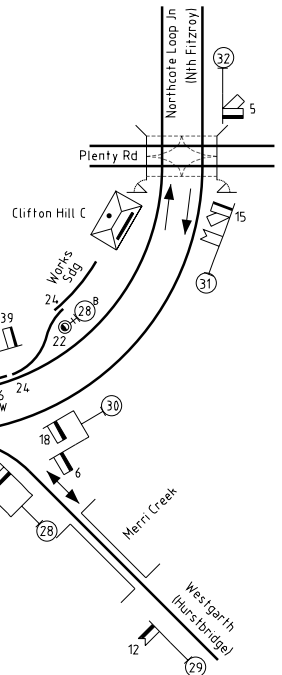
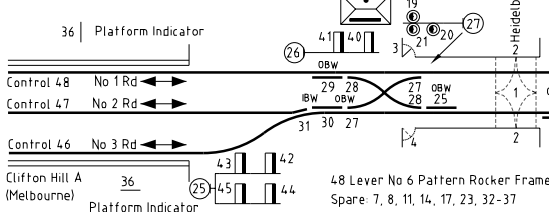


gust 1925 and the gates at Plenty Road were abolished. Clifton Hill C Box was closed and Posts 27B, 28B, and 32 were removed.

In late July 1926 direct bell communication for train description was provided between Flinders Street D Box (Princes Bridge) and Clifton Hill B with repeating bells in Clifton Hill A box. Subse-

### Clifton Hill B 1925

(Based on WN 21'25 & LS)

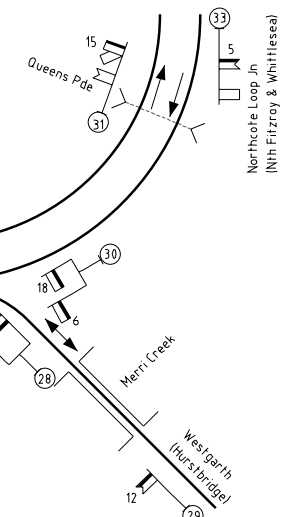
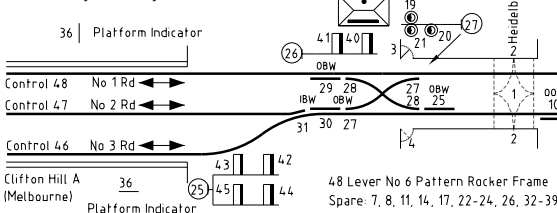


quently, the departure of Up trains was directly announced to Princes Bridge from Clifton Hill B Box (and vice versa for Down trains).

On 19 September 1926 automatic signalling was pro-

### Clifton Hill B 1926a

(Based on Signalbox Diagram)



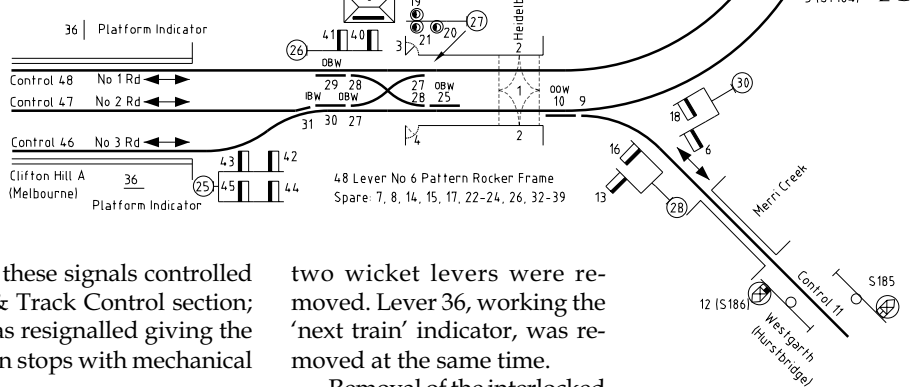
vided on the Down side of B Box. The Double Line block section to Northcote Loop Junction was replaced by three position automatic signalling and the miniature Electric Staff section to Westgarth was replaced by Lever Locking and Track Control. Posts 29, 31, and 33 were replaced by light signals (all with Style VR heads). Lockbars 25 and 30 were replaced by lever locks. Reversers were provided for the Homes on Posts 25 and 26 together with train stops. (The train stops were provided because these signals controlled movements into a Lever Locking & Track Control section; they remained until Clifton Hill was resignalled giving the unusual sight in recent years of train stops with mechanical signals.)

Traffic congestion at Heidelberg Road was causing concern. A survey in 1937, reported in Hansard in 1950, showed that between 0600 and 2000, 7268 vehicles crossed the line and the gates were shut 187 times for a total time period of 5 hours 12 minutes. Investigations in November 1938 revealed that it had been customary for the Heidelberg bus to stop a few feet beyond the level crossing preventing following cars from clearing the line. The owner of the service instructed his drivers to drive their vehicles a reasonable distance beyond the crossing and, in any case, not to block traffic. By 1953 it was claimed that between 1630 and 1800 the gates were closed for a total of 51 minutes, causing a queue of cars at least 10 chains long and cars had to stop three times.

The delay to road traffic at Heidelberg Road was caused

### Clifton Hill B 1926b

(Based on LSI)



two wicket levers were removed. Lever 36, working the 'next train' indicator, was removed at the same time.

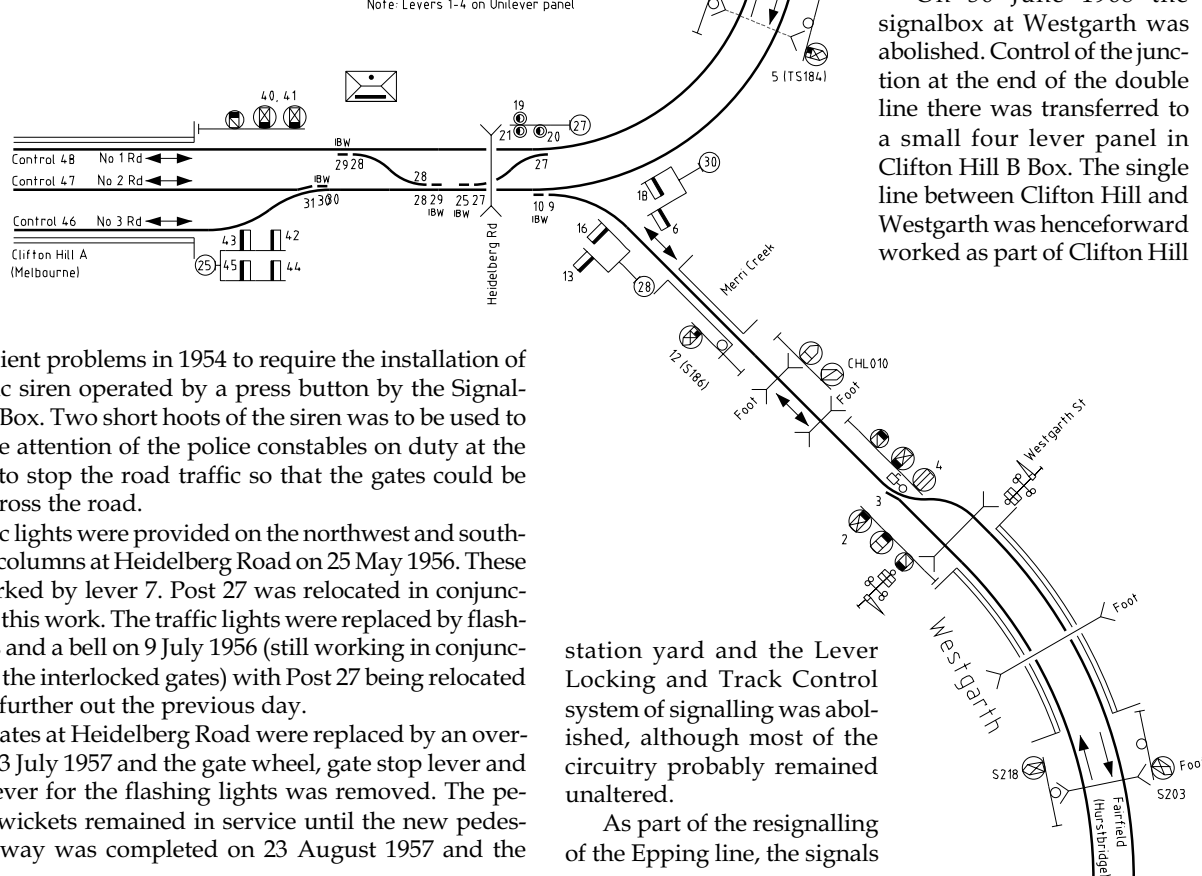
Removal of the interlocked gates provided space to allow the delta crossover in front of the signalbox to be removed. Again the first action was the relocation of Post 27 which was relocated 11 yards further out on 5 October 1958. The delta was replaced by two crossovers on 1 February 1959. Concurrently Post 26 was replaced by a three position signal Post 40. The Weekly Notice was at pains to point out that the Normal Speed aspects applied only for the North Fitzroy line and the Medium Speed aspects for the Heidelberg line. This situation still applies for this post forty-two years later and those in the know can easily determine the route of a down train at Clifton Hill irrespective of what the PID or station staff say.

Controlled Automatic ST184 was temporarily converted to a Home signal on 23 September 1964, though the reason for this was not recorded in my sources. It was reconverted back to a Controlled Automatic on 20 May 1965.

On 30 June 1968 the signalbox at Westgarth was abolished. Control of the junction at the end of the double line there was transferred to a small four lever panel in Clifton Hill B Box. The single line between Clifton Hill and Westgarth was henceforward worked as part of Clifton Hill

### Clifton Hill B 1968

(Based on Box Diagram & LSI)



ing sufficient problems in 1954 to require the installation of an electric siren operated by a press button by the Signalman at B Box. Two short hoots of the siren was to be used to attract the attention of the police constables on duty at the crossing to stop the road traffic so that the gates could be closed across the road.

Traffic lights were provided on the northwest and southeast gate columns at Heidelberg Road on 25 May 1956. These were worked by lever 7. Post 27 was relocated in conjunction with this work. The traffic lights were replaced by flashing lights and a bell on 9 July 1956 (still working in conjunction with the interlocked gates) with Post 27 being relocated 37 yards further out the previous day.

The gates at Heidelberg Road were replaced by an overpass on 23 July 1957 and the gate wheel, gate stop lever and control lever for the flashing lights was removed. The pedestrian wickets remained in service until the new pedestrian subway was completed on 23 August 1957 and the

station yard and the Lever Locking and Track Control system of signalling was abolished, although most of the circuitry probably remained unaltered.

As part of the resignalling of the Epping line, the signals

between Clifton Hill B and Merri were renewed on 23 August 1987.

Clifton Hill was resignalled in early 1992. At B box worked commenced with the conversion of the points to clamp locks. Points 27D were converted on 1 May and the other end of the crossover were converted the following day. The associated plunger (25) was abolished and the lever sleeved normal. Points 13 and 31 were converted on 3 May 1992. The associated plungers (14 and 30) were abolished and the levers sleeved normal. The box was abolished on 11 May 1992.

Like Clifton Hill A, it was decided to 'preserve' the box. Unlike A box, however, all the equipment was removed. The box is still in existence but is now very derelict due to vandalism.

## CLIFTON HILL C

Clifton Hill C box worked the interlocked gates at Plenty Road. It was brought into use on 29 July 1890 in conjunction with the Northcote cable tram which had opened on 18 February 1890 (but which terminated on the north side of Merri Creek for some weeks pending rebuilding of the bridge).

Plenty Road signalbox contained a 12 lever frame (6 spare). It was not a safeworking location. An additional lever was in use between 20 and 25 February 1891 due to the relocation of the signalbox at Heidelberg Road. By 1 July 1899 the box was crosslocked with Heidelberg Road, and worked 1 signal in addition to working the gates.

On 10 October 1901 the junction was rearranged at Heidelberg Road and, in conjunction with this, the crosslock from that signalbox was removed. Instead Plenty Road now

worked the Up and Down Homes protecting the crossing and controlled the Up Distant for Clifton Hill B box.

On 4 December 1904 the Northcote Loop was brought into service (the official opening date in Victorian Railways to '62 is shown as the 5 December). This double track line provided a sharply curved connection between the Whittlesea line and the line between Clifton Hill and North Fitzroy. The loop was worked by the new Northcote Loop Junction signalbox. Although the loop itself was double track, the double track did not initially extend all the way into Clifton Hill. Temporarily, the double track terminated at Clifton Hill C box, probably because of the difficulties in crossing the cable line (a contract had been let to Dorman, Long & Coy on 19 October 1904 for construction of a 'tramway crossing' for Plenty Road). An extra two levers (1 set of points, 1 lockbar) came into service at Clifton Hill 'C' on 4 December. It is probably that Clifton Hill 'B' gained control of the Home signals on Posts 31 and 32 on this date. On 14 April 1905 the double line was extended the short distance into Clifton Hill B and Plenty Road returned to being just a gate box.

On 8 March 1914 temporary alterations were made 'account the tramway crossing' - presumably the tramway crossing was being replaced. A short section of single line was provided in front of the box and Clifton Hill C was opened as a block post. The sections were Clifton Hill B - Clifton Hill C - Northcote Loop Junction. The Signaller at C Box could not accept Up and Down trains at the same time, and the Signaller at B Box could not a train to proceed towards Post 31 (the Down Starting signal) unless Line Clear had been obtained from C Box, unless it was an engine running around its train. At C Box the gates and wickets were disconnected from the frame, but an additional 2 points and 2 lockbars were provided. This temporary working was cancelled on 12 April 1914 when the normal working was resumed and C Box was closed as a block post.

Work commenced to replace the level crossing at Plenty Road with an road underpass in 1925. The first activity was the relocation of Clifton Hill C signalbox to the Up side of the line on the Down side of the crossing on 1 March 1925. The Down line was relocated to cross over the new bridge on 26 July 1925 and the control by C Box over the Down Starting was removed. The new Up line came into service on on 23 August 1925 and the signalbox and level crossing were abolished.

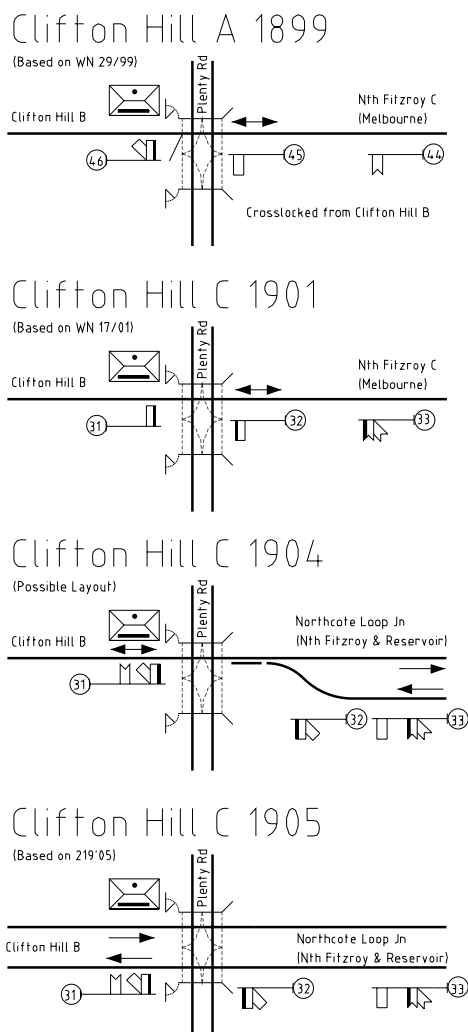
## CLIFTON HILL (POST 1992)

On 11 May 1992 the two mechanical signalboxes at Clifton Hill were replaced by a SSI normally worked from the Clifton Hill Group Signaller at Metrol. A number of unusual features were provided with the new interlocking.

The first was the provision of emergency control panel in the Up station building for use if communication with Metrol failed. Essentially the emergency control panel is a 'One Control Switch' (OCS) panel with a separate control button for a restricted set of routes. Available routes are:

- \* Home 108 to Epping
- \* Home 108 to Hurstbridge
- \* Home 128 to Epping
- \* Home 128 to Hurstbridge
- \* Home 123 to Melbourne
- \* Home 121 to Platform No 1
- \* Home 131 to Platform No 1

Selection of a route will call all required signals and points to the required position. For example, selection of the route from Home 108 to Heidelberg will call Crossover 008 reverse, and Points 021 and 030 reverse and clear Homes





CHL132 and CHL108.

Note that Down routes can be set from Platform 1; this covers the situation where Up trains need to be terminated at Clifton Hill because Metrol has failed completely and the city stations were closed. Home 123 was undoubtedly controlled to prevent the unnecessary or premature operation of the booms at Ramsden Street. On the Down journey, Home 104 would clear and be put in 'fleeting' mode (i.e. act automatically). Down trains from Melbourne would be automatically signalled to arrive in Platform 2 where the station staff would manually select a route to Epping or Heidelberg.

The second unusual feature was that Dwarfs 113 and 118 could display 'Clear Low Speed' (a green aspect) for moves from No 1A Track. This indication was allowed for from the original issue of the three position rules, and was indeed pro-

vided on many motorised dwarf signals in the twenties and thirties. This indication fell into disuse with the replacement of light signals for motorised dwarf signals. As far as I know, these two Dwarfs at Clifton Hill were the first light Dwarfs to display this aspect, and the first Dwarfs installed since the thirties that could display the aspect.

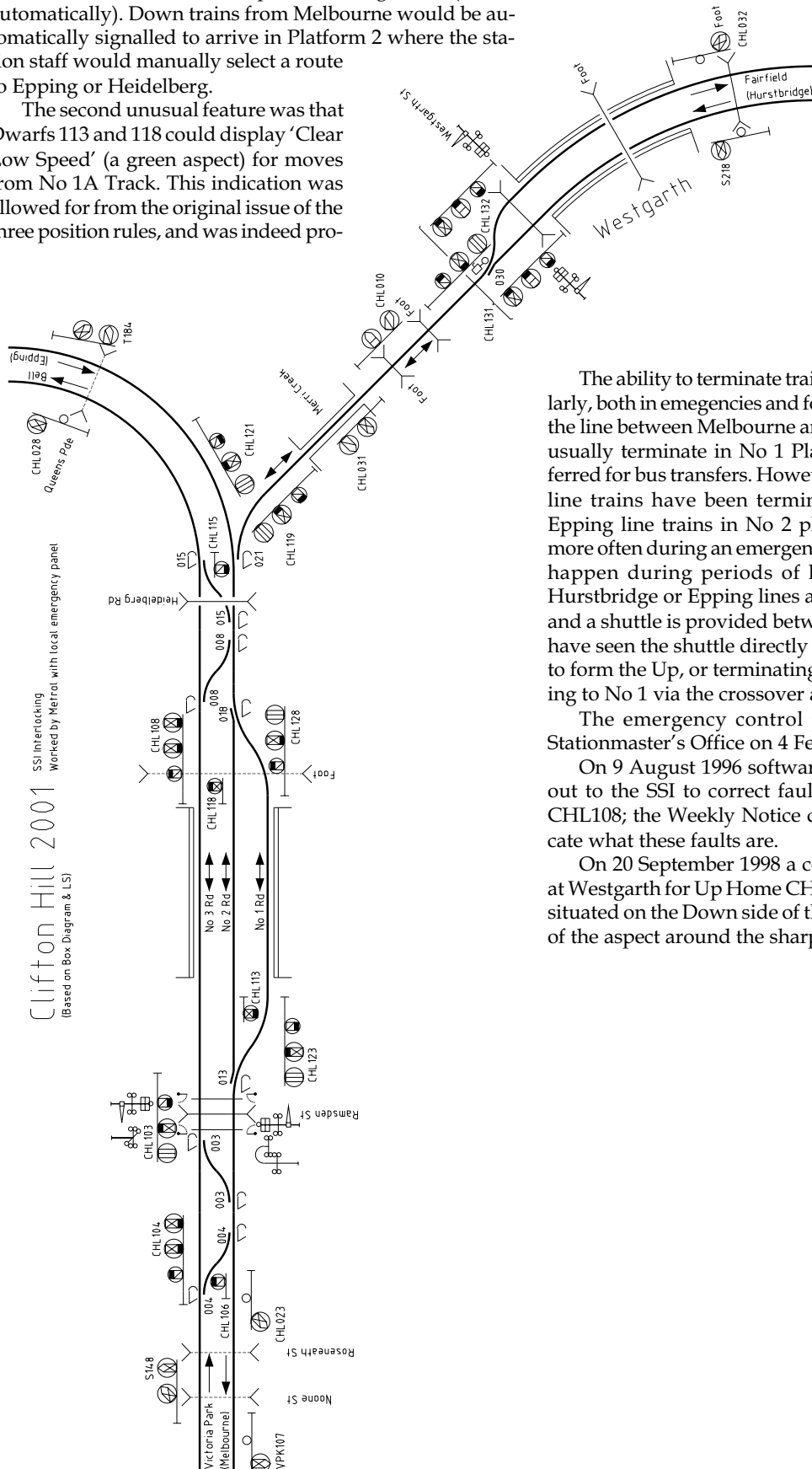
One final interesting point was that Homes 119 and 121 could be cleared for Up movements into No 2 Platform; restoring a facility that was withdrawn in 1920. This facility has been used at least once; in the morning peak earlier this year a passenger suffered a medical emergency in an Up Hurstbridge line train at Clifton Hill and, until she could be removed by ambulance, following Up trains were routed via No 2 platform.

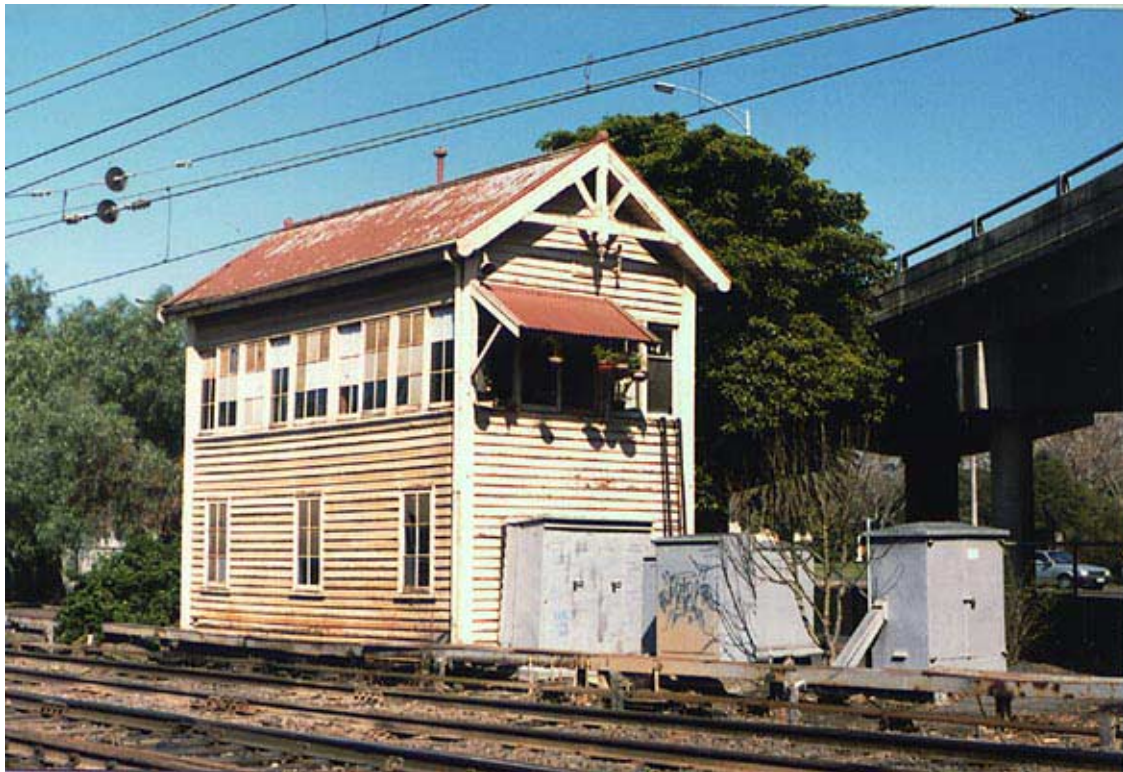
The ability to terminate trains at Clifton Hill is used regularly, both in emergencies and for regular maintenance. When the line between Melbourne and Clifton Hill is closed trains usually terminate in No 1 Platform; this seems to be preferred for bus transfers. However, on occasions Hurstbridge line trains have been terminated in No 1 platform and Epping line trains in No 2 platform. This seems to occur more often during an emergency, probably because this may happen during periods of higher train use. When the Hurstbridge or Epping lines are closed beyond Clifton Hill and a shuttle is provided between the city and Clifton Hill I have seen the shuttle directly terminating in No 1 Platform to form the Up, or terminating in No 2 Platform and shunting to No 1 via the crossover at the Down end.

The emergency control panel was relocated to the Stationmaster's Office on 4 February 1996.

On 9 August 1996 software modifications were carried out to the SSI to correct faults with signals CHL104 and CHL108; the Weekly Notice does not, unfortunately, indicate what these faults are.

On 20 September 1998 a co-acting signal was provided at Westgarth for Up Home CHL131. This co-acting post was situated on the Down side of the line to provide a clear view of the aspect around the sharp curve into Westgarth.





Clifton Hill B signalbox on 15 September 1986. The contract to erect this box was let on 24 May 1901 to W. Barry for £239/14/3. It was brought into service on 21 October 1901 with a 48 lever Rocker frame. The box was a standard Victorian design and was erected to plans prepared in March 1889 to drawing 465. This type of design has been classified as Type C1; the distinguishing decorative cross gabbling can be seen at the end of the roof. The box was 24'1" long by 12'3" wide (both inside dimensions at the operating floor level). The operating floor was 8'3" above nominal rail level. The lower photo shows the Down end of the frame on 20 April 1991 when the SRS visited the box. Although the frame was nearly 90 years old by that date, the equipment on the block shelf was more modern. At the far end of the shelf can be seen the small panel that worked Westgarth. Next to that are four time releases, and the strange wooden cabinet that appeared to contain a list of trains on rollers. Under the shelf can be seen various point and signal repeaters and track indicators. Although the yard was fully track circuited, no illuminated diagram was provided.





*The 48 lever rocker frame at Clifton Hill C on 20 April 1991. All that can be seen are the rocking shafts and rocking shaft brackets. The top brackets were 10 hole, the bottom brackets were 12 hole, and, as can be seen virtually all the holes were in use. The method for supporting the brackets in a Rocker frame can be seen in this photo. The outer ends of each bottom bracket were supported on a stanchion and the top brackets were supported by the bottom brackets. Flat iron strips joined the end of each rocking shaft bracket to its neighbor to ensure that the brackets remained square and the shafts did not bind in their journals. The weights which can be seen under the frame were clamped to the shafts to counterbalance the weight of the locks to make the frame easier to work. Bolted to the machine timbers under the frame can be seen a variety of electrical contact boxes. These are mostly circuit controllers, but there are few floor push contacts. The lower photo was taken in June 1992 and shows the pile of parts that resulted from the dismantling of the frame.*



## EARLY DAYS ON THE VICTORIAN RAILWAYS

George Brown

George Brown, the grandfather of former Victorian Railways Chairman of Commissioners, George Frederick Brown, wrote a series of articles with the above title for *The Footplate*, the journal of the Victorian Division of the then Locomotive Engine Drivers, Firemen and Cleaners Association. The first article appeared in the issue of 28 February 1919 and subsequent articles appeared regularly thereafter.

The following are selected extracts from these articles pertaining to safeworking matters in the very earliest days of railways in Victoria. George Brown began his footplate career as an engine cleaner at Bendigo on 11 November 1866. He later progressed to Fireman and eventually Engine Driver.

The extracts from *The Footplate* were supplied by Trevor Penn and edited for the interest of SRSV members by Chris Wurr.

The first installment which contained items of signalling and safeworking interest appeared in the March 29, 1919, issue:

The first railway accident I heard of was at the Little River station, Geelong and Melbourne line. The station was then on the Geelong side of the river. As of course in those days there were no points and crossings, the rails being merely shifted end on. They could not have been properly placed, as the engine of the last passenger train from Melbourne to Geelong ran straight off and turned upside down. John Guest, the driver and Jim Willet, the fireman. There was no one injured. The driver and fireman were both under the engine when she turned over. I think it was No. 16, a saddle back. Poor old Guest must have been knocked a bit dazed as the first thing he wanted to know was what had become of the tallow kettle. It appears he set great store on a nice little copper tallow kettle he had.

In the August 30, 1919, issue George relates the sage of a collision in February 1861 by presenting a copy of the correspondence between F.C. Christy, Loco Superintendent, and Thomas Higginbotham, Engineer-in-Chief.

Williamstown  
28th February, 1861.

Sir,-

I have the honor to report a collision which took place today on the Essendon line, between No. 8 engine, driver Thomas Higgins, fireman J. M'Kenna, and No. 10, driver Edward Jackson, fireman [no name given]. Upon the accident being reported to me I immediately proceeded upon No 8 engine up the line with a train of passengers for the races. I found the trains in utter confusion, no time being kept, and the time of starting, and not being aware of the arrangement of running. On proceeding as far as the Essendon Junction, the signal for entering the line was given. I then enquired where the other two trains (the race train and the Essendon) were. This no one seemed to know. We put our train into the Junction siding. The siding being too short to hold the train, it blocked both lines. I immediately jumped from the engine and gave instructions for the train to follow me slowly. I ran ahead of this train, and stopped Jackson's

train at the Newmarket siding. I brought my train into this siding, and sent Jackson on to Melbourne with instructions to return immediately from Melbourne with passengers, and that no train should leave Newmarket until he returned. This he did. In the interim the Essendon train had returned from the Racecourse to Newmarket and was shunted up the Essendon line letting Jackson proceed to the races with passengers. I then saw that it was advisable to take one train, two trains could not work safely upon a single line. Consequently I returned with No. 8 and ceased running for the day.

Accompanying are the reports of both drivers. I do not attach any blame to either of them, as they appear to have lost time and got into confusion. Higgins statement, together with that of the fireman, is that they were ordered to start by Mr. Richardson, so as to clear the Essendon Junction before the arrival there of Jackson. This they failed to do and met in the cutting. The accident would have been serious had not both been running very carefully. As it is the only damage done is three buffers broken. All the hands were perfectly sober and steady. The two drivers are the oldest on the Victorian lines and have been driving ever since the commencement of the lines, and before they were open for traffic.

I have the honor to be Your most obdt. Servant

F.C. Christy.

This report gives the names of the two drivers and one of the firemen. The E. Jackson is the Ned Jacks I have already written about. T. Higgins was driving for some years on the Geelong to Ballarat line. J. M'Kenna, the only fireman's name given, was afterwards loco foreman at Ballarat and Melbourne; so it is pretty well certain that these were about the first enginemen employed on the Government Railways. This report also throws a light on the difference in the race traffic in 1861 and 1919, and the electric trains now running over the spot where the collision happened. The Essendon line was made by a private company and had running privileges over the Government railway from Newmarket to Spencer Street. The line Spencer Street to Newmarket was built by the Government for the cattle market and then extended to the racecourse for the race traffic. It was evident that the Essendon Railway Co. was running a special race train on the day of the accident from Essendon. This company afterwards went into liquidation, being a losing concern, and was closed for a number of years. It appears as if the Government railway officers had a certain supervision to see that only capable drivers were employed by the Company.

A followup to the previous item was contained in the September 30, 1919, issue:

Mr Christy's report also throws some light on the amount of race traffic, as it is evident that Higgins'

train could only have been a very short one, as the engine No. 10 could only pull about nine short four wheeled carriages; yet there was not sufficient length of siding for one train to shunt for another. It was thought that Higgins' train could get back in time to Kensington Junction before Jacks' train arrived there. But the two trains collided opposite where Kimpton's flour mills are now. It appears on small engine ran all the race traffic in 1861.

The December/January 1924 issue contained the following:

In looking back to the days before the telegraph, telephone, block sections and other wonderful improvements for the safeworking of transportation it is a cause for wonder how we escaped with such few accidents. Of course the amount of traffic has increased, and without the modern improvements safe working would be impossible.

In a former paper I pointed out how two small engines were booked out to run all the Cup race traffic in 1861, and how they had a collision head on on the single line between Newmarket and Kensington Junction. Thirteen years afterwards, in 1874, I was on the race traffic and there were twelve engines to do the work. Each train left Spencer Street within a few minutes of each other, so that it was like one moving train to the Course.

Platelayers were stationed with flags to see that the trains kept a certain distance apart. In this way we could carry a large number of passengers, although they were in the old four wheeled carriages. At the Racecourse a spare engine was stationed. When the passengers were discharged the train was pulled over the crossing. The spare engine then coupled on, and steamed away on the return trip. The train engine then became the spare engine to couple on to the next train. The same was done at Spencer Street. I was amused at one thing that occurred that day. John O'Malley, the stationmaster at Spencer Street, arranged that the trains should consist of first and second class and should depart from first and second class platforms. A red disc to be carried on the front of the engines on first class and a white disc on the engines of the second class to denote to the pointsman which platform to turn the trains into. However, as it was a windy day and no provision in front of the engine, as there is at present, to fix the discs to, in a short time most of the discs were missing, and first class trains running to the second class platforms. Poor old John did jump around for a bit. But the people did not growl so much then as I think they do now. They appeared to take it as a good joke. One accident spoiled the day. One of the passengers was pushed from the Racecourse platform in between two carriages during the rush and was killed.

The opening of the single line - Newmarket to Wodonga - brought many difficulties as regards arranging the traffic. When there was nothing but regular time table trains to run, and they ran to time without accident, it was all right. When specials were run and the traffic increased, matters used to get mixed up a bit. To give an example of how a mix up could take place. I was running a "goods" to Seymour; on reaching Craigieburn on the return trip we were timed to pass a time tabled goods there. When the goods train passed us we saw that a red disc was on the back of the van. Now, a red disc or an extra red light at night denoted that a special train was following. If a red disc was carried or a red light

at night in front of an engine showed that he was crossing a special at the next station. So when the train passed us with a red tail disc we waited expecting to see the smoke of a special coming up the Broadmeadows bank. But there was no sign of it. Tom Gorman was stationmaster, and Andy Duffy guard. After a consultation we agreed that it was not safe to go on. This was about twelve noon. So we waited until we did see an engine coming. But it was an empty engine with the Stationmaster, Melbourne, and the loco foreman on board. They wanted to know why we were stopping there all the afternoon. We pointed out that there was red disc behind the van of the train that we passed at twelve o'clock. They said the disc had been put on account of a special that was to leave Melbourne at half past three p.m. We wanted to know how we were to know that; and so the goods train that passed us stopped all the trains she met right through to Seymour.

In a future paper I may have more to say re this, also the beginning of the staff and ticket system.

The February/March 1924 issue contained the following:

I endeavoured in my last paper to give an idea of train working on single lines in the early days.

The opening of the North-Eastern line from Newmarket to Wodonga, a single line, with increasing traffic, demanded a safe system for the crossing of trains. The first system proved so unsafe that red head lights were lit at Newmarket on the down journey and extinguished at Newmarket on the up trip as it gave some protection against head on collisions. Then the staff and ticket was introduced. At first the staffs were simply a piece of iron about three inches wide and six inches long, with a short piece of chain and a key attached. The line was divided into sections for crossing purposes, each sectional staff was painted in different colors, such as green, black, white, and yellow. At each sectional the "S.M." was provided with two small locked boxes in which the ticket was placed, to be opened by the key attached to the staff for that section. He was only supposed to take out one ticket at a time, but of course he could take out two if he liked, so there was not much security about that. However it was better than the old system. My first experience was while firing for J. Harris. He placed the staff on the shelf in the cab in front of him and when we were running between Broadford and Tallarook he hung it on a nail on the side of the cab and remarked to me that he thought that would be a good place to keep it. After a while we heard a rattle and away went the staff down between the footplate and the fire-box. 'Now it's gone,' Harris said, 'what are we going to do?' When we got to Tallarook Harris explained the matter to the S.M., who said that he would fix it up by giving us a ticket on the return journey as he had a couple that he had taken out of the ticket box and that perhaps the platelayers might find the staff, but, of course, the loss would have to be reported. Harris reported it and explained how he had hung it on a nail. I got him to suggest that a small box should be placed on each engine to put the staff. Hence the present staff boxes. The next day when I came to work I found Bill Douglas as the driver. I asked him where Harris was, and Douglas said that Harris had to ride with us and get off at Broadford and walk to Tallarook and find the staff. He did find it, but it had been run over and

was all smashed up.

One serious, if comical case occurred about this time. A driver had been off duty for about a month and started again on the three a.m. goods to Seymour. He was not aware of the new system. When nearing Newmarket his fireman told him that they had to stop there and get a staff or ticket from the S.M. The driver replied, "What rot, the S.M. would not be up at that time of the morning." Nearing Essendon, the fireman said that they should get a staff or ticket there, too, but the driver said that it was all nonsense. At that time there were a couple of double gates where the bridge now crosses the Mount Alexander Road. The engine ran through and smashed these gates. The driver stopped the train then and wanted to know why the gatekeeper did not have the gates open. The gatekeeper said that if the train had stopped at the station for the staff or ticket, he would have had the gates open. The driver said he thought everyone had gone mad as he had heard nothing but staff and ticket since he had left Melbourne. He went on to Seymour without any staff or ticket. I met him next day on the Spencer Street platform. I asked him how he was getting on. He said that the "Chief" had sent for him to explain something about a staff and ticket. He asked me if I know anything about it. I tried to explain, but he said that it was not at all likely that stationmasters would be up at that time of the morning. Plenty will say what a stupid way us "old fellows" done business, but they must recollect that there were no telephones, few telegraphs, and no electric systems in those days.

I hope in a future paper to trace the gradual advance in safeworking from that time to the present.

Staff and Ticket working was continued in the April-May 1924 issue:

The adoption of the staff and ticket system created many other alterations. It was certainly safer than the way we had been working previously. It was soon discovered that a stationmaster could not remain on duty both day and night. And as the traffic increased it soon became necessary to shorten the staff sections. In many instances the stationmaster would leave the staff or ticket at night on the ledge of the ticket window and the driver would get off his engine and change them himself. Of course, this could not last long, and there had to be an extra man placed at each staff station. The rule at this time was that guard a certain amount of responsibility, as he was not supposed to start the train until he had seen that the driver had received the staff. This instruction could not be carried out with long trains without great loss of time. After the Little River accident, the Commissioners ruled that the exchange of staff should only take place personally between stationmasters and drivers. The guards were not sorry when this regulation came out. But then another trouble arose at a station, such as Maryborough or Ararat. The stationmaster would have to leave his office and walk down or up the yard to exchange the staff with a goods train driver, and perhaps a passenger train standing at the platform, so he soon commenced to send a porter or guard to exchange the staff. Many guards refused to do this, as according to the regulations, they were well out of the responsibility of changing of staff. Then drivers refused to change the staffs with anyone but the stationmaster. At Creswick a porter came and I changed the staff with him. He

took it in his hand and then went on letting passengers out. At last he put the staff down between the two handles of one of the passenger's luggage bags while he assisted another passenger. I just caught the passenger walking down the subway, carrying away the staff with his luggage. I then put in a suggestion to office that there should be some way of letting a driver know who he was changing staffs with, as twice I had handed the staff at Stawell over to a cabman in mistake for the officer on night duty. I suggest that only one man should be appointed for this duty if the stationmaster could not attend to it himself, and this deputy should wear either on his cap, or a band around his right arm with the word "staff" on it. This was adopted, and in a short time was altered to the present silver band of the assistant station master. As the telegraph system came more and more into use, the stationmaster had to learn operating. This was another great safeguard. About this time another valuable safeguard was adopted by starting trains by day with a green flag and at night by a green light. This was brought in by Ned Proctor, now a retired stationmaster. He was running board between Bendigo and Echuca. Where there were very long trains the guard's signal at this time was to hold up the lamp pretty high, showing a white light and wave it from left to right. But when there were two or three moving about on a platform it was hard for the driver to tell which was his guard's signal light. As there were only two drivers running from Echuca, Proctor came to an understanding with them to show a green light as the starting signal. And it was in use long before the Department adopted it. There are many excellent safeguards that have been brought out in just such a way, and mighty little credit given to those who did bring them in.

The May/June 1924 issue contained information about the introduction of the white tail disc:

Having tried in my previous paper to explain the running of trains before and after the introduction of the staff and ticket system, I will try and give an account of further improvement in safety running. The general use of the telephone and telegraph was a great factor. Then came the splendid system of interlocking worked from signal boxes and the division of sectional running brought about the question of what should denote a complete train. It was considered that a red light at night and an ordinary lamp by day should show a complete train, but it was soon found to be very unsatisfactory and lead to all kinds of trouble and expenses. The tail lamp at the back of an engine attached to train had to be taken off and put out of sight somewhere. When an engine was running tender first, that meant three lamps to be taken off, and as they were pretty heavy, and no where to put them, things got mixed up. A large number of large Yankee lamps were in use at this time, and as it took two men to take them off, the drivers usually carried an old bag to cover them up. Again an engine attached to a goods train at night, although it showed a white light, had to light it while shunting at a roadside station and blow it out again on starting away again. The shifting, handling and planting of these lamps among the coal bunkers must have cost a few hundred pounds in repairs. A deputation of drivers waited on the Commissioners on

## VICTORIAN SIGNALLING SYMBOLS

### PART I - SIGNAL SYMBOLS

This series of articles will explain the symbols used on Victorian signalling plans and drawings. This, the first part of the series, will cover the symbols used for signals. Subsequent parts will cover the symbols used for points (and related equipment), general symbols, and circuit symbols. The article is based on the small booklets titled 'Symbols and Designations for use on Signal and Communication Plans'. The two editions used were issued c1916 and 1952.

#### General

The signalling symbols currently used in Victoria were introduced around 1916. The earliest edition of the booklet 'Symbols and Designations for use on Signal Plans' in my collection has a printing date of 1916 and was signed by F. M. Calcutt, Engineer of Signals. The booklet was almost entirely copied from the contemporary US Railway Signal Association (RSA) standards, indeed most pages are identical or very nearly so. The current symbols, then, are part of the introduction of new ideas and techniques consequent on the introduction of power signalling in 1915.

#### Two Position Signals (Pre 1916)

Victorian signal engineers drew signalling plans before 1916, of course. The signalling symbols used on these plans are shown in table 1 and are identical to those used on the Signalling Diagrams ("Litho's") which should be familiar to most readers.

On these diagrams signal posts were represented by drawings of the actual post as a Driver would see it approaching the post. The signal arms were represented by their shapes. A home arm was a black rectangle, a distant arm was the same as a home arm but with a fishtailed end, a calling-on arm was a short version of a home, and a disc was two concentric circles (the inner being black).

The only minor complication was the depiction of arms and discs that read in the opposite direction to the rest of the arms/discs on the posts. Reversed arms were shown on the right hand side of the post or doll and were not filled in,

but instead had a vertical bar. This, of course, echoed the physical appearance of the back of a home signal. Reversed discs were shown by two concentric circles but with the colours reversed to normal discs: the outer ring was black and the inner circle was white.

There were a very few additional symbols shown on signalling diagrams and not on the lithos. An electrical repeater was shown by a black circle on the mast or doll immediately below the arm it repeated. A reverser was shown by a black rectangle below the arm so controlled. A motorised signal was denoted by a half circle below the arm. The symbols for the reverser and signal motor reflected their physical appearance on the post.

Although these symbols were obsolete from 1915 many plans using them remained in use for many years. The interlocking sketch for Bendigo A box, for example, used these symbols until the box was abolished in 1990.

#### Two Position Signals (Post 1916)

The symbols for two position signals after 1916 are shown in table 2 on the next page. The basic approach for representing two position signals did not change with the adoption of the new symbols. Signal posts were still represented by drawings showing how they would appear to Drivers approaching them. Signal arms were still represented by their shape. The difference was that arms were not filled in. Instead a black bar in the arm gives information about the method of working the arm.

Mechanically worked signals have a bar across the top or bottom of the arm.

A plain mechanical arm has a bar across the top of the arm. An arm fitted with a reverser has a black bar across the bottom of the arm. In the symbol book this is referred to 'Slotted Mechanical' signal. The terminology was taken directly from the US, but is unfortunate as it tends to imply the conventional mechanical slotting used where one signalbox controls a signal worked from another. In this context, however, 'mechanical' merely refers to the method of

Table 1 2 Position Signals (Pre 1915)				
	Home	Distant	Calling-on	Disc
Mechanical (Normal)				
Mechanical (Reversed)				
Mechanical (with repeater)				
Mechanical (with reverser)				
Power				

Table 2 2 Position Signals (Post 1915)		Home	Distant	Calling-on	Dwarf	Normal Disc Reversed	Automatic
Fixed							
Non automatic	(Mechanical)						
	(Power)						
Slotted							
Semi automatic	Stick						
	Semi-stick						
	Non-stick						
Automatic							

working the signals.

Power operated two position signals are classified 'automatic', 'semi-automatic' and 'non-automatic'. These classifications refer to the control of the signal; automatic signals are primarily controlled by a track circuit; non-automatic signals are controlled manually, and semi-automatic signals are controlled both manually and by a track circuit. Power signals can be semaphore signals or light signals. A light signal is distinguished by a circle around the arm.

An automatic signal is one whose *primary* control is a track circuit. Note that this is not the same as the definition of an automatic signal in the rulebook and that an automatic may have a secondary manual control (e.g. control of the signal by a gatekeeper). The symbol for an automatic two position arm has a pointed end and no bar inside the arm. The post is fitted with a triangular plate showing the letter 'A'. All automatic signals have been light signals.

A non-automatic signal is only controlled manually (i.e. by a lever connected to a circuit controller or a switch on a panel); it is not controlled by a track circuit at all. A non-automatic power operated arm is distinguished by a vertical bar at the outer end of the arm.

A 'semi-automatic' signal is controlled by a track circuit, but also has a direct manual control (i.e. a lever in a frame or switch on a panel) that needs to be reversed before the signal can clear. A semi-automatic arm is distinguished by a vertical bar at the left hand end of the arm.

There are three varieties of semi-automatic signals: stick; semi-stick; and non-stick. All semi-automatic signals will go to Stop when a train occupies the controlling track circuit. The difference between the three types manifests itself when the train clears the controlling track circuit. A 'stick' signal will remain at Stop until the controlling lever is restored to normal and then reversed again. Stick semi-automatic arms are represented by a full vertical bar at the left hand end of the arm.

A 'non-stick' signal will automatically re-clear when the track circuit is free provided the controlling lever is left reverse. Non-stick semi-automatic arms are distinguished by

an unfilled vertical bar at the left hand end of the arm. Non-stick semi-automatic two position signals are uncommon; the only examples I can think of are at the two boxes at the Showgrounds.

A 'semi-stick' signal will remain at stop until a lever, other than its controlling lever, is restored to normal and then reversed. Semi-stick semi-automatic arms are distinguished by a half filled in vertical bar. Semi-stick two position signals are rare, and the only examples that come to mind were power operated distant signals.

Table 3 2 Position Signals (Other Symbols)	
Simple 2 position post	
Mechanically controlled	
Not in use	
Co-acting arms	
Double Wire	
Electrically repeated	



A fixed arm has no bar, but has a horizontal line dividing the arm in half.

A 'reversed' arm (i.e. one applying to moves in the opposite direction to the remainder of the arms on the post) is distinguished by being on the right hand side of the doll.

So far the discussion has been implicitly about running signals (homes, distants, and automatics). The same approach applies to two position shunting signals (discs, dwarfs, and calling-on signals) except that these signals were never automatic or semi-automatic signals.

The symbol for a disc signal was based on the pre 1916 version. The difference was that half of the black inner disc was missing giving a 'half moon'. A simple mechanical disc had the half moon at the top. A disc controlled by a reverser had the half moon at the bottom. A motorised disc had the half moon at the right. For a reversed disc (i.e. one applying in the reverse direction) the same principle applied, but half of the black ring was missing. Note that there are no light disc signals.

Calling on and dwarf signals follow the pattern for home signals.

A number of auxiliary symbols are used with two position signals. These are shown in table 3. Many of these symbols are also used for pre 1916 two position signals.

The post number for a two position post is shown within a circle which is normally located at the foot of the post. A mechanically controlled signal is shown by an outline of

the arm at 45 degrees. This outline is drawn using a dashed line. A cross is shown over a signal not in use. Co-acting arms are related using a brace. This is also used if the co-acting arms are on separate posts. A signal worked by double wire is noted by the letters 'DW' under the arm. A signal electrically repeated is shown by a black disc on the post or doll under the arm.

Finally, it should be noted that the symbols used by the railways often distinguish between two and three position arms (but not discs or light signals) using a small black square on the right hand side of the post or doll. A two position signal has the square level with the bottom of the arm. A three position signal has the square level with the top of the arm. The diagrams in Somersault do not use this black square as it is redundant.

**Three Position Signals**

The symbols for three position signal arms are shown in table 4. They have the same principles as the post 1916 two position signal arms:

- \* The symbol is based on the physical appearance of the arm: a rectangle for a home arm or a dwarf, a pointed arm for an automatic, and a fish tailed arm for a repeating arm.
- \* Light signals have a circle around them
- \* A vertical bar at the outer edge of the arm represents a non-automatic (i.e. non track controlled) arm. The only

Table 4 3 Position Signals		Semaphore				Light				
		Stick Semi-Stick Non-stick Stick	Semi-Stick Semi-automatic	Automatic	Non-automatic	Stick Semi-Stick Non-stick	Semi-Stick Semi-automatic	Automatic	Non-automatic	
Normally at 0	Fixed									
	0 - 45									
	0 - 90									
Normally at 45	0 - 45 - 90									
	Fixed									
Normally at 90	45 - 90									
	0 - 45 - 90									
Rulebook Definition		Home	Dwarf	Automatic	Automatic Repeating	Dwarf/Low Speed	Home	Automatic	Automatic Repeating	Dwarf/Low Speed

Special:  
 Mechanical  
 Non-auto

Special:  
 Non-auto 0-45  
 Semi-auto, Stick 45-90  
 Non-auto 0-45 Semi-auto, Non-Stick 45-90

three position examples are the low speed arms on home signals.

- \* A solid vertical bar at the inner edge of the arm represents a stick semi-automatic arm. All known three position home signal arms are of this type.
- \* A half vertical bar at the inner edge represents a semi-stick semi-automatic arm. The only known examples are the arms of controlled automatic signals; in this case the stick function is worked through the lever that controls the home signal immediately in advance.
- \* An unfilled vertical bar at the inner edge represents a non-stick semi-automatic signal. There are no known examples of this type of arm.
- \* No bars indicate a purely automatic arm.

The major difference between a symbol for three position arm and a two position arm is that it is necessary for to indicate which aspects a three position arm can show. This is achieved by a combination of the normal position of the arm and lines through the body of the arm to indicate what other positions the arm can display.

An arm is always shown in its normal position. This is stop for home and dwarf arms, but may be caution or clear for automatic arms. The lines through the body of the arm show what other aspects may be shown and are best understood by inspection of the diagrams as they are not completely consistent. As a general rule they echo the position of the arm when showing the aspect: a vertical (or near vertical) line indicates that the arm can show a green aspect; a diagonal line, rising to the right, indicates the arm can show a yellow aspect, and a horizontal line indicates the arm can (only) show a red aspect.

Two special symbols may be used for three position dwarf signals. Three position dwarfs are often non-automatic for the 45 degree position, and semi-automatic for the 90 degree position. This allows the dwarf to show Low Speed Warning for a move into an occupied road, but requires the track to be clear before showing a Clear Low Speed. Two different symbols are used depending on whether the clear position is stick or non-stick.

Table 5 shows auxiliary symbols that may be shown with a three position signal. An 'Illuminated Letter A' indicator is provided where the signal may operate automatically. A '65' indicator is provided where the medium speed movements may be made at 65 km/h. These indicators showed '40' prior to metrification (for 40 mph). '65' indicators may be mounted on automatic signals which show 'reduce to medium speed' for a following home. Route indicators indicate the actual route set past a signal and may be of the arrow type, letter type, or feather type. All of these auxiliary symbols may be mounted at various places on the mast, normally above the normal speed arm or below the medium speed arm. The drawing of the post does not always necessarily accurately reflect the real position of these auxiliary indicators.

Like a two position post, a three position post is represented by a drawing of the post. However, the drawing of a three position post is more symbolic than a two position post, particularly with light signals. Light signal heads are always shown on the left of the post, even though the actual heads may be mounted on the right hand side of the post.

Table 5 3 Position Signals (Other Symbols)	
Basic 3 position post	
Illuminated Letter A	
65 km/h indicator	
Arrow route indicators	
Letter route indicators	
Feather route indicator	

## EARLY DAYS ON THE VICTORIAN RAILWAYS

(Continued from page 50)

this subject. Mr Speight said that there was no trouble in England over this matter. But it was pointed out to him that the lamps used in England were only half the size of ours and asked where we were to put the big Yankee lamps. He asked what we would suggest to take the place instead of a lamp to show the tail end of a train. I, as one of the deputation, suggested that a white disc should be used. He asked me where any [such] signal was used. I told him that I had just spent my holidays in Sydney and that they had brought it into use there and it had proved a success, and we thanked him for giving us the inter-State pass, as it enabled us to see what was being done on other railways. After further discussion it was decided to leave it to the signal engineers. But it was twelve months before the white disc was adopted and many a lamp was smashed in the meantime.