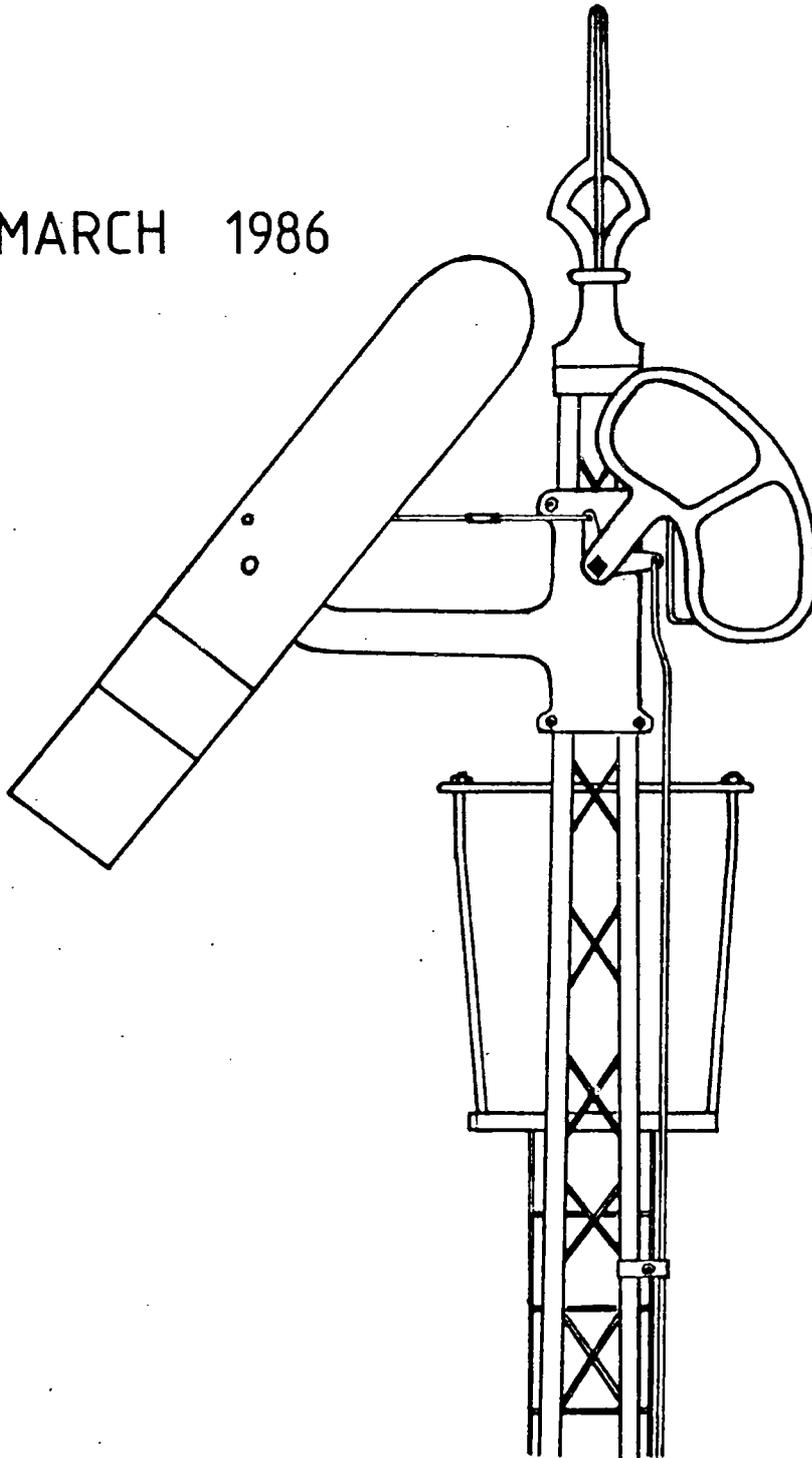


# SOMERSAULT

MARCH 1986



# SRSV

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 articles appearing in Somersault or supplements are  
 not necessarily those of the S.R.S.V.  
 Deadline for May issue is 20 April 1986.  
 NEXT MEETING: Friday, 21 March 1986.  
 VENUE: A.R.H.S. Library Room, Windsor Railway Station.

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#### MINUTES OF FEBRUARY 1986 MEETING

**HELD AT:** A.R.H.S. Library Room, Windsor Railway Station on  
 Friday, 21 February 1986.

**MEETING COMMENCED:** at 2010 hours.

**PRESENT:** Jack McLean, Andrew Wheatland, Wilfrid Brook, Jim Brough,  
 Jon Churchward, Warren Doubleday, Roger Jeffries, Alan  
 Jungwirth, Tony Kociuba, Keith Lambert, John McCallum,  
 Stephen McLean, Bill Mercer, Colin Rutledge, John Sinnatt.  
 A welcome was made to I. Mathews.

**APOLOGIES:** A special apology was recorded for the Editor in Chief,  
 D. Langley and his apology to the evenings speaker was also  
 noted.

**MINUTES OF PREVIOUS MEETING:** were adopted as read. (C.Rutledge/A.Jungwirth.)

**BUSINESS ARISING:** Tramway Crossing inspections. The one man sub-committee  
 arranging this day is to finalise a date in April for the  
 tour.

**CORRESPONDENCE:** Jack McLean tabled two letters:

1. from Dr. Heine, N.Z. He is writing a history of McK & H  
 material in New Zealand. Jack has corresponded with him and  
 Colin Rutledge will also correspond further.
2. Brother ..... re information for his book dealing with  
 categorising signal indications world wide.

**REPORTS:** The SRSV was well represented at the SRSNSW signal box tour  
 on 8 February. Alan Jungwirth, David Langley, Colin Rutledge  
 Brad Wooding and Glen Greenhall met the NSW party at Epping  
 and proceeded to visit the signal boxes at Epping, Thorn-  
 leigh, Hornsby, Mt Kuring-gai, Cowan, Berowra, Gordon,  
 Lindfield, Chatswood, North Sydney but not St. James as  
 originally planned. These tours are well worth the long  
 drive from Victoria to attend and are recommended.

Victorian Show Day Tour: The Eastern District staff are  
 expecting us to attend, full details to be advised.

**GENERAL BUSINESS:** It appears that a Papal Special is being considered for a  
 means of allowing the Pope to 'escape' Flemington Race-  
 course after the Mass. Some discussion ensued as to whether  
 this train would be afforded the same rank as Royal trains.  
 Rules for two man crews were tabled.

authorise the expenditure of \$40.00 for purchase of a plan  
 cabinet. Motion passed

GENERAL BUSINESS Part 2) Colin Rutledge reported on information concerning Annett's Locks and Patents which contradict that contained in a book claiming otherwise.

Colin also reported on today's derailment at Clifton Hill and on an accident at Kensington some months ago.

SYLLABUS ITEM: At 2040 hours John Sinnatt was given the floor and he presented part 3 of his illuminating talk on Level Crossing Protection which dealt with boom barriers. (Editors Note - It is hoped that John's talk will be able to be published in Somersault in the near future. It is articles like this that form an invaluable record of the past for enthusiasts to read in the years to come.)

MEETING CLOSED: at 2215 hours.

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MINUTES OF MARCH 1985 ANNUAL MEETING

HELD AT: A.R.H.S. Library Room, Windsor Railway Station on Friday, 15 March 1985.

MEETING COMMENCED: at 2015 hours.

PRESENT: J.McLean, S.McLean, J.Brough, A.Jungwirth, W.Brook, M.Bau, J.Sinnatt, C.Rutledge, A.Wheatland, M.McCormack, T.Deveney, J.Churchward, R.Jeffries, B.Wooding, R.Weiss, J.McCallum.

MINUTES OF PREVIOUS AGM: were adopted as read (Jungwirth/Brough)

PRESIDENT'S REPORT: Jack stated that the society had a good year and that all was going well.

EDITOR'S REPORT: In David's absence, the meeting recalled his concern about the shortage of material submitted for publication.

TREASURER'S REPORT: We made quite a good profit but we have to allow for the possibility that at any time production costs for Somersault could become much greater. The surplus for 1984 was \$179.95 and the bank balance at 1/1/85 was \$713.03.

There are 71 "members" but this includes 10 complimentary copies. Of the remaining 61 members, roughly half are Victorian only and half are Victorian & U.K.

The meeting congratulated Rob. on the excellence of his report and accepted it (Sinnatt/Deveney).

ELECTION OF OFFICE BEARERS: Jim Brough took the chair and the following were elected to office for 1985.

Group Leader	J.McLean	(Jungwirth/Brook)
Deputy Group Leader	A.Jungwirth	(J.McLean/Wooding)
Secretary	G.Inglis	(J.McLean/Weiss)
Treasurer	R.Weiss	(Sinnatt/McCallum)
Editor	D.Langley	(Weiss/Wheatland)
Archivist	-	-

GENERAL BUSINESS: 1. The meeting welcomed new member Michael McCormack.  
2. Bearing in mind that the amounts of money handled by the society are increasing, the meeting decided that an auditor for the accounts will be appointed when the largest figure in the financial statement reaches \$1000. (Sinnatt/Brough)  
3. Various members again expressed concern over the printing quality of the SRS UK magazine but as the original copy from which our copies are made is often not the best there is little we can do.

4. As it is now the societies tenth year in existence, the meeting was pleased to elect Jack McLean, the group leader for those ten years, as a Life Member of the society.  
(Jungwirth/Brough)

ANNUAL GENERAL MEETING: closed at 2050 hours and the ordinary meeting commenced.

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SIGNALLING ALTERATIONS

- \* 9/10/85 MACEDON. The up distant signal was relocated 840m in the down direction (again? see 2/10/85) and converted to electro-hydraulic operation
- \* 10/10/85 MANGALORE-AVENEL & LONGWOOD-EUROA. Balancing magazines were provided for these sections.
- 18/10/85 UPPER FERNTREE GULLY. A guards indicating light was provided for post No 18.
- 18/10/85 BELGRAVE. A guards indicating light was provided for post No 58.
- \* 20/11/85 CAULFIELD-GLENHUNTLY. Automatic signal F377 was relocated 4 metres in the up direction and automatic signal F364 was relocated from the existing bridge to a ground mast about 5 metres from the running line and on the right hand side of the line.
- \* 22/10/85 SHEEPHILLS. The up and down home signals, and plunger locks were abolished. The main line points were spiked normal.
- 23/10/85 KERANG. Flashing lights were brought into use at Murray Street level crossing at 290.475Km.
- 23/10/85 SWAN HILL. Flashing lights were brought into use at Bryan Street level crossing at 343.949Km.
- \* 24/10/85 WYCHEPROOF. Flashing lights were brought into use at Birchip Road level crossing at 307.911Km. A staff/annett key exchanger was provided so that the flashing lights could be manually operated when shunting was taking place at the G.E.B. siding.
- \* 27/10/85 HIGHETT. Boom barriers were provided inlieu of interlocked gates at Highett Road level crossing. Automatic signal F609 is interlocked with the boom barrier cycle. A 5P key switch is provided in order that F609 may be put to Stop should it be necessary to hold a down train at the platform. The interlocking frame previously in use was abolished.
- \* 27/10/85 SOUTH GEELONG. The up end staff locked points were relocated 20 metres in an up direction.
- \* 14/11/85 MELBOURNE YARD. The mechanical home signal "A" on post 2 and mechanical disc signals "B", "C" & "D" on post 1 were abolished and replaced by light dwarf signals controlled by push buttons located in the Yard Foremans office or from 5P key operated switches adjacent to the West lead points. A new dwarf signal from Hollands loop was also provided and this is also controlled by push buttons in the Yard Foremans office. All dwarf signals are repeated to their respective control positions.
- \* 21/11/85 DONALD. Flashing lights were brought into use at Campbell Street level crossing at 293.361Km. A new two position up home (light) signal was provided on the down side of the crossing. The signal may be controlled by 5P key switches on the platform or at the up end points. The flashing lights may also be operated by 5P key switches for shunting moves. All mechanical signals were electrically lit.
- \* 14/11/85 LANGI LOGAN. Disestablished as an electric staff station. The up and down home signals and plunger locks were abolished and the main line points secured by staff locks. The new staff section is the former long section Ararat "A"-Maroona.
- \* 21/11/85 MORDIALLOC. The down home departure signal post 7 was relocated from the signal bridge to a ground mast.
- \* 21/11/85 PIRRON YALLOCK. Disestablished as a switching electric staff station. The up and down home signals and plunger locks were abolished, and the main line points spiked normal, and will be removed at a later date. The staff section Colac-Camperdown remains.
- \* 24/11/85 RINGWOOD-MOOROOLBARK. The following alterations to signals between these stations was carried out. H828 was relocated 170 metres in the down direction and renumbered H834. A co-acting signal for H966 was provided at Croydon. H1012 was relocated 13 metres in the down dir-

- \* 30/11/85 KOOYONG. Boom barriers were brought into use in lieu of interlocked gates at Glenferrie Road level crossing. The boom barriers are articulated in order to clear the tramway overhead wires. The former gate stop lever in the signal box is used to operate the booms.
- \* WN48/85 TOOLAMBA. A staff exchange box has been provided.
- 1/12/85 KENSINGTON. Up semaphore signal R152 on the lower level lines was converted to a light signal.
- 2/12/85 ARARAT-PORTLAND. All block grain trains between Ararat and Portland will operate without a brakevan in the rear. The train will be crewed by a driver and a secondman. Trains worked in this mode are not permitted to have one of the following wagons as the three last wagons on the train - JX or JPCX (V/Line), or AOOX, AMNX, GOX or GB (AN). The first trains on this line without brakevans in the rear commenced on 11 November 1985 when the 1300 in each direction was so operated.
- 4/12/85 BUNGAREE. Flashing lights were brought into operation at Torpey's Rd level crossing at 106.701km.
- \* 7/12/85 CHELTENHAM-MENTONE-PARKDALE. New signalling diagram No 47/85 (Glenhantly-Parkdale) was issued and diagram No 8/74 (Glenhantly-Cheltenham) and 9/63 (Mentone & Parkdale) were cancelled. Three position signalling was provided in lieu of double line block telegraph between Cheltenham and Parkdale. Mentone signal box was abolished. Repeating signal F726 at Cheltenham and posts 11 & 12 at Parkdale were also abolished. Closing facilities were provided at Cheltenham.
- Signal alterations at Cheltenham were:  
 Post 18 was relocated 212 metres in the up direction and an up controlled automatic signal No 20 was provided in the rear of post 18. The down outer home arrival signal was converted to a controlled automatic signal and the set back move from No 3 road to the down line was abolished. Post 16, the down starting signal was converted to an automatic signal F687 and has a 5P key switch to permit the signal to be held at Stop. A 5P key switch was also provided to enable the up departure signal post 12 to be held at Stop. Illuminated letter "A"s were provided on posts 6, 12 & 18.
- At Mentone, F746 (Balcome Road) and F769 (Warr gul Road) were provided with 5P key operated switches.
- At Parkdale, F780 (Warr gul Road) was provided with a 5P key operated switch. Express and stopping push buttons were provided at Parkdale to pre-condition the booms at Warrigal & Balcombe Roads and clearing of signals F746 and F780.
- Train Number Transmitter facilities are available between Mordialloc and Cheltenham, and between Mordialloc and Caulfield when Cheltenham signal box is switched out.
- 7/12/85 MOORABBIN. Commencing on 7/11 and continuing on 8/11, a high speed turnout will be installed on the down line at 18.76Km, trailing for down moves and will be spiked normal.
- \* 14/12/85 SOUTH DYNON. Points 111 (broad gauge) and points 115 (Standard Gauge) were abolished.
- 14/12/85 DANDENONG-HALLAM & LYNDHURST. New signalling diagram No 7/85 and diagram No 36/83 was cancelled. Boom barriers were brought into use at Progress Street, General Motors (previously an open crossing) and at Hallam Road, Hallam (previously flashing lights only). Operation of both sets of boom barriers is automatic for main line moves and at Progress Street three sets of 5P key switches were provided for manual operation of the booms for moves along the shunting track. At Hallam a 5P key switch is provided to enable D1181 to be held at Stop when required. Pedestrian booms are also provided at Hallam.
- 15/12/85 BELL. A new turnout was installed in the down line at 10.24Km. The points were spiked for main line facing movements?
- WN1/86 ELTHAM. The pedestrian crossing with warning bell at Silver Street was abolished after the pedestrian traffic was diverted to the over-line road bridge nearby.

- \* 16/12/85 NEWPORT WORKSHOPS. Up disc signal post 47B was relocated 55 metres in the down direction and the catch points operated by lever 8 were relocated and renewed as a Hayes derail and wheel crowder.
  - \* 17/12/85 DARTMOOR. The up and down home signals and plunger locks were abolished. The main line points are now secured by hand locking bars.
  - 18/12/85 SUNSHINE. Boom barriers were brought into use at Sunshine Road level crossing on the Brooklyn-Sunshine Loop line. The crossing was previously protected by flashing lights only.
  - 18/12/85 BOX HILL. Guards indicating lights were provided for home signals Nos 305 and 318.
  - WN 2/86 CHELTENHAM. Will be switched in only as required and as arranged by Superintendent, Metrol and Signalling.
  - 15/1/86 ST. ALBANS. Boom barriers were brought into use at Taylor's Road level crossing at 19.805Km.
  - \* 23/1/86 NORTHCOTE. The goods siding and associated signalling was abolished.
  - \* 23/1/86 BELL. The signalling associated with S.E.C. siding, the Crane siding and siding "B" was abolished. The up end connection to siding "A", No 18 points and the main line crossover will be temporarily retained. Signals Nos 23, 24 and 25 on post 9C, signal 22 on post 11B and disc signal on post 11 were removed.
  - \* 23/1/86 KEON PARK. The staff locked points leading to Bates P/L siding and Fowlers Siding were removed.
  - 30/1/86 WARRENHEIP. The up distant signal, post 12, has been restored to use and when clear will indicate the signals set for the Geelong line. It will not be able to be cleared for the Ballan line.
  - \* 2/2/86 RINGWOOD EAST-LILYDALE. New signalling diagram No 57/85 was issued and diagram No 1/85 was cancelled. At Lilydale points 207 will now be free to be operated as soon as signal LIL300 is restored to Stop. This will permit a running low speed indication on signal LIL302 for moves to No 3 road. All track circuit indications transmitted by the remote control system will be inoperative during failures but the approach track indication for MLK300 (down home signal) will remain operative at all times.
- At Mooroolbark the following locking restrictions will apply when Mooroolbark is "switched out". Up movements from Lilydale will be prevented if a route has been set from MLK300 for No 1 road. When an up movement is in progress from Lilydale, no route can be set from MLK300. When Mooroolbark is "switched in" whilst an up movement from Lilydale is taking place, then Mooroolbark will not be able to "switch out" until the movement has cleared the section.
- Signal LIL300 has been provided with a working "B" arm to permit the display of a reduce to medium speed indication.
- \* 3/2/86 WEBB DOCK LINE. Opened for traffic. Signalling diagrams Nos 14/85 (Webb Dock line) and 24/85 (Melbourne Yard, Make-up, Sorting and Goods Shed areas) were issued and diagram No 3/74 (Melbourne Yard etc) cancelled. Details of the line are published elsewhere.
  - WN 6/86 BAYSWATER. The operation of the boom barriers at Scoresby Road have been co-ordinated with the traffic lights.
  - WN 6/86 WARRENHEIP. A board indicating P 40, F 40, G 40 has been erected at 147Km on the Geelong line. In addition, a curve board applicable to down trains indicating 40 Km/h is erected at the diverging crossover from the Geelong line to the down line at Warrenheip.
  - \* 10/2/86 MOUNTAJUP. The up and down staff locked points were abolished.
  - \* 18/2/86 PORTLAND. The junction points for the Harbour Trust Siding were re-located two metres in the down direction. A notice board lettered "Trains must not pass this point until the main line points are reversed" is provided for up trains from the Harbour Trust Siding. This board is located adjacent to the insulated joints. A 35 Km/h board is provided for down trains approaching Garden Street level crossing and is lettered "Speed limit 35 km/h to level crossing". This board is located on the down side of the Harbour Trust Siding points.
  - \* 19/2/86 HEYWOOD. Points "K" and associated plunger lock were abolished.

WEST TOWER - WEBB DOCKSignalling on the Line

Dwarf signals control movements between Nos 5 & 6 Sheds, and across the grade and road crossings for the Webb Dock line and the Pigott Street siding at Footscray Road. Dwarf signals lettered A, B, C, L and M are controlled by push buttons. Dwarf signals lettered G, H and K are controlled by train movements. A 5P key switch is located near these signals for local operation in the event of a failure of the respective dwarf signal. Automatically operated security gates will be provided for the Webb Dock line and the Pigott Street siding. Dwarf signals A, B, G, H and K are interlocked with the Footscray Road and North Wharf Road traffic lights. Automatically operated flashing lights are provided at North Wharf Road, Lorimer Street, Williamstown Road, at the entrances to Berths Nos 12-14, 15-19, 21, 27-32 South Wharf and at two other unnamed level crossings.

Operating Instructions - Safeworking

The Train Staff and Ticket system will be in operation for the section West Tower - Webb Dock. Staff tickets will not normally be issued, and unless special instructions are issued to the contrary, every train or locomotive must carry the Train Staff for the section.

After receiving the Train Staff, the Locomotive Driver of any train or locomotive between West Tower and Webb Dock must, except in the case of an accident or other unusual cause, retain the Train Staff in his possession until such train or locomotive returns to the West Tower.

The signalman, West Tower, will be responsible for the delivery and receipt of the Train Staff to and from the locomotive drivers. Where it is not practicable for the signalman for the time being to personally receive and deliver the Train Staff, the duty may be entrusted to a properly qualified employee who must wear a Staff badge.

In the event of a locomotive failure or similar cause, the Train Staff must be transferred to the West Tower to enable a relief locomotive or train to enter the section to assist.

It should be noted that no safeworking employee will be provided at Webb Dock and all safeworking matters and enquiries should be referred to the signalman at West Tower.

Authority is hereby granted for trains and/or rakes of vehicles to run between Melbourne Yard and Webb Dock without a brakevan in the rear.

Webb Dock may be serviced at any time on any day, however, except for essential and emergency movements, the servicing of Webb Dock should be avoided between 0700 and 0900 hours, and between 1530 and 1730 hours.

Shunting Arrangements

Block Trains - Rakes to a maximum siding capacity (about 15 bogie wagons) will be made up in the Melbourne Yard. The rakes will be run by a Leading Shunter, Class 1. A high powered locomotive will haul the rake from Melbourne Yard direct onto a clear line in A.N.L. Siding. The locomotive will be detached, run around, attached to the complete rake and haul it back to Melbourne Yard.

Pilot Operation - When a small number of wagons (less than 300t) require to be cleared/placed, this operation may be performed by a Pilot under the following arrangements:-

The Webb Dock line is to be considered as an "Open" siding and can therefore be serviced by an "available" pilot, as directed by the Yardmaster. If not in possession of a two-way radio, the Leading Shunter must collect one from the Shift Clerk before leaving for Webb Dock and is to return the radio immediately on his return.

The leading shunter must complete a T.R. 44 (Goods Train Load Sheet) recording particulars of all wagons transferred between Melbourne Yard and Webb Dock. These sheets must be handed to the Goods Checker on arrival at Webb Dock, and to the Leading Shunters' Supervising Officer on return to Melbourne Yard.

Supervision of Pilot/Train

The Yard Foreman, South Side whilst on duty, is responsible for the supervision of the Pilot immediately upon it entering the West Tower-Webb Dock single line section.

POINTS AND SIGNALS

THE ARGUS, MONDAY, 3 JULY 1876

Exactly at noon on Saturday, 1st July, 1876, there was performed a little ceremony which marks a rather important stage in the history of Victorian state railway construction. At that time there was brought into use for the first time, at what is known as the "Essendon Junction" - the point at which the Geelong and North-eastern railways run into one, and which is about a quarter of a mile beyond the North Melbourne station - a new system of point and signal manipulation for which the merit is claimed that it "renders accidents impossible". We cannot conscientiously admit this large claim on behalf of the contrivance. Even under this new system of point and signal management, known as the "interlocking system", dangerous accidents continue to be possible - under certain circumstances, however, which must be admitted to be very unlikely to occur. If a signalman suddenly drops down dead, then all traffic on the lines under his control comes to a standstill, to the inconvenience of the occupants of the carriages which combine to constitute the stopped trains, no doubt, but without the harmful effect upon the pockets of shareholders in life assurance companies. The trains merely remain where they are until another signal man seizes the levers which the nerveless hands of his predecessor are no longer competent to wield. If the signal man, instead of suddenly dying, is abruptly seized with homicidal or murderous mania, he can do nothing whatever in the furtherance of his diabolical propensities. The new apparatus renders it absolutely impossible for him to bring a train along until he has put the line in such a condition that the train can come along in all safety. But the lives of travellers by rail are not altogether dependent upon the skill, the sanity or the life of the signal man. They are also dependent, in some degree, upon the physical, mental and moral condition of the men who drive the engines. Well, if one of these was desperately bent upon murder, and had no repugnance whatever to a little incidental suicide, he could certainly do some mischief in despite of the most perfect system of interlocking points and signals that has ever been or ever will be contrived. He could disobey his instructions, and run on in opposition to signals warning him to the contrary, and so precipitate a catastrophe of which he would in all probability be the first victim. No perfection of mechanical appliances can afford security against such an occurrence. The engine driver who disobeys his instructions, and destroys or endangers the lives of the passengers entrusted to his care, subjects himself to the risk of a trial for culpable homicide or murder, just as he would do if he shot down an unoffending citizen in the street. Vagaries or crimes of this character are not to be prevented by means of more cranks, connecting rods, or other devices in wood or iron.

It must be admitted, however, that the interlocking point and signal apparatus goes a very long way towards rendering railway travelling absolutely safe. To make its action clear to the mind of ordinary readers without the aid of diagrams would be difficult. It must be seen in operation to be properly understood, and there are but few who would understand it then. It is an instrument which is played upon by means of levers requiring a pull of about 14lb. The signal man actuates these as an organist works his manual and pedal, and shifts facing points, opens and closes gates and wickets, or moves semaphore arms or lanterns with an ease and precision such as were never before obtained. To understand the functions which the railway signal man can perform so satisfactorily by means of the interlocking apparatus, it is necessary to have some knowledge of how railway traffic is managed. At certain points, such as junctions, stations, and the like, the engine driver comes under the control of a signal man, and must strictly follow his injunctions. From 500 to 800 yards from the signal station, according to the contour of the country and other circumstances, there is a post provided with arms and lights. When a train approaches and an arm is shown making an angle of 45 deg. with the post, this indicates that the line is clear. If this 'clear' signal is not shown, the driver may still proceed if he can see so far before him as to feel safe in doing so, but when he comes to the 'home' signal he must absolutely stop short, if that be against him. Now the interlocking system has the effect, as has already been said, of rendering it quite impossible to dislocate this arrangement except in the event of immediate death or vertigo or lunacy overtaking one or other of the railway employees who have a train in charge. A train must not go ahead unless the line is signalled 'clear' and this signal cannot be made until the points have been so arranged as to render it clear.

The new point and signal apparatus that was brought into use for the first time on Saturday is a product of Messrs. McKenzie and Holland's manufactory at Worcester. This firm makes a speciality of railway appliances, and is under contract to supply these to the chief railway lines of Great Britain. Another firm that devotes itself to similar work is that of Saxby and Farmer, which supplied the Melbourne and Hobson's Bay and Suburban Railway Company with an interlocking point and signal apparatus some 18 months ago. This is in use at the Richmond station, and is doing most excellent work. It does not lie with us to say which of the two competing companies turns out the best work, but we can safely say that each produces most excellent machines. It is a feature in the manufacturers of the present day that division and sub-division of labour are extensively availed of, and the making of railway appliances affords a striking example of this system. Messrs. McKenzie and Holland employ 600 men, chiefly in making interlocking gear, while the other firm we have mentioned, and some others besides, are similarly employed.

An interlocking apparatus costs about £300 to import. In addition to this there is the cost of erecting it, and building platforms and huts for the working of the machines and the accommodation of the signal men. Messrs. McKenzie and Holland's present contract with our Railway department provides for the erection of five sets of these point and signal machinery. One is that which was brought into use on Saturday. Another will be at the North Melbourne station; another at what is known as the sheep-truck washing station at the bottom of Hawke-street; another at the goods central junction station near the end of Dudley-street; and another at what is known as the Batman's Hill siding. At the busiest of these there will be 35 levers, 20 of which will actuate points, and 10 will actuate levers (sic). In all the machines there are some spare levers intended to meet future requirements. On the great English lines, the number of levers in use at important signal stations ranges between 50 and 100. At the Great-Eastern terminus in Liverpool-street, London, there are 100 levers, of which 95 are in actual use; but there a train passes about once a minute, whereas at our Essendon Junction there are only 130 or 140 trains a day. A capable signal man can operate 50 levers, actuating signals, points, gates and wickets, working eight hour shifts.

The other railway appliances which are used in connexion with the interlocking apparatus, are very ingenious and complete. Some new signal posts are being put up near the Spencer-street terminus which seem likely to answer the purpose for which they are being erected for a very long time. They are of Oregon pine, of various lengths up to 50ft., and are cased in red gum planking 3in. in thickness to a height of 3ft. above the surface of the ground. They are supported by red gum sills of 12ft. by 12ft., firmly rammed into cruciform excavations of 5ft. in depth. There seems to be no reason why these posts should not successfully resist all the convulsions of nature with which we have any acquaintance, and last for ever, more or less. A striking and beautiful novelty in Messrs. McKenzie and Holland's signals is that the indications of their lamps are varied by means of shades, called 'spectacles', which are interposed in front of them by the same apparatus that operates the arms of the semaphore. The colour of the light emitted is changed from white to red, or whatever other hue is desired, by simply changing the medium through which it is seen. The distant signal which by day warns a driver to approach his home signal slowly and cautiously, is imitated at night by interposing a capital 'D' between the lamp and the eye of the engine driver.

The rods by which the multifarious cranks and levers of the interlocking system are worked are iron tubes of about 1 1/2in. in diameter, screwed at either end, and joined by means of screwed collars. The ropes which actuate the signals consist of seven strands of zinc-coated iron wire, and they are carried across the railway in iron pipes to protect them from injury. The tube connecting rods (Ed-point rodding) are supported at intervals of 6ft. by wheels, which revolve inside iron boxes to obviate friction, and these iron boxes are supported by red gum frames let into the ground. The wire rope connexions are kept of the ground by means of pullies attached to posts about 18in. high, and in order to help them round curves, these pullies are made to work on hinges here and there. The ordinary pullies show an improvement so useful and simple that no one can see it and fail to wonder that a pulley for a like use could ever have been made in any other way. The axle, or centre pin, is simply a screw nail, which can be readily removed when necessary for the purpose of repair or otherwise. Before this simple contrivance was introduced, the connecting rope, perhaps many hundreds of feet in length, had to be unrove (as the sailor would say) before a pulley could be mended; but now this awkward necessity is altogether

abolished. Another interesting novelty in the apparatus is the provision it makes for meeting and combating climatic vicissitudes threatening its efficiency. The levers that actuate the points have three several notches into which they will fit according as the weather is hot or cold, and the iron connecting rods long or short. The wire ropes that work the signals being very much longer, require a more comprehensive means of adjustment. This is effected by means of screws having a rather considerable range of operation. The machine is, in fact, tuned up like a piano or a harp.

When the new points and signals were put in gear on Saturday, the signal man who had previously been in charge of the station found no difficulty whatever in working them, but rather found them to afford a quite appreciable relief to his muscles, as they certainly greatly lessen his responsibility. The very most that he can do now, if he tried his hardest, is to bring the traffic on the lines under his management to a pause, whereas formerly he could have killed a score or two of his fellow-creatures any time he had a mind to, or become a sudden victim to dementis. This change in his circumstances should contribute to his peace of mind or mental equilibrium. There was a great muster of heads of the various departments of the railway service when the interlocking machinery was put into gear, and all who were present expressed themselves highly pleased with the way in which it acted. Among those present were Mr. Wells (resident engineer); Mr. Hardie (district engineer); Mr. A. P. Matthison (traffic manager); Messrs. Reid, Panting, Billings, Eighley, Bowden and Sadler (inspectors of branches); Mr. Sims (of the construction department); Mr. Bochme, Mr. Milton, and others officers.

The firm of McKenzie and Holland is represented in the colony by Mr. E. Philpott, who has pushed on his employers' contracts with industry and perseverance. The work would have been finished by this time, only that Mr. Philpott has been incapacitated by ill health during a portion of the time that he has been here. Negotiations are now on foot for the performance of other work for our Railway department by the firm which he represents, at Ballarat and elsewhere, and it appears to be probable that the business connexion that has been opened up between our Government and Messrs. McKenzie and Holland may prove lengthened and mutually advantageous.

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(This article has been sent in by Colin Rutledge and is part of his research into the early interlockings in Victoria. The fruits of his research will appear in Somersault at a later stage.)

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BRISBANE SUBURBAN RESIGNALLING.

By J.D. Francis.

From the centre of Brisbane City lines radiate Northwards to Caboolture and Shorncliffe, Northwest to Ferny Grove, Northeast to Pinkenba, Westward to Ipswich, Southeast to Thorneside and Southwards to Beenleigh. This network totals 182 route kilometres or 394 single track kilometres. The Queensland Railway gauge of 1067mm exists throughout, apart from the standard gauge (1435mm) line up from Sydney which runs to South Brisbane. Present maximum speed in the area is 100km/h, largely due to the gauge.

Before resignalling a mixture of operating methods existed, including mechanical semaphores with tyers block, vintage multiple aspect with automatic sections, miniature electric staff and train staff and ticket. Many of the lever frames and signalling equipment were supplied by McKenzie and Holland.

Work for the Brisbane Suburban resignalling was first started in 1975 and was divided into four stages covering the Metropolitan area and preceded the electrification of the suburban network to a 25Kv 50Hz overhead system.

Stage 1 covered the 34km from Ferny Grove to Darra taking in 26 stations. This was completed in November 1979. Stage 2 saw the extension of electrification through to Ipswich in September 1980 over a further 23km of line with 11 stations. Stage 3 completed in September 1982 brought the Shorncliffe - Kingston corridor under the wires with its 50km whilst the commissioning of Stage 4 saw the routes to Petrie, another 18km, in April 1983 and Thorneside, 23km, in October 1983 integrated into the system. Since then extension of electrification and signalling from Kingston to Beenleigh has taken place over another 11.5km whilst that from Petrie to Caboolture is at present under way.

The completion of Stage 3 played an important role in the success of the 12th Commonwealth Games. The Kingston line carried many of the visitors and officials to the Queen Elizabeth II stadium at Nathan via a co-ordinated bus/rail service to Banoon and Sunnybank stations. This role would be repeated should Brisbane be successful in its bid for the 1992 Olympics.

The new system consists of multiple aspect colour-light signalling with full track circuiting and an automatic warning system (AWS). The whole being based on British Railways practise, utilising two, three and four aspect main running signals with junction route and theatre indicators where necessary and position light shunt and subsidiary signals. Controlled signals including shunts have one and two figure number prefixes following a two letter interlocking designation. Numbers are arranged such that even numbers appear on the up line and odd numbers on the down, with the lowest numbers starting at the up end of each interlocking area. Thus for example R02 is the last Rocklea signal on the up line. Automatic signals also follow the pattern of odds and evens but take a one or two letter line prefix, i.e. WS for Western suburban, B for Beenleigh line, and have a three figure number reflecting its geographical position. An example would be B074 which is on the up Beenleigh line between 7.3 and 7.5 kilometres from Roma Street station. Position light shunt signals, whilst displaying a horizontal red and white aspect arrangement for stop, have the pivot light mounted to the left of the red light, so that the "off" indication becomes two diagonal white lights in lower quadrant appearance. Subsidiary signals reading to fully track circuited sidings take the form of single yellow aspects offset below the main signal head toward the siding to which they apply. Guards repeater signals are provided on stations in situations where Guards experience difficulty in observing platform starting signals. These take the form of stencil indicators which are normally blank when the platform signal is "on" and illuminate as white lower quadrant semaphore arms when "off".

An additional aspect is used where appropriate to train running consisting of flashing the single yellow lamp. This is used to indicate to a driver that the next signal is displaying a red and that either a reduced or no overlap exists beyond it. Basically then a flashing yellow acts as a warner or low speed signal.

Where siting of a main running signal becomes difficult, 2 aspect green over yellow repeaters have been installed. The yellow aspect is improved to green immediately the signal it is repeating steps up from red to any main proceed aspect. Thus in 4 aspect territory it is possible for drivers to receive an aspect sequence of double yellow, green, single yellow. The green being displayed by a repeat signal for the single yellow.

Notice boards and 'Limit of Shunt' indicators are not illuminated, being constructed of reflectorised material. A small number of semaphore signals remain in use at the fringe boxes and these have been fitted with electric lighting.

Signals on the standard gauge line conform to State Rail Authority of New South Wales requirements with such provisions as marker lights on main running signals and two red horizontal lights for stop on position light shunt signals.

The control centre monitoring the complete signalling system is located just North of the city centre at Mayne, adjacent to the shed and yard complex there, in a three storey building which also houses the train controllers for the suburban area and the traction supply supervisory equipment.

The mimic diagram/control panel is a Westinghouse M5 style, 95 feet long, consisting of seven sections arranged in horseshoe shape and coloured smoke grey. Each section is made up from a number of tiles measuring 258mm by 258mm which are built up to the required layout. The M5 tile being larger than the common 40mm x 40mm or 40mm x 80mm tile provides greater overall rigidity to the panel but can lead to higher costs when minor changes occur. There are a total of 456 M5 tiles used at Mayne at present but a future extension at the left hand end to include the new lines to Cleveland and the Gold Coast should see a further 12 feet and 68 tiles added. It is of route setting entrance/exit (NX) design with built in four digit train describer also supplied by Westinghouse which utilises two Hewlett Packard computers. These are used in tandem, whilst one is on-line, the other remains on hot standby. There are over 700 berths driven from the describer and 6 operator control units fitted to the panel for the Signalmens' use. Each berth is made up of 4, 5x7 LED matrices which display the train identification number. The Queensland Railway train identification system is similar to that used by British Railways. The first character denotes the type of train, the second its destination line or station, whilst the third and fourth the train number. One slight variation is that the destination character may be a number rather than always a letter. All electric trains carry the number 1 or 2 as their first character which allows the train describer to prevent Signalmen from setting a "non-wired" route ahead of an electric train.

#### TRAIN IDENTIFICATION SYSTEM

##### FIRST CHARACTER - (TYPE OF TRAIN)

1. Electric Passenger Train
2. Electric Empty Unit
3. Diesel drawn passenger train
4. Diesel drawn empty carriages
5. Rail Car passenger
6. Express freight
7. Timetabled goods and shunt trains
8. Suburban special goods and shunt trains
9. Altered suburban passenger classification
0. Light engine or empty rail car

##### SECOND CHARACTER - (DESTINATION LINE OR STATION)

1. North Coast Line to and including Caboolture
2. Northern Division
3. Central Division
4. Beyond Caboolture to Maryborough District
5. Ipswich - Grandchester line - beyond Darra to and including Grandchester

SECOND CHARACTER - (DESTINATION LINE OR STATION) - Continued.

6. Main line beyond Grandchester
7. Beenleigh line
8. Lota - Thorneside line
9. Roma Street
0. Bowen Hills - Mayne area
- A. Shorncliffe line
- B. Pinkenba line
- C. Corinda - Yeerongpilly line (via South Brisbane)
- D. Ipswich line - to and including Darra
- E. Ferny Grove line
- F. Various destinations as directed by Control

THIRD AND FOURTH CHARACTERS - (TRAIN NO.)

The Controllers in the panel and Officers at key locations have VDU links with the train describer computer allowing interrogation of train running information and the monochrome display of selected panel areas.

The train describer also gives a continuous train reporting function in the form of a printout of passing times at programmed locations. A facility also exists to give speed reporting and eventually automatic platform indicators may be run from it.

On the panel separate three position keys are provided for individual point operation. Automatic restoration of routes is provided. Separate emergency indication panels inset into the horizontal portion of the console at each Signalmans position give power, level crossing and remote control status information. Route buttons are clear with black only bezels but are mounted within coloured arrowheads etched into the tiles. The arrowheads point in the direction of the route and are coloured as follows:

- |         |                                     |
|---------|-------------------------------------|
| RED:    | For main routes and offset yellows; |
| YELLOW: | For calling-on routes;              |
| WHITE:  | For shunt movements;                |
| BLACK:  | For exits only.                     |

Buttons selecting automatic working of controlled signals are fitted with blue bezels and those for ground frame releases with yellow bezels. Indications are by 24 volt lamps except on recently installed tiles for the alterations and extension work which are to the new MSB standard utilising LED's. The stainless steel tiles have magnetic properties to allow the attachment of reminder appliances.

Track circuits are displayed in a similar fashion to B.R. in that up line tracks are coloured alternate Blue and Yellow while down line track circuits are alternate Brown and Green. The standard gauge line and its connections are outlined in red to highlight them.

Power to the signalling system is provided at key points from the South East Queensland Electricity Board grid, supplemented by the overhead traction supply in emergencies. It is distributed at 415v to Relay Rooms and lineside locations. Level crossings have the addition of exclusive standby float-charged batteries.

The two overhead traction feeder stations at Corinda and Mayne and the twelve track sectioning cabins around the system are monitored by a telemetry/processor link from a diagram and two CRT displays adjacent to the signalling panel.

The remote control of interlockings is carried out using Time Division Multiplex telemetry. An LM Ericsson JZA 700 half-duplex ring system is employed to control and monitor 30 of the remote interlockings. Three more, Normanby, Central and Brunswick Street are controlled by direct wire, whilst a fourth at Indooroopilly is controlled by multi-core cable direct from Corinda via the telemetry link. Narangba, Burpengary, Caboolture and South Brisbane are to be connected by Westinghouse S2 remote control and panel processor at Mayne. This equipment will also be used for the extension work to Cleveland.

Each remote interlocking except those on the Ipswich line, has a maintenance diagram showing the state of all signals, track circuits, etc., connected to it. This acts as a comprehensive aid to maintenance and fault finding staff. Those on the Ipswich line have retained their local switch panels for maintenance and emergency use.

BR930 specification plug-in relays are used for all vital functions, the circuitry being "free-wired".

In the event of a telemetry failure the Signaller may select via independent communications circuits an automatic mode, whereby signals on the main line clear for through running and continue to work as automatics and in the case of the more important interlockings a local mode. This allows trains to route themselves by drivers using push buttons fitted to certain signals under the verbal direction of the Signaller (see article U.K. Newsletter No. 82, September 1983). This system was first used at Stuart in 1963 and has been adopted as standard on Queensland Railways CTC installations.

The communications network is based on a 4 channel UHF train radio system supplemented by common battery signal post telephones, local battery telephones at points, level crossings, ground frames etc., and the expanded automatic system to yards and stations.

All level crossings are automatic and comprise flashing lights only on single lines with flashing lights and half width barriers on multiple lines. There are now some 60 crossings monitored from Mayne one of which at Yeerongpilly has no less than five boom arms. The warning lights to road users at level crossings consist of dual red lights which in the case of flash light only crossings operate for 18 seconds before the fastest train can cross. At barrier installations the red lights flash for 8 seconds before the boom arms begin to fall. They have to be horizontal for a minimum of 10 seconds before the fastest train may cross. Thus the crossing sequence is initiated at a minimum of 18 seconds or 27 seconds before a train crosses. Each boom arm is fitted with two flashing red lights along its length and a fixed red tip light. On multiple lines booms are held down in a second train coming situation if it is not possible for the crossing to be open to road traffic for at least 10 seconds after the first has passed. Where signals exist within the control area of a level crossing these are conditioned to take into account the state of the crossing in their clearing sequence.

Track circuits are low voltage DC single rail type utilising conventional block joints in one rail, the other being a common traction return rail.

An electrification programme to 1500v D.C. was conceived for Brisbane during the 1950's. This was shelved after much work had been done to track and signalling and new electric stock had been ordered. 112 stainless steel cars built at that time entered service on the north side of the city as steam and later diesel hauled stock minus their electric traction gear. These SX and SXA cars, along with the older wooden red Evans cars, some of which date from 1911, have been the mainstay of passenger services until the introduction of the new electric units.

During the abortive modernisation of the fifties, Roma Street received an OCS panel and power operated signalling. This was converted to NX operation upon opening of the cross-city link in November 1978 which features the A\$20.6 million Merivale Bridge joining South Brisbane and Roma Street stations. The operating panel has been retained here as a maintenance diagram and may be switched in by key to act as a local control panel if required in event of a remote control failure. Preference was given to its retention rather than provision of signal post push buttons due to the stations importance and complexity.

Brisbane's new stainless steel air-conditioned electrics have 22.8m cars with two pneumatic doors and pneumatic inter-connecting gangway doors. They have been built in 3-car sets by Walkers-ASEA of Maryborough. A total of 84 sets will be delivered by June 1986. Each 3-car unit has seating for 248 passengers with provision for 266 standing during peak times. All cars are designated No-smoking. Compared with diesel-hauled trains the new electric units have allowed a 20 to 25 percent reduction in journey times. Normal train formation is one 3-car set during off-peak times with 2 coupled during the peak. 10 3-car inter-urban e.m.u.'s are soon to be ordered as part of the reinstatement of the line from Beenleigh to the Gold Coast.

The busiest part of the Brisbane system is the 2 track city tunnel section from Bowen Hills and Brunswick Street through to Central and Roma Street. This includes the recently rebuilt 4 platform Central Station with its international hotel. Steam working through this section is now banned with such workings by the ARHS having to use the Exhibition loop.

The method of working passenger trains in the suburban area requires note as virtually no turning round of stock occurs in the city itself since the opening of the Merivale Bridge. Due to the geography of Brisbane's network, services largely run through the city on a North - South corridor basis. Ferny Grove trains continue to Ipswich, Petrie trains to Thorneside and Shorncliffe trains to Beenleigh. Variations occur at peak times with those terminating in the city from the south continuing through to Bowen Hills before reaching the depot at Mayne and those from the north going forward from Roma Street to Mayne around the Exhibition loop.

The standard gauge line runs parallel with and crosses in places the Queensland lines between Salisbury and South Brisbane. Although not electrified, its proximity to the electrified system required immunisation of the signalling equipment. Opportunity was taken to renew some of this equipment. Three staff sections have been replaced with track block between signal boxes at Acacia Ridge, Clapham and South Brisbane (Interstate) which remain in use. Clapham is a rare example of a double-wire frame still extant. During 1986 South Brisbane Interstate Station and cabin will be closed. The standard gauge will be mixed with the QR tracks over the Merivale Bridge into platform 1 of a modernised Roma Street station at which rail, bus, coach and taxi services are to be co-ordinated.

Queensland is a major supplier of fruit to the southern states of Australia. Express goods trains run each day from Cairns, Townsville and other major centres in the north to Clapham and Acacia Ridge where inter-system exchange facilities exist. These have developed from basic transshipping yards into container transfer points between Queensland Railways and the State Rail Authority of New South Wales.

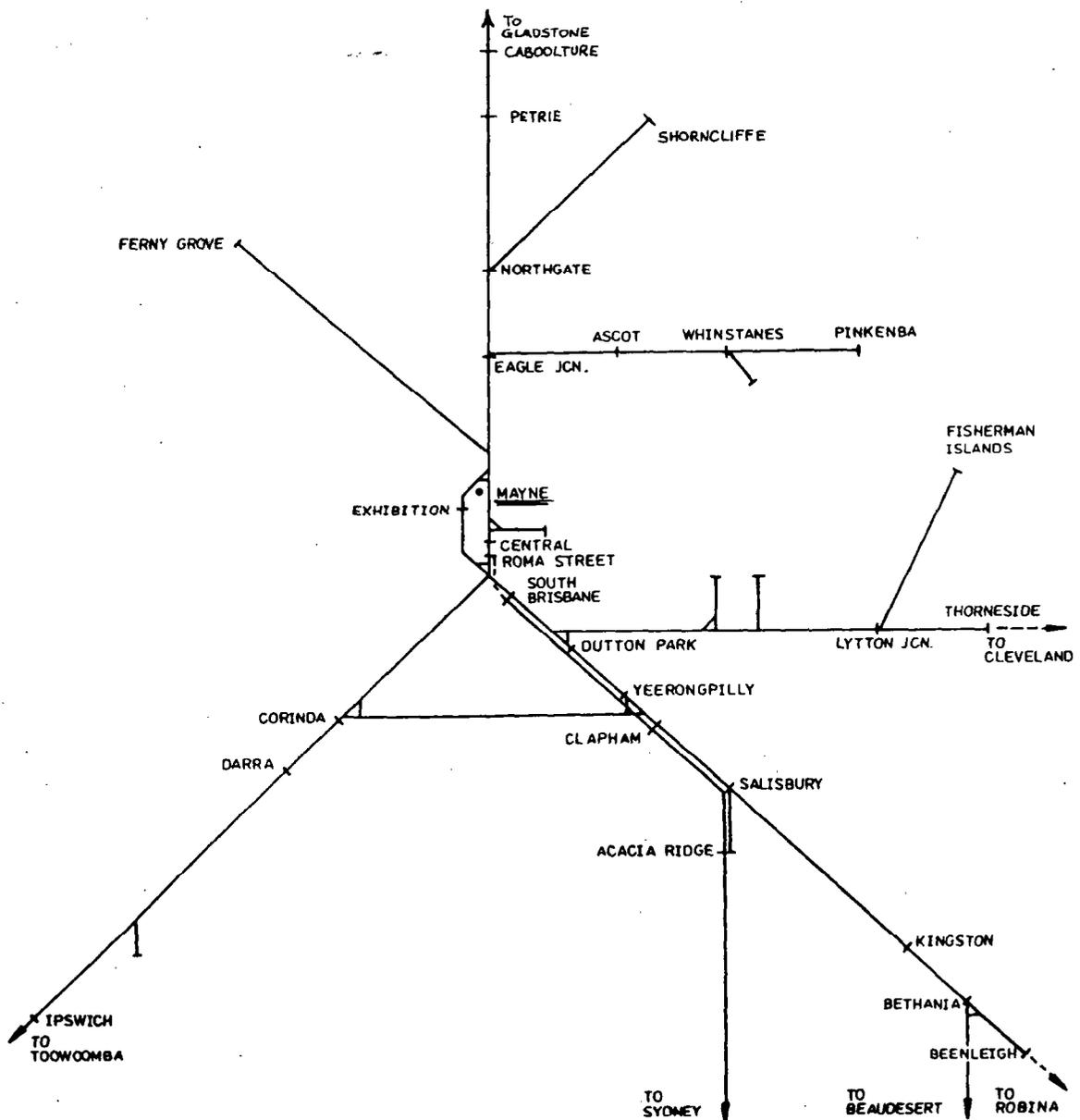
As an interim measure before the extension of electrification from Kingston to Beenleigh during 1984, the miniature electric staff system from Kingston to Bethania was modified to make it immune from overhead traction influence. The single line from Eagle Junction to Pinkenba however was fully track circuited to Whinstanes allowing the introduction of track block to Ascot, when open, and Whinstanes.

Mayne is a special class box, the highest grade on Queensland Railways and has taken over the role previously carried out by 44 cabins. Apart from a couple of shunters switch consoles in the yard complex at Mayne only eight other boxes remain in the Greater Brisbane area: South Brisbane (Interstate), Clapham, Acacia Ridge, Ascot, Whinstanes, Pinkenba, Ipswich and Fisherman Islands. Going northwards from Caboolture on the North Coast route signalling is controlled by the Gympie - Caboolture CTC office. This office utilising computer route setting is located on the 5th floor of the railway headquarters building in the heart of Brisbane City.

Emergency crossovers and less important sidings are provided with ground frames. These are either released from Mayne or by track circuit occupancy. Where ground frames are located within the vicinity of level crossings special facilities exist to replace to danger automatic signals between the ground frame and level crossing allowing the booms to remain open for road traffic whilst shunting takes place. Catch and Siding points operated by ground frames have in many instances retained their co-acting discs rather than have them replaced by position light shunt signals.

Main contractors for Stages 1 to 4 of the resignalling were DML Engineering whilst much of the outdoor equipment including AWS magnets and signal heads were supplied by ML Engineering (Plymouth) UK and point machines by GEC. Subsequent works from Kingston to Beenleigh and Petrie to Caboolture were carried out by Westinghouse Brake & Signal (Australia) and ML Engineering (Plymouth) UK.

Extension of electrification northwards from Caboolture linking with the current electrification work at Gladstone is at present being studied. Meanwhile the Lota line is continuing to be extended from Thorneside back to Cleveland with new stations initially at Birkdale and Wellington Point and work will shortly begin on the Gold Coast railway from Beenleigh to Robina. In conjunction with electrification to Caboolture, two new stations are to be opened south of Petrie, one at Bray Park the other at Carseldine.



BRISBANE SUBURBAN NETWORK

WEBB DOCK LINE

(continued from p 25)

At times when the Yard Foreman, South Side, is not on duty, the Assistant Yardmaster, South Side, will assume responsibility of the Pilot immediately upon it entering the West Tower-Webb Dock single line section.

If the Assistant Yardmaster not be on duty, the Yardmaster, West Tower, will delegate the responsibility to an appropriate Yard Supervisor.

Supervision of the Webb Dock area.

The Goods Checkers report to the Superintendent, Melbourne Freight Terminal, who is responsible for the overall supervision of the freight in and out of the Webb Dock area.

Goods Checkers will attend at Webb Dock as required on the day and afternoon shifts, and will be located in the building adjacent to the A.N.L. Terminal. They will be responsible for the co-ordination of freight movements in and out of the area as well as ensuring the containers are correctly secured and the necessary documents are prepared and exchanged.

The physical supervision of the Train/Pilot operations within the area is the responsibility of the Assistant Yardmaster, South Side, who reports directly to the Superintendent, Melbourne Yard, on all matters pertaining to operations within the Webb Dock area.

Arrangements may be made to terminate and/or originate complete trains to/from Webb Dock yard at times considered to be desirable. Section Manager, Wagon Maintenance, North Melbourne, will make the necessary arrangements for a train examiner to be in attendance to carry out the required duties prior to a complete train leaving Webb Dock yard.

Details of the Line

The Webb Dock marshalling yard consists of three tracks with a lead off No 3 road towards the A.N.L. terminal. The longest road is No 1 which measures 609 metres.

A locomotive release is provided at the down end of the yard and a shunting neck is provided at the up end. Two tracks should be left clear when a train or pilot departs for Melbourne yard.

The A.N.L. terminal has three roads with a neck or locomotive release provided at the down end.

The track speed on the Webb Dock line is 25 Kmph.

Initially the following ruling loads will apply:

BL/G	1350 tonnes
C	1200 tonnes
X	900 tonnes
B	850 tonnes
T	540 tonnes
Y	310 tonne

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S.R.S.V. Crossword No 12.

compiled by S. McLean

ACROSS

- 1 and 11. Battle stations (9,8)
- 9. Cleo's safeworking inspector (4)
- 11. See 1 across.
- 14. Fellow seen twice on the way to Cairns (3)
- 15. It can drop in a knuckle (3)
- 16. I first met this motor on the St. Kilda line (2)
- 17. Idiot in cabin changes 1B, missing signal aspect (10)
- 18. Encountered a suburban system (3)
- 20. Don't look too hard for signal style! (11)
- 27. One South Australian terminus? No, further north. (3)
- 28. An old carriage - but this old? (2)
- 29 and 33. SG diesel by BG car, unfortunately (4)
- 30. Initial result of a group activity (4)
- 32. See 3 down
- 33. See 29 across
- 34. Is the start of labelling upper-class carriages (3)

	1	2	3	4	5	6		7
	T	R	A	F	A	L	G	A
8	C		E		L		O	
11	H	A	S	12	T	I	N	G
	A		15	P	I	N		16
	R		17	I	N	D	I	C
18	M	19	E	T		E		L
		20	S	E	A	R	C	H
26	P			27	I	S	A	
30	L	31	N	E	R		32	S
33	A	S		34	I	S	T	
38	T	U	N	N	E	L	39	P
	E			G		41	E	S

- 36. Not bunker first (2)
- 38. Lunar plot ten somehow saw from Geelong platform (6,6)
- 41. Station on the way to Yarraman (3)
- 42. Rarely seen logging loco with article missing (3)

DOWN

- 2. Relief after climbing the bank (7)
- 3 and 32 across. Fettle in SS red is an important part of the system (8,6)
- 4. Dimwit in charge helps computer programs to work (5)
- 5. Two diesels right there (2)
- 6. Runs to the points (7)
- 7. Donny rearranges a loco depot (5)
- 8. A lake with a certain attraction (5)
- 10. The way at the end of a NSW platform (2)
- 12. 42ft hare (3)
- 13. Wilfrid's son once found on the Sandown line (10)
- 19. fff! (2)
- 21. Result of opening the window - ventilation in loco 511 (6)
- 22. There's a new one in NSW and an older one on the Hamersley Rly. (6)
- 23. Wintry feature of Serviceton and Alice Springs (3)
- 24. Station near the lakes looks the same from each end (6)
- 25. A while ago now, diesel led electric on the Caulfield line (2)
- 26. Such layers are found in England (5)
- 31. Trains up to Gladstone include this loco (3)
- 35 and 40 down. Carriage arrangements on the Leongatha and Footscray lines
- 37. Take off such illegal shunting(3)(4)
- 39. As an afterthought, remove first class carriage from the pass. (2)
- 40. See 35 down.

Solution to No 11. Across: 1. Mechanical 8. Moon 9. AM 11. Jumped 13. Rob.