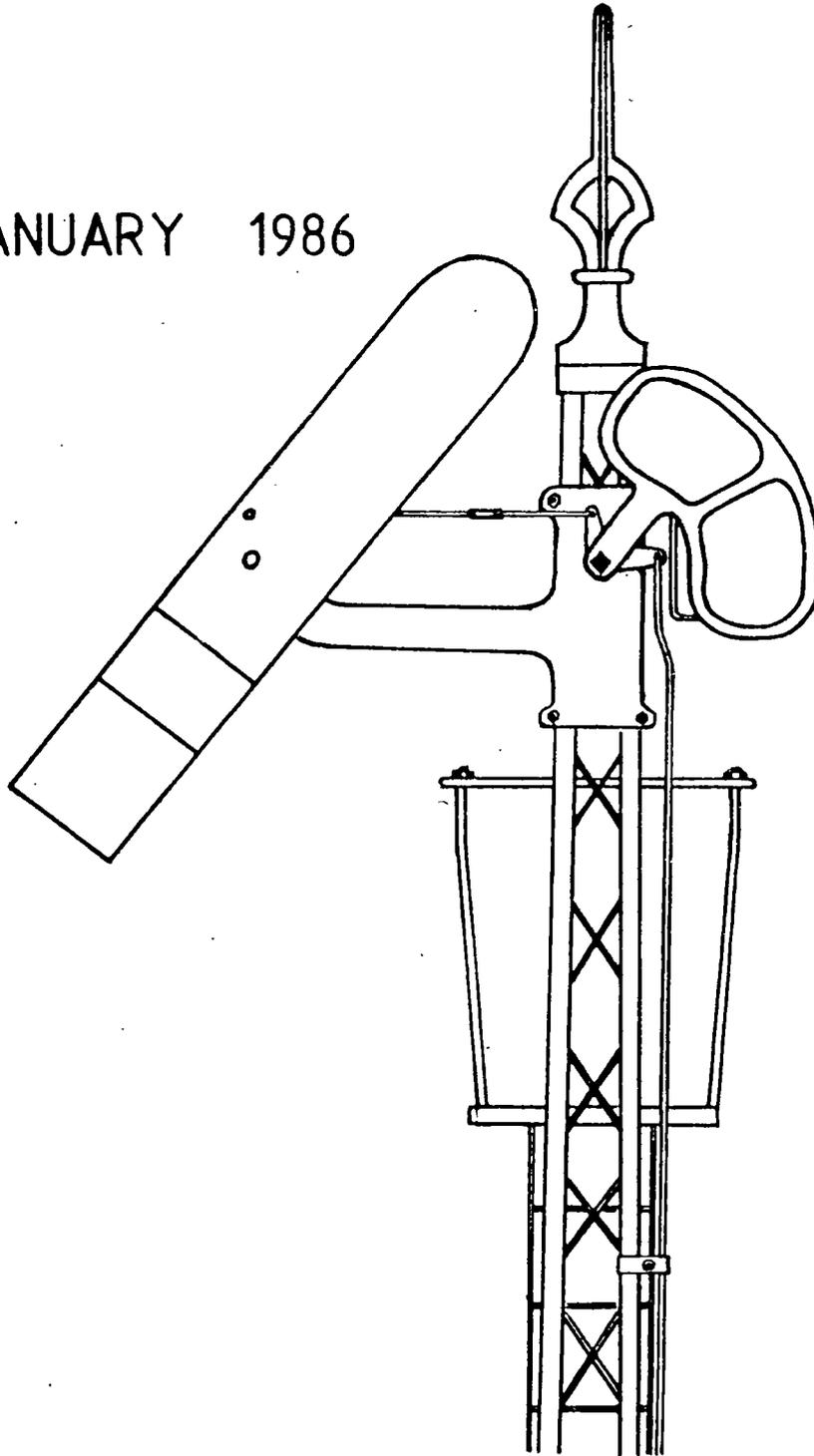


SOMERSAULT

JANUARY 1986



SRSV

Editor: David Langley, Crichton Street, Avenel, 3664.
 Articles may be reprinted without prior permission but acknowledgement is required. Opinions expressed in articles appearing in Somersault or supplements are not necessarily those of the S.R.S.V.
 Deadline for March 1986 issue is 9 February 1986.
 NEXT MEETING: Friday, 21 February 1986.

Victorian Group Leader: Jack McLean, 60 Kenmare Street, Box Hill North, 3129. Phone: 03-8906764.
 Victorian Group Treasurer and Subscription Manager: Rob Weiss, 40 Shady Grove, Nunawading, 3131. Phone: 03-8781305.

New South Wales Group Leader: Neil Curryer, 20 Elton Close, Adamstown Heights, 2289. Phone: 049-437404.

MINUTES OF NOVEMBER 1985 MEETING

- HELD AT:** A.R.H.S. Library Room, Windsor Railway Station. on Friday, 15 November 1985.
- MEETING COMMENCED:** at 2010 hours.
- PRESENT:** A.Jungwirth, R.Weiss, D.Langley, W.Brook, J.Brough, J.Churchward, W.Doubleday, R.Jeffries, K.Lambert, J.McCallum, B.McCurry, S.McLean, P.Miller, A.Ponton, C.Rutledge, J.Sinnatt, A.Wheatland, R.Whitehead.
 (Ed: It is fitting to welcome a founding member to a meeting as it is doubtful whether he has attended any before.)
- APOLOGIES:** J.McLean (in Adelaide) and others not mentioned on the report of the meeting handed in for publication.
- MINUTES OF PREVIOUS MEETING:** were adopted as read. (Brough/McCurry)
- BUSINESS ARISING:** nil
- CORRESPONDENCE:** nil
- GENERAL BUSINESS:**
1. Warren Doubleday suggested that a visit to the four tramway boxes be arranged due to possible rearrangement. Warren was appointed as a one man sub-committee to arrange this visit on a motion by R.Weiss and R.Whitehead.
 2. One train in each direction on the Portland line is running without a guards van in the rear and only a two man crew.
 3. Colin Rutledge provided some notes as to what the Metrail mob are doing in the signalling area in the next 12 months.
 - Caulfield-Moorabbin - resignalling & 3rd line
 - Moorabbin - Geographical Relay Interlocking (GRI) with unit lever panel in signal box (switch out).
 - Cheltenham-Mordialloc - resignalling (ready for commissioning).
 - Cheltenham - switch out.
 - Mordialloc - GRI and panel in station. 1st half of 1986.
 - Epping line - resignalling and provision of booms etc.
 - Bell & Keon Park - GRI and panels. switch out.
 - Lalor - GRI and panel. also controls derail at Epping. (NB: Car siding complex at Epping with Solid State Interlocking has been shelved.)
 - Kooyong - articulated boom barriers manually operated. 12/85.
 - Darling, Gardiner and Glen Iris - alterations to crossings a/c arterial road. At Gardiner PCR will have 4 road booms & 2 tram booms, manually op. at first later automatic. Track circuits & axle counters to control switching.
 - Springvale - automatic boom operation & switch out.
 - Traffic light co-ordination with booms at Werribee (Cherry St), Fairfield (Station St), Alphington (Grange Rd), and Mooroolbark (Manchester Rd).

Burnley Group - complete resignalling of all lines and locations a/c problems with insufficient headways. Start with Burnley to Ringwood. All interlockings controlled from Burnley.

Newport - new panel in lieu of existing panel, mech frame remains. New panel controls Altona Junction, Westona and Laverton and uses a Westinghouse remote control system. Not yet in service.

Eltham-Hurstbridge - three sets of boom barriers to be installed.

Underground Loops - removal of approach clearing of certain signals following recommendations from the Signal Sighting committee

All new work in Melbourne will use CSEE track circuits and GEC light signals (non-searchlight type). The Epping and Clifton Hill resignalling jobs will use DC circuits.

SYLLABUS ITEM:

John Sinnatt delivered the second portion of his talk on level crossing protection, control and operation. (It is hoped in the not too distant future to publish this talk in the form of an article similar to that previously written by John i.e. Absolute Permissive Block.- Ed.)

MEETING CLOSED:

at 2257 hours (plus or minus).

--oOo--

N.S.W. SIGNALLING RECORD SOCIETY1986 Tour Program

For information on these tours or about any other matter relating to the N.S.W. Group, contact Ken Date, 4 Iris Street, Paddington, NSW, 2021. Home phone:02-331 2097.

- Saturday, 8 February ----- Epping, Thornleigh, Hornsby, Mt. Kuringai, Berowra, Cowan, Gordon, Lindfield, Chatswood, North Sydney, St. James.
Meet at Epping at 0900 hours.
- Friday, 14 March ----- Electrical Trouble, Traffic Trouble and Train Control Sydney. (In conjunction with March meeting.)
Meet at Chalmers Street near entrance to Devonshire St tunnel at 1900 hours.
- Saturday, 12 April ----- Menangle, Douglas Park, Picton, Bargo, Yerrinbool, Mittagong, Bowral, Berrima Junction, Moss Vale and Moss Vale Junction.
Meet at Menangle at 0900 hours.
- Saturday, 14 June ----- Rockdale, Hurstville, Mortdale, Oatley, Sutherland, Gympie, Caringbah, Cronulla.
Meet at Rockdale at 1000 hours.
- Saturday, 9 August ----- Hanbury Junction, Hexham, Maitland, Telarah, Branxton.
Meet at Hanbury Junction at 1100 hours.
- Friday/Saturday, 10/11 October - Katoomba, Mt. Victoria, Bell, Newnes Junction, Lithgow Coal Stage, Lithgow Yard, Wallerawang East, Wallerawang West, Rydal, Tarana, Locksley, Raglan and Brewongle.
Meet at Katoomba station at 1000 hours.
- Saturday, 13 December ----- Seven Hills, Blacktown, St. Marys, Dunheved, Ropes Creek, Penrith and Emu Plains.
Meet at Seven Hills at 1200 hours (noon).

All arrangements are subject to confirmation. Please contact Ken to confirm.

--oOo--

OPERATION OF FREIGHT TRAINS WITHOUT A BRAKEVAN

The instructions published hereunder are those pertaining to New South Wales and were issued when the first of the WB (without brakevan) trains commenced operation in the Hunter Valley region out of Newcastle.

1. OPERATION OF FREIGHT TRAINS WITHOUT A BRAKEVAN.

Certain freight trains without a brakevan marshalled in the rear are permitted to operate in accordance with the following instructions.

The working instructions contained herein are within the terms of Regulation 4, Page 4, General Appendix, Part 1, and under the provisions of Rule 233 (a) with the exception that train crews will not be given written instructions but must comply with the conditions set out in these instructions which are to apply in all cases. The regulations herein are to be observed in addition to other instructions (where applicable) contained in this and various other Appendices and Rule Book.

2. DEFINITION: - WB TRAINS.

These trains are permitted to operate without a rear brakevan and for the purpose of distinction from other trains, will be known as WB trains. The 'WB' symbol representing train without a Brakevan.

The Guard accompanying a WB train will ride in the suitable rear Driver cabin of the locomotive.

The regulations contained on Page 317 of the General Appendix, Part 1, applicable to the operation of Unit trains will still apply with the exception that the identification plates showing the area and number of the unit train will be attached to both the front and rear vehicles.

3. SPECIAL CONDITIONS AND EXCEPTIONS.

A WB train will not carry standard type tail lights or a tail disc. In place of this equipment, a flashing red tail light mounted on a common bracket as described Clause 12 will be mounted on the rear of the trailing vehicle of all WB trains, during daylight and dark.

Exhibition of crossing lights vide Rule 206 will not apply to WB trains.

Exchange of hand signals between the guard and signalman enroute will not apply to WB trains.

The manner in which the signalman receives an assurance that the WB train and the rear vehicle has arrived complete is explained in Clause 9.

GENERAL WORKING CONDITIONS.,

4. TRAIN EXAMINATION PROCEDURES.

(a) The examination of WB trains will be conducted in the normal manner with the exception that the Car and Wagon Examiner must ensure that the automatic air brake is operative on both leading (5) and trailing (5) vehicles. The examiner must also inform the driver and the Guard of the position and number of any vehicle on which the automatic air brake and hand brakes is inoperative. The mass of wagons with the automatic air brakes inoperative must not exceed the restrictions shown in Regulation 18, Page 352, General Appendix, Part 1. During the normal brake examination the Car and Wagon Examiner must connect the portable continuity tester to the air Brake hose on the trailing vehicle and ensure that regulation brake pipe pressure is available throughout the train.

At block and staff stations south of Campbelltown and Unanderra and west of Penrith, north of Cowan to Fassifern (inclusive) and north of Maitland.

The signalman when aware of the approach of a WB train must contact the driver by two-way radio and inform him that he (the signalman) will position himself so as to closely observe the passage of the train as it travels through the interlocking. If the driver does not receive a call from the signalman he must stop at the signal box and ascertain the cause.

Should anything be noticed to be wrong with the train or load etc the signalman must promptly instruct the driver to bring the train to a stand. If everything appears to be correct and the rear of the train has been identified as complete by observation of the flashing red tail light, the signalman must give this assurance to the driver.

If no assurance is received from the signalman, the driver must endeavour to make further use of the two-way radio to contact the signalman. If again unsuccessful arrange to stop the train at the next attended signal box.

In addition to the action to be taken by the driver the guard must as far as practicable keep a good lookout in the direction of the rear of the train and be prepared to act in response to any hand signal that might be exhibited for his train.

10. WB TRAIN DIVIDED.

- (a) In the case of a WB train becoming divided, the guard must take any action that may be necessary to prevent the rear portion moving and to protect the train, in accordance with the regulations.
- (b) Should a train become divided or the continuity of the brake pipe be interrupted by either a burst air hose or other cause on a heavy falling grade, the train must be immediately secured with hand brakes by the Guard and Observer. The Guard when proceeding to the point of rupture must ensure that the front portion of the train attached to the locomotive has been secured by means of vehicle hand brakes before he attempts to close the rear air cock of that portion of the train. In addition, the Guard must ensure that the rear portion of the train is properly secured.
- (c) When the couplings of vehicles on trains, loaded or empty, become detached accidentally or otherwise, after the prescribed test has been made, or on the journey, the guard must retest the brakes whether the flexible air hose pipe has been disconnected or not, as prescribed in Regulation 5, Clause (f) sub-clause (i), and clause (h) sub-clause (iii), General Appendix, Part I.
- (d) Should it be necessary for a train to be removed from a section in two or more portions, a continuity test of the air brake on each portion must be carried out by the guard. This test must be carried out by the guard opening the air cock on the rear of the last vehicle on each portion in accordance with Regulation 5, Clause (h), sub-clause (iii), General Appendix, Part I.

- 10. (e) Use of Tail Ropes. - When using a tail rope, the guard, shunter or other employee, when the locomotive is ready to move, must see that it starts gently, to avoid jerking, also that excessive strain is not placed on the rope. Towing vehicles by locomotive should be resorted to only when this method of working cannot be avoided. In the event of couplings on vehicles marshalled within the consist of a WB train becoming divided due to damaged drawgear or defective coupling, arrangements are to be made if necessary by the train crew to make use of the tail rope carried on the locomotive to haul the defective vehicle provided the mass is within the permissible tonnage only as far to the nearest suitable location.

11. CONTINUITY BRAKE PIPE LEAKAGE TEST.

- (a) A "Continuity tester" is in use comprising a dummy coupling "T" piece fitting, pressure gauge and ball cock.

5. GUARD TO OBSERVE REAR OF TRAIN WHILE TRAIN IS IN MOTION.

(a) When trains are departing from stations, sidings or platforms, the Guard must look back to see that the whole of the train is following in a safe and proper manner and to observe and act upon any hand signal that is exhibited to him.

6. WB TO BE SECURED DURING SHUNTING AND WHEN ON GRADES.

(a) The locomotive or any portion of a WB train must not be uncoupled for shunting or other purposes at stations or sidings until the Guard/Shunter has secured the train.

(b) Where the line is not level the Guard must apply a sufficient number of vehicle hand brakes on those vehicles marshalled at or nearest the rear of the train on an ascending grade, or at or nearest the front of the train on a descending grade, as prescribed in the Regulations, to prevent possibility of the train or vehicles moving away. The number of hand brakes to be applied will be regulated by the steepness of the grade, the number and mass of vehicles and the state of the weather and rails.

7. SIGNALMAN TO BE ADVISED WHEN RUNNING LINES ARE CLEAR.

(a) After shunting operations of any description the signalman must see, or have intimation from the Guard in charge of the shunting operations, that the vehicles have been left secured in the sidings and that the running lines are clear before clearing the fixed signals to allow any train to proceed.

(b) WB trains shunted onto other lines or sidings to be placed clear of points. - If a train is to be placed in a crossing loop or siding, or onto a Branch or Loop line (where track circuit is not provided) to cross another train, or for one to pass, the Guard will be responsible as shown in Clauses (7c) and (8a) for ensuring that the complete train is clear of the points, and any other running line, before informing the signalman that the train is clear.

(c) WORKING OF WB TRAINS WITHIN NON-TRACK CIRCUITED INTERLOCKING, WHERE A SIGNALMAN IS ON DUTY.

The driver of the WB train on passing the Home signal must bring the train to a stand at the facing points to allow the Guard to alight so he can examine the rear of the train proceeding past that location. The Guard will report by two-way radio to the driver confirming that the train has arrived complete and the rear vehicle is in clear of the Home signal and/or the clearance point of any adjacent running lines or sidings. It will be the driver's responsibility having received this assurance to exhibit a green hand signal to the signalman as an indication that the train has arrived complete and is clear of any adjacent siding or running lines. In the event of the driver not being able to exhibit the hand signal he must make use of the two-way radio or other means to inform the signalman of the train's arrival - in clear and complete.

8. AT UNATTENDED AUTOMATIC CROSSING LOOPS.

(a) When a crossing is not being made, the driver, having passed the Home signal, must bring the WB train to a stand prior to traversing the facing points to permit the Guard to alight, taking with him the electric train staff and two-way radio and SL key. The train will then proceed towards the clearance post at the other end of the loop on instructions from the Guard who must observe the rear vehicle, ensuring the completeness of the train and advise the driver accordingly. The Guard is to then proceed to the staff hut and perform the safeworking duties required.

9. MANNER IN WHICH WB TRAINS ARE IDENTIFIED AS HAVING PASSED THROUGH SECTION COMPLETE.

(a) Action to be taken by train crew and signalman when WB trains are leaving block or staff section.

Prior to departure of the train, a continuity test is to be conducted by the guard. The tester is to be applied to the coupling head in the brake pipe air hose on the trailing vehicle; the cock on the tester is to be in the closed position. The guard is to grip the hose head and tester firmly with one hand and then open the cock on the vehicle and observe the pressure in the pipe. The cock on the tester is then to be opened for a period of approximately 15 seconds allowing air in the brake pipe to vent to atmosphere. The cock is then to be closed and the guard is to then observe that the brake pipe air pressure returns approximately to its former value. The guard will then observe the gauge ensuring that the driver conducts a further reduction and recharge of the brake pipe. The guard must also observe that the brakes on the last vehicle apply and release and that the brake pipe is recharged to at least 425kPA before closing the brake pipe cock on the vehicle thus venting the air pressure on the gauge and then remove the continuity tester.

The guard will then proceed to the leading locomotive taking with him the continuity tester and inform the driver of the number and position of any vehicle marshalled within the consist of the train with the air brake cut out.

12. EXHIBITION OF FLASHING TAIL LIGHTS.

(a) DESCRIPTION OF LAMP

The portable flashing tail light is made in two parts, the top part has the red lense and is connected to the bottom part which contains two (2) by 6 volt batteries. The unit is secured by a bolt which requires a special Allen key to attach it to the bracket for mounting on the vehicle.

To activate the flashing tail light a match or a 2mm nail is required and is used to press and operate the switch through the hole which is located just under the lense at the top left hand side at the front of the light.

(b) CHECKING BATTERY FOR REPLACEMENT

A white adhesive marker is fixed to the outside of the battery case on which a date of replacement of the battery is required. The guard is responsible for ensuring that batteries are replaced at intervals of every 30 days. In addition to replenishing new batteries a new globe must be used and the globe it replaces is destroyed.

NOTE: The flashing tail light will be attached to the portable bracket and be ready for "switching on", when required to mount the assembled unit onto the rear of the wagon.

(c) INSTRUCTIONS FOR MOUNTING ONTO VEHICLE.

The red flashing tail light and bracket is to be attached to the end of the freight vehicle and inserted into the aperture on the right hand side of the emergency towing fixture.

(d) TO ATTACH THE TAIL LIGHT AND BRACKET TO EMERGENCY TOWING FIXTURE HOLE.

(i) Unscrew the clamp bar by turning the handle anticlockwise so that the space between the base of RHS and top face of the clamp bar is approximately 22mm.

(ii) Drop the support bracket into the emergency towing fixture hole, the clamp bar fits through the slot and the back plate into the hole.

(iii) Screw the clamp bar tight by turning the handle anticlockwise and tighten firmly.

(e) TO REMOVE TAIL LIGHT.

(i) Unscrew the clamp bar by turning the handle anticlockwise until the clamp bar is parallel to the slot.

(ii) Lift the tail light up to remove it from the emergency towing hole.

V.R. SIGNALLING HISTORY

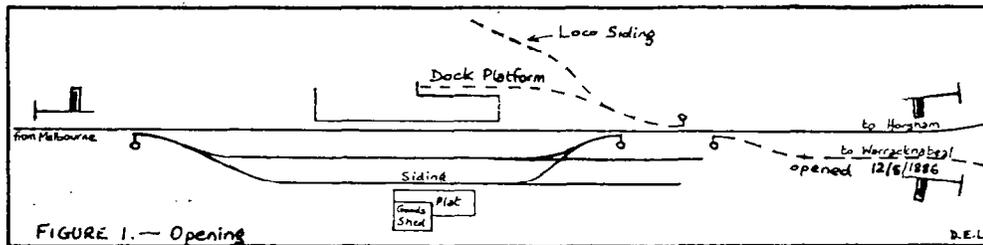
STAWELL - MURTOA

(continued)

by David Langley

No 40. MURTOA

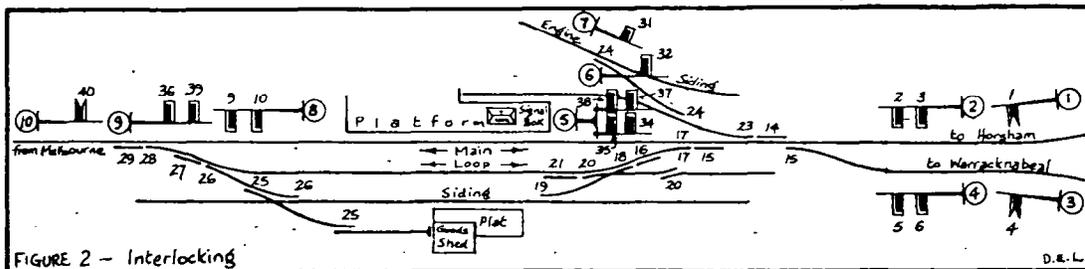
Murtoa became a temporary terminus on 17 December 1878 and remained so until 5 February the following year when the next stage of the western line, to Horsham, was opened. We do not have a record of what the first track layout at Murtoa looked like at this time but using the first interlocking sketch dated 1887 and our knowledge of early Victorian layouts, we can safely assume that there would have been three roads - platform, crossing and goods siding - with maybe extensions at either end of the goods siding. Loco facilities would have been provided and no doubt occupied the same site as the loco depot we all know. My suggestion of the layout is shown as Figure 1.



The branch line to Warracknabeal was opened on 12 May 1886, the junction with the main line being made outside the station at the Horsham end of the yard. The dock platform, shown on the interlocking sketch as Warracknabeal Departure Bay, could have been also added at this time but it could also have been an extension of an existing carriage dock. Carriage docks were very popular at Victorian stations around this time. The arrangements for the branch line are shown dotted in Figure 1.

With the branch line came a certain amount of additional shunting, more so than just merely picking up or setting down wagons at a wayside goods siding, which Murtoa had been prior to this time. It is true to say though that Murtoa would have been an important railhead for the surrounding area and the number of wagons handled there would have been increasing all the time. Wagons from the branch line would be arriving at Murtoa to wait clearance by main line trains and siding space would be needed to store these wagons. It is presumed that the gradual provision of additional goods sidings took place in this period including the short No 4 road serving a goods loading platform next to the original goods shed and platform.

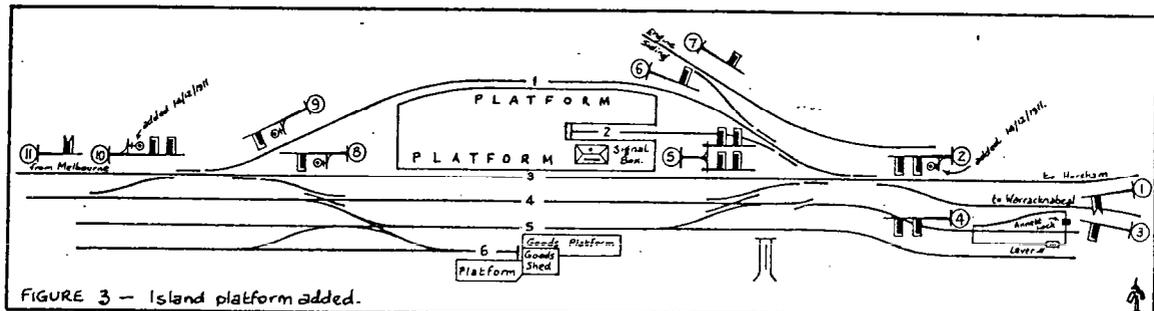
The first interlocking sketch, dated 15/6/1887, is the earliest record I have on the layout and we can see the dead end extensions at both ends. The sketch has a number of alterations on it but using the first interlocking register entry for Murtoa, it has been assumed that the alterations were made prior to the provision of the No 6A pattern rocker interlocking apparatus on the platform on 8 July 1887.



A two lever ground frame, secured by an Annett Lock, was provided on 23 August 1893. This ground frame controlled a crossover between the branch line and one of the dead end sidings at that end of the yard, later Siding "C".

To protect this connection, the up distant signal for the branch line was converted to a home signal, with no replacement being provided for the distant, not even a location board. As there were still seven spare levers in the interlocking machine, a distant could have been provided but perhaps the slow speed of branch line trains did not warrant a distant, a good view being obtained of the home signal by approaching trains.

The island platform at Murtoa dates from 20 December 1896 and signalling diagram No 823/96 was issued for the occasion. This diagram has not survived but the list of signals at this time was published in the weekly notice and from this list, together with other diagrams, we can draw a diagram of the layout. Five of the seven spare levers were now made working and the register entry for 1 July 1899 tells us that 20 signals, 12 points and 6 lockbars made up the 38 working levers in the 40 lever machine (Figure 3).



The two remaining spare levers were put into use on 14 December 1912 when a disc signal was added below the arms on Posts 2 and 10. Both discs were used to signal trains from the main line into No 4 road. This road, of course, was the old crossing loop prior to the island platform but became unsignalled with that alteration. No doubt the requirement to signal many goods trains into No 4 road with nothing more than a green flag (or light) led to this provision.

In about March 1913, according to Weekly Notice No 13 of that year, bracket post No 5 was replaced by separate posts both with two arms, one above the other. These two posts then survived further alteration until all semaphore signals at Murtoa were removed during the Western CTC project - but that is another story.

Parallel moves became the feature at Murtoa following substantial alterations to the trackwork. At the down end, the dock platform has now been directly connected to the branch line via a double compound in the main line while the back platform road now only leads to the line to Horsham, all branch trains now being required to use either the dock platform or the original platform. One can only assume that long trains were probably the order of the day on the branch and the branch mixed could be docked up in the branch platform from the branch line, and the down main line train could run via the back platform. This would enable the signalman, perhaps, to assist with the van-goods and not having to worry about signalling the trains at that exact moment. This use of the parallel moves was certainly a feature of Murtoa when I first saw the station during the 1960's although the branch train was only a Diesel Electric Railmotor hauling a "C" van and not a long mixed train. Both down trains, however, were signalled to their respective lines simultaneously leaving the signalman time to do other things, like assist with the van goods.

Figure 4 shows the layout at Murtoa after the changes which came into use on 13 April 1913. The 40 lever rocker frame was abolished and a 68 lever tappet machine provided in a new signal box located very near the original box. I say that it is a new signal box on the strength that it was a hip roof building very similar to a number of signal boxes installed in this period. Others that come to mind are Toolamba and Hamilton to name but two.

Although 28 more levers were now in the Murtoa signal box, only 15 of these were used on the new layout and most of them were taken up by the provision of a number of disc signals around the yard to assist in the many shunting movements that took place every day. In fact ten such signals were provided along with an up distant signal for the branch line, however, the register says that only ten additional signal levers were brought into use. The apparent dis-

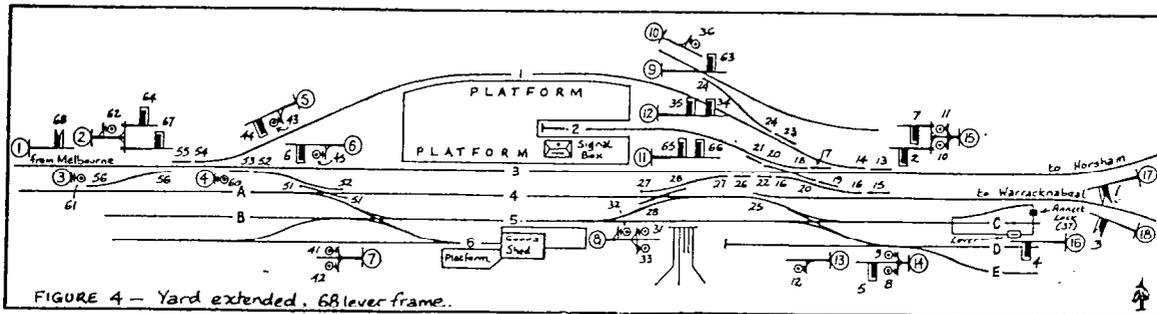


FIGURE 4 - Yard extended, 68 lever frame.

crepancy is easily explained by the removal of one arm from Post 9, moves from the back platform road to the branch line were no longer possible. The other five levers are accounted for by the provision of the previously mentioned set of double compound points at the junction of the dock, branch and main lines.

On 20 December 1925, the back platform road was extended at the up end of the yard to a new main line connection on the Melbourne side of the crossover from No 3 road to shunting siding "A". Post 5B was added to govern up movements from No 3A road, the arm to the main line and the disc to shunting siding "A". The disc was previously on post 6 and the arm on this post now only applied from No 3 road to No 3A road to post 5B. Post 5 governing movements from the back platform road also had its disc removed as moves to the shunting siding were no longer possible. The arrangement of levers was a little more complicated as the new arm on Post 5B became lever 7, previous signal 7 (the up home signal into the back platform road from the Horsham line) became lever 9 whilst the right hand disc on post 14 (previously lever 9) became lever 39 which was spare. The one additional lever brought into use at this time was 57 which worked the lock bar for 56 crossover, this lockbar previously being lever 55, but lockbar 55 was moved out along with 54 points. Figure 5 shows the layout at this time.

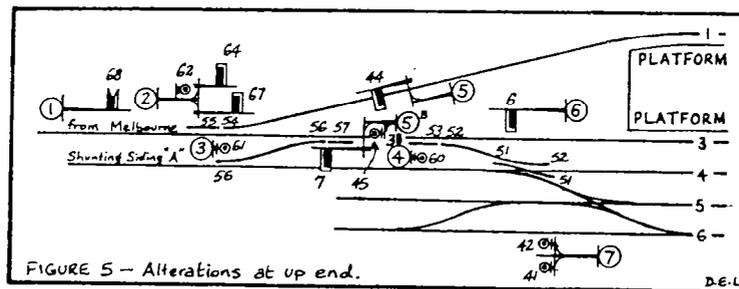


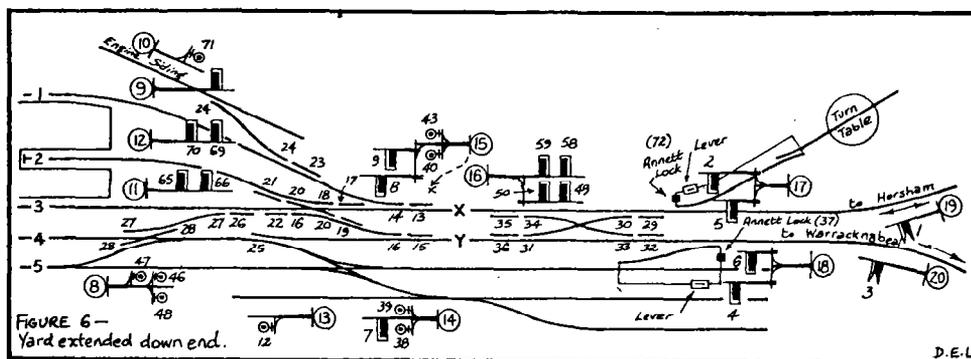
FIGURE 5 - Alterations at up end.

Two minor alterations occurred on 8 September 1926. The disc on post 5B was moved up underneath the arm and on the left hand side of the doll whilst the disc on post 2 was moved onto the right hand side also underneath the arm.

A curious remark is made on the locking sketch for the period that on 13 December 1926, lever 62 was made locked by lever 54. It seems that someone forgot to ensure that lever 54 (working the points from the main line to the back platform road) was locked when lever 62 was reversed to permit a train to proceed from the main line to Nos 4 or 5 roads. Points 54 would, of course, be required to be normal for such a move.

The final expansion at Murtoa came on 16 December 1928 when the delta crossover was provided at the down end between the main line and the branch. This, once again, permitted branch line trains to use the back platform road but perhaps more importantly, allowed main line goods trains to enter the yard further out than before thus permitting longer trains to be handled without the awkward necessity of having to run forward and back up. Many alterations occurred to lever functions in order that logical lever pulls could be achieved although some out of order pulls remained. Signalling diagram No 28/28 was issued

and Figure 6 is based upon it. The signal posts at the down were renumbered and five additional levers were added to the lever frame making it a 73 lever machine. Interestingly enough, the down distant signal remained worked by lever 68, the new levers being used for various other functions around the yard. One of



these levers was fitted with a "B" pattern annett lock the key of which could be taken to the new loco siding and used to release the points of that siding. This siding, which was installed in July 1928, led to a 70' turntable which enabled the longer locomotive now being operated to be used on trains that terminated at Murtoa. The previous turntable was one of 53' and it is probably indicative of the use it received that the 70' turntable was in service before the 53' one was removed. The points leading to the new turntable were secured by a staff lock requiring a staff for the Murtoa - Jung section to be inserted before they could be unlocked.

A landmark near Murtoa, just on the Melbourne side of the station, are the very large wheat storage silos and sheds at Marmalake operated by the Grain Elevators Board. The sidings at Marmalake started in a modest way when a staff locked loop siding was provided on 29 May 1941 being given the name Marmalake on 5 March 1942. Weekly Notice No 11 for 1942 tells us that the sidings are now open for traffic, perhaps also on 5 March. An independent connection between Murtoa and Marmalake was provided on 23 December 1950 thus saving a fair bit of mucking about if the pilot was required to go and shunt Marmalake when a main line train was due. This connection was simply an extension of shunting siding "A" and joined onto the down end of Marmalake siding, the staff locked points at that end of the siding were removed on 22 February 1951. (For further reading regarding Marmalake, see Somersault July 1979.)

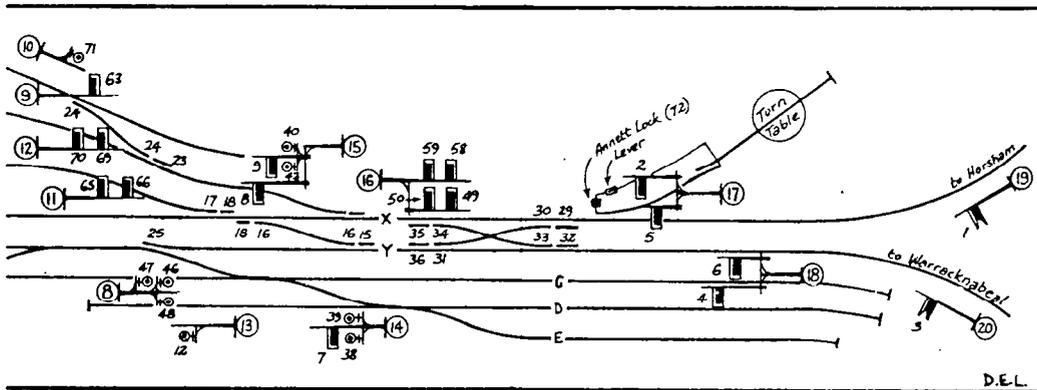
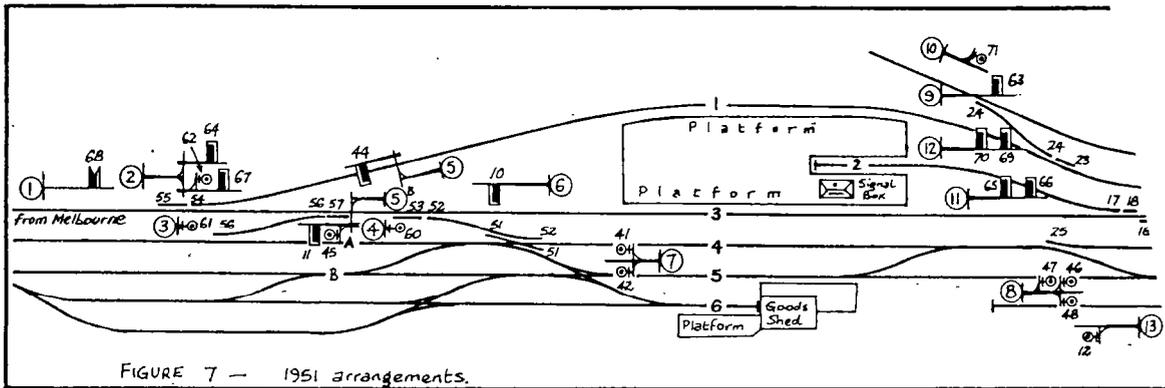
Signal posts at many stations become relocated for many reasons, other than for layout alterations, and Murtoa was no exception with the up main line distant signal being moved 527 yards (482 metres) further out on 12 June 1944. The wire operation of this signal was also altered to motor operation at the same time. A more obscure signal relocation was post 15 which was moved 42 yards further out on 12 December 1948. One possible reason was the track alterations that took place at the down end in 1950-51 which culminated in the issue of the next signalling diagram - No 7/51 - on 18 November 1951. The alterations at this time saw the removal of the three double compounds at the down end and the provision of crossovers and turnouts in their place.

The first to go was on 26 February 1950 when the lead from No 4 road towards sidings "C" and "D" was made a crossover 50 yards nearer the signal box and a plain turnout was provided at the junction of "C" and "D" sidings. Post 13 was moved 30 yards in the up direction. Also about this time, in fact on 22 August 1951, the annett locked crossover from the branch line to siding "C" was abolished and lever 37 became a spare.

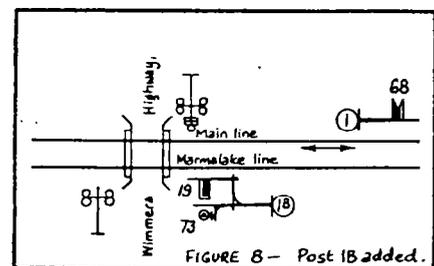
The second double compound set of points was removed when the inner connection from the main line to Nos 4 and 5 roads was abolished altogether. A hand operated crossover was provided at about this location between Nos 4 and 5 roads only. The left hand disc (No 40) on post 15 was abolished and post 8 was moved 60 yards in the down direction. Post 11 was moved 33 yards further out to the new fouling point between the dock and the main line on 10 October 1951.

As a lead up to the abolition of the third double compound, post 14 was moved 17 yards further out on 6 November 1951 and seven days later, a new connection was provided between "X" and the back platform road further out from the existing connection, post 15 had already been moved almost three years prior. Finally, on 18 November 1951, the double compound points in the main line were abolished and replaced by a turnout to the dock and a crossover to the branch line.

Figure 7 below shows the layout at Murtoa after the above alterations had been completed and has been taken from diagram No 7/51. Readers perusing the diagram carefully will notice that two discs on post 15 have been moved and this move took place on 2 December 1948 and may have been done for sighting purposes although I would welcome any further comment on this matter.



Modernisation came to Murtoa in the 1960's with the provision of the first of two sets of flashing lights in the area. The up end level crossing (Wimmeria Highway) was so equipped on 28 July 1965 and in order that shunting operations would not operate the lights unnecessarily, a new signal post - 1B - was provided (Figure 8). This right hand lopsided bracket post carried a disc (lever 73) for moves along the Marmalake siding and an arm (lever 19) for moves along the main line. Lever 73 was always spare but lever 19 previously worked a lockbar prior to the 1951 alterations.

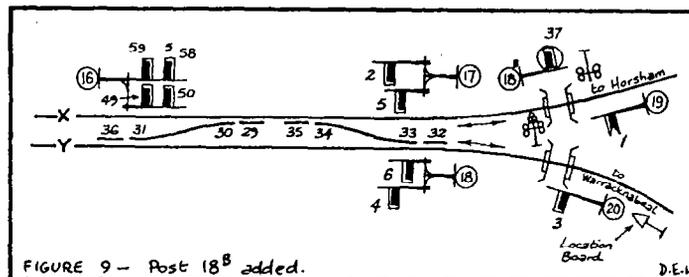


The other set of flashing lights were provided at Warracknabeal Road level crossing at the down end of the yard on the main line. A two position down home (light) signal was provided to prevent unnecessary operation of the lights during shunting operations on the Horsham line. This signal, post 18B, was worked by lever 37 which had become spare following the removal of the annett locked crossover from the branch line to siding "C".

With the gradual introduction of diesels and the cessation of steam operations, the loco facilities at Murtoa were slowly done away with. The first to go were the tracks around the 70' turntable in the middle of 1965 then in August 1972 most of the original locomotive depot was abolished although one siding was retained to service the railmotor still in use on the Hopetoun line.

The annett locked turntable siding was abolished on 7 October 1974, although the turntable lingered on for a number of years, causing lever 72 to become spare. The turntable was rendered surplus by the removal of the steam engine and the absence of a need to turn the few (at that time) main line diesel electrics that were single ended, the usual form of motive power of trains terminating at Murtoa were either T or Y classes, and maybe the odd B or X class.

Our story of Murtoa ends with neither a reduction nor an expansion, in fact, the number of levers in use remained the same. On 1 December 1974, one leg of the delta was abolished and a new crossover from the Horsham line to "Y" was brought into use further out. 15 days later the rest of the delta was abolished and a crossover from the branch line to "X" was brought into use. Figure 9 shows the final arrangements at the down end of Murtoa. This diagram also shows the up outer home signal on the branch line. This was formerly the up distant signal and was converted so that trains could be placed on the branch line whilst a staff was out of the instrument at the other end of the section. A location board was provided 440 yards in the rear of this outer home signal.



The layout at Murtoa remained unchanged until December 1982 when the first of the alterations as part of the CTC project commenced. An article on the changes to the line for the CTC will appear in Somersault some time in the future.

--000--

Letters to the Editor

from Chris Wurr, Ararat.

Dear David,

some further notes to append to Jack McLean's Dobie article in November Somersault.

The dead-end extension of No 2 road at the up end was used right up until Dobie's demise for loading river gravel from a nearby tributary of the Hopkins River - hence the catch points at the down (also downhill) end of the yard and which were later moved to the exit of the dead-end.

Dobie was used extensively as a dividing station in the early years, whereby a full train was brought out of Ararat and divided at Dobie for the trip over Mt. Mistake to Buangor.

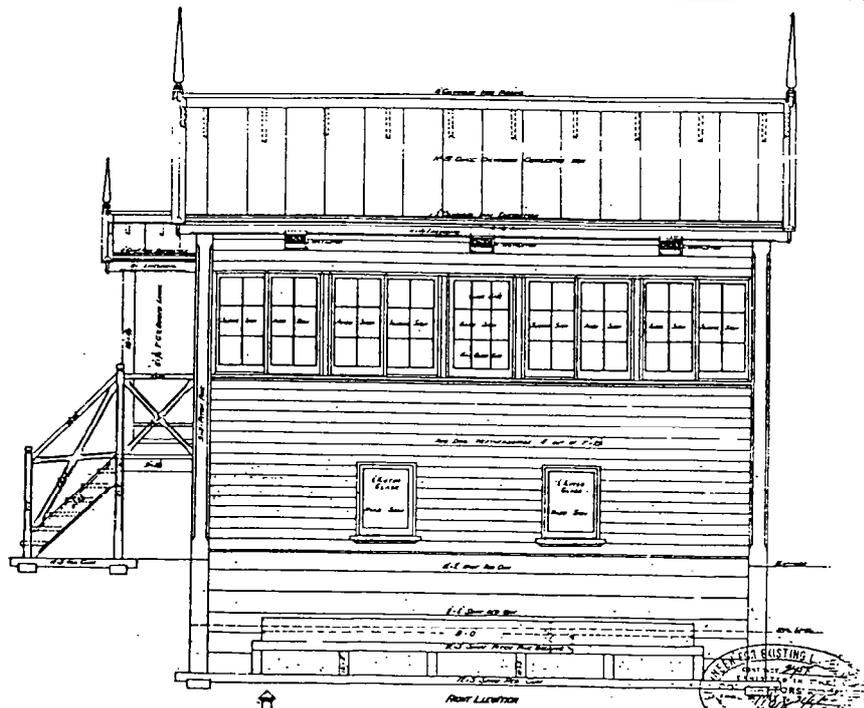
The D.R. was bought by Ganger McCallum, who was the father of present Ararat Train Controller Ian McCallum. It lay empty for several years and in 1981 or 82 was purchased by an Ararat engine driver who moved it to 29 McLellan St, Ararat and extensively rebuilt it, such that it is completely unrecognizable as a former D.R. today.

Until just a few years ago (and possibly still today) a Dobie-Ararat A miniature electric staff was in use, strapped into an 'auto ring' for gauging new auto staff exchangers at Spotswood Workshops. (No amount of bribery could seduce Luig into parting with it either.)

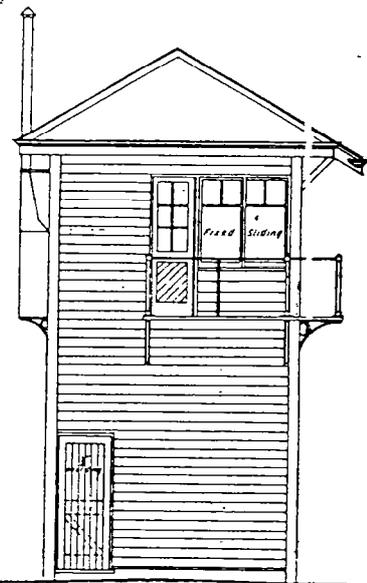
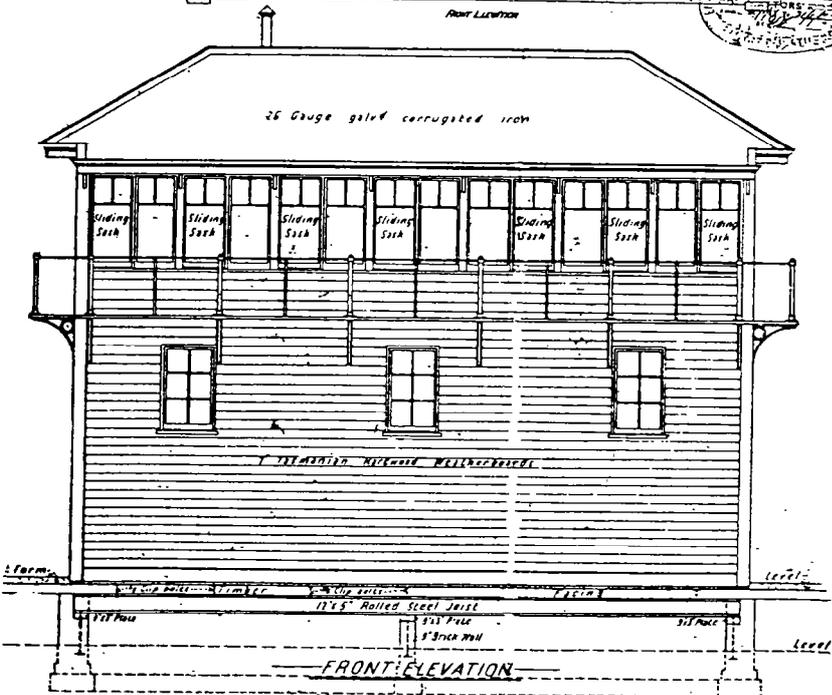
Despite being only 24 chains apart, the two P.C.R. crossings immediately on the down side of Dobie at 126M 3C 3L and 126M 27C 36L must have both been equipped with gates sometime prior to 1908 as they both have brick-lined water wells adjacent.

Closer inspection of the photo of Dobie station on page 43 of "The Ararat Railway Centenary" (A.R.H.S.) reveals why Ganger McCallum trotted out the Box Brownie on that day in 1944. SNOW! Perhaps some leftovers from J.D.McL's Canadian blizzard!!!

--000--



Left and Below: These diagrams of Murtoa signal boxes were supplied by Colin Rutledge and we can clearly see the type of structure that housed the 40 lever frame. The latter structure (below) the 1913-16 style of box with the hip roof in lieu of the gable type housed the 68/73 lever frame up until the demise of mechanical interlocking at Murtoa.



END ELEVATION

PAGE 172 - ELECTRIC STAFF SYSTEM.

(Continued from P.8)

Regulation 11 - Bell signals.

Add:- After (d) Through goods, ballast or water train or locomotive hauling dead locomotive or locomotives only ___ 1 pause 2 pause 1.

- * WB trains1 pause 2.
 pause 1 pause 2.

Add:- Footnote at bottom of list of signals.

- * WB trains - trains operating without a read brakevan under the conditions prescribed in Circular No.240.

INTERLOCKING ON THE VICTORIAN RAILWAYS

by Colin Rutledge

(The first part of this article was published in the Nov 1983 & Feb 1984 issues.)

Part 2. Staff Locking

Security of non-interlocked points on single lines has the same importance as points worked from an interlocked frame. Crossing stations generally have signals interlocked with the main line points which therefore prove the lay of the points for train movements. Any location that is not a crossing place with fixed signals, but is equipped with points, needs some means of securing these points for the passage of trains.

Until the 1890's, the excepted means of securing points where no signal was provided, was to use an arrangement which is still in limited use today - the Hand Locking Bar (HLB) - which is secured itself by pin and padlock to prevent unauthorised manipulation of the bar. There is no guarantee that when a train is admitted into a section between crossing stations that the HLBs are securing the points and it is therefore necessary for any train proceeding over points in the section to slow sufficiently for the driver to observe that the points are so secured. This type of arrangement probably existed at all sidings that were not provided with interlocking frames and I am inclined to think that prior to 1882, there was no security of any form on the points. The 1862 Rule Book makes no mention of such things while the 1885 book says that locking bars or bolts, or both, must be used to secure points, and that the locks and keys must be kept in good order.

A contract was let to a Mr. James McGuire on 8 September 1882, for £165.0.0 to supply 500 locking bars and a further contract was let to a Mr. J. Williams on 25 May 1883, for an unknown quantity of locking bars also for £165. Further evidence that the installation of locking bars commenced around this time is a further contract for £397.3.4 for the supply of locking bars & fittings awarded to Mr. Joseph Williams (the same Williams previously shown above) which would yield about 2,000 sets of equipment.

It is of interest to note that around the same period, Mowbray, Rowan and Hicks were awarded a contract on 30 October 1884 for the sum of £550.9.6 to supply 194 sets of staffs, staff ticket boxes and brackets. These were not of the pattern we know today of which more anon, and it should be noted here that Train Staff and Ticket working commenced in Victoria in 1873.

The break through for better security of points came in 1896. Tyer's No 5 pattern tablet instruments were installed on the sections Nyora-Loch-Bena-Korumburra in November 1895, being the third installation of tablet instruments in the state. On 6 January 1896, the tablet sections were altered to Nyora-Jeetho-Korumburra, possibly to release a pair of instruments to use exactly one month later between Mangalore and Avenel. On 23 October 1896, tablet locks were fitted to the points at Loch, Whitelaw and Bena, and so 'interlocking' the main line points on a single line with a train.

The tablet locks secured the points for the main line and could only be released by the removal of the drawer portion of the lock, inserting a tablet and then pushing the drawer home.

Notes in my files show that McKenzie and Holland supplied tablet locks of "Evan's patent". I also have a note that says that there is a No 1 and a No 2 pattern of tablet lock. This connection to the points is identical to that described in my earlier article on annett locks (See Somersault Nov. '83).

The 1890's were certainly progressive times as far as single line safe-working was concerned. Shortly after the introduction of tablet instruments, Webb & Thompson Electric Staff instruments (large type battery operated) were introduced, initially between Moorabool and Gheringhap on 21 April 1897 (replacing tablet instruments installed on 18 November 1895), and then spreading over many lines throughout the state. Weekly Notice No 15 of 1897 (October) published instructions for staff locks which were soon to be installed. Soon indeed, for on 18 October 1897, a staff lock was provided at Irvine's Siding (later Seppelt's Siding, now closed) near Great Western. (The section Armstrong-Great Western was equipped with large pattern ES instruments just six days before.)

When Webb & Thompson designed their ES system, they also developed a siding or ground lock. At one end of the staff, a brass casting increased the size of the staff from 1 1/8" diameter to about 1 3/4" diameter. From this

casting, there were two projections which worked the lock mechanism.

Sidney Prescott Wood, who was the General Manager of McKenzie & Holland in Australia by about 1900, patented the Wood's Siding Lock sometime in the 1890's and it appears that Wood set out to design a lock that could be directly fitted to the points but still operated by a staff of similar dimensions to the Webb & Thompson staff. Wood's lock is worked by a key called a feather which is fitted into one end of a staff, projecting inside the 1 1/4" diam. tube of the staff itself. In conjunction with his lock, Wood designed a staff for train staff and ticket working, and presumably ticket boxes to suit. It is the Wood's lock and Wood's staff which is used in Victoria.

In the previous article on annett locking, I referred to a number of locations that, in order to save traffic personnel, had the interlocking frame fitted with an annett lock to secure the signal levers reverse. It was a logical step to replace the annett lock with a staff lock so the levers could only be put back when a train was present and required to shunt. I believe the annett locks were replaced with staff locks at the same time that the various sections had the staff & ticket system replaced by the electric staff system.

Because the train staffs originally in use (the 194 sets supplied by Mowbray, Rowan & Hicks in 1884 and what ever else was around at the time) were not compatible with the new Wood's lock, points in sections worked by these old pattern staffs were still secured by locking bars.

On 17 March 1898, the first installation of Wood's staff and staff locks was made on the Buninyong line, and the points at Eureka, Canadian and Mt. Clear were now staff locked. The Wood's staffs were now known as Lock Staffs to distinguish them from the older type.

All the early locks and staffs would have been manufactured by McKenzie & Holland, and there are still a few locks around that bear the McK&H brand. In common with nearly all interlocking equipment, the VR started to make its own equipment in the early 1900's and the designs were copied so exactly that without exception, McK&H and VR parts are interchangeable.

The Wood's staff lock is operated by inserting a staff in the lock with the section name uppermost, and then rotating it through 135°. Once turned, the lock is released and the staff back locked in the lock. The lock rod connection to the points is again the same as for annett locks and tablet locks. The locks are fitted with a spring mechanism to ensure vibration will not release the mechanism. In addition, the lock is fitted with a lever which proves a staff has been inserted before allowing the mechanism to be released.

At some locations, such as North Creswick and Barry Beach Junction, the points leading to the branch line are secured by a staff lock. Since the main line is worked by electric staff at North Creswick, and staff & ticket at Barry Beach Junction, both the main and branch line staffs could release the points. To prevent this, the branch staff is fitted with a special feather 5/8" wide as opposed to the usual 1/4" and therefore, the branch line staff is too wide to enter the lock mechanism and release the points. If staff locks are required on the branch line, the locks are altered to accept the 5/16" feather and any staff with a wide feather, has that information engraved near that end of the staff.

The staffs themselves (both electric and lock) were originally constructed from steel tube. At the point on the tube where a ring was required, the tube was knurled and a brass ring cast on. After casting, the rings were cleaned up on a lathe and a feather, a small piece of steel, was brazed into the end of the staff. In recent times the staffs have been made by casting the complete staff in durallium (an aluminium alloy) and then machining the staff to shape in a lathe. The feather in one of these staffs is welded in as a separate piece like in a steel staff.

Practice has shown that the feathers in these staffs are both soft and liable to break out. The solution, applied only in the last few years, has been to manufacture the first 3" or so of the staff from the feather end in mild steel and rivet this to the remainder of the staff. A steel feather is then welded in the mild steel end. This has proved to last much longer.

With the abolition of many staff sections in recent years, there has been many staffs withdrawn and it is now usual to fill and re-engage these spare staffs to replace damaged staffs, or for new or altered sections. It should be noted that lost staffs in ES sections are not replaced.

On both electric and ordinary train staffs, the first ring from the feather end is so located as to be a guide for the staff when it is inserted in a lock. In addition, this ring also determines the gauge or pattern of the staff.

The distance of this ring from other rings on an electric staff is varied to achieve the four different gauges used in Victoria. An ordinary train staff has a notch cut in the ring and it is therefore the angular position of the notch, not the ring location, which determines the gauge in this case. The different patterns or gauges are identified by colours - red, green, blue and grey for electric staffs, and red, white, blue and black for train staffs. There are two further gauge staffs available for use, although not in Victoria and so have not been allocated colours.

Due to the physical size of the large pattern electric staff (about 20" long), Webb & Thompson developed their Miniature Electric Staff (MES). It was available in two types - 'M' type; with staffs 10" long, and 'S' type; with only 9" staffs. The 'M' type was selected for use in Victoria, South Australia and New South Wales, and the 'S' type appeared in Tasmania. Both 'M' & 'S' type staffs are 5/8" diam. with 1 1/8" diam. rings. The body of the staffs were originally 5/8" diam. steel bar with cast on rings but nowadays are also made of durillium.

No doubt, because of its reduced size, convenience and ability to be exchanged at greater speeds when used with a cane hoop, MES caught on very fast and I think it would be true to say that after the first section of MES was introduced, no further purchases of large pattern instruments would have taken place.

Although not the first section converted to MES (Buangor-Dobie-Ararat "A" was the first in 1912), Armstrong-Great Western was converted in 1913 but a first was attained with the conversion of Irvine's Siding's large pattern staff lock to a Miniature Electric Staff Lock.

MES locks use the same lock rod assembly as all other forms of point lock. The lock itself is a cast iron box about 12" x 8" x 6". A drawer with a handle is in the opposite face of the box to the lock rod and a lever is fitted to one side of the case. To work the lock, the drawer is withdrawn and the staff is placed in the slot in the tray. When the drawer is pushed home, the lever can be thrown which withdraws the plunger from the lock rod. The design of the lock permits the fitting of a gauge plate to prove the gauge of the staff if desired.

Many sections of staff & ticket working are provided with a Master Key so that a train travelling on a staff ticket can shunt at an intermediate staff siding. Instructions for their use are covered in the General Appendix.

On ES sections, master keys are sometimes provided in glass-fronted boxes so that in the event of an instrument failure and a staff is not available it is possible to shunt at an intermediate siding.

A master key consists of about 2" of a staff from the feather end, mounted on the end of a 3/4" steel shaft about 10" long. A 'T' handle is provided and a ring is fitted in the same place as the gauge ring on a staff to serve as a guide when the key is in a lock. Since the ring is not notched, the key will not release a ticket box.

Miniature master keys look very similar to miniature electric staffs with the exception that they have a fifth ring that is 3/4" wide. This ring prevents the key from working an instrument. Both types of master keys are engraved with the details of the section for which they are provided.

The only other variation I want to mention can be seen at Newport and Brooklyn. Between these two signal boxes there are two parallel single lines, one worked by large pattern ES and the other by MES. To ensure that the correct starting signal is operated, after removing a staff from the instrument at either end, the signalman places the staff in a special contact box. This permits one operation of the respective starting.

I haven't mentioned staff exchange boxes or staff switch out variations as these matters need to be explored more thoroughly as part of the section on electric staff generally. Suffice to say that a master key is also used to remove an electric staff from an exchange box when the signalman resumes duty.

(to be continued)