LIGHT RAILWAYS

Number 122 October 1993

Glen Davis Oil Shale Works Pt 2
Powelltown Tramway Timetable
Decauville Loco 399

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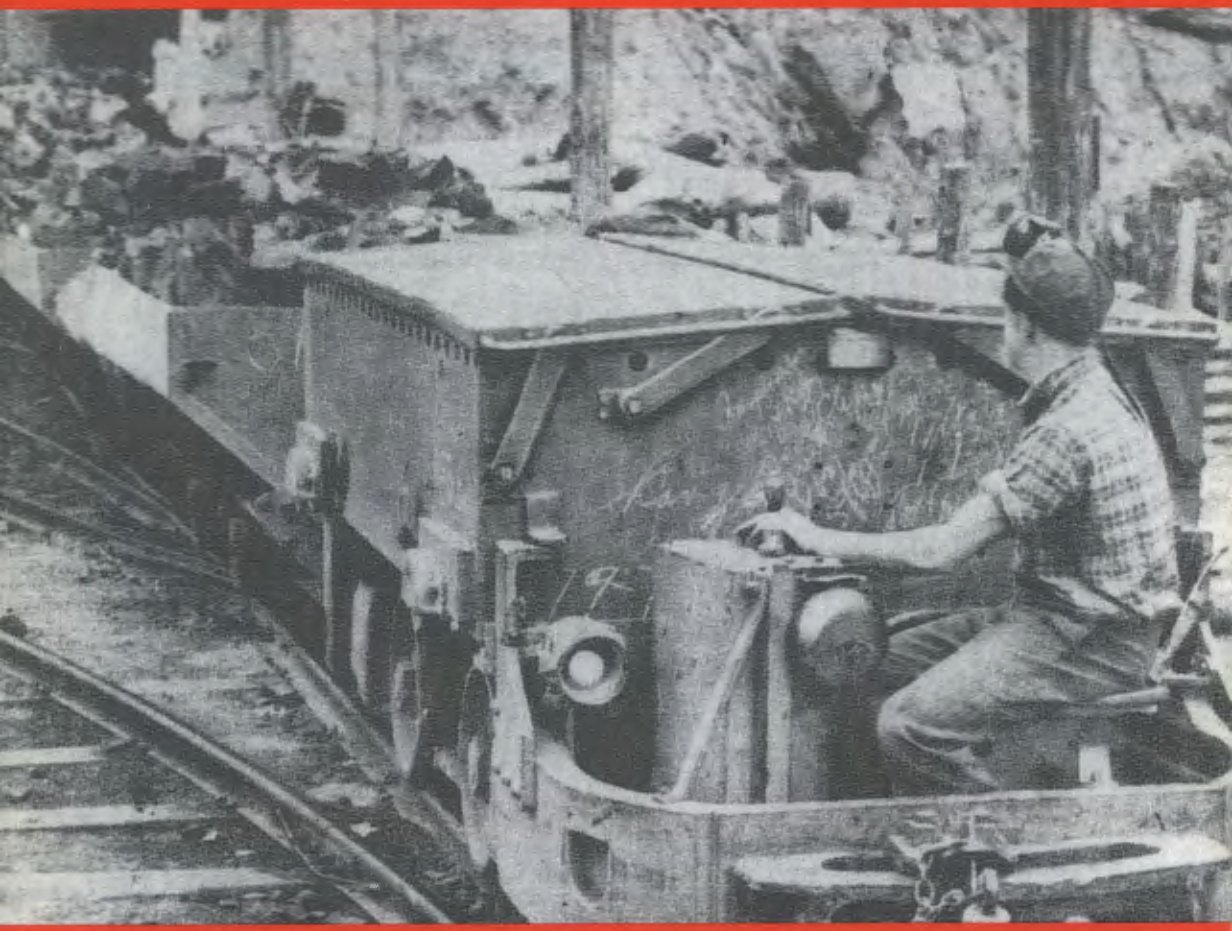

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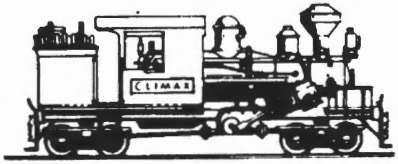

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Cover Photo: A Mancha storage battery locomotive with a load of shale.
Photo courtesy George Hicks Collection.

CONTENTS

EDITORIAL

In this issue the concluding instalment to Ross Mainwaring's comprehensive account of the Glen Davis Oil Shale Works is presented. Much is being made today by government, industry and the trade union movement about work practices, productivity, restructuring and reinvestment.

The demise of the Glen Davis operation when seen in this light shows that the issues are not new but that history can teach us a lesson or two provided we are prepared to listen.

Peter Barry provides an interesting and provocative insight into time table interpretations as applied to the Powelltown tramway and raises some intriguing questions.

A dogged piece of locomotive research regarding Decauville 399 is offered by Steve Molone for the benefit of modellers.

Bringing up the rear is John Browning's forensic piece on the Denton Park loco mentioned in the previous issue.

Norm Houghton

GLEN DAVIS OIL SHALE WORKS PT. 2

by Ross Mainwaring

(continued from Light Railways 121)

SHALE MINE

On 5 September 1947 a joint conference with Senator W.P. Ashley, Minister for Supply and Shipping, Miners' Federation representatives, Colliery Staff Association, Deputies Association, Joint Coal Board and NOP finally worked out an agreement for mechanical pillar extraction. Senator Ashley had threatened the unions if no progress was made, stating in part 'I am afraid that unless the position can be met, the Government will be obliged seriously to consider the question of whether this enterprise should be continued and in the circumstances the Government feels that it can rely upon your Federation to cooperate to the fullest extent to averting what could amount to a national calamity by agreeing to mechanical extraction of pillars being put into operation at the earliest practicable date.'

Finally on 14 October 1947 the first mechanised pillar extraction in NSW commenced at the top of 7 West. No improvement in output was expected for some time because of the experimental nature of the work. A 'short wall' face some 96 ft long was established along the goaf side of the pillar. Wooden chocks were erected about six ft back from the face. A four ft long drill was used followed by an 8 ft drill so that the borers would remain inside the safety of the chocks. After firing, the Joy loader would load the shuttle cars, which then drove into the loading ramp where the shale was emptied into the mine cars.

Trouble was immediately experienced with the chocks (which were placed at four ft intervals) as they were damaged by shot firing, but the chief Inspector of Collieries would not agree to placing them at a further distance from the face. Extraction reverted to the orthodox 'lift' method of extraction and shots were then fired by hand, two at a time. When erecting the wooden chocks a square block of cement was placed inside which had a hole in it to accommodate some explosive. If the weight of the roof was on the chock it may not have been possible to remove it without recourse to detonating the charge. The roof was so firm that on one occasion after two pillars were extracted it wouldn't fall. In this situation the floor could heave up and the men would feel it move beneath their feet, so the roof was bored and shot down. The borers needed steady nerves on this job because of the frightening noises coming from the goaf. Other problems, such as the floor heaving up to create 'toe' and poor traction on the slippery floor for the shuttle cars meant that although mechanical pillar extraction would reduce costs, it would not alone permit of an increase in the winning of shale.

The Mine Manager, Mr Bowdler, resigned his position on 2 May 1947 to take up with the Joint Coal Board. Mr Les Moore took up managerial duties on 26 May 1947.[27]

ROLLING STOCK

In hopeful anticipation of the production target of 1400 tons a day, an additional 25 six ton mine cars were ordered from Thirlwell & McKenzie for the sum of £9470.[28]

These were ordered on 21 July 1948 but due to a chronic shortage of steel, delivery was very protracted and the first lot of 12 cars was not ready until April 1950. At this time the remaining batch had hardly been commenced so NOP wrote to the builders requesting cancellation of the balance of the order. The desired production figure was unachievable so additional cars would not be needed at this time.

All mine cars were numbered. The earlier orders were painted yellow while the later Thirlmac cars were painted grey. Some initial teething troubles became apparent with this final order (such as derailments and broken axles) but these faults were soon remedied.

An automatic door closing device was fitted between the rails which was hinged on one end with cams fitted beneath it. The mine cars were pushed back over this plate after emptying on their return into the mine.

A need had long been felt for a machinery float to carry the 11ft by 5ft Joy loaders in and out of the mine. Cliff Evans designed the float and construction was undertaken by Mathieson & Waters Pty Ltd of Sydney for a quoted price of £225. A flat mild steel plate about a half inch thick was used as the 'body' with old skip wheels cut into quarters welded on underneath to the correct gauge.[29]

At one end a link was welded onto the frame to which a wire rope was attached for coupling up to a loco. The float was light enough for two men to tip off the rails and was ready for service on 24 November 1948. When a Joy loader was required to go into or out of the mine it was driven up onto the float using power from its trailing cable.

One Saturday morning, Cliff Evans recalls, two locos were coupled onto the float dragging it up a steep heading into one of the districts. Despite profuse sanding the locos stalled. At that particular spot a full toilet pan was sitting adjacent to the track. It had been there for about two weeks, stinking to high heaven, as the men were demanding extra pay to bring the pans out for disposal. The Jeffrey loco had square ends on its frame and by mischance punctured the pan. As the two locos could neither move forward or back the driver, Mr Eric Faber, was overcome by the stench and began to retch. Another loco was quickly summoned up to assist.

On occasions the rails coming up out of the 'swallow' were greased if there was too much resistance from the loaded float. A few cars with brakes applied were sometimes added if coming downhill out of 7 West.

ASH HAULAGE SKIPWAY

The large quantities of spent shale from the retorts were disposed of by a circuit skipway that was built to the north of the retort bench. The ash was conveyed in four side tipping four wheel skips supplied by W. Thornley & Sons Pty Ltd of Sydney in 1940. These skips, in rakes of three, were pulled by horses over a 2ft 6 in gauge line and five ashmen attended to the filling and tipping arrangements.

The horses were supplied from Tweedies farm, and Clem Norcross, the Carbonising Superintendent, considered the horses unsafe as they would not keep still and one horse even fell into the hot ash. Accordingly when No 1 bench of retorts came into full production an alternative ash disposal system was devised. Side opening 'W' type skips on a 3ft 6in gauge line were clipped onto an endless wire rope haulage running across the works roadway to the north west of the retorts.

The track went up an incline to where a Sullivan winch was placed and the skips dropped the ash onto the ground from where a scraper filled motor lorries. This particular design of skip was chosen because if the doors should accidentally open a minimum of nuisance would result as the ash would fall clear of the rails. Ash disposal by this method began on 10 June 1942. The haulage was known as the 'Burma Road;' and vehicles using the works road had to be careful not to collide with skips bearing red hot ash.

When the No 2 bench of retorts came on stream, Messrs Morrison & Bearby Pty Ltd of Newcastle designed and supplied an upgraded haulage that could service both benches of retorts.[30] This endless rope haulage was driven by a 20 hp winch and the rope was controlled from six push button stations placed at every third house of retorts. Once stopped the rope could only be restarted from that particular panel. The skip doors could be opened and closed automatically while the skips were in motion. The haulage was initially installed beneath No 1 bench in 1945 and then by 1946 No 2 bench was included.

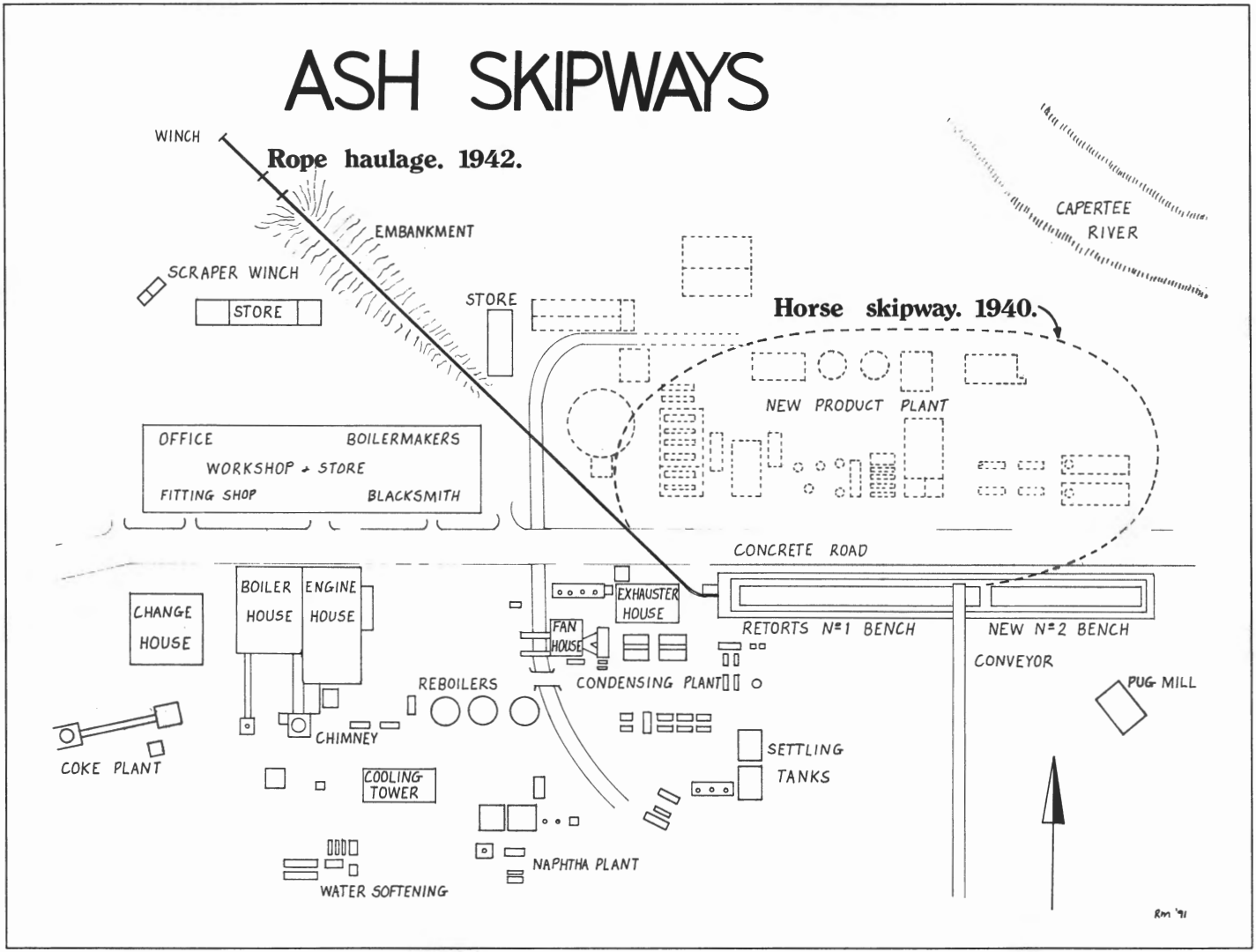
In operation the spent shale extractors dropped the ash residue into a hopper beneath the retort from which the brick lined skips were filled as required. Ash dropping was carried out at hourly intervals. Retort throughput at this time was 8.5 to 9 tons of shale per day due to depreciation in shale quality and of this amount the ash residue represented approximately 70% by weight of shale.

When No 2 bench was commissioned it was found that 60% of the expected total volume was being handled by 42% of the retorts. This imbalance could only be rectified by the supply of superior grade shale and as a consequence was allowing no margin for breakdowns in the ash disposal system. One breakdown in the ash haulage cycle lost 8000 gallons of oil so its reliability was most important.

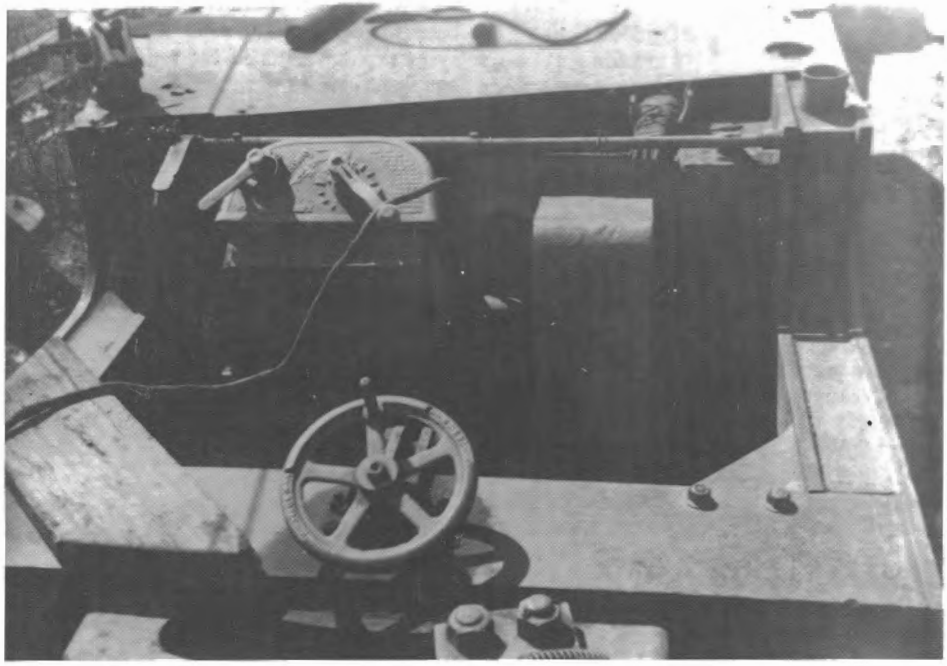
The skips discharged automatically by cam gear into receiving hoppers on the eastern end of No 2 retort bench. A projecting roller was attached to the centre of each door and as the skips arrived at the discharge point, the rollers contacted a door opening cam which lifted the doors up and so discharged the ash.

When this was completed the leading skip struck a stop switch, and the haulage stopped. The operator pressed a recall button and then the empty skips returned to his position for filling. Bucket conveyors elevated the ash into a residue bunker for disposal by either motor lorry or by aerial ropeway. Spent ash was required when bringing a repaired retort back onto heat.

Care was needed when working beneath the retorts because clearances were minimal. A man was crushed between a moving skip and a concrete pier and killed there in February 1946.



Awaiting the auction: the yellow 'tram' trolley is at the head of the line followed by a rebuilt General Electric and then the Goodman, trailing some empty mine cars. Also in the yard are the shuttle cars and large amounts of reclaimed rail.
Photo courtesy Leonie Knapman Collection.



Driver's controls on one of the 'tram' trolley locos. On the left side is the sand lever, the controller with forward and reverse and the amp meter in the centre. In the foreground is the brake handwheel with a billet of wood as the driver's seat on the left.
Photo courtesy George Hicks Collection.

SHALE MINE

During the first six months of 1947 the mine was unable to supply the required amount of shale and as a consequence the average number of retorts in operation was only 51.3 and the refinery was only able to operate on a half time basis.

The average assay value of the shale as supplied to the retorts was 67 gallons per ton, which at the time was the richest in the world. Crude oil production was 23,500 gallons a day or 82.6% of the Gray-King assay value.

Mr Sydney Christie was appointed general manager on 1 January 1948. In an application for further funds allocation of £208,662 in January, Christie said 'Since the last approach to Cabinet in December 1946 .... all expectations in the carbonizing and refinery sections have been fulfilled. Unfortunately, as reports to the Minister for some time have indicated, the same cannot be said for the mining section. In fact present labour conditions tend to compel the belief that economical working of the mine becomes more and more difficult'.[31]

£42,000 was required for additional mine equipment because the wide dispersal of working places required more equipment, particularly conveyors, to ensure future production.

Mr Heywood Wilkinson, Assistant Superintendent of BHP Collieries Ltd appointed as honorary consultant and Mr Gordon Sellers, Western District Engineer for the Joint Coal Board, were asked to report on methods to improve the production of shale.

Wilkinson visited the mine on 15 February 1948 and made observations over a period of four days. He pointed out 'that mining a low vein shale of decreasing thickness is a difficult undertaking and in no way to be compared with similar conditions where coal is the subject of operations'.[32]

On Monday of his visit Wilkinson noted the production from each section.

	Day Shift (8-4)		Afternoon Shift (4 to midnight)	
	cars	tons	cars	tons
7 West (pillar sect)	31	139.5	15	67.5
8 West (pillar sect)	25	112.5	25	112.5
2 West (pillar sect)	34	153	16	72
	90	405	56	252

There was insufficient labour on the afternoon shift and circumstances which caused output from the loading machines to be below normal were thoroughly investigated. One difficulty was the intermittent supply of empties to the loading ramps, particularly in 2 West. The shuttle cars frequently had to wait at the ramps while full cars were pulled away to the flat then the empties returned.

The average number of mine cars per working place firing was seven, or 32 tons. In his report Mr Wilkinson stated that each shift should, under ideal conditions, produce:

2 West	42 cars	189 tons
7 West (pillars)	35 cars	157.5 tons
8 West	23 cars	103.5 tons
	100 cars	450 tons

He further pointed out that the shale in 8 West had thinned to varying from 2ft 3in to 3ft 10in (working height 4ft 2in to 5ft 5in): 7 West pillars 2ft 2in to 3ft 8in and 2 West 3ft 6in to 4ft 3in. When all the high working places were worked out (2W and 7W pillars) the 11BU and 42D shuttle cars would be made redundant.

To overcome the loading difficulties in 2 West a shunt accommodating two empties was proposed at the outbye cut through from the loading ramp so these two empties could be left at the ramp for filling while the fulls were run out to the flat.

Upon the return of the empty set the two now full skips would be shunted out of the way into the shunt, then the empties pushed back for loading. This movement would take only three to four minutes instead of 20 as at present.

The Mavor and Coulson winches could be remotely controlled from each ramp by the shuttle car or shunter and a run round was essential so that the empties could be lowered onto the back of the loading ramp and fulls be taken away without delaying the shuttle cars. For safety reasons catchpoints or chocks were needed to prevent runaways.

Wilkinson found that the arrangement of three sets of six workplaces was most undesirable because 18 places had to be served by the railway system (plus ventilated and reticulated with power and water) which gave the shuttle cars undesirably long distances to the ramp. To take advantage of concentrated mining that mechanisation provides a cycle of two sets of places would have been much better.

Wilkinson stated that an extra loco was required if production were to be raised to 1500 tons a day but that the 200 kw motor generator set was barely sufficient for 900 tons a day. Bowdler had suggested purchasing an additional main road loco of 15 to 20 tons so that the 12 ton Goodman could be used for auxiliary haulage and as a standby unit. The existing power supply of 350 kva was insufficient.

At this time 13 loco drivers, 9 shunters, two traffic officers and three road layers were employed. The total workforce was then 232 men.

Mr Gordon Sellers visited the mine in June and made many recommendations. He proposed to let 8 West stand idle until 2 West was fully developed and 7 West pillars were extracted after which 8 West would advance or become a district of pillar extraction.

New main tunnels for haulage and ventilation were to be driven in from the outcrop near the old Langs prospecting tunnel to intersect the top of 7 and 8 West.

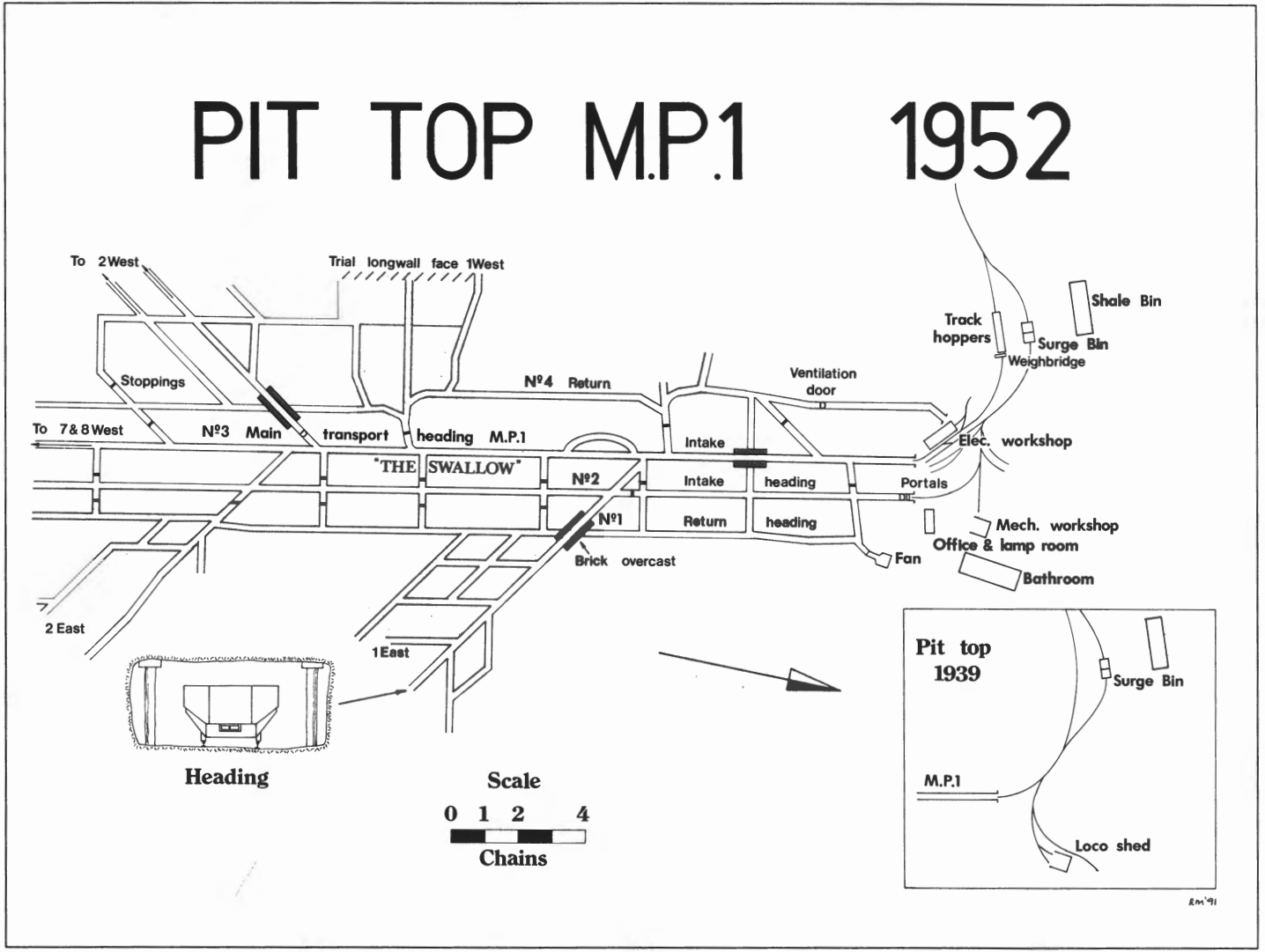
A new haulage road to serve 2 West was under development to avoid the roundabout route which, apart from the excessive distance for travelling, prevented the total extraction of pillars in 7 West district. In addition much weight was coming onto the haulage road causing it to heave. This made life difficult for the loco driver.

Traffic control telephones were to be placed at each loading ramp and in the weighbridge.

A large scale traffic plan was to be placed in the weigh cabin for use by the traffic officer. All future shunts would be on the run round principle with an electric winch to place the cars for loading.

Sellers commented 'It is unfortunate that the organisation is not working as it should and a great effort by more than the manager is necessary before the position will be retrieved.'

In accordance with the Engineer's report work in 8 West ceased in the first week of October 1948 and work in 2 West was reduced because of the poor roof conditions. Work later ceased here altogether as the oil assay declined to only 41.2 gallons per ton and the shale had become physically altered.



At this time loco drivers were earning 37/10 a shift (41/7 on afternoon shift), shunters 36/10 and transport officers 43/4.

TRAFFIC OFFICERS

A traffic officer or 'boss wheeler' was appointed to ensure coordinated transport movements. Dick Jacques was the first man so described followed later by Roy Windle who was promoted from a flat wheeler.

Both classifications worked day and afternoon shifts in rotation.

The officer on day shift would clock on half an hour early to marshal the transports for the miners. The transports were boarded near the electrical workshop and usually pulled by a battery loco. On rare occasions a trolley loco was used on the front while a battery loco was connected at the rear.

Telephones were located on pit top as well as 7 West junction so that the flat wheelers could be in contact with the traffic officer (who was the officer charge in the event of a derailment). 'Wallaby' jacks and props were used to rerail locos and cars.

Roy Windle also loaded mine timber into the cars from the storage stock piles in big stacks according to size. An empty car was shunted alongside a stack and the timber was speared in. The full car was then coupled to a set of empties going inbye. Otherwise unoccupied loco drivers would also load mine timber if required. Each timber baulk or prop was specially cut to length to suit every working place in the mine.

SHALE MINE

Mr Idris Richards was appointed the new mine manager on 24 January 1949. He came from a Welsh colliery and was described as 'the most competent and approachable man so far'. Senator Ashley visited the mine early in the new year and took the opportunity to issue an ultimatum to the workers that production must improve or else the works would be closed. On Friday 25 February 1949 this threat prompted record production and one hundred and sixty two cars were filled for the day.

The new manager recommended the cessation of bord and pillar working and change over to Longwall in recognition of the diminishing height of the shale seam.[33] He also proposed to mine the main seam only to extract enough shale for 8,000,000 gallons of petrol a year. A lesser tonnage of retort feed was required with main seam material. Oil yields had further declined to only 55 gallons a ton. A 'La-Del' MTB-30 belt conveyor 1,950 ft long was placed in 7 West pillars to shorten the run of the shuttle cars and load directly into the mine cars.

The significant sum of £97,000 was put forward as necessary to purchase new low seam loading machines, shuttle cars and conveyors. The equipment then in use was unsuitable for the proposed new working of winning shale down to a thickness of two feet. Production had then declined to only 590 tons a day.

THE NATIONAL COAL STRIKE

The National Coal Strike commenced on 27 June 1949 resulting from the struggle between the Chifley Labor Government and some Communist controlled unions. Although the Western District Miners' Federation wished the shale mine to keep working, the Central Council in Sydney ruled otherwise. Mr Christie said that Glen Davis was in danger of being ruined and that after a long strike the Federal Government would have to decide whether to reopen the enterprise.

Work resumed at Glen Davis after the bitter seven week dispute ended in August but NSW suffered a petrol shortage shortly afterwards.

With a federal election looming, Mr Spender (Liberal) said of Glen Davis that 'production would not be reduced but if anything developed and extended'. The Liberals entered government on 10 December 1949.

Senator McLeay the new Minister for Fuel and Shipping visited the works in January 1950 and implied that he was pleased with what he saw. Mr Christie, in a memo to Canberra, said 'It appeared futile either to hope for such an increase in mine employees or to spend further capital on machinery for which operators were unlikely to be available and consequently we advised that until labour conditions improved in the indefinite future the company's output of petrol could not be expected to exceed four million gallons per annum. On this basis the facts of the mining position and their overall effect on the economy of the industry were presented to you for such decisions as you cared to make.[34]

Finally after years of avoiding what was a sensible business decision Senator McLeay announced on Monday evening 8 January 1951 that the inevitable was to occur - Glen Davis would close. No further expenditure of capital could be justified as it was impossible to procure the necessary labour for the mine.

By this stage, shale production had fallen to a mere 437 tons a day and a meagre 1,452,000 gallons of petrol (a little more than the capacity of one of the large storage tanks). was refined during the previous year. Petrol was costing 5/3d a gallon to refine as against imported fuel at 1/3d. Australian petrol consumption had reached two million gallons a day yet production at Glen Davis could only account for 0.023% of this consumption. The Australian oil shale industry was now irrelevant and unwanted.

Idris Richards had proposed to reduce the capital cost of the new mining equipment by selling the existing machines but the government would not permit this. It was also pointed out that the US government had voted $US60 million for synthetic oil research whereas only £4-5 million was expended on Glen Davis.

Mr Clem Norcross took over as the final general manager upon Syd Christie's resignation on 15 September 1951. The number of mine employees had fallen to 100 men. Development work had ceased and only pillar extraction was continuing.

The federal government called tenders closing on 14 March 1952 for the purchase of the works in its entirety but no acceptable offer was forthcoming.

The plant was to be stopped progressively from 30 May 1952 but the workers ignored this. An approach was made by the Miners' Federation to the Coal Industry Tribunal, Mr Gallagher, to issue an interim order restraining the general manager from dismantling the plant. Dismissal notices were now being issued so the miners began a 'stay in' strike in the shale mine on 2 June 1952, beginning with the afternoon shift and with the next mornings day shift, totalled 50 men.[35] The men were asked to dismantle the loaders and bring out all the gear which they refused to do. At this time only the Goodman loco, the yellow tram loco and the battery locos were still in operation. The General Electric locos (one with its electrical control panel burnt out) had been shunted out of service and stored near the electrical workshop. The womenfolk were rostered to bring food each day which was cooked at the pit top and then taken underground on a loco. Beds were made out of brattice and timber and table tennis boards were erected for recreation.

Further entertainment was provided by the 'New Theatre' company of Sydney when they staged the play 'The Candy Store', appropriately enough about a strike in a large US chain store.[36]

One Monday the acting troupe arrived at Glen Davis and was taken deep underground on two transports pulled by the Goodman loco. A makeshift stage was erected and after lunch as soon as the players were ready to go on 'the whole audience turned on their miners' lamps. Never before or since have we played with such footlights.'

New Theatre players later repeated the two hour play at the Glen Davis hall for the towns people.

During the strike a 'ghost train' was run to supply enough shale to keep the retorts working. This set of cars ran at night and was filled with shale either picked off the roadways or barred off the rib. Additional shale for the retorts was removed from the dump.

At 6.30 pm on 28 June 1952 the men finally came out of the pit on a transport after setting a 27 day Australian record for an underground 'stay-in'.[37] The men accepted the recommendation of their union and the ACTU which in part stated 'We consider it is in the best interests of the Glen Davis workers that immediate negotiations be entered into with the government for the purpose of providing adequate compensation to the workers who will lose their employment in the undertaking.'[38]

The resulting compensation negotiations were a benchmark in that it was the first time that pressure from the union movement forced a government to pay compensation, albeit with great reluctance, for loss of homes and assets.

On 4 August 1952 dismantling of the shale mine began, employing 15 men on contract.[39] The equipment was pulled to the pit top by battery locos and stored for the impending auction sale. Mr A.C. Joyce, CBE was appointed Official Receiver on 26 September 1951 and F.T. Strange Pty Ltd commissioned as the auctioneers. The auction was held on 3,4 and 5 February 1953 by Mr Karl Huenerbein and at that time it was the biggest single auction ever held in Australia.

Bidding for the mining machinery was brisk and 300 people were catered for with sandwiches and tea served at the mine bath house. £50,000 was realised on the first day for the mining equipment. Most of the rolling stock and locos were keenly sought after. Mr Stan Grimshaw demonstrated the trolley locos to prospective buyers by a plug in cable connection to the motor generator set in the electrical workshop.

BHP purchased the Goodman loco for £1650 plus spares and three Mercury Arc Rectifiers at £1837 for use at its Burwood Colliery near Newcastle.[40] It was intended to use this loco in the borehole seam where grades of up to 1-40 against the load were

encountered. A new trolley pole was fitted to suit Burwood's wire system and the cable reel was removed by the workshop. While the borehole trolley was being built, the Goodman was put to work in the Victoria Tunnel seam assisting the big 20 ton Goodman locos.

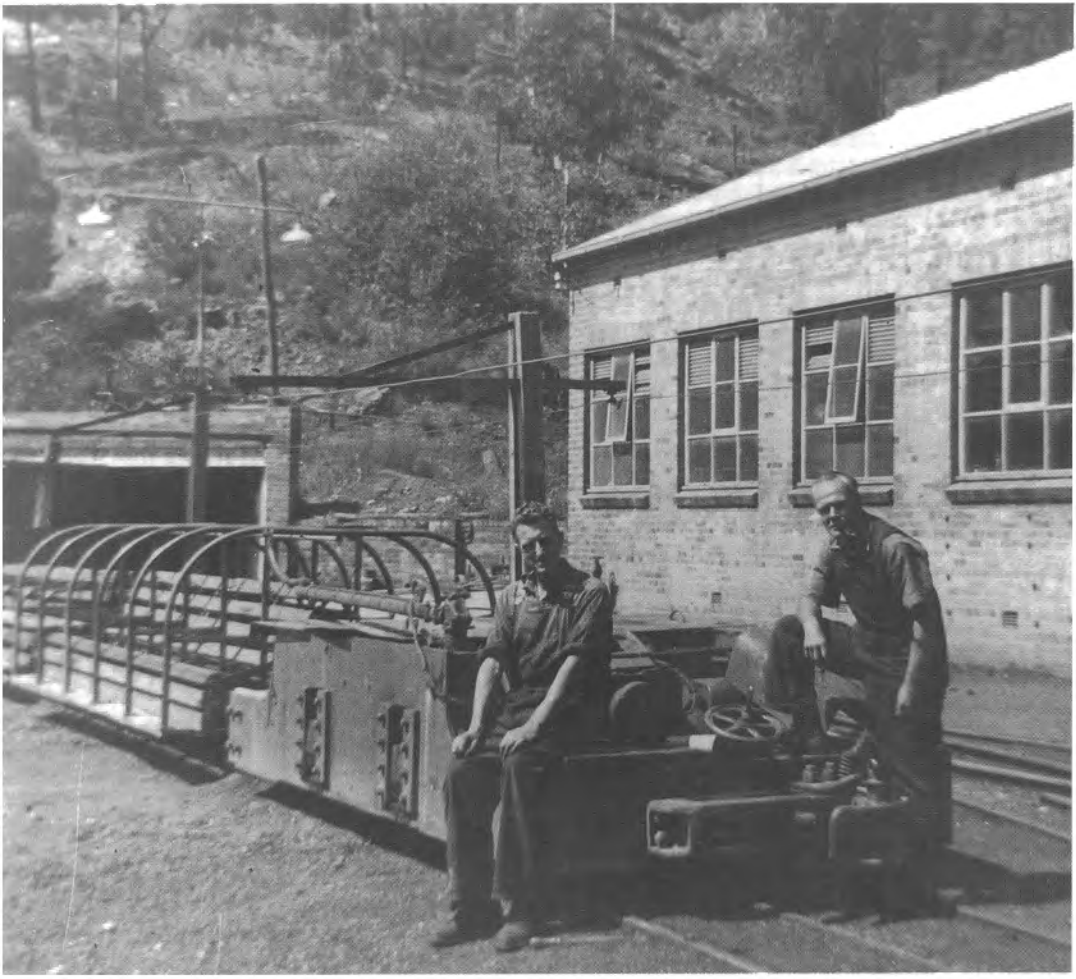
The Jeffrey and two Mancha locos were bought by Bill Clinton the owner of Nattai-Bulli colliery near Camden. He also purchased four man transports which he modified and fitted with brakes.

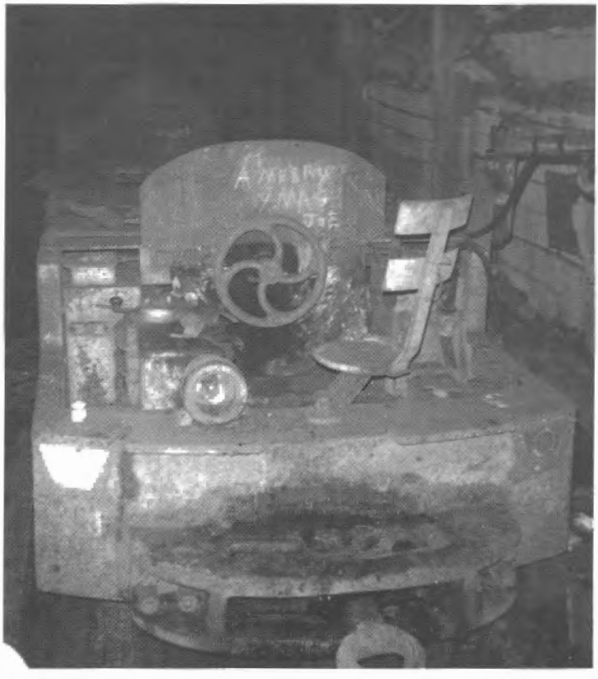
Bill Clinton also purchased the yellow tram loco and the rebuilt General Electric but they saw no further use. They were dumped at Clinton's brickworks site at Narellan near Camden where they were 'rediscovered' by the author in 1989. Both have now been preserved.

The remaining General Electric loco and the 'grey ghost' loco were in a damaged condition and were sold for scrap. Most of the mine cars went to Northern and Western district collieries and some of these cars are still in use at the time of writing.

A 'tram' loco (possibly the 'Grey Ghost') outside the electrical workshop with two different types of man transports. Mr Ernie Dean is sitting on the loco while Arthur Baker is standing on his right. Note the third rail laid in the centre of the track in case of dropped car doors.

Photo courtesy Mr George Wilson.





The Goodman trolley loco lies abandoned in the South Crosscut, Borehole bin, Burwood Colliery, 1982. The very last Christmas greeting has been chalked on the windshield to Mr Joe Hodge, one of the regular drivers.
Photo courtesy Mr Don Roach.

Four men, including Mr Bert Redman, were employed by Caledonian Collieries to salvage any remaining materials in the mine. All the sleepers were sold to local farmers.

A horse called Prince was used to pull out what remained. So, as the Glen Davis shale mine began, it finished, with horse power.

As at 30 June 1951 the financial situation of the ill fated enterprise was represented by cash advances from Federal Government of £476,785; NSW Government £236,965; unsecured cash advance of approximately £3,500,000 to 31 December 1950, and a £100,000 Commonwealth Bank overdraft. Assets as of this date were £1,512,614.

CONCLUSION

Sir George Davis continued to cherish hopes for the industry's success up until his death on 13 July 1947 at age 64, but by this time circumstances had conspired against a positive long term outlook. There were other potential oil shale developments in NSW dependent upon the outcome at Glen Davis but these would not eventuate. The growing impatience of the Commonwealth Government towards the financial impasse and technical delays ended Davis's dream. The impossibility of procuring sufficient skilled labour for the shale mine, the thinning of the shale seam with the need to obtain new low seam mining machinery were the main problems.

The reader can feel for the directors in their disappointment when with the refinery and carbonisation departments finally completed the realisation came to pass that the mine was incapable of producing the necessary amount of shale.

The haulage system was able to meet all the demands for the movement of shale to the retorts with success and ingenuity as regards the locomotive problems. Wartime shortages were successfully overcome by making parts at the works to keep the mechanised plant of the mine in production. It was a credit to the employees that they achieved this.

Up until the date of official closure of Glen Davis on 30 May 1952, 26,034,403 gallons of petrol were refined there.

Today, the pungent smell of oil still hangs around the crumbling ruins of the works and the entrances to the mine lie sealed. Perhaps things could have turned out differently.

APPENDIX 1

A DAYS WORK

A loco driver's working week often began with an overtime shift on Sunday evening watering the haulage roads. A four wheel tanker kept in the underground runaround loop near 1 East was filled with water then propelled to the furthest limits of the rails. A gravity fed spray wetted the roads to keep down the dust. This procedure took about six hours but the dampening effect did not last long because the intake air coursing through the workings soon dried the roadways. Sometimes the dust became so thick it was difficult for the drivers to see their shunters who were only thirty feet away.

A loco driver beginning work on Monday morning would change in the bathroom, remove a numbered token from a token rack then proceed to the lamp cabin where the token was exchanged for a cap lamp of the same number. Five drivers were usually rostered for each shift.

The two most important necessities to the driver were good brakes and dry sand and these requirements were religiously checked each day. A fire beneath a steel plate with sand on top thoroughly dried out the sand, after which it was sieved and shovelled into a drum kept in the electrical workshop. Drivers filled their locos sandboxes with a bucket. During the winter months problems arose with condensation within the sandboxes causing the sand to become damp.

At 7.30 am the man transports entered the mine pulled by the storage battery locos to the respective workplaces. The larger transports mostly went up into 7 and 8 West where the men alighted at the crib room. The transport was then taken back down and chocked in a bord near the flat. After attending to this the battery locos busied themselves in spotting mine cars at the ramps for the shuttle cars to load.

The East side workings were very demanding on the battery locos so that three or four skips was the absolute maximum that the Jeffrey loco could haul even on a fully charged battery. Only one car at a time was the usual. If a battery became discharged or was beginning to boil the driver would wait five minutes for the battery to 'recover' then try again to lift the set. On occasions three or four attempts had to be made.

Once out onto the flat from , say, 4 East headings, if the battery had sufficient power remaining the driver would push the full cars back towards 7 West then reverse direction and with the controller full open race down through the 'swallow' to 1 East where the controller was shut off and the set allowed to coast out to the pit top. A trolley loco pushing an empty set up into 2 West had a rather circuitous route. After leaving the bins the set was allowed to coast down to the bottom of the 'swallow' passing beneath the brick overcast that passed the return air from number four heading. Slack was taken up and the set was pushed up through the 'swallow' to the 7 West junction. Here the shunter walked ahead to check the points. This set of points was concreted in situ to stabilise the trackwork against the tremendous side thrust of a full set of cars turning into the main heading.

Sometimes when making this turn, the trolley pole was guided around through the trolley wire frog by slight pressure from the driver's hand. After negotiating the turn, a very steep upgrade began and continued for about two thirds of the heading before easing off slightly. At 3 bord a turnout directed the rails towards 2 West. At a turn further on, the trolley wire did not go continuously around the curve; there was a gap of some 20 feet. This gap was overcome by first placing the loco in parallel, then when the driver judged he had enough speed, he pulled the trolley pole down so the set turned out at the points, before raising the pole to the wire once again.

In the latter life of the pit care was needed on these roadways as pressure from the old 7 West goaf caused the floor to heave reducing clearances and making the tracks very rough. Similarly the unsound roof and severe gradient precluded erecting the wire directly up from the main heading into 2 West. An alternative route was begun but was not completed.

Three mechanical ramps loaded the mine cars in 2 West. The shuttle car tipped directly into these instead of waiting for an empty car. When a car was shunted beneath the loader it was switched on. A small conveyor elevated the shale then discharged it into the waiting car. These mechanical ramps were originally track mounted but later, rubber tyres were fitted so the ramps could be towed around by shuttle cars. Eventually they were transferred to the conveyor belt header in 7 West. Up in 7 West proper, on the way into the bords, the shunter walked ahead to open the wooden ventilation doors to allow the set to pass through, while on the way out with a full set the loco itself would nudge open the doors.

Because of the grade and sharp turn it was difficult to push more than three cars at a time into a bord, so three cars were left in the heading and

'New Theatre' players boarding the transports to go underground to perform for the 'stay-in' strikers in the shale mine, June, 1952. The Goodman loco is on the front of the set.
Photo courtesy of the New Theatre archives.

pushed in afterwards. The trolley locos would pick up the full cars which were left standing in the full shunt at the flat by the district wheeler.

In October 1949 a gate belt conveyor was installed in 7 West in conjunction with pillar extraction. The trolley wire was extended beneath the belt header so that trolley locos could pick up full sets. These locos were capable of pushing up to 12 empty trucks into the empty shunt whereas a Mancha could manage only four. With the greater availability of empty cars, production would not be interrupted.

If six full skips were brought down by a battery loco, it was the practise to secure the brakes on the three rear cars, so if necessary the shunter could lean across from the loco and apply the brake of the adjacent car. Often the brakes were applied hard enough to skid the wheels, the shunters would arch their backs against the roof then push down with their feet onto the brake lever quickly pushing in the locking pin.

On one occasion late in 1947, the under manager, Mr Fred Johnson, asked for a ride out of 7 West down to the flat. The driver of the trolley loco, 'Bouncy' Judge and his shunter, Tom Parkinson, obliged so Fred climbed in beside Tom. He didn't see the wink that the driver gave his shunter.

Off they went, gathering speed rapidly then 'Bouncy' shouted out that he couldn't hold the speeding set. The under manager glanced at Tom, who casually enquired of the driver whether or not he was able to stop. 'Bouncy' replied that 'I might be able to hold it in a minute' as he surreptitiously wound the hand brake on and off. This was too much for the under manager who jumped off - straight into a heap of stone dust.

When the set reached the flat the two pranksters waited. Presently a bedraggled figure appeared covered from head to toe in white dust. Trying to keep straight faces they asked Mr Johnson why he had jumped off the loco. His embarrassed reply was that he saw a bit of bad roof and thought he had better get off to have a look at it.

8 West was laid out so that the bords were driven on the south side of the heading. As a consequence the trolley wire was erected on the right hand side

of the heading to avoid the shuttle car ramps. Harry Dalziel laid out this district to avoid 90 degree turns from the heading into the bords.

The shuttle car ramps were built by erecting two wooden baulks then blasting down the roof to make a ramp. Retort ash was laid on top of the stone to protect the tyres. A maximum run of 200 yards was the optimum for efficient working of the battery powered shuttle cars.

When pushing an empty set into 8 West it was the practise to speed up then shut off the controller before negotiating a rough little turn at the junction. Here the loco's brakes were applied so that the wheels skidded across the turn and this made the crossing smoother and avoided throwing the driver off. It was also necessary at this point to lower the left hand trolley and raise the right side one to accommodate the change in the wire. If only one pole was fitted the driver would swap pole sockets then reapply the power for the long push up the heading.

Mavor and Coulson putters (single drum, 25 hp electric winches) were installed in order that a battery loco would not be occupied for long periods shunting cars under a ramp. The section wheeler pushed the empty skips in past the ventilation door and attached them to the winch cable. When all was ready the winch pulled the cars up past the ramp then lowered them down as required for loading. A frog was placed on the rails to hold the set when full. The winch driver could lower the set down to the doors and if another set of empties happened to be there then these were coupled up and the whole lot pulled back up to the ramp where the empties were loaded. When the section wheeler returned the complete set was lowered down to his waiting loco. The Goodman loco was often used in 8 West on afternoon shifts as its greater adhesive weight required fewer brakes on the cars. Low headroom was a problem in some of the working places, down to only six inches clearance from the top of the battery box so that the driver would have to tilt his head out the side to look ahead.

The drivers exchanged their cap lamp globes (unofficially) for a brighter type so it was easier to see their shunters when loading under the ramps. A light waved side to side meant stop while one waved up and down meant all right to move. Whistles were also used. A cap lamp was never waved directly at the other man because it was often difficult to distinguish the movement from afar.

When all the skips were filled the driver would knock down or throw out any large lumps of shale that may foul the timbers. If a piece was to hit a timber bar the shale could split and fly forward, injuring the driver.

Occasionally a full set coming down out of 8 West would run out of control. To try and regain control the driver's technique was to apply sand to the rails and take a couple of notches on the controller with the brake still wound on. This action would force the wheels to turn against the braking effort while the sand would arrest the skidding wheels. Upon approaching the turn at the bottom, if speed was still excessive, the driver would deliberately lock the wheels so that the loco would skid around the turn. To do otherwise risked derailment.

A hair raising practice that was sometimes tried on the way out was 'flying low'.

Full power was applied to the trolley loco along the flat until 4 East, where with more than sufficient speed attained, the shunter would lay along the top of the loco's cover plates and pull down the trolley pole to prevent it breaking if it jumped off.

After 1 East the heading ascended again to the entrance where, on reaching daylight, the loco was put into a skid to negotiate the turn whereupon the shunter raised the pole back onto the wire.

If a driver was caught by the manager a stern lecture was given. The legal speed was a respectable six miles per hour for shale haulage and four miles per hour when hauling men.

A nasty accident occurred one day involving the rebuilt General Electric loco. Very high speed was allowed to develop coming up through the 'swallow' and upon leaving the adit and approaching the curve to the surge bin a bad rail joint tipped the loco over the side of the embankment. The driver, John Sibraa, and his shunter, Jack Redding, managed to jump off just in time. An enquiry was held into how the crash happened. No check rails were fitted on this curve, doubtless contributing to the result.

From time to time a set would stall on the way up out of the 'swallow'. In these cases the driver would walk out to the pit top to summon an assisting loco.

Upon arriving at the bins the cars were weighed and their numbers recorded. The special handle for releasing the car doors was kept at the bins. It was inserted onto a square key on the end of the car then kicked by the shunter. This released the first door which in turn released the next two. The men

became so familiar with the cars that they could tell its number by the sight of the door latch.

Very large lumps of shale that wouldn't fall through the doors were either broken into smaller pieces with axes or blistered with explosives. The numerous holes in the bin house roof were evidence of this practice.

Wet shale was difficult to discharge so the locos would jolt the cars back and forth to force the shale to drop. This was another practise that the manager frowned upon esspecially on warm summer evenings when the banging echoed far and wide along the valley.

Once the set was emptied the driver pushed the set back over the door closing ramp between the rails. If the lip on a door was worn, the doors may not lock up properly so several attempts might be made before they were positively secured. If all else should fail a long piece of wood was used as a lever to try to force the door up into its allotted place. At points an extra rail was spiked to the centre of the sleepers so if a door should drop down by mischance while the set was moving it would ride up over the diverging rail and cause a minimum amount of damage.

On the afternoon shift the spare loco driver pulled in the explosive van. This van was of four wheel design, the stemming was loaded into the top section and the explosives (Ajax permissable) were loaded below.

If a trolley pole should break anywhere in the mine the shunter would lie on his back along the top of the loco and hold the pole up to the wire, keeping his eyes tightly shut in case of arcing.

During winter the incoming air along the haulage run was so cold as to cause the driver's eyes to water and he continually wiped the tears away. Heavy jackets were a must for keeping warm during the colder months.

At the conclusion of the shift the battery locos would pull out all the man transports to pit top where the homeward bound miners would make for the bathhouse.

The battery locos either had their batteries changed or recharged. They were stabled under cover or in the electrical workshop.

The trolley wire motor generator set was normally switched off at the control panel in the mine but to save walking back in at the conclusion of afternoon shift an axe was held up to short circuit the trolley wire to the guard thus tripping out the motor generator supply set. Next morning the set would be started again.

Appendix 2

Shale Mine and Haulage cost comparisons

Fortnight ending October 5, 1940		
Output of Shale (tons)	2514	
Number of mine employees	143	
Tons mined per shift per employee	1.65	
Tons hauled per loco per shift	41.9	
Labour transport to surface per ton	13.5	
Total cost of shale in bin	£1/0/4	
Month ended December 31, 1942		
Output of shale (net tons less stone)	7,389	
Number of mine employees	165	
Tons mined per shift per employee	3.04	
Tons hauled per loco per shift	45.61	
Labour shale into skips	£2,621/4/1	per ton 7/1.14
Road laying	£248/17/11	per ton 8.09
Transport to flats		
Labour transport to flats	£350/2/4	per ton 11.37
Electric loco upkeep	£79/9/5	per ton 2.58
Provision for replacement of batteries	£66/6/7	per ton 2.16
Electric power - 12,804 units @ 4d	£213/8/0	per ton 6.93
Total Cost:	£709/6/4	per ton 1/11/04d
Transport: Flats to Bunkers		
Labour - transport	£125/10/8	per ton 4.08
Trolley loco upkeep	£33/11/0	per ton 1.09
Electric power - 2,134 units @ 4d	£35/11/4	per ton 1.16
Total Cost:	£194/13/0	per ton 6.33d
Skip repairs and maintenance labour	£3/11/0	per ton .12
Skip repairs and maintenance - materials	£32/4/4	per ton 1.05
Total cost of shale into bins:	£7,266/6/3	per ton19/8.02d
Month ended October 31, 1945		
Output of shale (net tons less stone)	9,847	
Number of mine employees	149	
Tons mined per shift per employee	3.22	
Tons per shift	146.97	
Transport to Flats		
Labour transport	£366	per ton 8.92
Repairs and maintenance	£459	per ton 11.18
Battery replacement	£80	per ton 1.95
Power	£187	per ton 4.57
Total cost:	£1,092	per ton 2/2.62d
Transport: Flats to bunkers		
Labour transport	£126	per ton 3.08
Repairs and maintenance*	£443	per ton 10.78
*Costs were 9.67d higher due to continual repairs on trolley loco's armatures.		
Power	£219	per ton 5.33
Total cost of shale into bins	£11,673	per ton 1/3/8.49

Shale Mine and Haulage cost comparisons (continued)

Month ended October 31, 1946		
Output of shale (net tons less stone)	13,170	
Number of mine employees	186	
Tons mined per shift per employee	3.49	
Tons per shift	219.50	
Transport to Flats		
Labour transport	£390	per ton 7.12
Repairs and maintenance	£732	per ton 1/1.35
Battery replacement	£220	per ton 3.99
Power	£215	per ton 3.91
Total cost:	£1,557	per ton 2/4.37
Transport: Flats to bunkers		
Labour	£138	per ton 2.52
Repairs and maintenance*	£220	per ton 4.01
Power	£263	per ton 4.78
Total cost	£621	per ton11.31
General underground		
Repairs and maintenance*	£948	per ton 1/5.28
*Increase of 5.33d due to extension of trolley wire system in 7 & 8 West.		
Total cost of shale into bins	£15,094	per ton 1/2/11.06

REFERENCES

1. Member of Newnes Investigation Committee
2. Lithgow Mercury, 30th May 1938
3. Australian Archives SP954 Box 12, Sydney
4. Report by Kramer and Thorne, 1947. Department of Minerals and Energy
5. Australian Archives A425 (41/3391) Canberra
6. " " Box 94
7. " " SP954
8. " " Box 6
9. " " SP954
10. " " Box 6
11. " " Box 24
12. " " Box 2, part 2
13. Report by R. Crichton and H.R.J. Loader of Scottish Oils Ltd 1935.
14. Australian Archives Box 2, part 10
15. Lithgow Mercury, 17th February 1943
16. NSW Official Year Book 1948-49
17. Australian Archives Box 1, Minutes of Board Meetings, 1943
18. Australian Archives Box 14, Weekly Production Report
19. Australian Archives Box 6, Part 2
20. " " Box 6, Part 2
21. " " Box 4
22. " " Box 6
23. " " Box 18, Mine 1943-46
24. " " Box 2, Board Minutes 1944-45
25. " " Box 2, Report 62
26. " " Box 94, Mine Rectifier
27. Australian Archives Box 1, Report 2nd April 1947
28. " " Box 89
29. " " Box 94
30. " " Box 10
31. " " Box M5/1, Part 25
32. " " Box 18, Mine organisation
33. " " Box 4
34. " " Box M5/1 Part 6
35. Lithgow Mercury 25 November 1949
36. 'New Theatre' Archives, Newtown, Sydney
37. Lithgow Mercury, 30 June 1952
38. Miners Federation 'Common Cause' 5 July 1952
39. Miners Federation 'Common Cause' 2 August 1952
40. Australian Archives B.H.P. Records, Box 46, 1947 to 1953

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Also I thank my sister, Julie Bennett, for doing the typing.

ERRATA

On p.13 LR 121, col 1, line 19 delete the word 'each'. The locos were 40 h.p. not 80 h.p.

On p.5, the phot caption should read 'Left to right'.

CONVERSION

1 mile	= 1.6 km.	1 shilling (s) =	10 cents
1 chain	= 20.10 m.	1 penny (d) =	.83 cent
1 yard	= 0.914 m.	1 gallon =	4.55 litres
1 foot	= 304.8 mm.	1 pound (lb.) =	454 grams
1 inch	= 25.4 mm.	1 ton (£) =	1.02 tonnes
1 pound (£) = $2.00			

THE POWELLTOWN TRAMWAY

Two Train Operation and Withdrawal of the Second Passenger Carriage

by P. J. Barry

1.Two Train Operation

Recent research of the Victorian Railway Public Timetables which are in the Australian Railway Historical Society's Archives at Windsor, Victoria has led me to offer the following which compliments the work in Stamford et al: "Powelltown", Light Railway Research Society of Australia, 1984.

At least from the Victorian Railways timetable of 7 November, 1921,(8) the Powelltown Tramway operated an early morning service on Mondays and Saturdays. This was in addition to its services later on most days of the week.

By the January, 1930 issue of Bradshaw's Guide to Victoria (1), but probably after the Victorian Railways timetable issued on 14 October, 1929(2), the Powelltown Tramway altered the timetable of its early morning service.

The table below shows these two situations:

		Previous am	Late 1929 am
Powelltown	d	4.45	6.20
Yarra Junction	a	5.30	7.30
Yarra Junction	d	6.30	7.50
Powelltown	a	7.15	8.50

This change may have reflected a change in starting time at the mill due either to Industrial Award changes or to the lack of demand for work in the Depression. It may also be in response to the lesser movement of Mill Workers from settlements along the line to board in Powelltown for their week's work. Certainly it gave Melbourne bound passengers a much shorter wait to connect with the Warburton line train.

The Saturday service was cancelled in August, 1930(3), and the Monday service was withdrawn in April, 1934(4).

Throughout this period, late 1929 to April, 1934, the second train of the day left Powelltown at 8.20a.m.(1) &(2). This was thirty minutes before the first train arrived there. I believe that this implies a cross of trains at Gilderoy. This would have been twelve minutes and three miles from Powelltown. Further, the combination of the telephone and a small band of train crews would reasonably ensure that Safeworking discipline was maintained to prevent two trains being between the same stations at the one time.

From late in 1925, until the cross at Gilderoy was introduced late in 1929, the second train of the day had left Powelltown at 8.30am, ten minutes later. This train reverted to this time of 8.30am when the cross was discontinued, and this time remained until the end of passenger service. It was only between 1922 and 1925 that the second train operated later in the day than at 8.30am from Powelltown(1) & (2).

"The Main Line was operated on the one engine in steam principle, and from all reports trains never crossed between Yarra Junction and Powelltown"(5). The above data indicates that this sentence is not completely correct.

2. Withdrawal of the Second Passenger Carriage.

The above data enables the withdrawal of the second passenger carriage to be dated as not before April, 1934. My assumption in this is that the Tramway always provided a passenger carriage on each of its advertised services. I believe that the second of the two references in Stamford et al can be read to allow this conclusion to be drawn. Firstly, at Page 68: "Demise of Second Passenger Carriage ca 1928 - Use as a Shelter Shed at Powelltown State School."(6). This reference is from interview with a resident or worker. Two possible sources would verify its correctness - either a pupil at the school when the carriage was delivered, or the School Committee's Minute Book. Secondly, at Page 105: Here it is said that the second passenger car fell out of use due to declining traffic in about 1925(7). I believe that this is not inconsistent with its use only on two days per week until August 1930, and on one day per week after then until April 1934, given that it was only away from Powelltown before 9 am on both of these days. Most of the daylight hours would be spent "Standing on a siding at Powelltown."

If we accept both these references as correct, the early morning service had no passenger carriage on it at least from late 1929. Perhaps a local source of information now in their late 60's or early 70's will clarify this point - it's certainly well within living memory.

3. Speed Limit on Main Line.

Until and including the timetable of 14 October, 1929, a running time of forty five minutes for the twelve miles of Main Line was usual, although some trains were slower. After that date, the running time was never less than sixty minutes (8). It would appear that a speed limit of at least 35 miles per hour was reduced to 20 miles per hour at that time. The time from Yarra Junction was usually 10 minutes less than that from Powelltown. This indicates the lighter loads returning to Powelltown and also the possibility of having to stop the loaded trains at the top of each heavy grade to set the brakes, and a further stop at the foot of these grades to release the brakes.

References:

1. Bradshaw's Guide to Victoria. January Issues, 1929 to 1938
2. Victorian Railways Suburban Public Timetables, 14.10.1929 and two issues dated early in 1930s.
3. Stamford et al: "Powelltown", Light Railway ResearchSociety of Australia, 1984. Page 10.
4. Ibid: Page 113 (Ref 15, Ch 12)
5. Ibid: Page 54
6. Ibid: Page 68
7. Ibid: Page 105
8. Victorian Railways Suburban Public Timetables, various issues in 1920s and 1930s.

Acknowledgements.

The help of Ian Jenkin, Jack McLean and Michael Guiney in marking data available to me has enabled this article to be written.

Author's Note.

All conclusions which I have drawn are my own responsibility. Some are plausible rather than based on written information. I look forward to another researcher throwing more light on the matter of the withdrawal of the second passenger carriage.

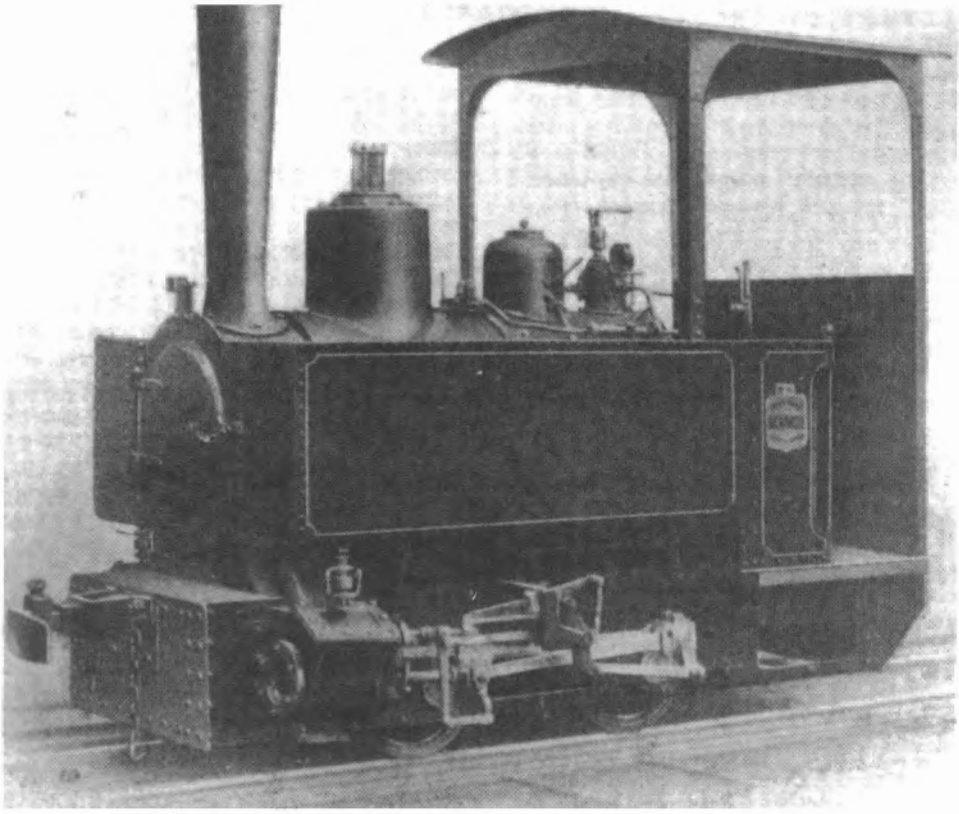


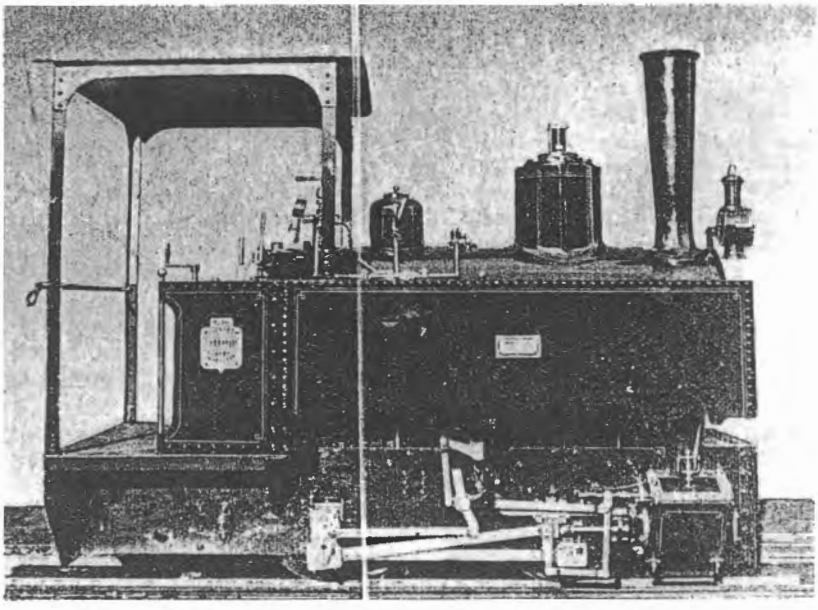
Illustration from the Decauville catalogue of a Type 1, 3¼ ton locomotive.

DECAUVILLE LOCOMOTIVE 399

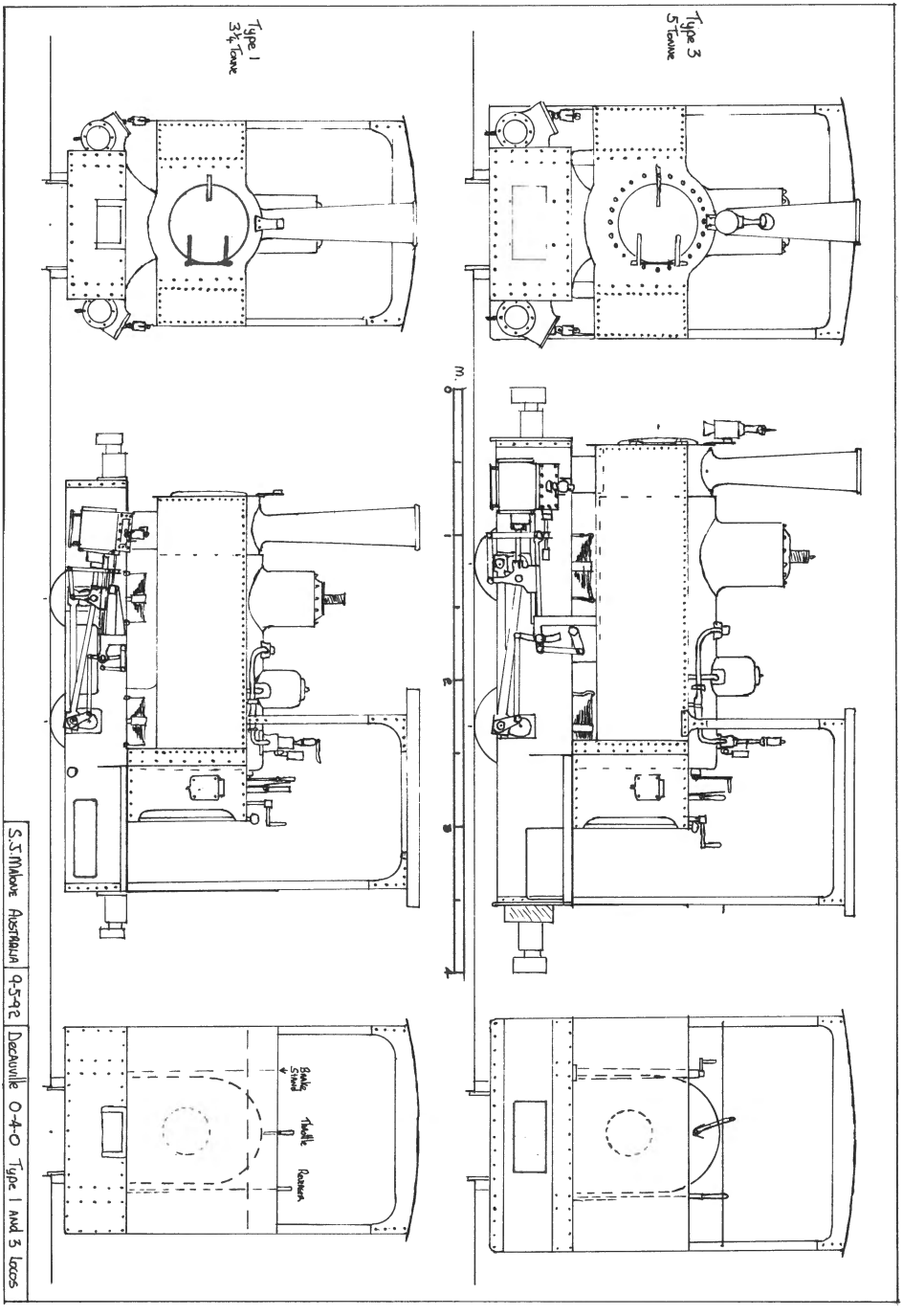
by Steve Malone

The photo of Decauville 399/1904 in Light Railways 102 prompted me to research this style of Decauville loco to find or produce drawings for future model making purposes. Firstly, David Mewes, kindly advised me of the two sizes (3¼ & 5 ton) of this style of Decauville loco. It seems 399 (a 5 ton loco) was the only one of this style of loco to come to Australia. The book "Rails to the Setting Sun" by C.S.Small has some good photos of the two types of these locos. Enquiring through various worldwide modelling magazines uncovered more information. A young enthusiast from the Pithiviers N.G. Museum near Paris, Bruno Duchesne, was able to take measurements of 431. This 5 ton loco is preserved in non-operating condition at Pithiviers. From Germany, N.G. Enthusiast Kelvin Parkes was able to supply more details. The 5 ton version was known as Type 3 and the 3¼ ton loco, a Type 1. Kelvin discovered a dismantled Type 3 loco (648/1912) in Berlin and was able to take measurements also. As for Type 1, 3¼ ton locos, an indirect contact with Mr. K. Clingam who has written Decauville articles in the I.R.S. Record 76, indicated that Type 1 loco 412/1904 "Steatitte", once preserved in France, was cut up in 1978. I do not know of any other Type 1 which may be still about, perhaps the Volos Brickworks Type 1 loco (509/1912) in Northern Greece, still exists. I wonder if any other Type 1 or 3 locos still exist other than 399 buried at Bundaburg, Queensland, 431 at Pithiviers, France, and 648 in Germany. The attached drawing and information is the end result of my research, a most interesting exercise, proving that N.G. Enthusiasts from all over the world can be a helpful bunch. The main difference between my drawing and the photo of 399 is the front spectacle plate, perhaps an optional extra on 399. The main dimensions of the two sizes of these Decauville locos are:

	Type 1	Type 3
Length over frames	2750mm	3200mm
Width	1520mm	1700mm
Height	2465mm	2550mm
Wheelbase	850mm	1100mm
Wheel Diameter	500mm	600mm
Boiler Diameter	650mm	800mm
Cylinder Dia x Str	135x200	165x250



View of a Type 3, 5 ton Decauville locomotive.



'DENTON PARK LOCO'

by John Browning

The loco illustrated on page 37 of LR 120 is an Andrew Barclay product, one of the twins Andrew Barclay 310 and 311 of 1888. These were built to the order of Kerr, Stuart & Co., and were fitted with plates fitted with Kerr Stuart numbers 538 and 539. Builder's records state that these were built to 2ft 9in gauge (839mm) although both subsequently ran on 3ft gauge (915mm) in Australia (Horne, 1984). It would appear that they were dispatched to Sydney for Kerr Stuart's customer in 1888 (Jux, 1992), not in 1896 as implied by Jeff Moonie (1991) on p.7 of LRN 114.

A photograph of Barclay 311, 'Squirt', taken in the Powelltown area in November 1918, is shown on p.6 of LRN 114. Richard Horne's drawing of Barclay 311 in original condition in 'Powelltown' p.96 (Stamford et al., 1984) shows that the 'Denton Park loco' retains a number of original features not present on 'Squirt' by 1918. However, 'Squirt' did retain the brass spectacle cab window surrounds not apparent on the 'Denton Park loco'.

As 'Squirt' is recorded as being in the service of the Warburton Tramway Company from 1910, then if we believe that the 'Denton Park loco' was photographed at or near the colliery in the 1914-8 period, we could assume it to be Barclay 310. However, the clothing of the men, the presence of surveyor with theodolite, the stone tips behind, and the general condition of the loco might lead one to be suspicious of this dating and location.

Close examination of the photographs provides even more important details, most likely associated with the regauging of these locomotives from 2ft 9in to 3ft 0in which would have necessitated moving the cylinders and motion outwards. The photograph of the 'Denton Park loco' shows the upward extension of the cylinder cover to be flush with the footplate beading, while the Powelltown photo shows it slightly proud of it, with a small piece of plate seemingly attached to the beading above. In the same way, the motion bracket on the 'Denton Park loco' is mounted behind the footplate beading, while in the Powelltown photo, it has been moved outward, cutting the smooth line of the beading. This leads me to believe that the 'Denton Park' photograph shows one of these locos before it was altered from 2ft 9in gauge.

It is suggested that both locomotives may have been first used in Australia at the Cullen and Bullen Lime & Cement Co., Portland, NSW (Buckland 1968). Barclay 310 is known to have arrived at G. & C. Hoskins' Ben Bullen limestone quarry in November 1909 and to have departed in mid 1911. It was reported out of use by Gifford Eardley at the Hoskins' steelworks at Lithgow in 1922 (Moonie, 1991), and had by that time acquired a rearward extension including a coal bunker, possibly having seen use at Hoskins' Habilah quarry (Horne, 1991).

Judging by the dates, it certainly seems possible that Andrew Barclay 310 was used at Denton Park Colliery during the Great War period. The discovery of any connection between Hoskins and Denton Park would be most illuminating. However, I submit that the photograph shown in LR 120 shows it or Barclay 311 in 2ft 9in gauge quarry service in NSW, possibly at Cullen Bullen around 1900.

References:

Buckland, J.L. (1968) 'The Powelltown "Kerr Stuart" - Exploding a Myth!!!' in 'Light Railways' No. 24 Winter 1968.

Horne, R.T. (1984) 'Andrew Barclay locomotives in Australia, New Zealand & Fiji' in 'Australian Railway Historical Society Bulletin' Number 560, June 1984.

Horne, R.T. (1991) 'Ben Bullen at Lithgow' (letter) in 'Light Railways' No. 111 January 1991. Jux, F. (1992) 'Kerr Stuart & Co. Ld. Locomotive

Works List'; Frank Jux. Moonie, J. (1991) 'The Limestone Quarries and Tramways of Ben Bullen, NSW' in 'Light Railways' No. 114 October 1991.

Stamford, F.E., Stuckey, E.G. & Maynard, G.L. (1984) 'Powelltown'; Light Railway Research Society of Australia.

Back cover:

The ruins of an industry as nature slowly reclaims the works. Looking west, the stumps of the shale bin are on the extreme left while number two retort bench has been demolished. The skeletal remains of the power house, store (workshop) and cooling tower are visible. This is all that is left of the Glen Davis works and refinery today. Photo R. Mainwaring.