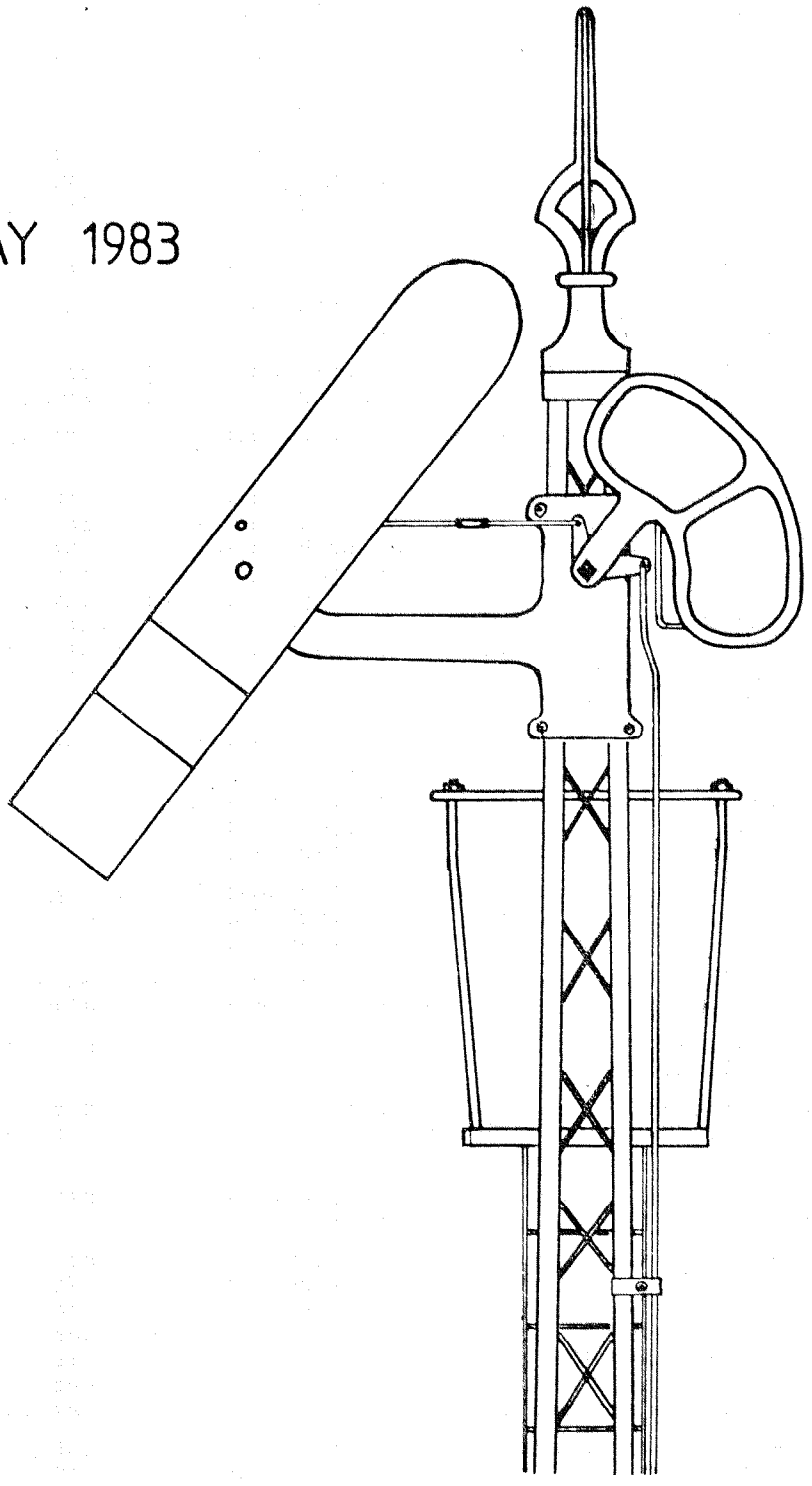
SOMERSAULT

MAY 1983



SRSV

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Dead line for July 1983 issue is 15 May 1983.
NEXT MEETING: Friday, 20 May 1983.
VENUE: A.R.H.S. Library Room, Windsor Railway Station.

SIGNALLING ALTERATIONS

5/1/1983 GHERINGHAP. New signalling diagram No 46/82 issued cancelling diagram No 15/67. A staff exchanger has been provided for up trains travelling via No 1 road. The exchanger is located 20m on the up side of the platform.

9/1/1983 SEAFORD. The overhead wiring was removed from the goods shed sdg.

19/1/1983 SOUTH GEELONG. Rodded derail points were provided at the up end staff locked points in Siding "A".

26/1/1983 CHELSEA. The co-ordination of the road traffic signals with the Argyle Avenue boom barriers was brought into operation.

27/1/1983 CULGOA. The inner plunger locked points leading to the Goods Shed road were removed.

26/1/1983 NORTH BALLARAT-LINTON JUNCTION. New signalling diagram No 22/82 issued cancelling diagram No 3/65. The hand gates at Forrest St, Wendouree, have been replaced by boom barriers the operation of which is automatic for all trains. The down home signal on post 15 and the up starting signal on post 17 were converted from two position mechanical signals to two-position light signals. Post 15 previously the down home signal for Forrest St gates is now North Ballarat's down starting signal, post 11 at North Ballarat has been renamed down home signal.

WN7/1983 LASCELLES-CARWARP. New signalling diagram No 48/82 issued cancelling signalling diagram No 16/70.

3/2/1983 NATIMUK. Closed as staff and ticket station.
GOROKE. Closed as staff and ticket station.
New section is East Natimuk to Carpolac.

3/2/1983 ST. ARNAUD. Flashing light signals have been brought into use at Wellington Road crossing at 256.499 Km. Operation of the lights is automatic for up and down movements.

6/2/1983 BOX HILL. Automatic signal L496 was relocated two metres further out from the track and four metres in the down direction.

9/2/1983 NHILL. Down home signal Post 6 and the right-hand arm on post 7 were abolished.

WN13/1983 NORTH BALLARAT S.E.C. SIDING. Up to ten vehicles may be pushed by the Ballarat Yard Pilot from Ballarat to the Ballarat S.E.C. siding in clear daylight.

15/2/1983 JUNG. Closed as a switching miniature electric staff station. The new section is Murtoa-Horsham.

10/2/1983 EAGLEHAWK. New signalling diagram No 19/82 issued cancelling diagram No 2/30. Boom barriers were provided at Victoria Street crossing, the operation is automatic for up and down movements. Up trains may be held at posts 1B or 4 at the stop position without activating the boom barriers. A push button is provided on the block shelf near lever 35 to release the lever lock when the up approach section is occupied with post 1B at stop.

15/2/1983 PARWAN. The dead end extension of No 2 road at the up end has been reduced by 110m due to the commencement of earthworks for Parwan Loop.

16/2/1983 TARRANGINNIE. The up end catch points were replaced by a rodded derail block and wheel crowder.

19/2/1983 WEST TOWER. The "K" crossing between Nos 177U and 155D points will be operated in conjunction with No 177 points.

24/2/1983 SUNBURY. New signalling diagram No 33/82 issued cancelling diagram No 32/82. Boom barriers have been provided at Gap Road, the operation of the booms being automatic for up and down movements. The mechanical signals, posts 2 (down home signal) and 4B (up home signal), were converted to light signals. Push buttons are provided adjacent to the crossing for the operation of the boom barriers and post 4B for shunting operations over the crossing.

6/3/1983 MURTOA. No 24 points, No 25 catch points and No 23 plunger were abolished. Signal posts No 8 and 10, and the disc signal on post No 15 were removed. Lever 23 now pilot lever, levers 24, 40, 47 and 71 were sleeved normal. Lever 25 sleeved reverse.

8/3/1983 MURTOA-HORSHAM. The electric staff section was abolished and the section is now worked under the rules for staff and ticket.

8/3/1983 HORSHAM. A new control panel and illuminated diagram has been provided. Home signals Nos 2, 3, U4, 6, U6, 8, 10 and 12 were re-numbered 6, 10, 12, 30, 32, 26, 24 and 28 respectively. Points Nos 3, 7 and 9 were re-numbered 7, 27 and 29 respectively. Repeating signals Nos A10653 and A10916 were re-numbered A3233 and A3310 respectively. Signal aspects were altered on new signals No 12 and 32 and the medium speed aspects are approach operated on signals Nos 12, 24 and 32. Emergency low speed signals Nos 6, 24 and 26 are approach operated and time cleared.

WN11/1983 OFFICER. In the event of a train arriving at signal D1648 at stop without the illuminated letter "A" displayed and no train in the siding, the guard must examine the points and ensure that they are set in the proper position for the train to run. Also he must ensure that the switch lock doors are closed and locked. He then instructs the driver to pass the Home signal as prescribed in Regulation 74. The circumstances are then reported to the signal man at the next attended station.

WN12/1983 KATAMATITE. Commencing forthwith and until further notice, providing that trains are not to cross, the Guards of all trains will be responsible for the staff and ticket working.

WN12/1983 NARRE WARREN-TYNONG. New signalling diagram No 36/82 issued cancelling diagram No 20/77.

17/3/1983 MOOROOLBARK. Boom barriers have been provided at Manchester Road and the operation is automatic for all movements. Lever locks have been provided on levers 4, 12, 31 and 33 and these are released by the push buttons immediately if operated when the approach section is unoccupied. If the approach section is occupied the lever locks will be released after the boom barriers have operated to the horizantal position.

24/3/1983 ST. ARNAUD. Flashing light signals were brought into use at Howitt Street crossing at 255.045 Km. The operation of the lights is automatic for up and down through movements. An Annett Key/Annett Key exchanger is provided to convert the flashing lights to manual operation for shunting movements. Removal of the up end plunger will also convert the flashing lights to manual operation. A new Up Home light signal has been provided on the down side of the crossing to prevent unnecessary operation of the lights. It is controlled from the platform or up end points.

30/3/1983 WINDSOR. The pedestrian gates have been replaced by a crib crossing and warning bells. The bells are controlled by a switch operated by the signalman.

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Editors News

On page 28 is the third and final part of the article "All Stations to Hurstbridge". The late running of this part was due to the need to check some of the details originally researched and obtain the diagram of Hurstbridge. The diagrams of Diamond Creek and Hurstbridge are reproduced from sketches made available by Mr. Tom Murray to whom my thanks are given.

Also in this issue is the concluding part of John Sinnatt's excellent series on Absolute Permissive Block signalling. It is hoped that a series of articles on Level Crossing Protection will appear soon, also from the pen of John Sinnatt.

Other news on the grapevine tells us that Colin Rutledge has started writing a series of articles on interlocking on the Victorian Railways, the first part to be published possibly in the July issue.

David Langley

SINGLE LINE AUTOMATIC SIGNALLING
(THE ABSOLUTE PERMISSIVE BLOCK SYSTEM)

by John F. Sinnatt. (continued)

Electric Staff Stations with Automatic Arrival Signals

Two Unattended Automatic Electric Staff Stations were established in Victoria in the late 1920s - Mysia, between Korong Vale and Boort, and Barraport, between Boort and Quambatook. The automatic staff instruments enabled a a staff to be withdrawn at an attended station without the bell key being held down at the unattended station. The arrival signals at the unattended stations also worked automatically. Each was preceded by a triangular Location Board, the line through the station being track circuited between opposing Location Boards. The hand operated points and plunger lock at each end were detected electrically in their normal positions. Operating instructions were given in circular C 1/29 "Instructions for Automatic Electric Staff Working".

The arrival signals were electrically-lit upper quadrant Automatics, normally at Stop and with their lights out. In Figure 26, when a through train from the left passes the Location Board, the main and marker lights in both signals 1 and 2 are switched on and signal 1 goes to Warning provided that the track is clear to the opposing Location Board, that signal 2 remains at Stop and that the points at each end are set for No 1 road and correctly locked by their plungers. Signal 1 returns to Stop when the engine passes but the lights

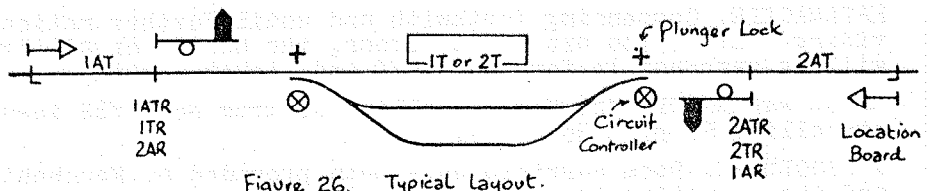

Figure 26. Typical Layout.

stay on. After the Guard works the staff instruments in the usual way (this requires the presence of an operator at the Attended station at the other end of the section) and the train departs, signal 2 goes to Warning as the van of the receding train passes, but returns to Stop, and all signal lights go out, when the train clears the Location Board.

When trains were to cross, Stationmasters were to advise crews of the arrangements, but the issuing of a formal Order was apparently not required. An interesting point is that after signal 1 had cleared for an arriving train it would not be put back to Stop by an opposing train then passing the Location Board at the other end; signal 2 would of course not clear.

An arrival signal, being classed as an Automatic, could if necessary be passed at Stop under the provisions of Regulation 74, but the Driver also had to ensure that the points were set correctly, and was not to proceed beyond the fouling point at the opposite end unless the line was seen to be clear. Where a train was to take No 2 road, the Fireman withdrew the plunger and set the points, the Guard restoring them to normal after the train had passed; the Guard of a Rail Motor performed both functions. The staffs were not to be put through the instruments when trains crossed, but the Guard of the first train to arrive was to advise the station in the rear by telephone, and also, before departing, the station in advance.

The installation was powered by primary batteries - public electric supply was not generally available in rural areas at the time - and the technical arrangements were apparently intended to keep battery and other maintenance costs to a minimum. Certainly some quite unusual, even novel, features were incorporated in the design. The approach track circuits 1AT and 2AT were of the normally-open type favoured by model railroaders in which the relay picks up when a train enters the section; the track circuit designated 1T or 2T was reversible, with a relay or battery being connectable at either end, and with an auxiliary relay provided in series with the battery; the signals were approach lit; no line wires at all were required for signalling purposes between one end of the station and the other.

The batteries were normally connected to the reversible track circuit in opposition to each other. None of the relays were normally operated, and with no train present, the only current flowing, if any, would be due to leakage through the ballast or to unbalance between the two batteries connected at opposite ends of the reversible track circuit.

Referring still to Figure 26, when a Down train enters approach track circuit 1AT, relay 1ATR picks up in series with its battery. Power is applied to the lights in signal 1, and relay 1TR is connected to the reversible track circuit 1T or 2T instead of the battery. If the track is clear relay 1TR now picks up through the rails from the battery at the other end in the usual way. An arm contact in series with this battery proves that signal 2 is at Stop. An auxiliary relay 1AR in series with the battery and arm contact also picks up causing power to be applied to the lights in signal 2; it also disables Up approach track relay 2ATR if this is not already operated. When 1TR picks up, signal 1 goes to Warning; the disabling of 2ATR ensures that the signal remains off, and signal 2 remains at Stop if an Up train now passes the Location Board.

When the engine of the Down train passes signal 1, track relay 1TR drops and signal 1 goes to Stop; series relay 1AR at the other end however stays up, its circuit being completed through the wheels and axles of the train. When the van passes signal 1, approach relay 1ATR drops and re-connects battery to the reversible track circuit in place of track relay 1TR. An auxiliary relay 2AR is connected in series with the track circuit battery at this end in the same way as is 1AR at the other end, and now picks up similarly, so that signal 1 remains alight.

Nothing happens when the engine of a departing Down train passes signal 2 as the approach track relay 2ATR is still disabled. But when the van passes, series relay 1AR drops, so that 2ATR is re-enabled and picks up, connecting track relay 2TR to the reversible circuit in the same way as if the train were arriving. So signal 2 clears behind the receding train. Then when the van passes the Location Board and the approach track circuit is again clear, relay 2ATR drops and all returns to normal; signal 2 falls to Stop and the lights in both signals go out.

An electrical plunger for testing the signals was mounted on the Location Board at each end of the station, and was to be operated by the employee patrolling the track on his daily round while no train was present. He was to check that when the plunger was pressed the signal at that end cleared and that when released the signal returned to Stop. Both signals were not to clear at the same time. Pressing the plunger completed a short circuit between the two rails of the approach track and simulated occupancy by a train.

For the more technically inclined, a full circuit of the arrangements is given in Figure 27, except that the contacts made by the electrical plungers on the Location Boards are not shown. No further explanation is necessary (it is hoped that the explanation already given is correct!) but attention is drawn to the way the points and plunger lock detectors ("switch circuit controllers") are bridged across insulated joints in the track circuits - this helps in saving line wires. It may also be supposed that careful adjustment of the resistances associated with 1AR and 2AR would be needed to obtain the required balance between the two ends.

The signals at Mysia were replaced by searchlights in 1975 (25 June - Ed.) presumably with conventional circuits. Both Mysia and Barraport have since been closed as staff stations (Mysia 19 November 1980 and Barraport 1980 - Ed.)

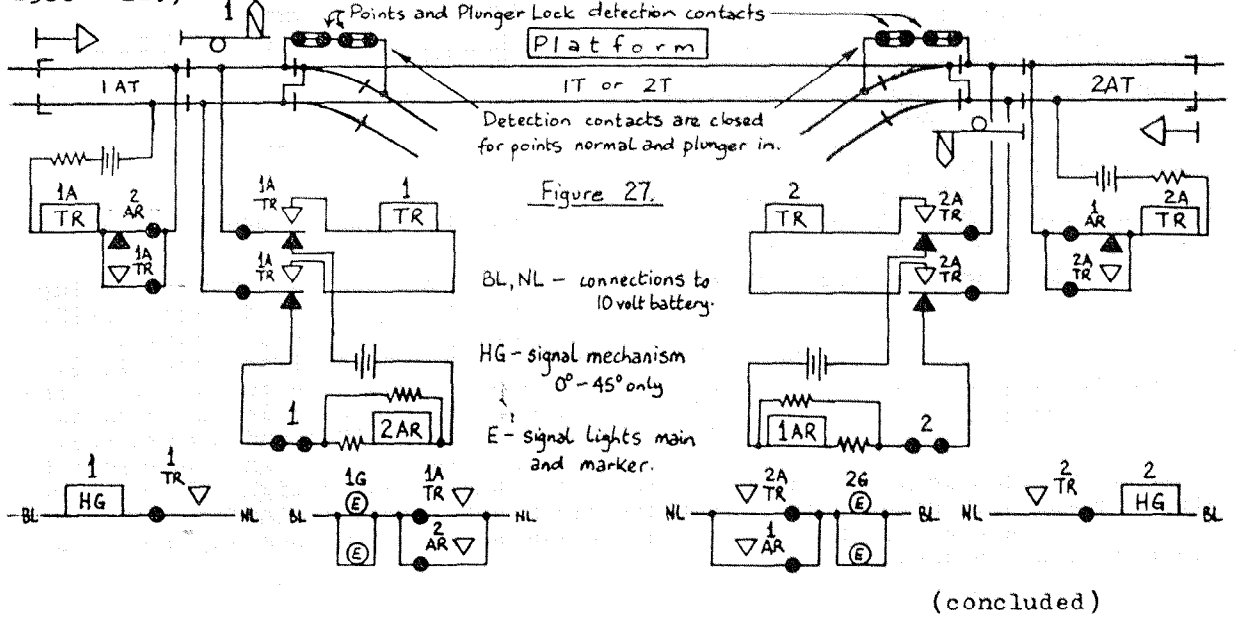

Figure 27.

(concluded)

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V.R. SIGNALLING HISTORY
ALL STATIONS TO HURSTBRIDGE (continued)

by David Langley

Parts 1 and 2 of this series were published in July 1981 and November 1981 issues of Somersault.

No 23. DIAMOND CREEK

Following the opening of the line between Eltham and Hurstbridge on 25 June 1912, a station with a loop goods siding was provided at Diamond Ck. The main line points were rodded to derails and secured by staff locks. The key for the staff locks was the train staff for the Eltham - Hurstbridge. The dead-end siding was possibly added at this time but my notes are silent on this fact. Figure 1 shows the layout on opening.

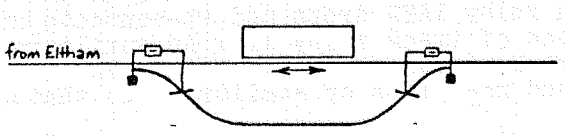


Figure 1.

The opening of the railway to this unspoiled beauty area enabled the population of Melbourne to make day trips to Hurstbridge for family outings and picnics. As can be imagined, the train service increased greatly on these days and it was soon apparent that the long section was unable to handle the service. Provision was made for Diamond Creek to be opened as a staff station when required and the date of the alterations was 6 April 1914. The staff locks were replaced by plunger locks and home signals were provided for each direction. No 2 road was not provided until November 1914 and announced in Weekly Notice No 47. Figure 2 shows the new layout now in use.

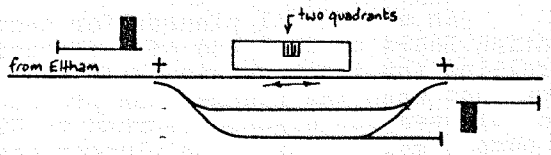


Figure 2.

By 1921 Diamond Creek was a regular telephone block post on Saturdays and remained such until the demise of the picnic traffic following the expansion of ownership of private motor cars. Today Diamond Creek is regularly opened as a staff station during the Monday-Friday peak hours but not for picnic trains. With the expansion of the suburban sprawl, the train service has tried to keep pace and the long section Eltham-Hurstbridge is not very conducive to a frequent train service. Even with Diamond Creek open, the service is not frequent when compared to even the lines 10' minute service but is more so than normally. Two crosses are currently scheduled at this quaint plunger locked station and a local train operates whilst a train is at Hurstbridge. The goods service beyond Eltham was withdrawn on 26 November 1957 and the goods siding was removed soon after. The flashing lights at Hurstbridge Road were provided on 28 August 1959 and an up departure signal was added to enable the operation of the lights to be suppressed when crossings are taking place. This signal is controlled from the platform quadrant and also from a quadrant at the up end points. Figure 3 shows the layout currently in use at Diamond Creek.

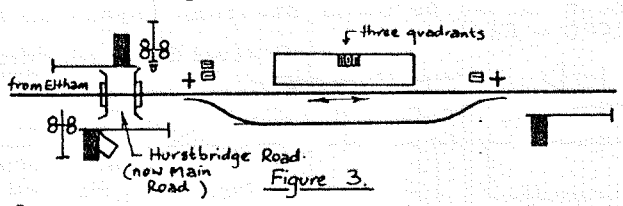
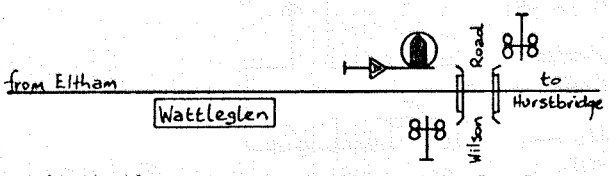


Figure 3.

Balee station, also opened with the line, was just a platform, being renamed WATTLEGLEN on 4 August 1922. Originally unattended, caretaker conditions applied from April 1953. Flashing lights were installed at the adjacent Wilson Road level crossing on 26 November 1968 and a down two-position automatic signal provided to protect the crossing. The signal clears after the flashing lights have operated for about 15 seconds following the train entering the platform track. Express trains are not catered for in the timing circuits thus any non-stop train will be checked.



No 24. HURSTBRIDGE

Figure 1 shows the yard provided at Hurstbridge on opening. The up end main line points were (and still are) secured by a plunger lock and protected by a down home signal worked from the platform quadrant. A quadrant at these points is provided to work the home signal for movements directly to No 2 road. It will be noted that the standard Victorian layout was used and that any further extension of the line could be carried out without any alterations being necessary at Hurstbridge save for the addition of a plunger lock and home signal. No locomotive facilities appear to have ever been provided.

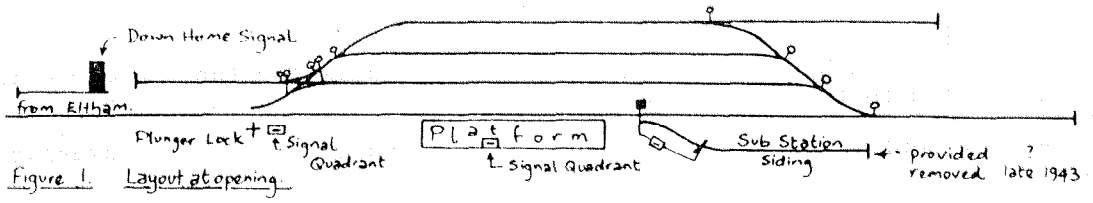


Figure 1. Layout at opening

During the construction of the line, the name Hurst's Bridge was used but was changed to Hurstbridge just before opening although certain railway documents referred to Hurst Bridge for many years.

Electrification of the line from Eltham was completed on 2 June 1926 and the steam engine was almost completely ousted from working the line. A two car set of suburban cars worked a local service supplimented during the day by a four car set when the two car set was used to run the goods service between Hurstbridge and Heidelberg.

The Working Timetable for 1929 shows that the two car set operated a couple of trips between Eltham and Hurstbridge in the morning peak then on arrival at Hurstbridge at 0916, the Heidelberg goods train was assembled for a 1000 departure on Tuesday and Thursday. The set stabled on the other days. The goods reached Heidelberg at 1150 where connection was made into the goods from Melbourne. Departure from Heidelberg was at 1225 and Hurstbridge was reached at 1400, Diamond Creek being opened as a block post for the running of this train and the 1352 Heidelberg-Hurstbridge train. The two car set was again used for Eltham locals during the evening peak until stabling at Hurstbridge on arrival at 1849.

The daytime Hurstbridge services were worked by a four car set that had run from Princes Bridge as seven cars and detached the unit at Eltham. Similarly at night a four car set was utilised for one trip and additional trips on Thursday and Friday nights beyond Eltham. The four car set generally connected with city services at Heidelberg. The unit was reattached to this set after running and stabled at Eltham ready to form a Princes Bridge working next morning. Two seven car trains were normally stabled at Eltham overnight.

On Saturdays the two car set operated local trips all day sometimes venturing to Heidelberg to connect and eventually stabling at Hurstbridge after arrival at 1852. The remaining services were worked by the four car set from Eltham. The second Eltham seven car train worked through from Princes Bridge as the last down and ran through to Hurstbridge returning to Eltham as empty cars. This was the first through service between the city and Hurstbridge for the whole week.

Sundays saw the two car set stabled at Hurstbridge all day, local services between Eltham and Heidelberg are operated by one of the sets stabled at Eltham. Only two trains operated to Hurstbridge, both through from Princes Bridge, and their timetable tells something of the country atmosphere prevailing at this time. The first left the city at 1040 and arrived Hurstbridge at 1140 not returning until 1900 that night and the other provided an early afternoon service leaving Princes Bridge at 1423 and arriving Hurstbridge 60 minutes later returning to Princes Bridge at 1637.

The goods train ran on Tue and Thur in 1929, later on Mon, Wed and Fri but reduced to Tues only in 1955 before ceasing altogether in 1957. With withdrawal of the goods, the facilities at Hurstbridge were pruned to the layout in use today, a simple three road terminus for electric multiple units. Figure 2 shows the layout today.

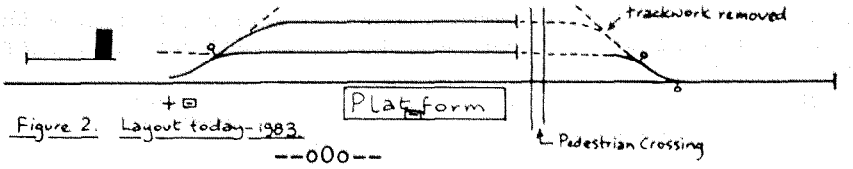


Figure 2. Layout today-1983

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INNER AND OUTER SIGNALS - NSW

The following letter from Graham Harper to the editor of Blocking Back 3-3 regarding the query raised about the use of inner and outer signals was originally published in the October 1981 issue.

Dear Editor,

Your mention in the last issue of Blocking Back of outer and inner signals has tempted me to add my comments to the confusion. Let me say from the outset, I am no expert on the subject and I find that the more you delve into the subject, the more confusing it becomes.

Outer and Inner Distants

Some places have two separate distant signals for the one direction. This is quite common in single line sections, not so common in double line situations. Sometimes a second distant signal may be placed under the first (or subsequent home signal). The reasons for the second distant are usually local, e.g.

WINGELLO: two distants on the up. There is a heavy rising grade and a train approaching Wingello may pass the first distant before the road is set but may still be outside the second distant when the signals are pulled off. In this instance, it virtually gives the signalman additional time or a second chance to give an approaching train the full road before checking it on the grade. The same situation applies at MARULAN with two down distants on a rising grade.

DOMBARTON: two distants on the up. Here the converse is probably true with a train approaching on a heavy falling grade, there are two warnings that he is approaching the home signal.

Sometimes the distant is under a home signal (the inner distant, that is). Examples of this are at:

BOWRAL: under the down outer home signal. The down outer home signal is there to allow a train to approach from Mittagong while another train is ahead, backing into the down refuge at Bowral. If the second train is pulled up at the outer home signal while the shunt is taking place, the road he will get when the signal is cleared will probably be straight through Bowral, this is the need to tell the driver not only that he can proceed, but also that the line is clear right through the interlocking and that it will not be necessary for him to creep up to the home and subsequent signals expecting a further delay.

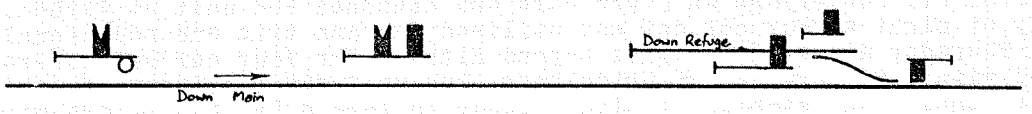

Figure 1. Bowral

MITTAGONG: under the up home signal. This is a motor worked automatic distant signal and dates from the days of yore. When the line was doubled from the south, it ended at Mittagong Junction pending the deviation to Picton. The distant was under Mittagong's home signal was actually a repeater for the state of the aemi auto signals north of the home signals (2nd home and starter) which were in turn governed by the state of play at the junction. The clearence of the distant under the Mittagong home signal effectively meant that Mittagong Junction had at least accepted the train. The facility now works in conjunction with the same semi autos but the automatic signalling north of Mittagong usually provides sufficent headway for the need to give early information on the state of the section ahead to have diminished.

Incidently Mittagong Junction is not now a block station and has not been since 1919; its levers are released and it is virtually a glorified ground frame.

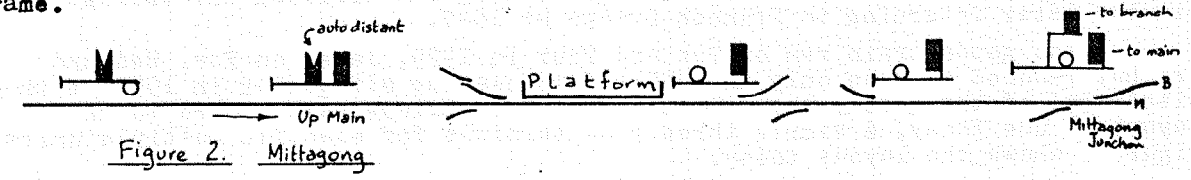

Figure 2. Mittagong

WAMBOOL: under the second up home signal. I can only assume that curvature obscured the view of the starter and this distant was put there as a kind of repeater.

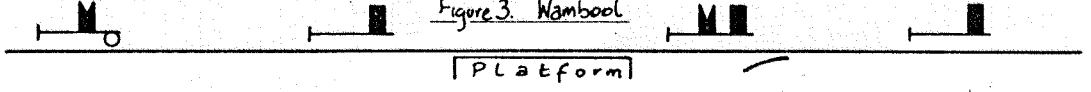

Figure 3. Wambool

LITHGOW: distant signals in profusion. Coal Stage Box actually had three distants in the down direction and four in the up. Refer to Fig 4. The up distant levers were designated:

51 - up inner distants.
52 - up intermediate and outer distants.

The down distants were:

54 - down inner distant.
53 - down outer distants.

One can only assume that with the signals so close together on this cluttered section of line, it was felt necessary that each distant signal indication should be repeated, so close together were the signals.

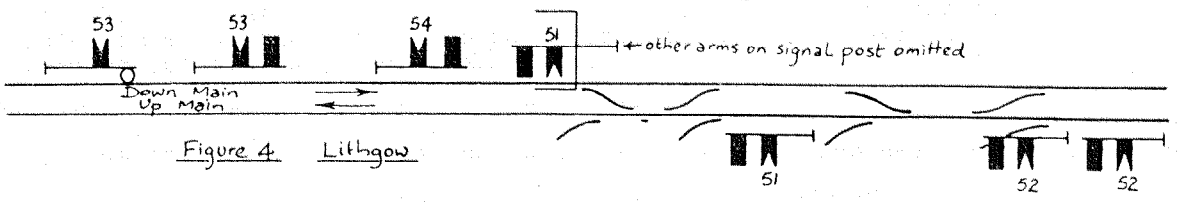

Figure 4 Lithgow

I think that's enough on distants.

Outer and Inner Home signals

If you thought the foregoing was complicated, skip this next bit.

Once upon a time, the concept of outer and inner homes was a simple one. If there were two home signals before the platform, the one furthest away was called the outer home and the one closer was called the inner.

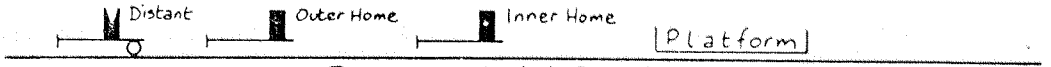

Figure 5. Simplest form of Home signals.

Note however, if the second of the home signals was after the platform, it was called a starting signal and the one before the platform was simply the home.

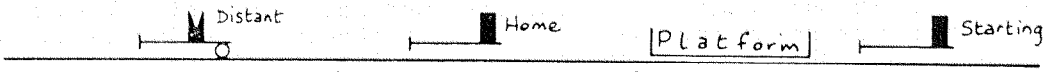

Figure 6. Inner home as Starting.

A later nomenclature changed what was the outer home in this arrangement to be known as the AUXILIARY home. (At the same time and just to make it a bit more confusing, the former inner distant was also called the auxiliary distant.)

Figure 7. Auxiliary Home.

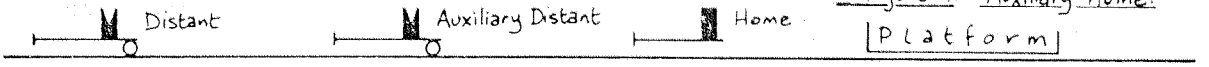

Figure 8. Auxiliary Distant.

The terminology was later changed again to make the outer home one which protected nothing but the home signal. Following the English practice of requiring at least 400 metres (1/4 mile) protection against any obstruction, an outer home signal was placed at some stations to allow a train to approach in safety from the station in the rear while the line inside the home signal was obstructed. Outer homes were often placed at large stations where shunting was frequent, examples are: Yass Junction (up), Wallerawang West (up), Moss Vale (down), and Bowral (down). To use Bowral (fig 1) as an example, it is quite permissible for a train to be accepted from Mittagong while the train ahead is backing into the refuge siding, as there is the full 400 metres, as well as two signals to protect the shunting train.

The railways confused themselves a bit when automatic signalling was introduced. Here, the acceptence of a train was not from the station in the rear, but from the automatic signal in the rear. In normal block working, this had been done by the block instrument, but now it was done by accept levers, which control usually the first automatic signal before the home signal. What the accept signal is, for all intents and purposes, is a renaming of the outer home to emphasise that not only is it an outer home signal, but is always the manner by which a train is "accepted" from the section in the rear. Early diagrams show lack of clear policy on accept signals. Some colour light accepts, to underline the fact that they were only lever controlled autos, actually had staggered lights. Similarly, although they are lever controlled and affect an interlocking they were able to be passed at stop in many instances.

Where everybody got a bit confused was where a power worked upper quadrant outer home signal is provided out of a block section and the signal was called an accept signal, even though it was obvious to all that the acceptance was by the block instrument. These signals were sometimes fitted with accept name plates. Examples were at Yass Junction on the up, Campbelltown (both), Wallerawang West (up) and Picton on the up branch were there is no question of acceptance of a train which has the staff anyway.

Sometimes two accepts are provided in the one direction. These were called inner and outer accepts. The reasons for this were local. Around Sydney, there often two accepts in the one direction where the signals were not very far apart and the first automatic signal back into the section was not far enough out from the home signal to allow a train to pull up in time. Effectively the protection given to the confliction would be outer and inner accepts, and home all at stop, but with all three signals probably within 400 metres.

Sometimes two accepts are provided where wrong road moves are common. The classic case of this was Fassifern, where trains regularly backed out of the colliery and even outside the home signal to get a run up at the grade.

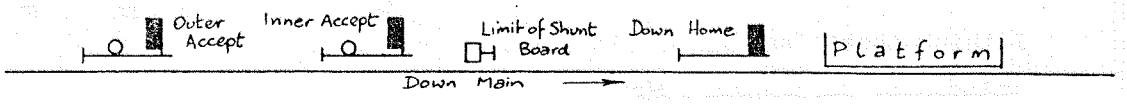

Figure 9. Fassifern

Just on multiple accepts, perhaps the best case of a lot of accepts very close together is Martin Place which has three on the up, although in accordance with the latest practice, the inner two are called outer homes.

Someone ought to write a treatise on the total revolution in signalling practice which has occured in the past few years. However, I will comment only on the outer home aspects.

The old practice was such that the outer home signal was ALWAYS the first absolute signal at an interlocking. Intervening signals were always the xth home until the last which was the starting (or home and starting if it protected points or some other potential obstruction). Now a signal which protects a neutral zone no matter where it falls in the interlocking is an outer home signal (except the first which is of course the accept).

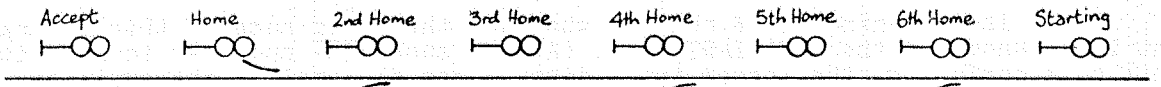

Figure 10 - Old

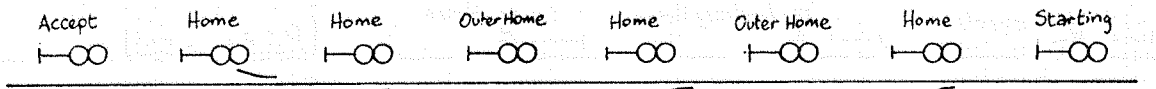

Figure 11 - New

I hope the foregoing has helped rather than confused. It's very hard to get your thoughts straight when you are a lousy two fingered typist with sore fingers and all you can think of is the end of the typing. Should I be able to add further fuel to the discussion, I would be pleased to do so.

Graham Harper.

--oOo--

CROSSWORD No 3.

Due to gremlins in the works, two clues were incomplete in the March issue. The full clues are reprinted hereunder:

Across

12 I rent link, cog arrangement to provide safety.

18 These trains run from Bendigo to Melbourne, and from Ogden to Denver.

Any other errors in the clues are for your enjoyment.
Crossword No 4 should appear in the July issue of Somersault.

Question Time

Where is there a dwarf signal with a route indicator ?

(Answer to last question - Gowrie.)