THE NARROW GAUGE

No. 55 • OCTOBER 1970

THE NARROW GAUGE RAILWAY SOCIETY

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Cover Photo AND FACING PAGE

Two fine photographs by Ivo Peters showing the latest 15" gauge locomotive for the Longleat Railway on Lord Baths estate in Wiltshire.

'Dougal', designed by David Curwen and built by Severn-Lamb Ltd. shown along with 'Muffin' supplied in 1968.

Contents

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SIXTEEN EXTRA PAGES THIS ISSUE - Something for everyone, steam, electric and diesel, big and small, home and abroad. Your Editor's "piece de resistance" for 1970.

Letters to the Editor

From RODNEY WEAVER, KENILWORTH

Sydney Moir has certainly turned up some interesting material in NG 54. A Stronach-Douglas line has, of course, operated briefly in the U.K., at the British Empire Exhibition of 1924/5. Who was Stronach, incidentally?

The two road-rail tractors used by the S.A.R. were examples of Yorkshire steam tractors, fitted with the justly famous Yorkshire Patent Boiler. They appear to have been shaft-drive vehicles, in which case they would have been almost brand new when rebuilt. As both carry the same works plate it seems likely that the Johannesburg firm mentioned were in fact the Yorkshire agents in South Africa. No. 973 was obviously a standard tractor fitted with a pair of hydraulic (not steam) jacks; these jacks would have been operated with high pressure water from the injectors as in the case of hydraulic tipping gear on a steam wagon. No. 1155 appears to have been built from standard wagon parts but with the boiler placed at the rear of the normal chassis (for additional adhesive weight?) As the same engine and boiler was used there would be no point in fitting two driven axles. One incidental point is that the headlight shown is not fixed to the body but carried on twin brackets; as these are fitted to the other end of 1155 it clearly was intended to work in either direction after dark.

CONTINUED OVERLEAF

Letters to the Editor CONTINUED

The standard Yorkshire boiler (a double ended loco pattern boiler with single central firebox and return tubes to a central internal smokebox) had a grate area of 3.35 sq.ft. and total heating surface of 65 sq. ft., there being 35 1¾" tubes in each end of the boiler. Normal working pressure was 175 p.s.i.g. The standard engine was a vertical two-cylinder compound with cylinders 5" x 7½" x 8" developing some 50 i.h.p. In view of the early closure of the line due to excessive traffic it seems unfortunate that Dutton's proposal to build larger tractors was not implemented; the design shown might have been intended to use a converted Gardner-Ricardo tank engine of around 150 b.h.p. and would clearly have possessed much greater haulage capacity than the steam tractors.

Turning to the little steam tractor illustrated on p.4, this was a Lifu product. Though nominally produced by the Liquid Fuel Engineering Co. of Cowes, Isle of Wight, a number of Lifu vehicles were actually built by sub-contractors. The Lifu system used a paraffin-fired water tube boiler rather similar to the earlier Yarrow designs and a very neat enclosed two-cylinder compound engine with Joy's valve gear. I too would like some further details on this particular tractor; when, for instance, was it built and were there any other Lifu 'locomotives'?

From SYDNEY LELEUX, KEIGHLEY

I found Sydney Moir's article in NG 54 very interesting. The principle of the 'Songolole' road rail system seemed familiar. There appears to have been a similar system at the Wembley Exhibition. A passenger train hauled by a Halley petrol engined tractor is illustrated in plate LIII of Light and Narrow Gauge Locomotives (Oakwood, 2nd Edition) and the text on page 80 says that Sentinel steam tractors were also used. '(The tractors) ran on two road wheels and a rail bogie, hauling carriages running on rails only'.

The principle was also described in paper N 210 of the (Indian) Railway Technical Papers 1920-21, which I found while browsing in India House Library, Aldwych, some ten years ago. The paper stated that the heaviest axle loading on a railway usually belonged to the locomotives, and thus their size governed the track. If the track was just heavy enough for the rolling stock then special light axle loading locomotives were needed. To cut down the weight of track and to permit steeper gradients than normal - and so cut the capital costs of a railway - were the objects of experiments conducted in India in 1919 with a 'loco tractor'. The test layout was a dumbbell shape of 2' track with 25 lb. rail, laid with curves of 50' radius and gradients of 1 in 20. Rolling stock was ordinary bogie vehicles whose 'carrying capacity was undiminished'. The front end of the tractor was carried on a 4 wheel bogie which lifted the front road wheels of the tractor clear of the track. 'By means of a ramp the tractor could be run up and its bogey removed, so that it could then function as an ordinary road vehicle.' The tests were satisfactory, but no mention was made of any applications to an actual railway.

I enclose a chapter from an old children's book which may be of interest about Mr. Moir's potato railways. Perhaps you could use one of the illustrations

While on children's books, The Railway Album by E.S. Wolff published about 1950, contained photos of the following ng items. Can anyone give more information about them? At Aketi Station in the Belgian Congo an 0-8-0T (Feldbahn?) is preserved on a pedestal. An American 0-4-0ST (?) 'Sandfly' was shown working near Darwin, Australia. Abadan oil refinery of the Anglo Iranian Oil Co. used No. 6, 0-4-0F by Andrew Banley (makers catalogues show the AIOC also had a Peckett 0-6-2T and a 2'6" Bagnall 0-6-2T - any information on AIOC railways welcomed). Lastly there was a scenic shot of a tank loco hauling some bogie open wagons 'on the line which operated in S.W. Persia between Dar-i-Khazinch and Masjid-i-Sufaiman'. The Esso film 'All in a lifetime' has a brief glimpse of a ng 0-4-0T with 'washbasin' chimney hauling some 4wh. wagons in an oilfield (Persia?) around 1910. Any ideas?

From KEN HARTLEY, SELBY

The letter by Sidney Moir, in No. 54 mag., prompts me to weigh-in with the following notes on Lincolnshire Potato Railways motive power.

'Railway Mag.', August 1916, contained an article giving similar details re the activities, and railways, of W. Dennis & Sons, at Littleworth, to those quoted by Mr. Moir, as well as photographs (two show the paraffin-fired loco). Horses were also used for haulage, and one infers that there was only the one steam unit.

'Railway Mag.', December 1927, contains a short article with much the same gen, but with two much better views of the same steam unit - Mr. Moir's sketch is evidently made from a similar view, and conveys an excellent impression of this unique 'loco'. Although it is now well over 50 years since I first read the first article, I have never yet come across any real details of the engine, which was obviously based on early steam car practice, and may even have been a local conversion of one of the several types of commercial vehicle produced by 'Clarkson' in, roughly, the 190? - 1920 period. Some were paraffin-fired, others used coke, and some had a chimney part-way along the bonnet. I seem to recall a letter in a 1912 volume of 'English Mechanics', (by one E. Smith) which seemed to refer to the Littleworth loco - or something very similar.

As regards the 0-6-0T at Nocton, 'Meccano Mag.' of about 1926-7, contains a good photograph and considerable detail of this loco, supplied by John Fowler. No. 16991 of 1926. (Editor's Note - please see No. 12 in our Fowler series for details).

Obviously, the 'Fowler' could handle much heavier loads than the 20 h.p. 'Simplex' machines, but it was too heavy for the Nocton track in general, and was restricted to the short western section serving Glebe Farm. It later went to Durham County Water Board (via Cohen), after a fairly short stay at Nocton.

A second, smaller, steam loco is said to have been used for a short time, but no details are known of it.

I can say nothing about Mr. Worth's light railway, beyond stating that I crossed the line, near Fleet, in 1937, at an ungated crossing on the road to King's Lynn. The gauge appeared to be 2'0", and there was a rectangular water tank on a timber framework nearby the crossing. This seems to indicate a possible steam loco, but, in fact, I saw no rolling stock of any kind.

From D. TREVOR ROWE, HORLEY, SURREY

In issue 54 Sydney Moir asks for more details of the Correntino Railway in Argentina. I am sorry to advise this line closed on 1st November, 1969. It extended from Corrientes to General Paz, with a branch from Lomas de Vallejos to Mburucuya, totalling about 200 route kms. in all. Towards the end there was a train on Monday and Thursday from Corrientes to General Paz, returning on Friday and Tuesday with connections over the branch.

Loco stock noted in 1968, plus other observations by Ken Mills soon after closure, was as follows:-

655/658/660/661	4-6-0Ts
667/668/670	0-8-0
681	2-6-0

I have seen illustrations of steam and diesel traction on the Balcarce line in Southern Argentina, but do not know if any vestige of this remains.

From ALISTAIR PARSONS, BOSTON, LINCS.

'Burra' illustrated on page 29 of No. 54 was built in 1923 by Hawthorn Leslie Works No. 3574, for the Corrimal Balgownie Colliery, south of Sydney, Australia.

Leading Dimensions: 2' gauge. Cylinders 8" x 12".
Coupled wheels 24". Working pressure 160 lbs. Weight 7½ tons.

Originally the loco hauled skips from the mine tunnel to the incline about one mile. Later a 3'6" gauge inclined skip-way replaced the line and 'Burra' was then used for workshop shunting and moving pit props. She continued working until 1967 when a conveyor belt was put in. The loco is now preserved at the main gate of Port Kembla steelworks painted green with yellow lining.

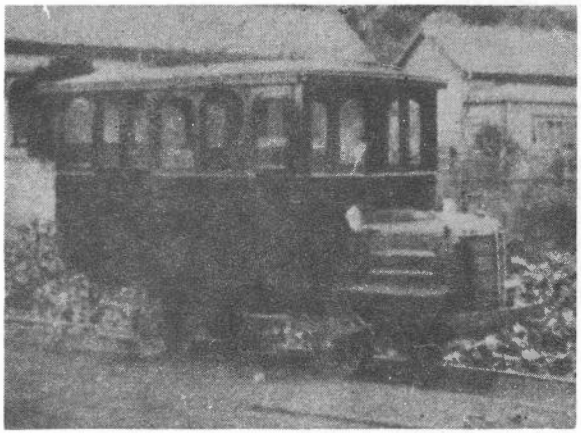
The name was originally intended to be 'Kookaburra' (an Australian Kingfisher) but the name was too long and was abbreviated to 'Burra' instead of the usual 'Kooka' by the English agents.

Notes from Australian Railways Historical Society Bulletin No. 378 April 1969 by Mr. J.L.N. Southern.

Two other interesting photographs have come to hand.

The Tasmanian Railcar built in 1922 alleged to be a Daimler seems to have an Austin or Bedford radiator. The second shows a glimpse of the Clogher Valley Tramway at Fivemiletown, Co. Tyrone. I believe taken in 1931, by the clock it would be the 3.55 p.m. ex Maguiresbridge which arrived at Tynan at 6.32 p.m. in time for the 6.45 to Belfast.

The Austin 7 in the photo is a 1931 model and by November 1932 the CVT became diesel operated by two Walker units.



One-man rail car

★ TASMANIA'S famous red Daimler rail car, retired after 40 years of service in 1964, is being smartened up for display at the Zeehan (T) museum.

It was built in 1922 for the personal use of Mr R. C. Sticht, first general manager of the Mount Lyell Mining and Railway Company of Queenstown, on Tasmania's west coast.

He used it to travel the company's line to the port of Strahan and sometimes the State lines. *It must certainly have been Australia's only personal, chauffer-driven rail car complete with gold pass for rail travel throughout the State.*

Successive Mount Lyell managers following Mr Sticht used the car — driven for many years by Mr Clarry Coltheart, who took enormous pride in his charge — until it was retired six years ago.

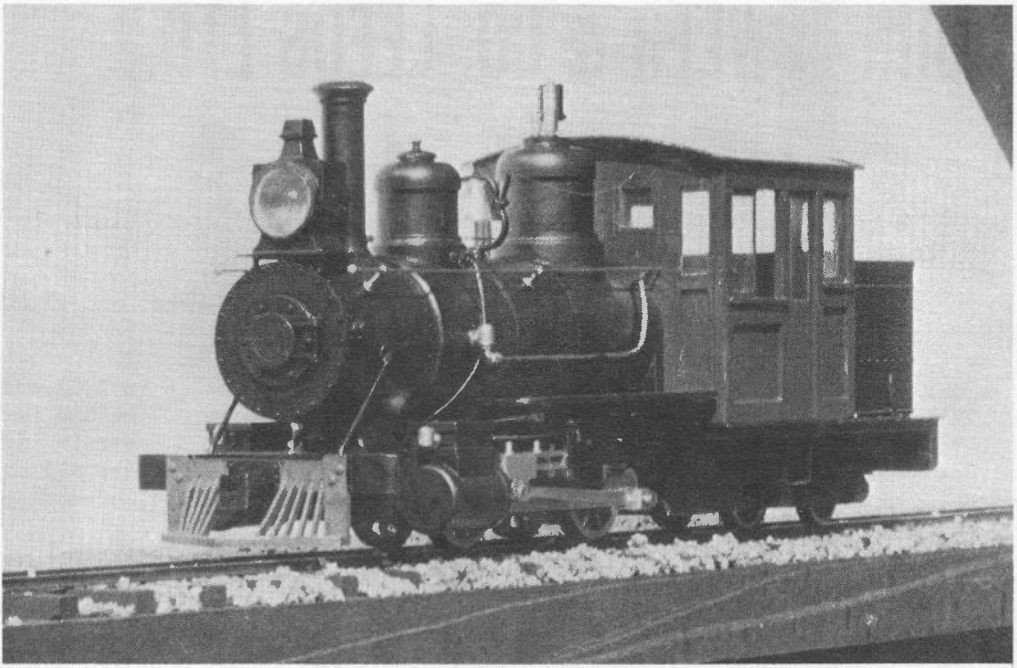
From BILL STRICKLAND, BRENTFORD

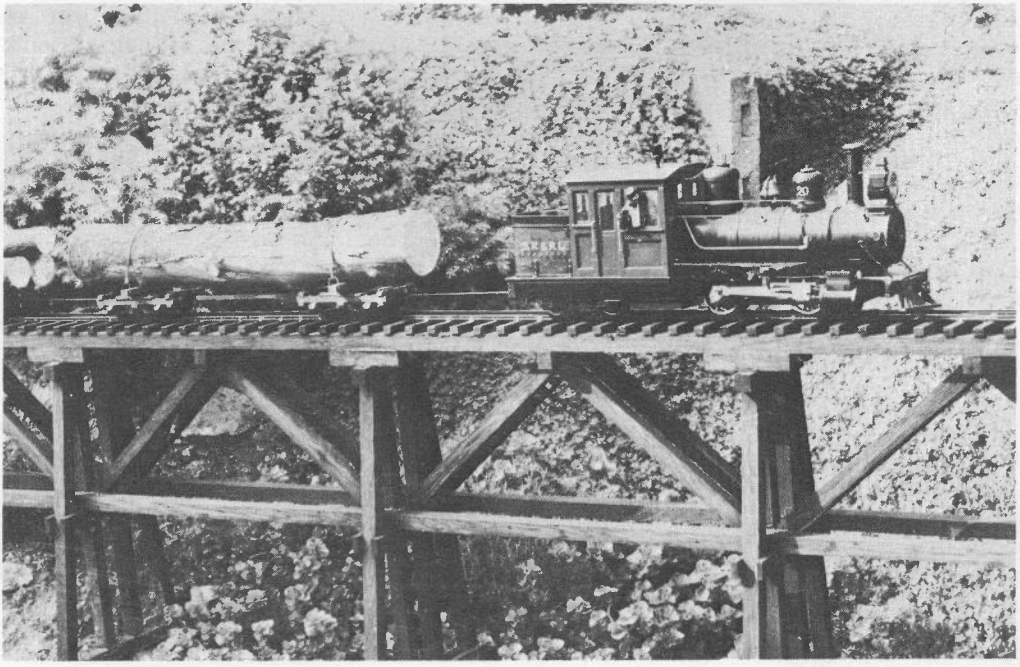
Enclosed a couple of pictures of some of the stock now running on my garden railway. Prototypes are Sandy River and Rangeley Lakes to information supplied by Temple Crittenden. Scale .333" = 1 foot which is 1/36 full size for 'two-foot' on 16½ m/m and for 00 gauge models these are quite some size.

The loco is one of the three heavy Baldwin 0-4-4RT freight engines built for the Eustis Railway for hauling timber in 1903-4. The model is 10" long, 2½" wide and is 3¾" high, quite a monster on this small gauge but she rides remarkably smoothly and is quite happy hauling trains 10 feet long.

Passenger cars scale 16" long, as large as many O gaugers; all stock passenger and freight is fully sprung and these also ride well.

Freight bogie castings can be arranged for other modellers as I had to make patterns for these and others are in hand.





JOHN FOWLER & CO. LEEDS LTD.

The Editor has received some very interesting correspondence since our batch of Fowler photographs appeared in Issue No. 54.

Firstly, No. 11944 was an 0-8-0 not 0-6-2. From John Forshaw and Alistair Parsons comes news of photograph 4:-

No. 10992, 0-6-2 side tank (photo No. 4, page 26) was built in 1907 and supplied to the Colonial Sugar Refining Co. of Fiji with whom she became Lambasa Mill No. 3. (Each mill appears to have numbered its locos in a separate list, presumably because the railway systems serving the various mills were all separate originally, and a good deal of duplication is the result). Gauge, of course, 2ft.

She was the first 0-6-2T in Fiji though not by any means the first Fowler, this honour being held by No. 5406 of 1887, an 0-4-0T which was scrapped in 1959. No. 10992 was one of several similar 0-6-2Ts supplied to the C.S.R. Co. up to 1911 when they suddenly transferred their custom to Hudswell Clarke. At some time in her life 10992, like most if not all the other locos, acquired a bogie tender. I do not know if she is still in existence but she was still in service at Lambasa Mill in January 1961.

Above information from 'Balloon Stacks and Sugar Cane' by Peter Dyer and Peter Hodge, which has another builders photo of her plus one of her at work and drawings 'as running in 1957'. It gives full details of all the Fowler and Hudswell Clarke locos supplied to Fiji.

I cannot contribute anything definite about the other locos, but in 'Railway Pictorial' No. 2, Spring 1947, there is an article by Sir Thomas Salt about the Changa Manga Forest Railway, 2ft. gauge, which was apparently worked at the time by two Fowler 0-6-0T locos. From the photos these are clearly inside frame well tanks with small 4w tender and enormous balloon stacks. Quite different to any of the 'mystery' engines. The point is that the original loco (maker not quoted) is said to have been a 'small 0-4-0'; could this have been the loco in photo No. 2 - No. 8144?

(J.F.)

And more important member R.G. Pratt of Minehead has sent us another set of 15 Fowler official photographs which we shall publish in the next three issues. Ron Redman has spent some time delving into old catalogues to identify the engines but any further information would be welcome. The Editor hopes you agree his feelings that these old photographs deserve a wider publication and with or without details are interesting. We are grateful to the Secretary of John Fowler & Co. (Leeds) Ltd. for permission to reproduce these prints.

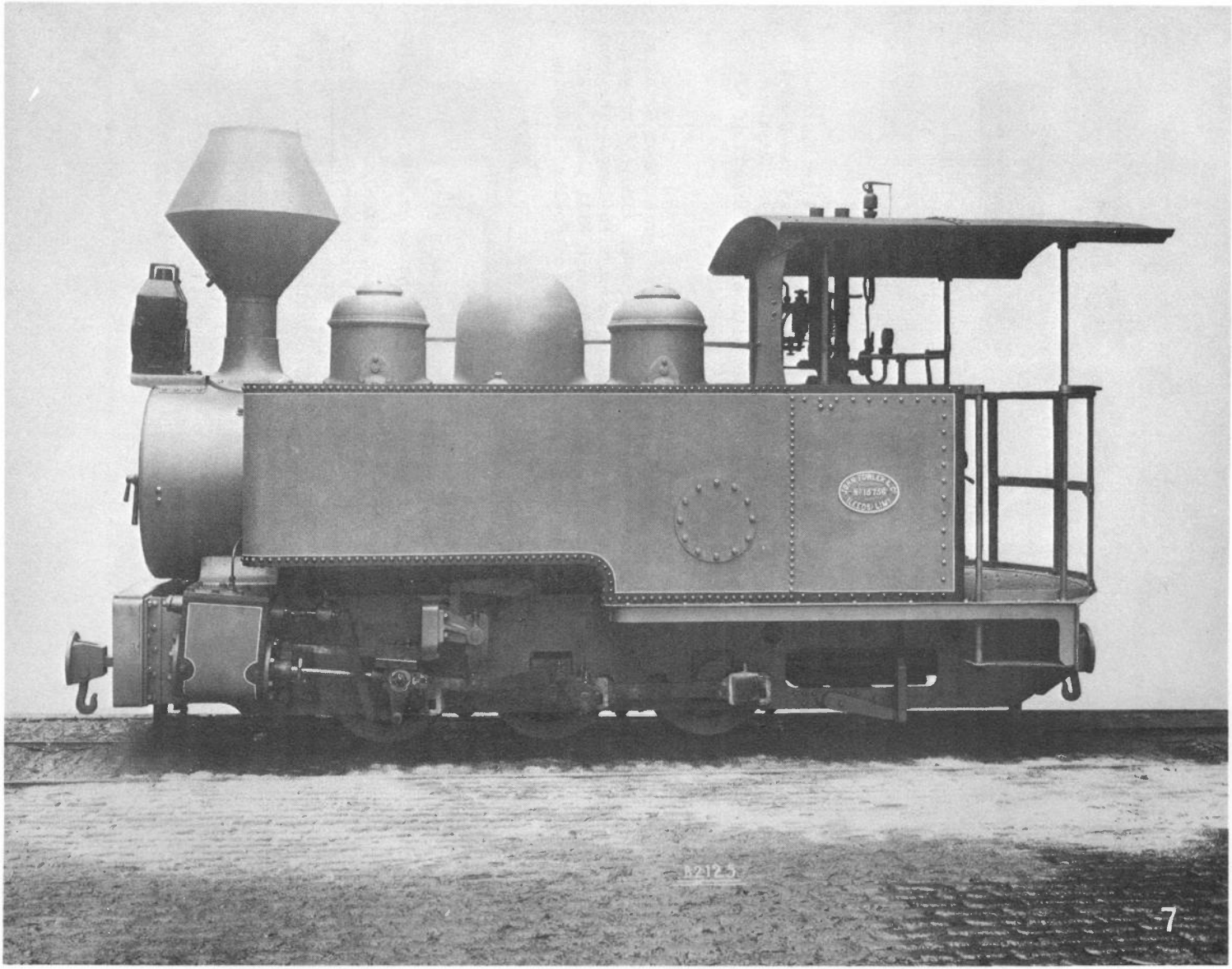


Photo No. 7

Works No. 15756, 0-6-0 Side Tank.

Photo No. 8

Works No. 15909, 0-4-0 Well Tank.

Photo No. 9

Works No. 15916, 0-4-2 Side Tank.

Photo No. 10

Works No. 15952 of 1923, 0-8-0 Side Tank. One of eight supplied to Braithwaite & Co., West Bromwich for work on the Bombay Pipeline. Usual load was 8 pipes mounted on loose bogies (weight 10 tons each and about 45' long). Gradient average 1 in 40. Biggest load hauled was 13 pipes with a train length of 624 feet. Fowlers also supplied the bogies.

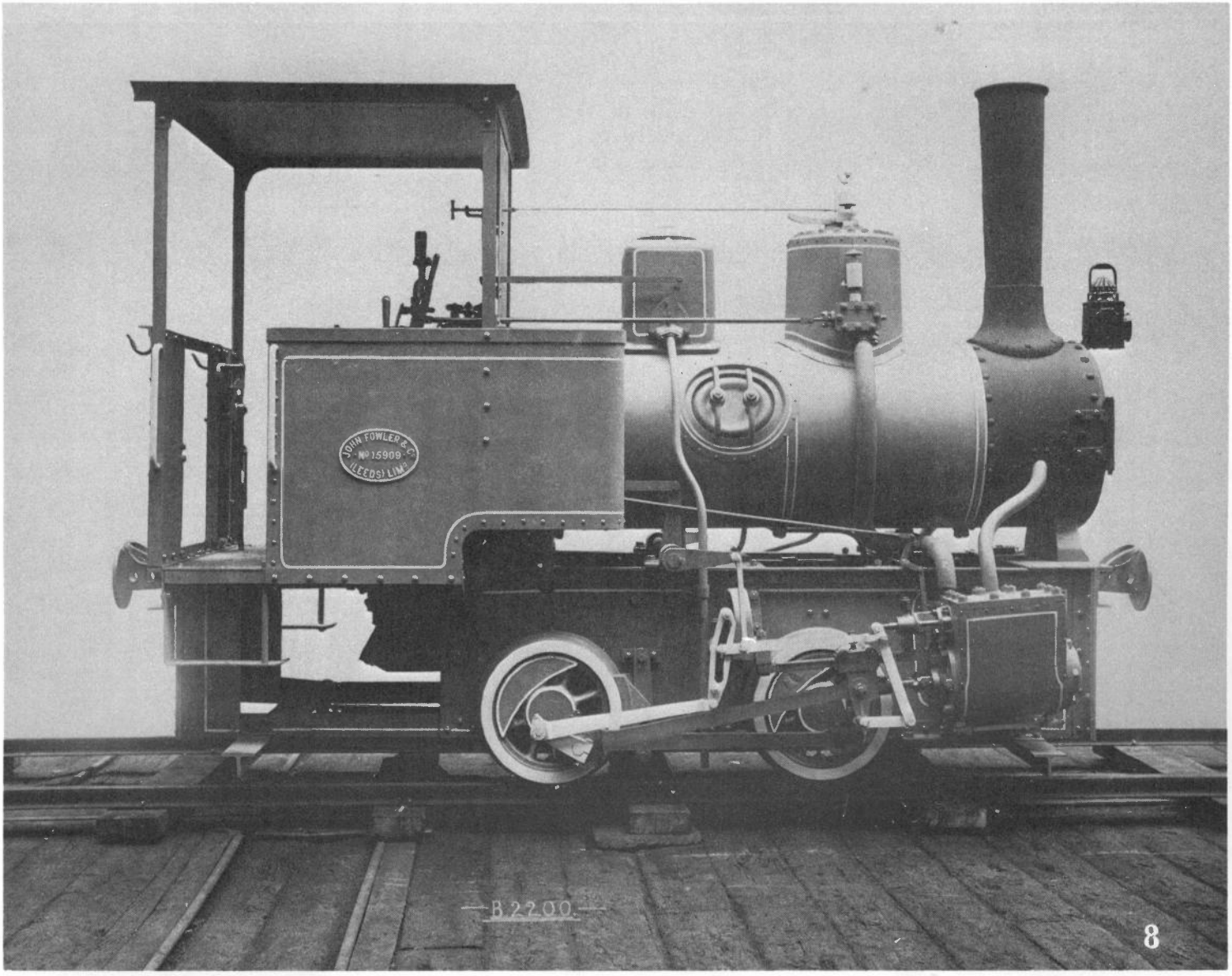
Photo No. 11

Works No. 16023 of 1923, 0-6-2 Side Tank. One of three to Seria Sugar Estates Ltd., Mozambique. 12" x 16" cylinders. For work on the main line, 3' gauge, hauled trains of 600 tons of sugar cane on the Caia-Marromeu Railway. The cane travelled down river by stern wheeler paddleboat to the main Mill where a 2' and 3' gauge system worked. The Mill also owned 16 pairs of Fowler Ploughing Engines.

Photo No. 12

A little out of numerical order but included in this issue in view of Ken Hartley's 'Letter to the Editor'. (Notes by Ken Hartley).

No. 16991 of 1926. 2' gauge to Mr. J.H. Dennis of Nockton, Lincolnshire. Driving wheels 24", wheelbase 5'. Cylinders 8" x 12". Walschaerts valve gear. Toial heating surface 270 sq. ft., firebox 28 sq. ft. Grate 5 sq. ft. Working pressure 180 lb. sq.in. Tractive effort 4320 lbs. Haulage 200 tons on level, 50 tons on 1 in 40. Tank 250 galls. Bunker 15 cu. ft. Weight 11 ton 15 cwt. Unusual feature for a loco in this country the spark arrestor chimney and the water lifting device.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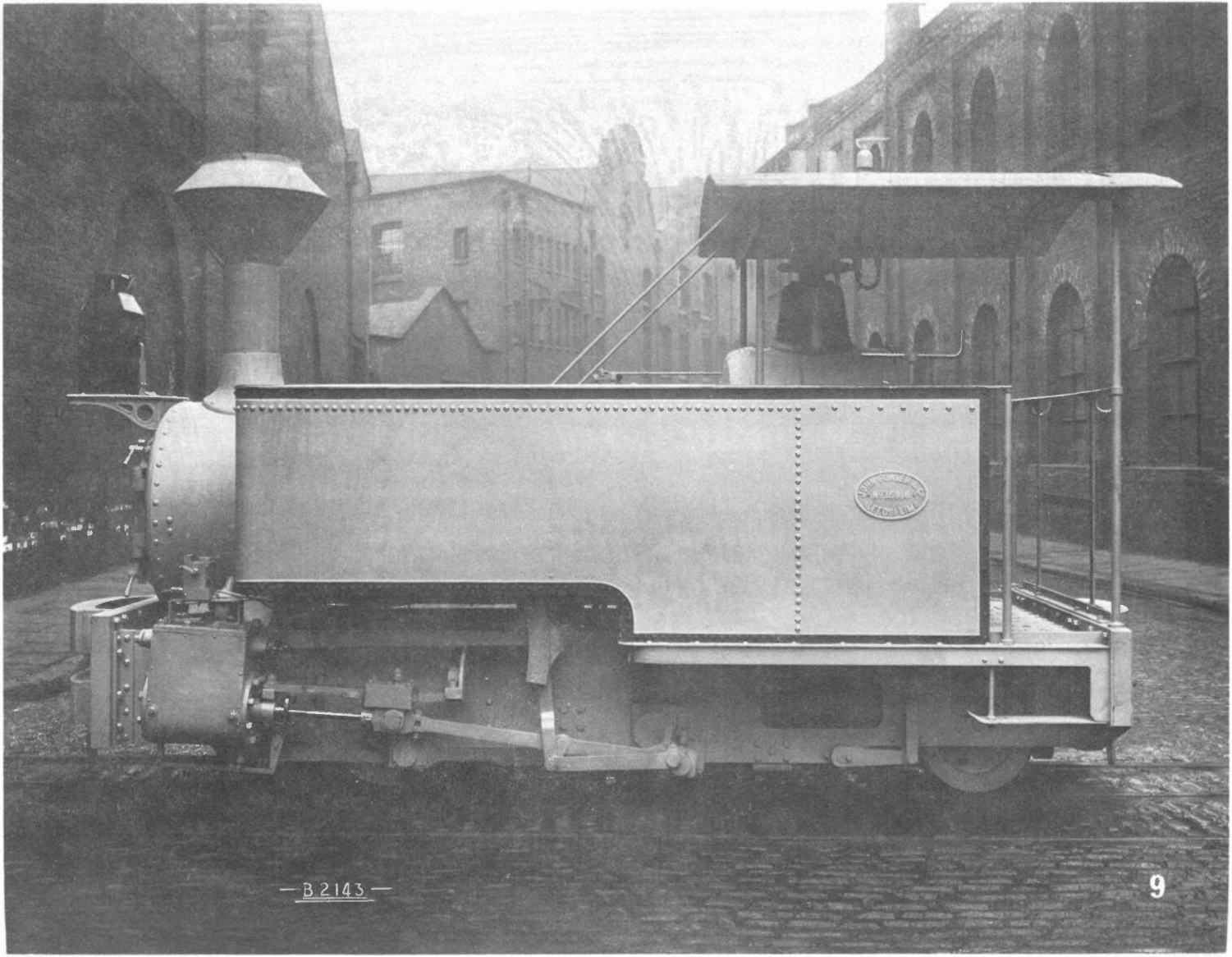

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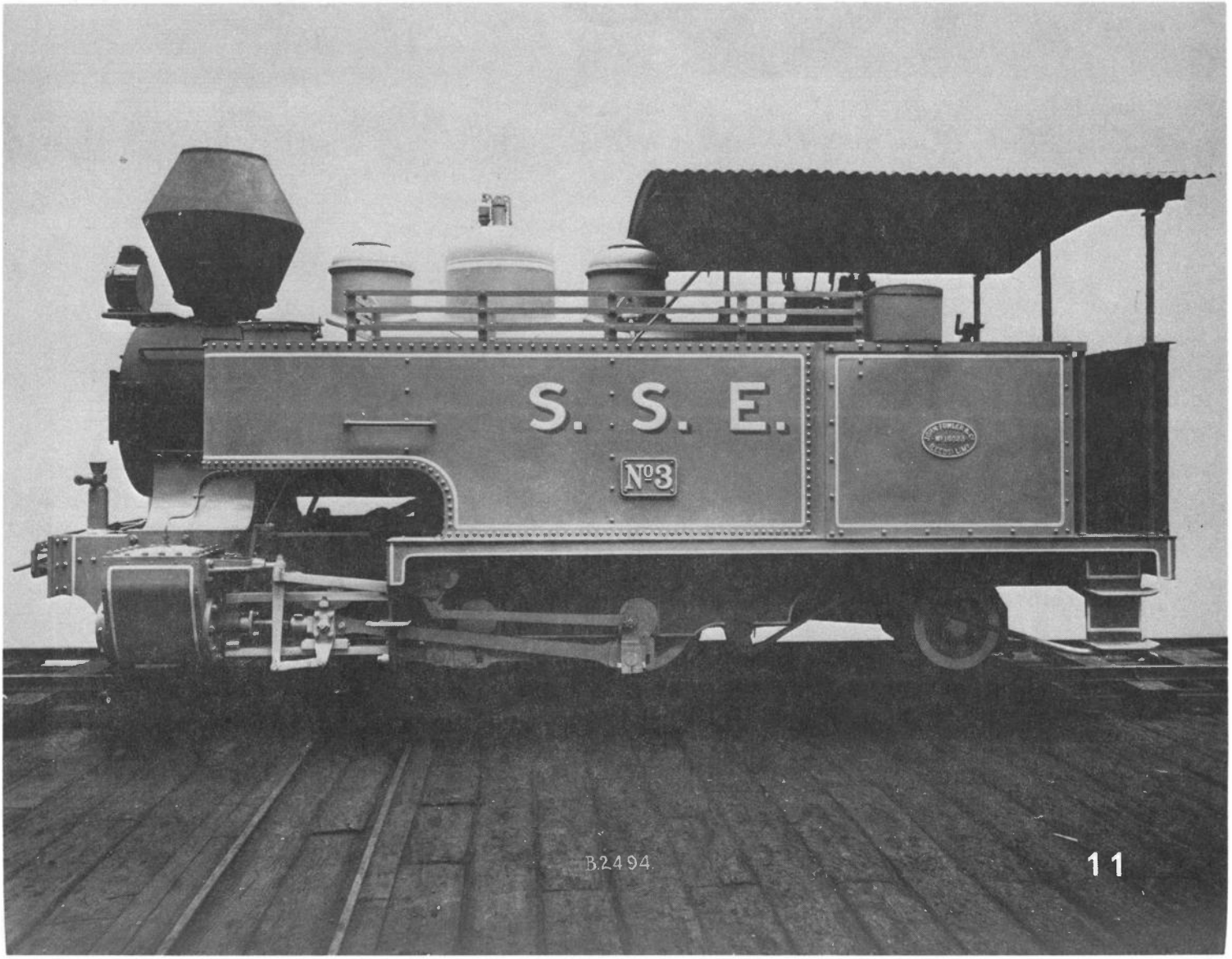

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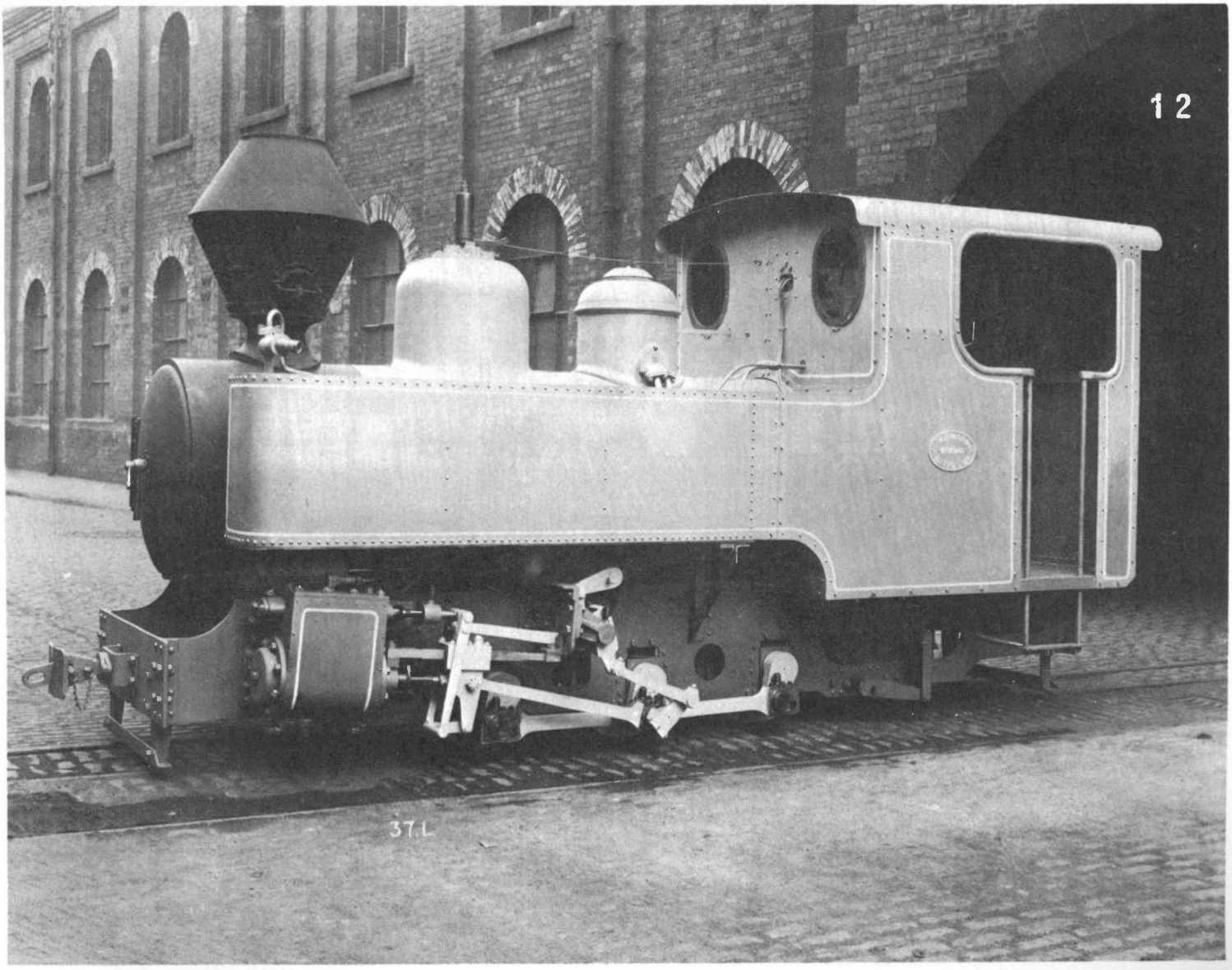
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EAST BROAD TOP

Part 4 (from No. 43 Feb. 1967)

IVAN STEPHENSON

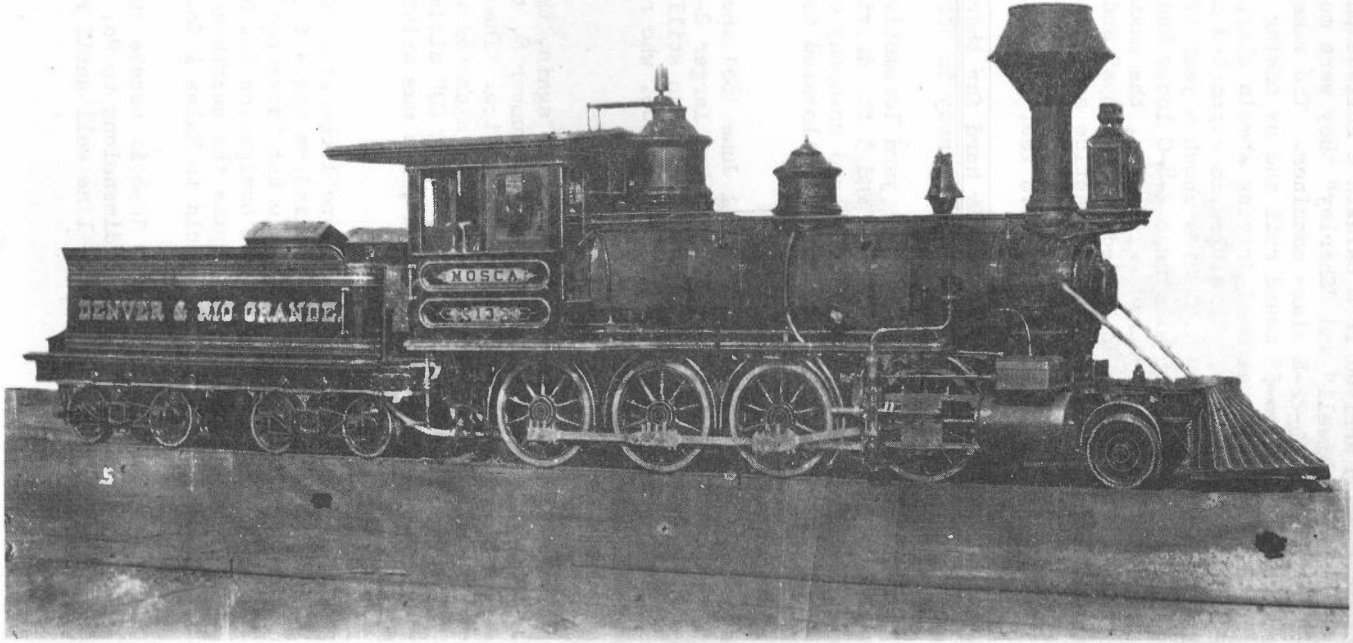
When the East Broad Top coal trains began running two tiny woodburning "Baldwins" graced the Master Mechanic's roster. Both engines were 2-6-0 tender locos of about 18 tons in weight, they had been built in the early months of 1873 and were the road's No. 1, the "E. D. Roberts" and No. 2 the "R. D. Wood".

The moguls carried 11" x 16" outside cylinders, with inside Stephenson link motion, the driving wheels were 3 ft. diameter. The twin-domed "straight top" boilers carried 160 lbs. of wet steam and the whole appearance of the locos, with large diamond stacks and square cased oil headlamps, was typical of American loco design of the day.

The company soon realised that two locos were not enough to cover the service, nor were their first locos sufficiently powerful to do the heavy work. It was decided that more powerful machines were required and by late 1873 loco No. 3 had arrived on the line, named "Rockhill". The new machine had already quite a history, for although it was new it had not been built for the line but for Colorado's infant 3 ft. gauge Denver and Rio Grande.

As D. & R.G. No. 13 "Mosca" it would have been the first 2-8-0 on the narrow gauge in Colorado, but due to the "Money Panic" of 1873 the Rio Grande apparently could not afford to pay for it upon its completion as Baldwin 3475 of 10/1873, there is also a strong rumour that "Mosca" was too heavy for the Rio Grande track anyway!

Baldwins soon found a customer with ready money, and shipped "Mosca" to the E.B.T. after removing the fancy lettering specified by the intended owners. The new "Consolidation" was much larger than the 2-6-0s, for a start it weighed around 26 tons. The "Wagontop" boiler supplied steam at 135 p.s.i. to two 14" x 16" cylinders which drove the 40½" driving wheels by short connecting rods to the second coupled axle. Boiler feed was by one injector sited on the lefthand or firemans side and by a long stroke feed pump driven by the righthand crosshead. Designed and built as a woodburner E.B.T. No. 3 had an ample diamond stack, this fitting was replaced by a tall slender "straight shooter" stack when the loco's diet was changed to coal some years later. "Rockhill" nee "Mosca" served on the East Broad Top until 1911 when she was sold to Fitzhugh, Luther and Co. for use on the Tuscarora Valley Railroad.


DENVER & RIO GRANDE
MOSCA
5

Locomotives 4 and 5 arrived from Baldwin's Philadelphia works in May and July 1874, named "Cromwell" and "Shirley" they were much the same as "Rockhill" being Baldwin 10-22-E class machines. The makers considered they were quite suitable for 30 to 35 pound rail and by making use of flangeless or "bald" tyres on the inner pairs of driving wheels sharp curves would present no trouble to the locos. This view is supported in letter to Baldwins written by E.B.T. Superintendent A.W. Sims about a year after 4 and 5 were delivered. Mr. Sims states that all three 2-8-0 locos had given no trouble and passed over 240 foot radius curves with ease, the maximum load hauled by the locos was some 274½ tons or 18 loaded coal "dumps" and a passenger car, he considered that this was quite normal practice and added that the locos were able to maintain a speed of 12 m.p.h. with this load. The maximum grade on the E.B.T. at that time was a rise of 52.8 feet per mile.

"Cromwell" must have been worked really hard for there is a record of it being rebuilt by Master Mechanic George A. Haggarty in 1882.

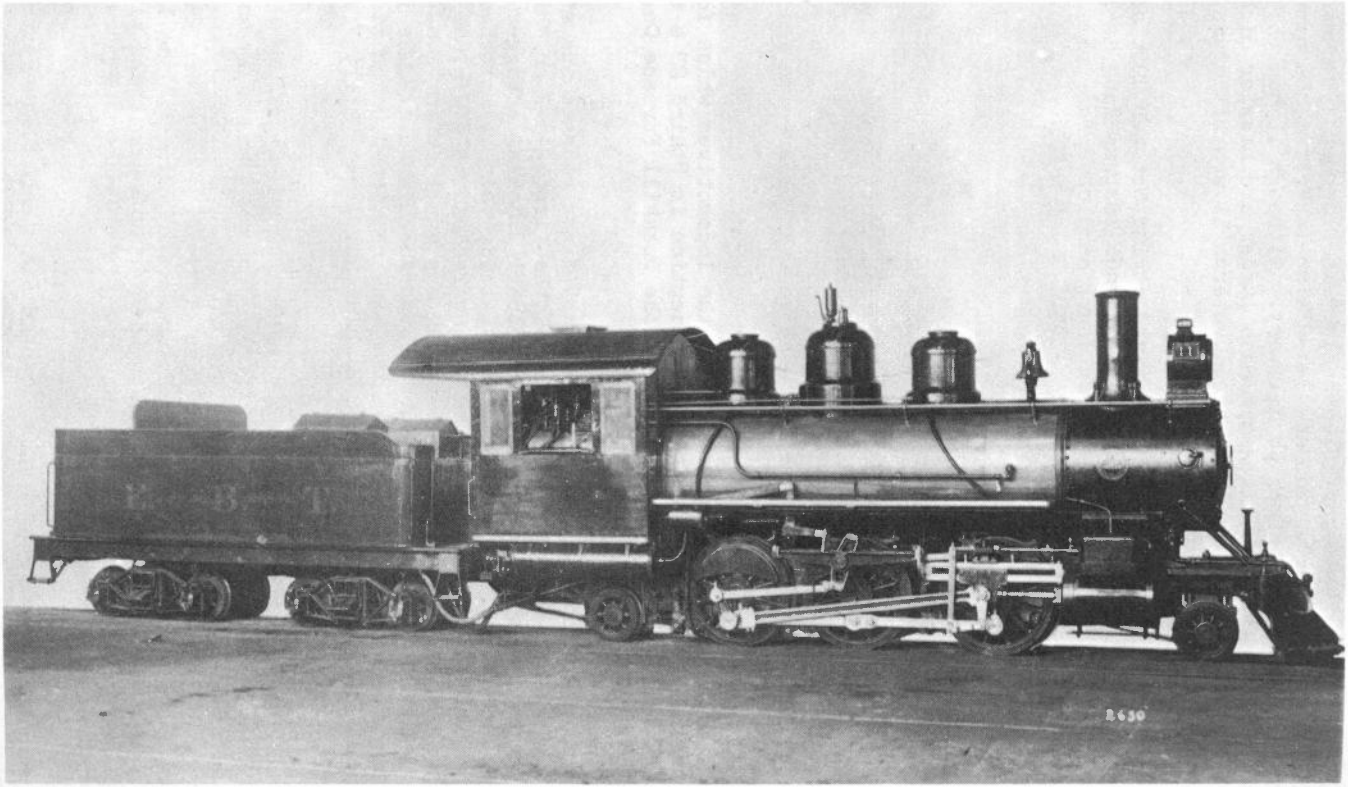
In 1875 the E.B.T. bought their first yard locomotive, this was No. 6 an 0-6-0 switcher with 14" x 16" cylinders and 3 ft. driving wheels, being purely a yard loco it apparently was considered unworthy of a name. Several years later No. 6 was sold and the number was allocated to a standard gauge 0-6-0.

No more motive power was required until June 1881 when "Aughwick", E.B.T. No. 7 appeared on the scene, this was a somewhat larger 2-8-0 with 16" x 20" cylinders and 3 ft. drivers, and lasted well, it was still in fair order when sold in October 1913, the buyer was T.F. Carey & Co. who resold the engine to the Ohio River and Western Railroad.

It was six years before the Broad Top bought again, this time they added a 4-6-0 to the roster. Built in November 1887, number 8, the "Tuscarora" was obviously intended for running the passenger service. The E.B.T. passengers were not speedy for driving wheels of only 4 ft. diameter were specified, plenty of power was however provided by the 16" x 20" slide valve cylinders. October 1913 also saw the end of "Tuscarora", she was written off and sold to the Birmingham Rail and Locomotive Co.

February 1889 saw a return to mogul type locos with the delivery of No. 9, a moderately sized 2-6-0 with 16" x 24" cylinders and 4 ft. coupled wheels. Again the line had become the owner of a new but "diverted" loco for No. 9 had been built as Coer d'Alene Railway and Navigation Co. No. 4, but like "Mosca" it had never been delivered. Despite the unorthodox start No. 9 served the coal road for nearly 26 years until sold to Males & Co. in December 1915.

Another mogul was purchased in early 1896 it became the "second 5" and was also called "Rockhill", being of similar dimensions to No. 9 it possessed a 13,000 lb. tractive effort and served the line well until retirement in April 1943.



The E.B.T. bought its second "Tenwheeler" in December 1901 when Baldwin's delivered the "second No. 4". The new 4-6-0 also inherited the name "Cromwell" and was the last loco to be named on delivery. Although it had the same size cylinders and wheels as No. 8, it was a much larger and heavier machine, having a tractive effort of 15,000 lbs., as tired veteran it was withdrawn some 33 years later on New Year's Eve 1934.

The third and final E.B.T. 4-6-0 arrived during October 1906 as "No. 10", it was generally similar to "second 4" but did not last as long as its older brother, in fact No. 10 only put in seven years service before being sold to T. F. Carey & Co. in 1913, it later became Ohio River & Western, No. 15 and wound up as Pennsylvania Railroad 9670!

A fine loco was purchased in 1908! This was No. 11, the only 2-6-2 on the line, with 16 x 22 cylinders, slide valves and Walscheart valve gear she was indeed a sleek little machine. (PHOTO)

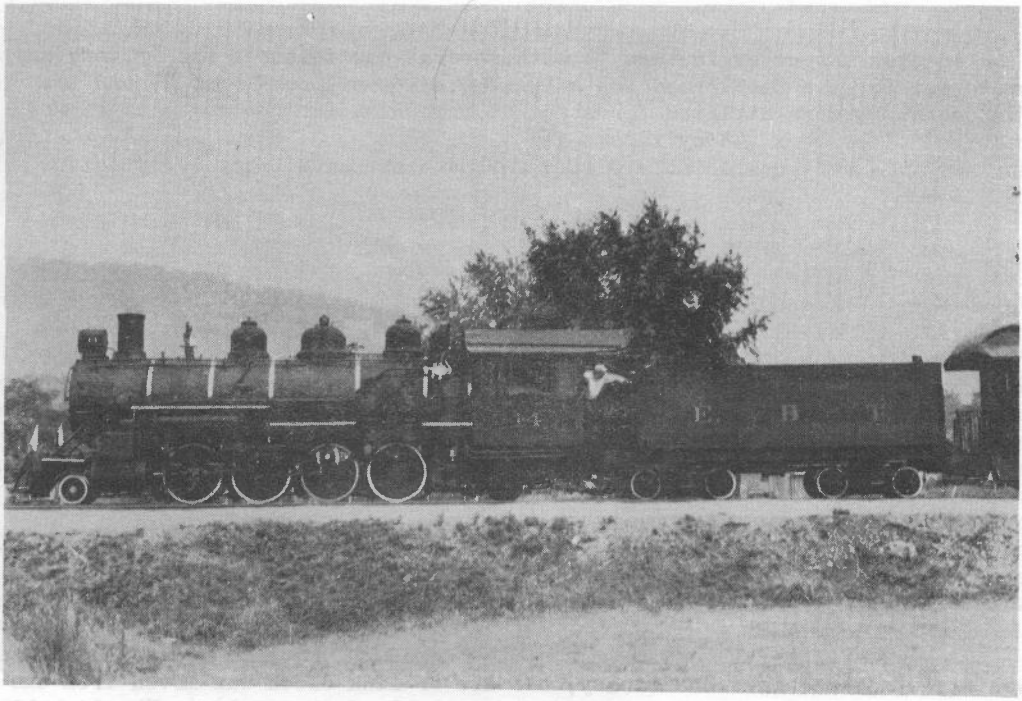
"The Eleven" had really long connecting rods, they drove on the third coupled axle! With her 16,000 lbs. tractive effort and 160 lb. boiler pressure the little "prarie" was a very useful general service loco, her 4 ft. drivers rolled merrily on much of the passenger work however before the end came on April 30th, 1943.

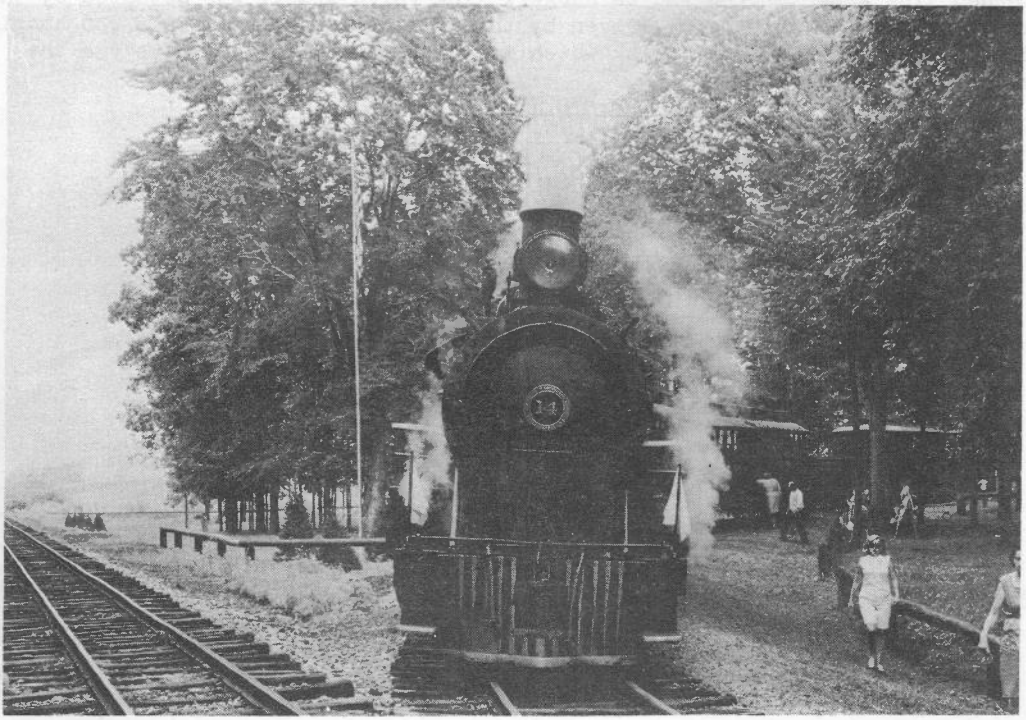
Finally, with one exception we come to the locomotives which form the present roster of the East Broad Top, the exception is "third 2" a tiny 1903 vintage 040 ST by "Dickson" taken over from the Rockhill Furnace Co. in 1913 and disposed of about 1935.

To describe the present day roster we must first retrace our steps and travel back to 1911 to witness the arrival of the first 2-8-2 or "Mikado", this was the now famous No. 12 or Baldwin 37,325! Looking a bigger version of the 2-6-2, No. 12 had 17" x 24" cylinders, slide valves, Walscheart gear and 4 ft. diameter coupled wheels, with a tractive effort of 19,600 lbs. and the increase in boiler pressure to 180 p.s.i. she was a definite advance on the earlier locomotives. A firm favourite with the men No. 12 was first to be restored for "toting the tourists" when the line re-opened under its new owner in 1960. Still a highly favoured Machine No. 12 or "Millie" as she is now named remains on active service.

The second "Mike" arrived in October 1912 to outclass No. 12 with 19" x 24" cylinders and 27,600 lbs. of tractive effort, this was the No. 14 and you will notive how the "Brasshats" avoided the unlucky number, the E.B.T. never had a number 13! February 1914 saw Baldwins erecting yet another 2-8-2 for the East Broad Top, impressed with the performance of "the 14" the line had ordered a duplicate which was adorned with the famous round brass plate numbered 41196 on completion of the steam test, another plate lettered "15" was fixed to the smokebox door at the same time!

"Tommy Atkins" was already bogged down in his muddy Flanders trench when the next "Mike" arrived at Mt. Union for delivery, in fact the loco's number coincided in part with the date, No. 16 built 6/1916.

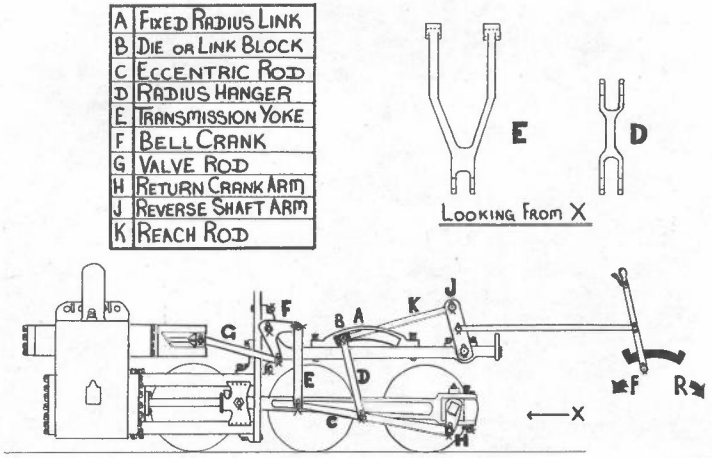




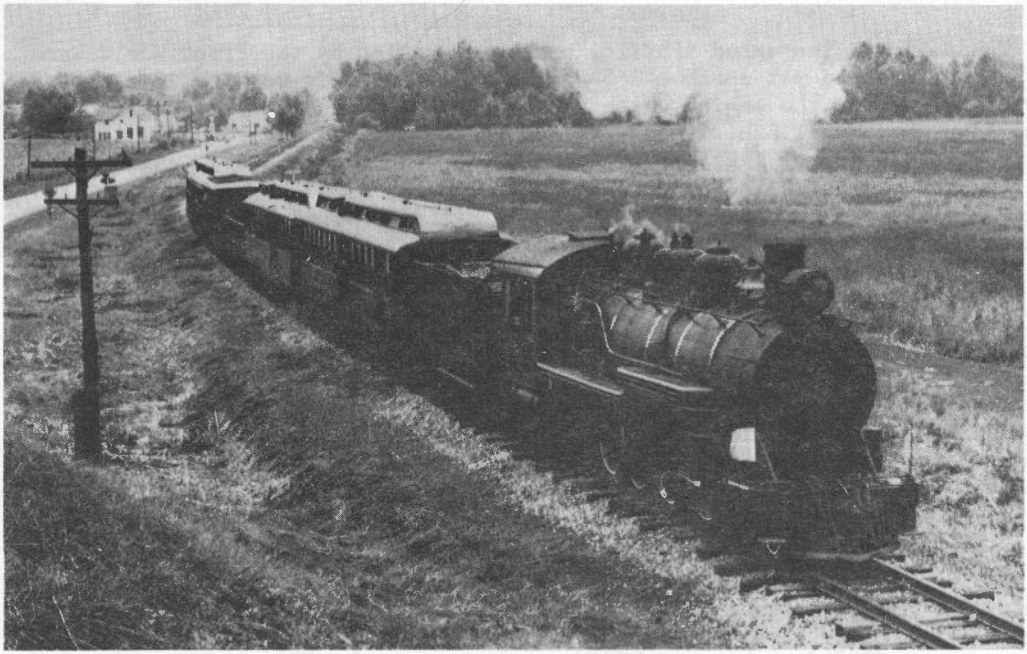
An even larger engine was 16 with several new features and in many ways a prototype for the East Broad Top's "Ultimate steam locos" Nos. 17 and 18. Piston valves were utilized for steam distribution for the first time, and combined with 20" x 24" cylinders fed with 180 lbs. of steam the power output shot up to a very respectable figure giving a matching tractive effort of 30,600 lbs.

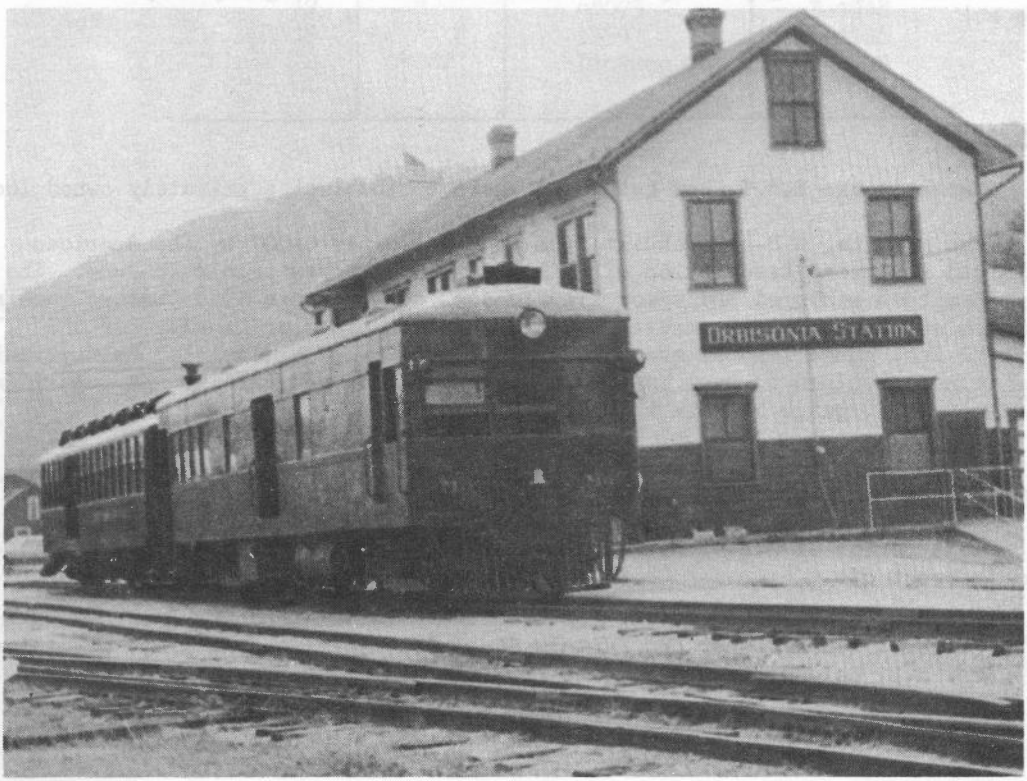
Gone was the familiar Walscheart "monkey motion" standard since '08 in its place was a queer looking tangled up gear known as the "Southern Locomotive Valve Gear" which was then reaching its peak of popularity. Designed and patented in 1912 by William S. Brown of the Southern Railway (U.S.A.), the "Southern" motion gave good valve events despite its lack of lateral stability and being more susceptable to irregularities, (due to the normal vertical movements of the driving axle boxes) than other gears. The motion had one advantage however as it was probably the easiest valve gear for the engineer to operate with the normal "Johnson bar" or reverse lever, it didn't try to take command when worn, unlike the Baker motion which was probably the most dangerous gear ever put on a loco fitted with manual reverse, many engineers have been injured on engines so fitted when the lever "ran down" into full gear as soon as the latch was lifted, the men soon learnt to leave the gear "where it was" with a resultant coal and water consumption that really pooped the fireman!

In Bill Brown's patent gear the slotted link common to most valve gears was fixed and remained stationary, the die or link block was moved from one end of the link to the other to effect reversal of the engine. The link block also served as a fulcrum for the excentric rod being connected to it by a suspended link known as the radius hanger. The valve itself was actuated by the eccentric rod (itself being driven by the driving crank pin) via a rod hanging from a rigid fulcrum bell crank which imparted motion to the valve via the valve rod.



Southern Valve Motion




ORRISONIA STATION

To deal with increased traffic, probably swollen by the First World War the company ordered yet another 2-8-2 from Baldwins, this was No. 17 a carbon copy of No. 16 and the engine which was destined to work the last train on close down day, April 6th, 1956. The new "Mike" arrived aboard a BLW flatcar during March 1918 just like her predecessors and the final E.B.T. engine, the No. 18 which was built in September 1920 as Baldwin 53541. The last new engine was again a repeat order from a well satisfied customer who did not require any changes to a proved design.

Thus these were engines 12 through 18 which were in service when the road shut down, all were in good order for the E.B.T. had a fine repair shop and rotated overhauls so that one loco was always "in shops" at all times.

One "Foreign" engine was yet burnish the 3 ft. metals, but not until the line had been re-opened for two years! In 1962 a tiny 440 destined for a pleasure line in Silver Springs, Florida was tested on the line by the Crown Metal Products Co. of Wyano, Pennsylvania prior to delivery.

Did the vexed question of diesels arise? Yes it did, studies of Mr. D's machine were made by the "Brasshats" and its fact that Alco submitted estimates about 1950. However steam burned E.B.T. coal and the line kept faith with steam so that today 12 to 18 are still with us and Nos. 12, 14, 15 and 17 are in service "pulling passengers" in the summertime - long may they continue to do so!

FOOTNOTE

Recently the E.B.T. has been used again to test out a privately owned loco.

The machine, a 2-4-2 rebuilt from an H.K. Porter 040ST by the American Railroad Equipment Association of Hilliard, Florida, ran trials in June. The loco has been restored and remodelled to 1880 style from a 1948 vintage machine, and now sports a small 4 wheeled tender. She was built originally for the 3 ft. 2 ins. gauge line of the Carbon Limestone Co. of Hillsville, Pennsylvania and is now destined to haul tourists on the newly opened Lahaina, Kaanapali and Pacific, 3 ft. gauge line in Hawaii.

Author's Note

This series of E.B.T. articles could not have been written without the help and interest of:

Mr. C.R. Wilburn, Operating Vice-President, East Broad Top Railroad.
Mr. W.S. Young, Owner and Editor, Steam Locomotive and Railroad Tradition.
Mr. H.L. Goldsmith (U.S.A.) and Mr. R.N. Redman.

EAST BROAD TOP RAILROAD & COAL COMPANY

Alltime Roster of Engines (3 ft. Gauge)

RR		Type	Baldwin	Date
	1	2-6-0	3167	3-1873
	2	2-6-0	3251	5-1873
	3	2-8-0	3475	10-1873
	4	2-8-0	3578	5-1874
Second	4	4-6-0	19849	12-1901
	5	2-8-0	3612	7-1874
Second	5	2-6-0	14685	2-1896
	6	0-6-0	3733	5-1875
	7	2-8-0	5677	6-1881
	8	4-6-0	8919	11-1887
	9	2-6-0	9836	2-1889
	10	4-6-0	29172	10-1906
	11	2-8-2	32664	2-1908
	12	"	37325	12-1911
	13	Not used		
	14	2-8-2	38625	10-1912
	15	"	41196	2-1914
	16	"	43562	6-1916
	17	"	48075	3-1918
	18	"	53541	8-1920
Third	2	040ST	Dickson Co.	5-1903

BALDWIN WORKS PHOTOS by courtesy of Mr. H.L. Broadbent, 310 Glenside Avenue, Morrisville, Pa, U.S.A.

2-8-0 No. 3475 of 1873 built for Denver and Rio Grande and diverted to E.B.T. as their No. 3 'Rockhill'.

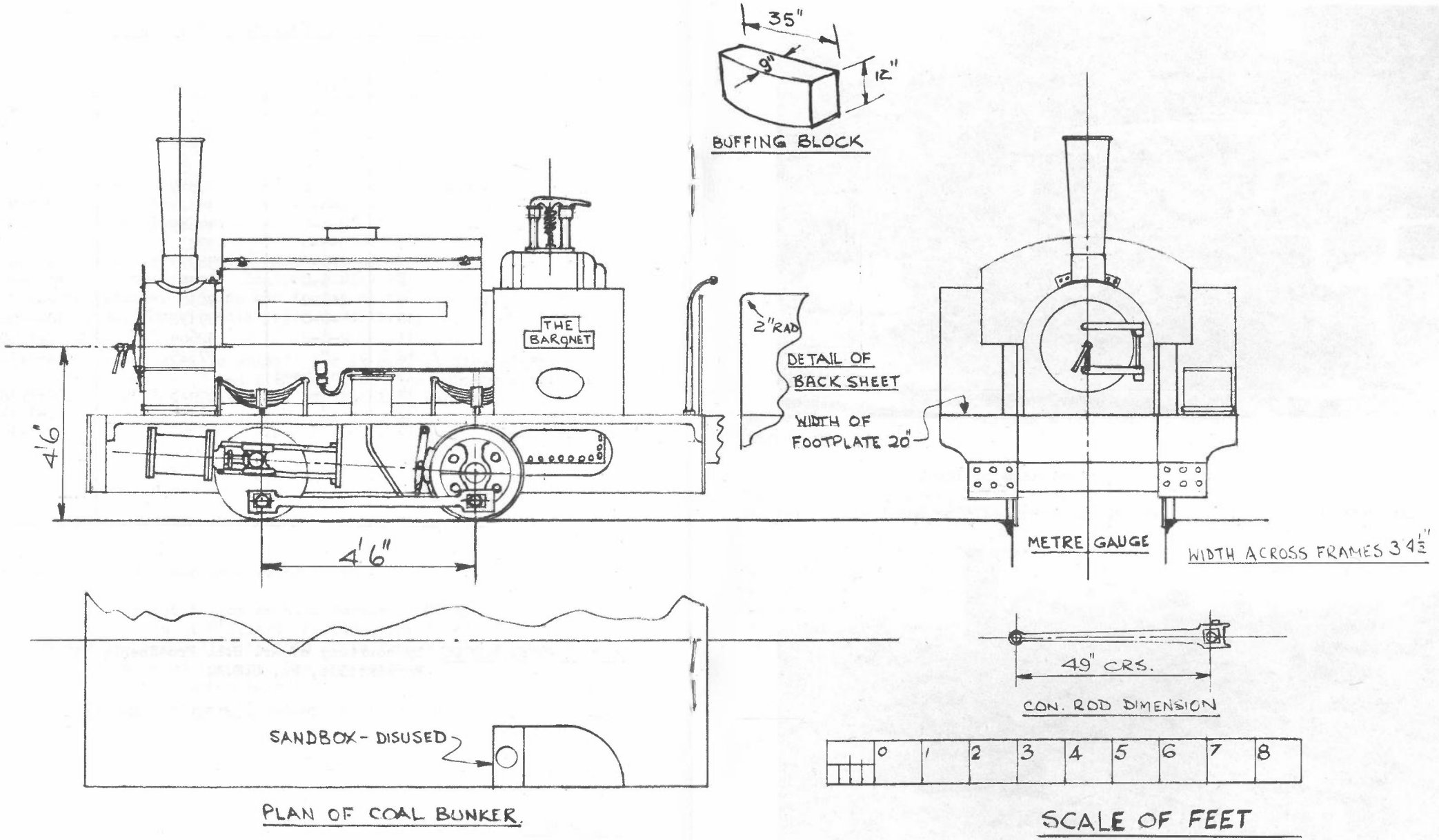
- and -

2-6-2 No. 32664, 1908.

OTHER PHOTOS

Motor Coach No. 1 in operation 1969, photo courtesy Christopher White.

E.B.T. 14 - Baldwin 38625 in service with Tourist trains.



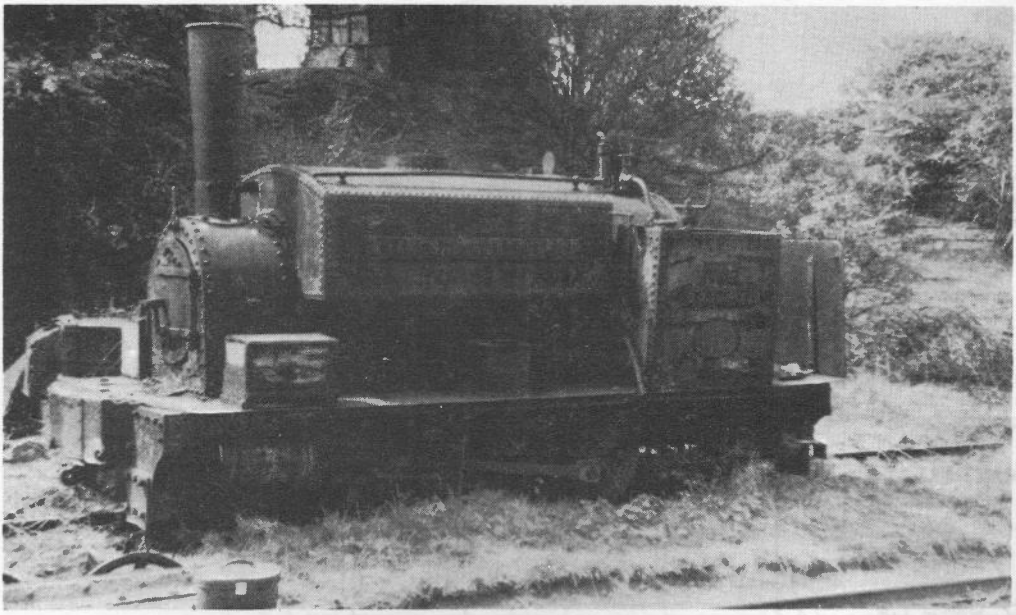
WALTHAM IRON ORE COMPANY

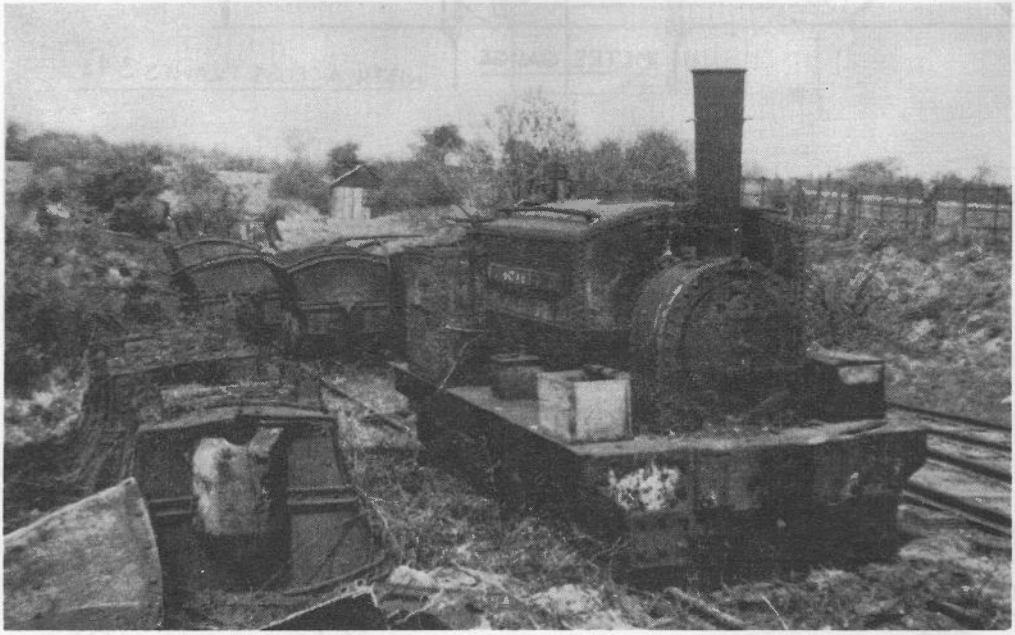
0-4-0ST "THE BARONET"

MARKHAM ENGINE Co. CHESTERFIELD. 1889.

DWG No. W.2.

P.S. Halton. 8/58.





"THE BARONET"

EATON QUARRIES

PETER HALTON

This locomotive was built to the unusual gauge, for this country, of one metre. It was built by Markham & Co. Ltd. of Chesterfield in 1889, Works Number 102.

It served at Cranford Quarries near Kettering, Loddington Quarries, again in the Kettering area, before arriving at Waltham. The full travels of this engine can be found in 'The Ironstone Railways and Tramways of the Midlands'.

When I first saw 'The Baronet' I was with our Editor and the thing which impressed us was the completeness of the engine after some ten years of lying in the open. Our next visit was with tape, etc., in order to gather sufficient information to enable a drawing to be produced. The results of our efforts depict this rather charming little loco shortly before the scrap men got to work on her.

An attempt to move the engine to the 'chopping block' failed - a case of becoming attached in more ways than one to its quiet siding some distance from the depot. Thus 'The Baronet' was dismantled where it had been for over ten years.

Metre gauge locomotives built in this country for service here are few in number and I hope that readers will find them interesting.

On the drawing the long panel on the saddle tank should carry the inscription - 'Cranford Ironstone Co.', but this has been omitted since it would be almost impossible to read when reduced.

SCHULL & SKIBBEREEN

By J.I.C. Boyd.

I was interested to see that Mr. Thompson has drawn up S&S coach No. 7 from the notes he made at the 'remains' near Bantry. I was determined, almost 20 years ago, to see this line and made a special journey there from Manchester for a long weekend! At least there was some reward in a host of dimensions, notes and photos I obtained then, and fortunately since then, have spent a goodly part of each year in the district so that my notes on S&S affairs are reasonably extensive for so small a line, and most of the stock has been carefully recorded though the notes are still in rough form. There have been the Oakwood Press book and the IRRS Journal article for Spring 1957 on the line. Summarising very drastically, I have noted coaches as follows:

1. 4wh Dick Kerr c 1888. All 1st Partn to divide smoke and nonsmoke. Open balc ends. Glazed ends and doors (which 3rds have not got). Coil springs as contemp. goods stock. GS livery. Elec. light. Vac fitted. Overall length 17 ft. Panel sides.

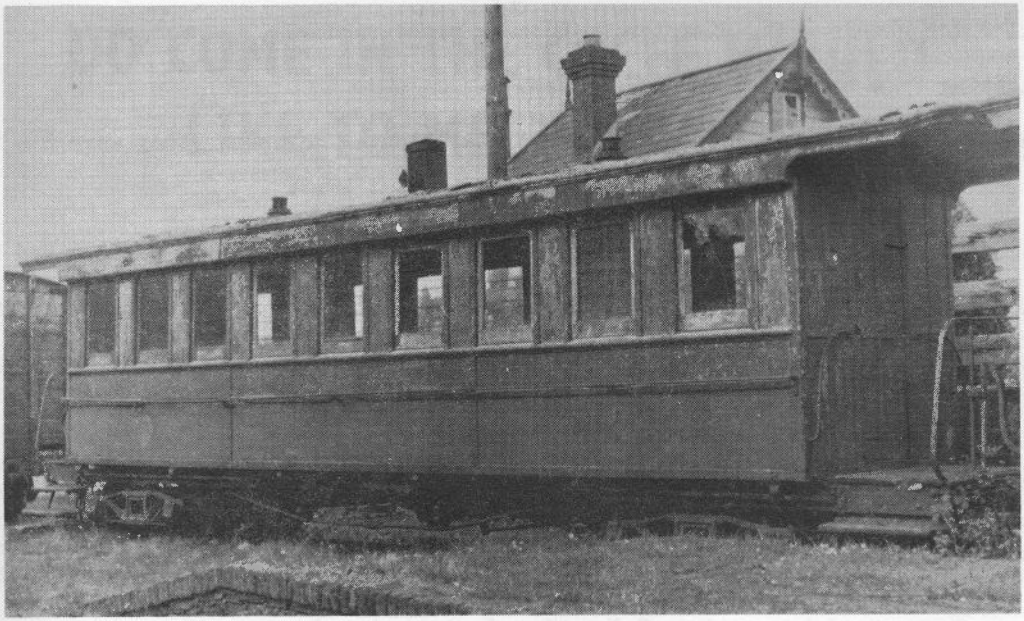
2. 4wh No makers plate All 1st Partn to divide smoke and nonsmoke. Seats covered red plush. Laminated springs. Steel underframe faced wood. Boxes read 'S&ST&LtRlyCo. 1914'. Balconies had been enclosed and side end doors gave access to interior. Prob. Dick Kerr build; rebuilt Skibbereen in 1920s. Paint CIE green. Elec. light. Vac fitted. Last painted 8/1946. Length 17 ft. Panel sides.

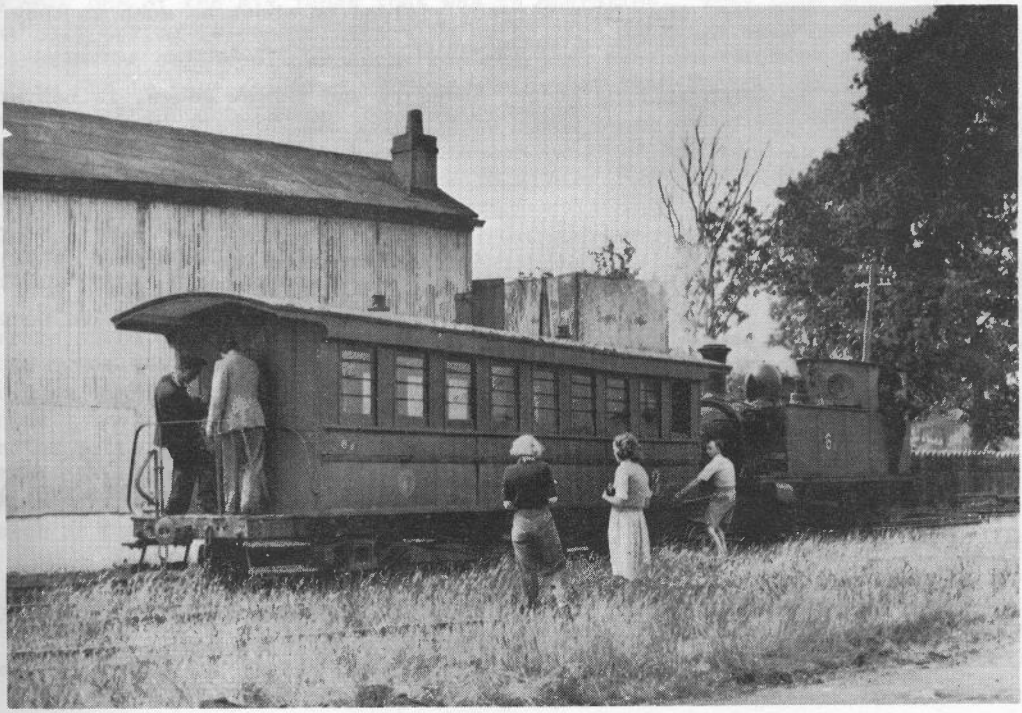
3. 4wh Dick Kerr c 1888 Unlike 4., has panelled and not matchboard sides. Has end windows, unlike doors of No. 1 1st class. Gas lighting. No interior partn. GS livery. Open balc ends. Lath side seats. Coil springs as contemp. goods stock. Steel frame faced wood. Vac. fitted. Length 17 ft.

4. 4wh Dick Kerr c 1888 Generally as for 1 & 3. All 3rd. No inter. partn. End doors slide; (others are hinged). Open balc ends. Elec. light, Vac fitted. Matchboard sides, laminated springs. GS livery. Probably body as 1 & 3 but given new running gear at Skibbereen. Box covers dated 1911. Length 17 ft.

8. 4wh No makers plate Exactly as No. 2 in rebuilding but one centre door and lath seats. Matchboard sides. Laminates springs. Elec. light. Prob. Dick Kerr rebuilt Skibbereen with new body and running gear. Length 17 ft.

CONTINUED OVERLEAF





All coach wheels 2, ft. diameter in disc or spoke random.

Lighting from batteries in Guard's Van.

The drawing in No. 54 issue is of one of two Gloster coaches; they were 6 & 7.

* * * * * * * * * * * * * * * * * * * *

6.	Bogie	Gl. Carr and Wagon	? 1886.	All 3rd Side seats. No partn. End balcs.	
7.	Bogie	G1. Carr and Wagon	? 1886	ditto ditto	ditto
5.	Bogie	G1. Carr and Wagon	? 1903.	Rebuilt removing open balcs. and similar Nos. 2 & 8 at Skibbereen. Length 31 ft. 10 ins.	
?	Bogie	G1. Carr and Wagon	1903	Scrapped in ? in form as built.	

It is said that 6 & 7 were not identical with 5 & ? but there could not have been much difference.

* * * * * * * * * * * * * * * * * * * *

As for goods stock, there is still much to be seen around the farms of the surrounding country and even from my boat I can pick out covered vans now rapidly disintegrating! However, they have already yielded up about as much as they can give!

Information on Irish rolling stock, standard and narrow gauge, is not easy to find. I would gladly exchange notes with anyone who is well in advance of the skimpy notes on Cork and Muskerry coaches and wagons given in the Oakwood book on that subject. There are plenty of bodies still to be found!

Finally would any reader making his way west along the Coast road out of Galway and Salthill, please look out for a bogie carriage body (narrow gauge) on the left hand of the road within six miles of Salthill; it is now a sort of residence (!) but its origins are beyond me and no Irish friends have been able to identify it either.

Having left Irish tourists with something to do on one of the wet days they are sure to encounter.

I remain,

Yours sincerely,

James E. Best

Editor's Note

Our second photograph from the camera of Ivo Peters shows Coach No. 6 which was drawn out of its shed for Mr. C.L. Fry to measure up for modelling purposes on 3rd July, 1950.

DO COME IN THE CHEFE WOULD LIKE TO MEET YOU . . .

JEFF LANHAM

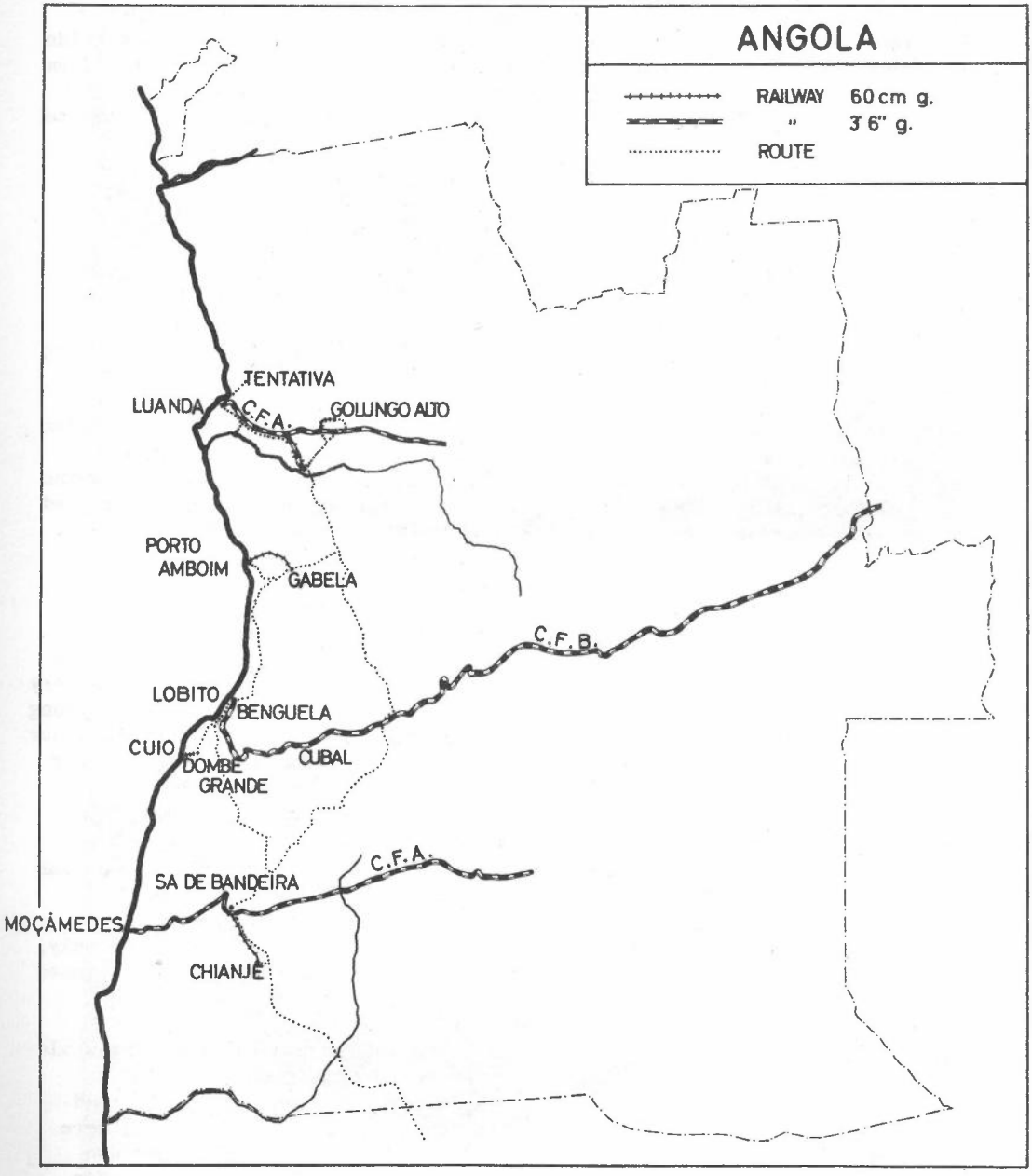
As soon as we crossed the border from South West Africa into Angola we, that is my wife and I, realised that this part of our trip was going to be very different. The South Africans had been friendly but extremely efficient and operating from a two room shack this was impressive, but here we were confronted with a six lane, very modern, international terminal type Customs Building without a soul in sight. All this at the end of a two rut track. It was probably the heat but we all started to laugh, and so we laughed our way from the southern border north to Luanda and Tentativa and back again. This cheerful approach and the presence of my two young sons seemed to impress the two border policia who materialised from their siesta to usher us through the only one of the six lanes that was in operation. They then spent the next hour trying to communicate with us by sign language and variously to entertain the children. We soon realised that as a people they adore the bambino and to have children with us was better than an introduction. Before we reached these conclusions however we became a little frayed because as usual we were out in the mid day sun and the calm southern European approach of 'soon' or 'a little while' had not slowed us down sufficiently to appreciate these finer points.

One and one half hours later we were on our way, rather hot and dry, and wondering what was ahead of us. The AA had described this section of road as terrible, dangerous to vehicles with poor clearance and not to expect an average speed of more than ten miles an hour. Much to our amazement we soon found ourselves flying along at our best dirt road speed of about 45 miles per hour with the usual dense cloud of yellow dust trailing about 200 yards behind. The Land Rover always seems at home on the dirt and in fact I feel handles better, but the more likely reason for my particular pleasure was the relief of being in Angola and within three hundred and forty two kilometres of my primary goal, the southern terminus of the C.F. Angola 60 cm. gauge branch at Chianje.

Next day we hit the tarmac which was to speed us to Chianje and in fact only two hours driving saw us to the turn off. Here the road turned into one of the better gravel highways but with teeth jarring corrugations which no change in speed within the Land Rovers range seemed to cure.

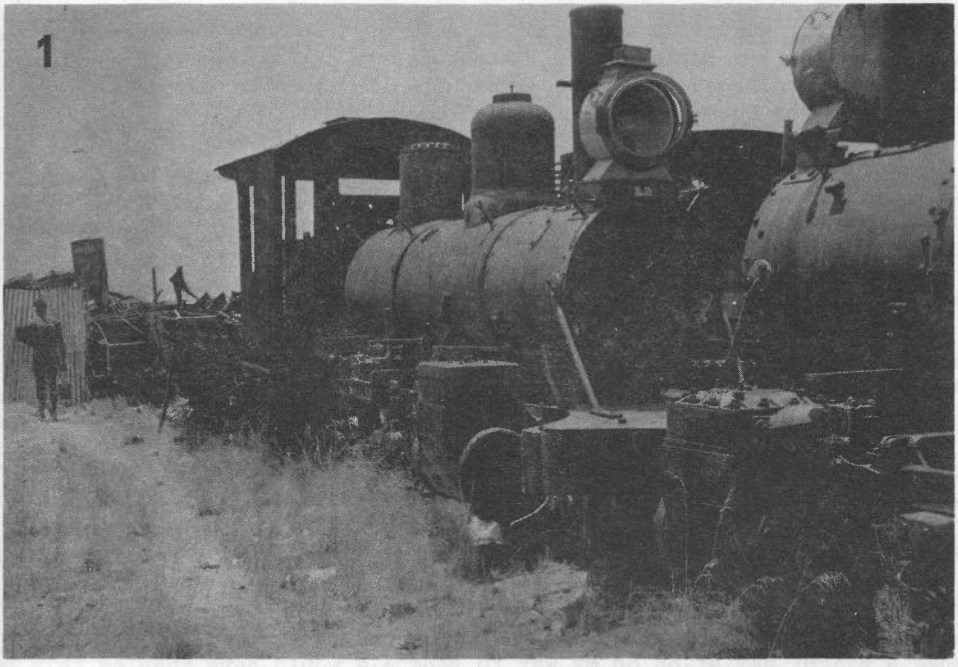
Chianje is a typical Angolan administrative town, well laid out with wide streets and a neat if rather run down railway station, this was not manned so I immediately feared the worst, for how could a 60 cm. gauge line hope to compete with a new parallel tarmac road. More careful examination revealed that the rails though dull were not rust covered and behind the large closed goods shed were hidden two petrol tank waggons. As is usual this research had aroused the interest of the local populace and by sign language I concluded that a train was due at about six o'clock that evening. Further search revealed three very tired bogie carriages painted a faded red, obviously these had not moved for some time because a small tree had grown between the rails and forced its way between the planks of the end balcony of one. Obviously some sort of service was still operating and the discovery of a large heap of wood piled neatly beside a water tank with tell-tale piles of ashes beside the rails confirmed that steam locomotives had been around not too long ago. This was where I made a serious miscalculation, the single track passed this point and headed off in a southwesterly direction into the bush, a discreet veil must be drawn over the ensuing search for a non-existent terminus at the next village which just happened to be at the end of one of the worst roads I have ever experienced. The actual terminus was at a water pump and borehole about a quarter mile into the bush. This search caused us to miss photographing our first Angolan wood fired steam passenger train which passed us heading in the opposite direction at a surprisingly high speed towards Chianje late in the afternoon. A determined effort was made to catch this train but its speed and the complete lack of tracks made this impossible, however its appearance had registered quite an impression. A quite large black tank loco hauling a large bogie tender piled high with wood fuel and hauling two grey bogie waggons and five red end balcony bogie carriages. The appearance of this train and the promise of better things at Sa de Bandeira made us push on to that town though by now we could have all done with a good rest. Much to my disgust having reached the town and negotiated its rush hour traffic without upsetting the Policia I could not find the narrow gauge terminus. I found without difficulty mixed three foot six and sixty centimetre tracks and more by luck than judgement arrived on the hillside overlooking the dual gauge modern workshops just as the sun was setting. The sight below was well worth braving the comments of a tired family. Behind the modern factory type building built to service the new diesel electric and mechanical locos of the main line was a large scrap yard containing examples of most classes of the lately replaced steam locos and beside the further fence a small group of narrow gauge engines. Two of the tank engines of the same type as seen hauling the passenger train, both with tenders, and a third in pieces. A much smaller frame and wheels and behind three American type tender locos in a row but without tenders. A few prayers were silently offered that the authorities would look kindly on my interest in their junk heap and we moved off far too late to find a suitable camp site, but I at least was buoyed up with hopes for the next day.

Bright and early we arrived at the main gate but were not reassured by the armed police at the gate who were checking the employees in. However the bait in the yard behind was far too tempting to give up without a try, language barrier or not. My wife opted to stay in the Rover, a decision she was to regret as the time passed and the temperature climbed steadily.


ANGOLA
RAILWAY 60 cm g.
" 3' 6" g.
ROUTE
TENTATIVA
LUANDA
C.F.A.
GOLUNGO ALTO
PORTO AMBOIM
GABELA
C.F.B.
LOBITO
BENGUELA
CUIO
DOMBE GRANDE
CUBAL
C.F.A.
SA DE BANDEIRA
MOÇÂMEDES
CHIANJE

The police proved much more helpful than they looked and passed me and my six year old son into the care of a foreman who was only too pleased to try and communicate by a mixture of German, French and sign language while we waited for the office staff to appear. An hour later with the company interpreter as a guide and escort we were ushered into the main workshop, because as he put it, 'I am sure the little fellow would prefer to see the machines until the Chefe can spare the time to see you'. Fortunately my son prefers even derelict steam to live diesels and we were soon out in the yard bemoaning the fate of large modern Jung and Henschel steamers kept in reserve and soon to look like the older Armstrong Whitworth 4-8-0's which they had ousted lying in bits and pieces further down the yard. The narrow gauge was easy to approach and I soon found that we had arrived none too soon as they were expecting the authorities to confirm the closure in the near future. The interpreter was a most useful contact, since he dealt with all the foreign correspondence he was able to tell me that the company had had enquiries from a prospective purchaser in America of the American type locos, though he doubted if anything would come of it because of their bad mechanical condition and the effects of exposure for some time. The small frame belonged to a 0-6-0T and I was interested to learn that there had been two and the other one was at Mocemedes and used at fetes. By now I had worked my way to the 4-6-0's which locked somehow familiar though I had never previously had the good fortune to examine such a loco first hand. Then it clicked, on the rear of one tender, which had obviously originally belonged behind the 4-6-0's was a small cast plate NG46. These must be ex SAR locos though I had no knowledge of such a sale, this conclusion was confirmed by a close examination of a fourth separate boiler of obvious American origin which carried a cast metal plate with the letters SAR cast on it. By now my escort was getting just a little anxious though much to courteous to hurry us away, I had of course completely forgotten that we must visit the Chefe to have permission to be there, also there was the very important detail of photography. The Chefe turned out to be a remarkably young man who displayed absolutely no surprise at my request and in fact detailed our guide to accompany us back to town to ensure we visited the Bank, etc., after I had completed my photography. Our guide also remembered that I had been unable to find the town station so this was also placed upon the list. The town station was a dual gauge terminus not much used but the site of a small two road running shed, one track 3'6" the other narrow gauge. On one road was CFA 145 a Jung 2-8-2 of 1956 on the other road was CFA 62 a 0-8-2T by Orienstein & Koppel complete with its ex 4-6-0 tender. Enquiries here confirmed that only two locos were in operation and trains ran on four days only, with a train in one direction for each day. The train we had so nearly missed would be returning early that afternoon to the station at the works.

That afternoon we were waiting in good time to ensure that the trip would provide at least one action shot, this proved to be rather an anti-climax since the train crawled in at about five miles per hour and only cine could prove that it was actually moving. When it finally ground to a stop we were amply rewarded by the sight of the several hundred people of all types who swarmed out including many tribesmen in national dress consisting of a skin kilt of mini proportions, bangles, armlets and topped of with a bow and arrow or spear.

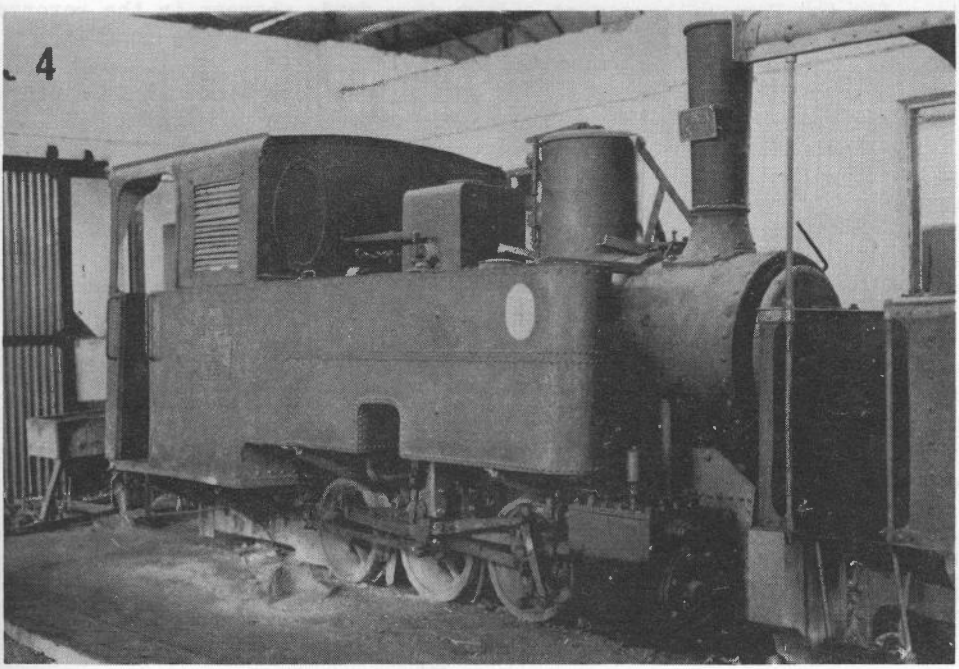

1


2

Their womenfolk wore similar gear just to show that the mini can be combined with the topless look. These people then spent much time supervising the unloading of several trussed up goats from out of the tender, before departing for the town in the modern Mercedes Taxis.

Next day the target was Benguela which was reached without any notable incident except to be thankful that there had been no rain up in the mountains since almost every bridge had been washed out and each river bed had to be negotiated in low gear and would have proved difficult to impossible if there had been any water. This was a whole days journey over better quality dirt roads. Monday bright and early we were again on the move this time towards the possible location at Dombe Grande. This proved to be a large modern sugar refinery set in a large river valley and approached from Benguela across low bleak dusty hills. The refinery was very quiet and it turned out that they had not yet recommenced production after the Sunday shutdown. We had crossed the narrow gauge tracks on the way into the estate and easily found our way to the workshops and running shed. Here again nothing could be too much trouble though the whole engineering staff was working flat out on maintenance and repairs before the processing recommenced. This was the Companhia do Assucar de Angola and the Chief Engineer was only too pleased to let me examine the railway. He also spared the time to tell me of the railway that had operated at the companies sisal plantation at Marco de Cauauezes near Cubal, unfortunately he thought that this was no longer used. I was sorry too, because a slight deviation on my way to Benguela would have enabled this to be checked, now this was impossible because of our tight schedule. Dombe Grande turned out to be completely dieselised but four steam locos were kept in reserve in the back of the running shed cum workshop, two of these were the almost standard six-coupled Koppel well tanks but the other two locos were much more interesting. One was a four coupled side tank of French origin the builder a firm I had never heard of before, Messrs. Sornin of La Clayette, S & A. A careful examination of the motion revealed the number 02, but whether this is the builders number I do not care to guess. The other loco was a six coupled side tank by Maffei but with a Dutch plate that seems to indicate that it was either built as a sub contract by Du Croo & Brauns or to their order: The remaining locos were all diesel of various designs with a large proportion by O & K, though the most recent loco was a six wheeled diesel mechanical by Hunslet and delivered earlier in 1969. Also in the shed was a four wheel homemade coach which was used for the passenger service to Cuio. The steam locos were all painted black with red motion but the diesels were all a light shade of blue as were the large bogie vans used to transport the sugar down to Cuio and supplies back. The number one disadvantage of sugar lines as I see it is their location which must be warm but wet and this causes the atmosphere to be excessively humid which with the sweet and overpowering smell of the crushed cane is rather unsettling to those not used to it. Also the very fact that railways are still used makes it very difficult to find tracks for the Land Rover to follow the lines which usually cross ditches and streams at very frequent intervals. The increased use of wheeled vehicles in the fields does help but as these are more often than not tracked exploring can be embarrassing and time wasting. However the sugar lines have an atmosphere completely unique in my experience and well worth visiting.


3

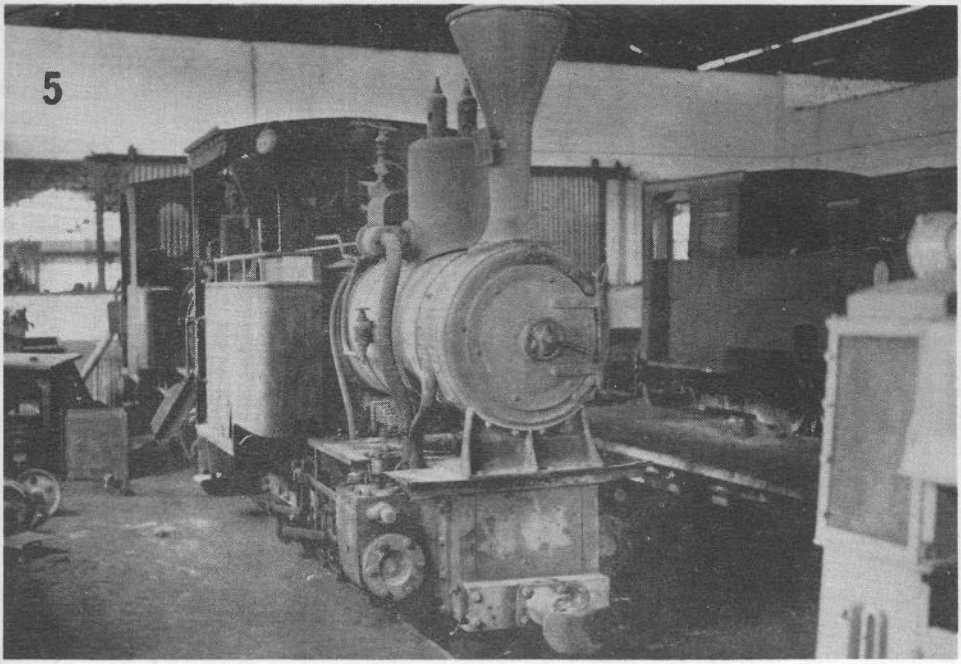

4

The next location was at Catumbela between Benguela and Lobito but here I must confess to giving this line only a very cursory inspection as I knew that it was dieselised with two Krauss steamers preserved and I managed to arrive at the mill during the midday break. This line does not look as if it can hope to survive very much longer and much of the track into the fields north of the mill is disused with the road crossings tarmacked over. This is also Angola's major sugar producing area and it is most likely that the old form of transport should be ousted here. This company, the Sociedade Agricola do Cassequel, must at one time have operated one of the more picturesque systems with the tracks shaded by tall palms on each side. Though the locos were not either very large or of unusual type, and the lack of grades since the whole line is situated on the flat coastal plain, probably precludes any larger types the loco stock must have been quite numerous in its heyday.

The next target was Porto Amboim, the western terminus of the C.F. Amboim. This proved much harder to reach than we had expected and we finally faced a beached and disused pontoon after fifteen kilometres of muddy dirt road. This meant that we had to return to the main tarmac road and we then made for Gabela the eastern terminus which is on the main tarmac road to Quibala. Next morning we had the pleasure of meeting one of the Bagnal 2-8-2T's while we were out in the town purchasing provision for the day. The 60 cm. gauge tracks run right through the town in order to reach the terminus on the east side and trains wind their way alongside streets and across a square with much squealing of flanges and whistling to warn the traffic. The two Bagnals seem most popular and we saw both in Gabela on different days. Unfortunately both were leaving the town for the Port without much effort down grade whereas in the reverse direction with the grade against the train the working must be much more spectacular. The run direct to the Port proved easy if a little bumpy but we were all rather disappointed with this part of the line since it is most run down and generally scruffy though the management were most helpful. I was also most disappointed that the derelict Ex USA/TC Baldwin 2-6-2T had been scrapped and its remains were lying in a heap with parts of two O & K and Arthur Koppel locos. Only one each of the Henschel 2-8-0T's and 2-6-0T's were complete and in working order, one was in the works under repair while the rest lay about the yard in rusty pieces. The derelict 0-6-0T by Linke Hoffmann was however being cleaned up and painted to be placed in a childrens park.

The miserable state of Porto Amboim and the very humid atmosphere probably moved us to the C.F.A. line at Golungo Alto without this line receiving the treatment that it should, and on looking back I always feel that at the next locoation I will not be so hasty, but unfortunately I always feel this and however carefully I attempt to cover all details for everyone, unless the site is completely new, I always seem to wander on leaving something undone.

The road to Golungo Alto once the tarmac is left behind is very spectacular for the passengers, though the driver is far too busy wondering what may be met around the next corner and how far it will be necessary to reverse or crawl to the next or last passing place.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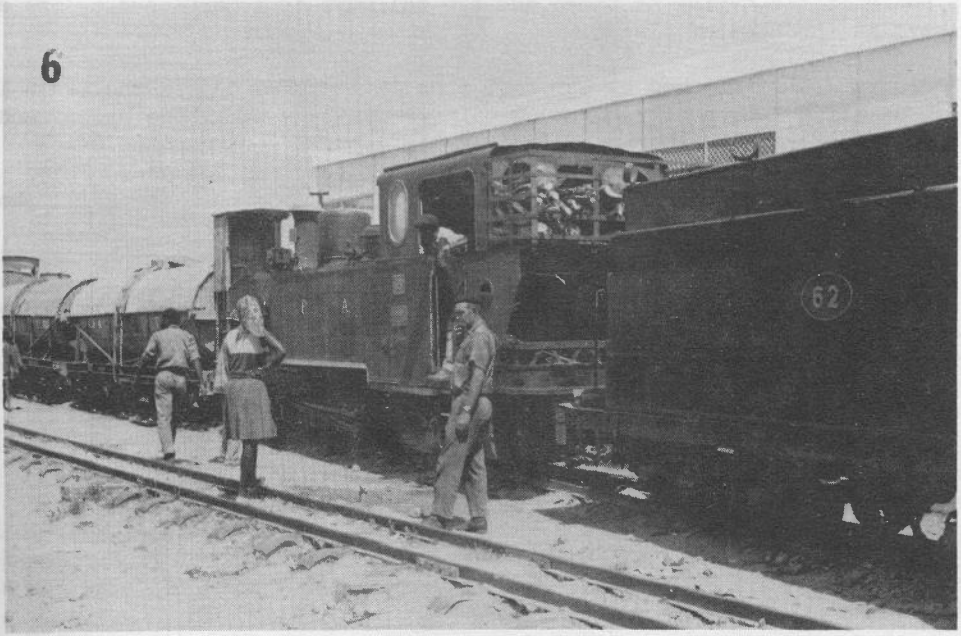
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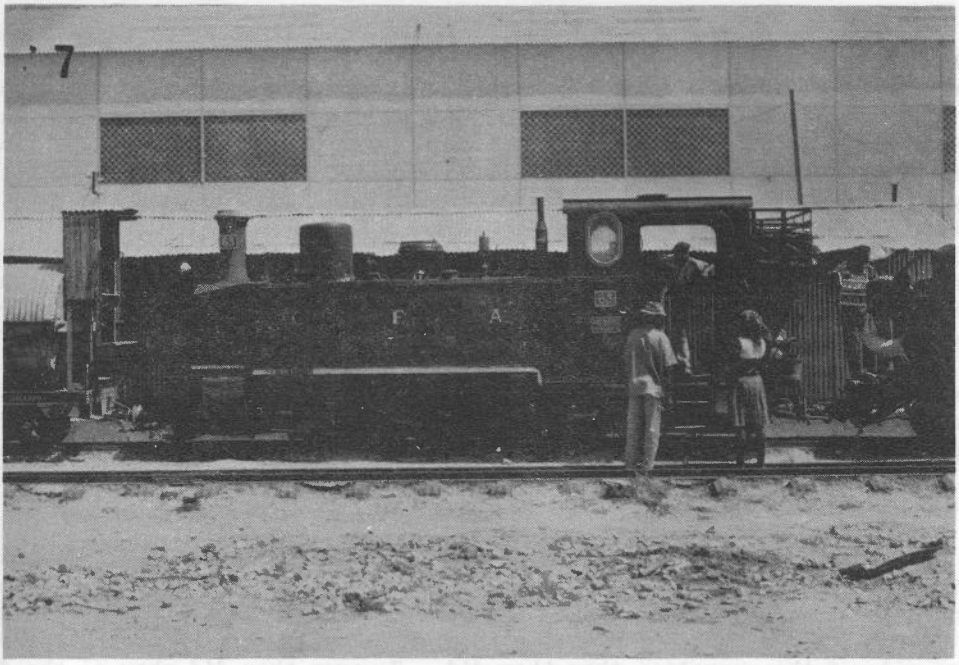
62

Halfway along this road is the junction between the 60 cm. branch and the 3'6" gauge C.F.A. at Canhoca. Here there is a dual gauge running shed with the usual facilities, and a station with one gauge on each side, though the narrow gauge looks a lot less prosperous with its sleepers buried in the dust, compared to the wide gauge which seems most well maintained and looked after. I called at the station for the usual photographic permission and was most amused when after this being granted the chefe insisted that the Land Rover be driven into the narrow gauge yard over the tracks in order that he could keep an eye on it while we were away at the shed. Outside the shed was stood an 0-8-0T by O & K with a most unusual red bogie van which had the front cut away to form a sort of roofed half tender to augment the locos bunker. The fuel was of course wood which seems almost universal on the narrow gauge. This reminds me that I forgot to mention that the C.F. Amboim locos each haul a square auxilary water tank onto which the wood fuel is neatly piled. In the shed was another O & K, this time an 0-8-2T which appeared identical and probably numbered in the same series as the Sa da Bandeira locos.

Another loco was up the line according to the shed staff. We accordingly set off for Golungo Alto which we reached safely though we managed to pass through the edge of a reputed terrorist zone. The people of Golungo Alto proved to be the most hospitable and friendly of our whole visit which was all the more astonishing when you realise that we are resident in the country that harbours and supports the people who commit the acts of terrorism that cause so much suffering among the people in this area. Because of the security arrangements it was late before we were able to look for a site to camp, but this was not to be since the manager of the local cooperative insisted that we stay at his house. This in fact gave us a much needed break since camping in the tropics can be not a little trying at times and the railways as I mentioned before are not always in the best of places.

Next day I was informed by our host that if I wished to see the train I had best be off straight away since it only ran twice a week. So bright and early I was waiting at the station to film the departure of another O & K 0-8-2T with attendant van cum-tender and train of dull red coaches. This proved fairly spectacular with lots of steam, in fact too much for still photos, though cine would have been very good. The next act was to chase the train down the line to obtain more action shots which had so far been sadly lacking on this trip. This proved much harder than expected, for example you do not have to contend with banana leaves and palm fronds at every spectacular curve on the Rheidol or the Festiniog, neither do you need to worry about the activities of the local mamals and reptiles not to mention some quite charming insects. The photos were taken finally from the roof rack much to the amusement of the train crew after their initial surprise.

Next stop Luanda, this holiday was no holiday, just a Texan railway enthusiasts view of Angola. Still not to give up yet there was still the Tentativa estate to visit and the Bomb Jesus and C.F.A. Luanda. At this point the passengers mutinied and a few days were wasted on the beach at Luanda, I must admit at this point I was only really comfortable behind the wheel or a camera pointed at something interesting.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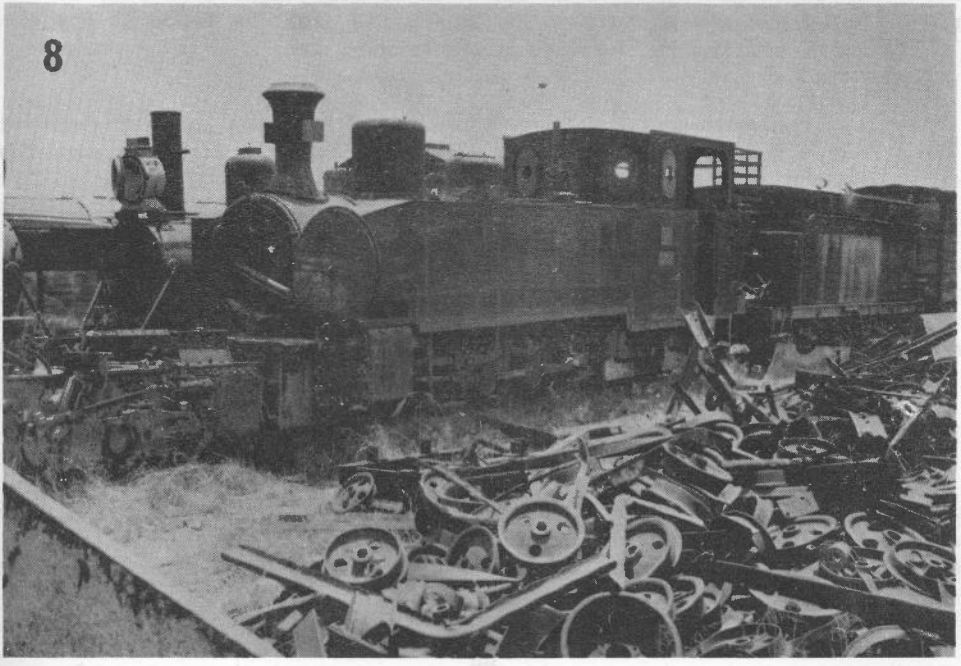
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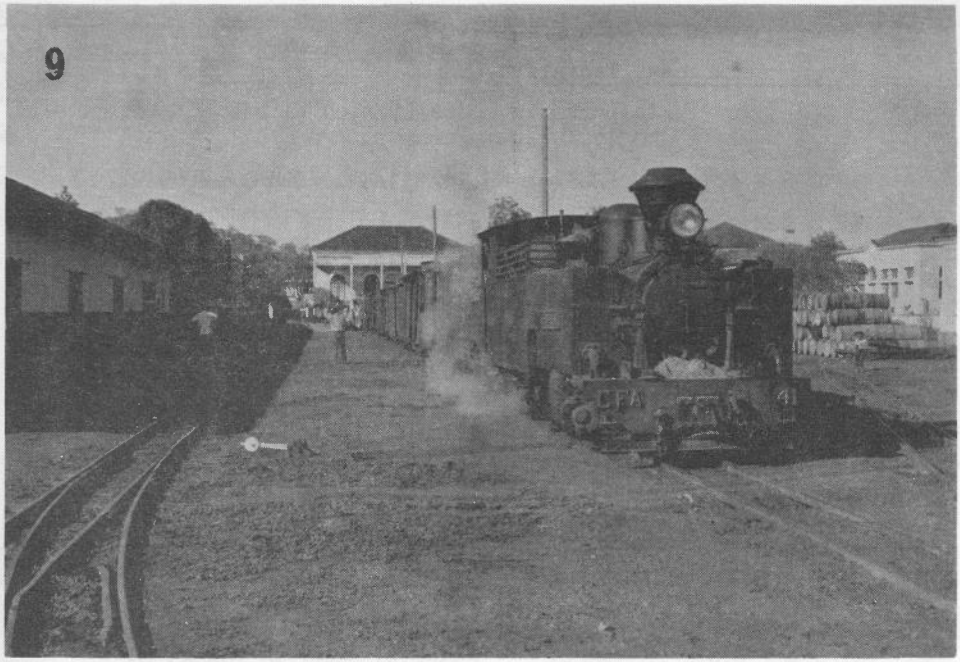
The rest over, Tentativa proved very easy, the director at Luanda spoke English and permission was granted to visit and to photograph. This estate proved to be a little gem with working steam locos of three different types, one a partly dismantled Decauville sporting an O & K boiler, was hidden in the back of the workshop along with an O & K outside frame O-4-OWT, a type I had never previously seen. The working locos were two O-6-OWT, outside frame but very much standard O & K types and quite powerful. The locos in the main seemed to burn wood and indeed there were the usual piles alongside the line but the smallest loco, an absolutely minute O-4-OWT, again by O & K had palm oil kernals piled on the footplate. Here again I particularly wanted action photos but came up against a new problem, the long trains of loaded cane trucks with their loads dragging on the ground created more dust than a fleet of lorries, the difficulty was of course getting myself out of the way of this hazard to cameras in the narrow lanes along which the tracks run through the cane, the cane here was about nine feet high and thicker than the jungle. Again the humidity and high temperature drove us back to the coast far sooner than I should have liked, but I must admit that even I was happy to get back to the relative cool of the beach.

The workshops at Luanda reminded me very much of the shops of the Iraq State Railways at Bagdad, rows and rows of derelict, partly dismantled locos, tenders and assorted waggons and carriages. Again every effort was made by the staff to help, though I did find soon that I knew more about the narrow gauge side of the operation than they did. However they did show me the derelict O-8-OT by O & K that had come from the Golungo Alto line and went to some trouble to make copies of the general arrangement drawings of the narrow gauge locos. They would not admit to having a small Decauville tank loco or a tiny carriage, but I did manage to see the Decauville over the fence at the back of the works still sitting in the wide gauge tender.

Bom Jesus turned out to be a very small and run down establishment at the end of a rather rough dirt road about an hour and a half from Luanda. The condition of the mill, surprisingly, was to our advantage since the first person met on the premises was the representative of Babcox & Wilcox there to sell new equipment. He was only too pleased to translate my request to see the locos which turned out to be one O-4-2T with an Arthur Koppel plate very much derelict and hidden in a yard at the back of the mill. Some traffic was being worked by Ruston diesels and road tractors hauling the cane waggons. There seemed to be no loco shed or facilities except an open pit and the guide assigned to us made sure that we found the loco and then went back to the entrance so who knows what may be hidden away? It was probably the derelict state of the property and the new schemes in hand made them tend to be a little secretive.

This was our last locoation in Angola to see the narrow gauge and it would have been a fitting culmination at the turning point of our nine week trip to have reported finding twenty four narrow gauge steam locos as visitors to Sena Sugar Estates in Mozambique still can, but this was not to be, and discoveries of this type will not happen many times again.

9



10

Comp. do Assucar de Angola, Tentativa. Gauge 60 cm.

2 0-4-OT oc Dec 357 In parts in shops, fitted with O & K boiler 10311. Acquired 1903.

2 0-4-OWT oc O & K 10311/22 Boiler No. 12511/34. Acquired 1922.

5 0-6-OWT oc O & K 11112/25 Acquired 1925. *

6 " O & K and Arthur K. S.A. 12140/30. Acquired 1930.

7 O & K 12493/ Acquired 1934. Not seen 20/10/69.

8 0-4-OWT oc O & K 12536/34 " 1934. *

All locos except 7 seen and works numbers verified.

1 4 whl. D RH 200746/ Acquired 1941.

2 " " 283901/ " 1950.

3 " " 373375/ " 1954.

4 " " 402819/ " 1956.

C.A.A. Dombe Grand.

1 4 whl. D. O & K.

'Dombe' CDG2 0-6-OWT oc O & K and Arthur K.S.A., Madrid.

'Benguella' 3 0-4-OT oc Sornin /11.

'4 Cuio 1920' CAA 4 0-6-OT oc Maffei 4017/20. New to Chia do Dombe Grande. *

CAA6 0-6-OWT oc O & K 10857/24. *

8 0-6-OD O & K 20397/

9 0-6-OD O & K 20954/

10 4 whl. D RH 244486/

11 6 whl. D HE & Hudson 3501/47.

12 4 whl. D RH 279612/

13 " O & K 25364/

14 " Schoma 2788/

15 6 whl. D HE 6998/69

Steam locos kept in reserve.

* SEE PHOTOGRAPH

C.F.A. (Luanda) Gauge 60 cm.

CFA 31 0-8-OT oc O & K 9935/22. In use.

CFA 61 0-8-2T oc " 10497/25. In use.

CFA 65 " " 9932/22. "

CFL 32 0-8-OT " 9936/22. Dere. Luanda Wks.

C.F.A. (Mocamedes) Gauge 60 cm.

CFA 62 0-8-2T oc O & K 10496/25. In use with ex SAR tender.

CFA 63 " " 9933/22. " CFA 62 ex NG47. *

CFM 66 " " 9931/22. Derelict "

CFM 68 " " 10499/25. " " CFM111 ex NG46. *

CFM 69 " " Scr. frames and boiler only.

0-6-0T oc " " only.

" Reputed to be kept at Mocamedes for 'Fairs'.

4-6-0 oc BLW Ex SAR Derelict

" " " "

" " " " *

" " " Scr. Boiler only survives.

C.F. Amboim Gauge 60 cm.

'Porto Amboim' 1 4 whl. D.O & K 25190/ Acquired 1952.

2 " " 25215/ " 1953.

20 2-6-0T oc Hens 19733/23 In parts, prob. scr.

21 " " 19734/23 "

23 " " 20759/26 In use.

'Amboim' 40 2-8-2T oc Bag 2637/ In use.

'Cuanza-Sul' 41 " " 2638/ " *

'Boa Entrada' 60 2-8-0T oc Hens 28457/49 Under repair.

'Ebo' 61 " " 28458/49 In use. *

5007 2-6-2T oc BLW 46262/ Scr. ex USA/TC.

0-6-0WT oc L.Hoff. 3205/21 Being painted for childrens park.

O & K and Arthur K. 8687/18 Scr.

One other with identical parts to above also scr.

Query L. Hoff. works No. I have 2305/21 in notebook.

Sociedade Agricola do Cassequel, Bom Jesus, Nr. Luanda. Gauge 60 cm.

'Gazengo' 0-4-2T oc Arthur Koppel, Berlin-Madrid. Dere badly rusted but No. 1847 on one part motion. *

4 whl. D Planet Chassis No. 3785.

" D RH Engine No. 321775.

One other diesel probably Planet seen from a distance.

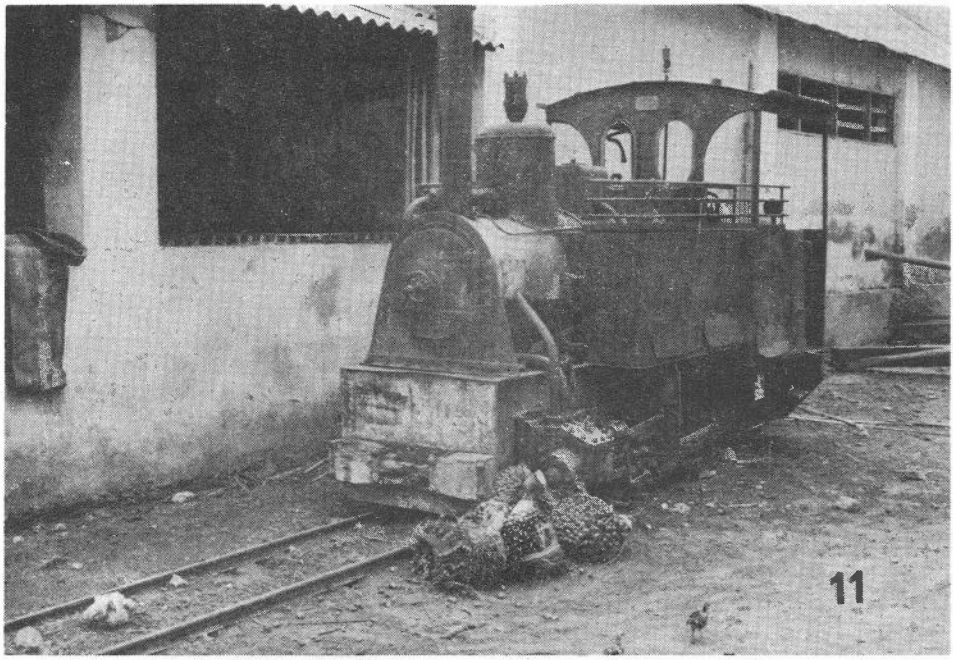


PHOTO DETAILS

PHOTOGRAPHS

1	4 - 6 - 0	Baldwin ex S.A.R.
2	0 - 6 - 0 W.T.	No. 5 C.A.A. (T)
3	0 - 4 - 0 W.T.	No. 8 C.A.A. (T)
4	0 - 6 - 0 T.	No. 4 C.A.A. (D.G.)
5	0 - 6 - 0 W.T.	No. 6 " "
6 & 7	0 - 8 - 2 T	No. 63 C.F.A.
8	0 - 8 - 2 T	No. 68 C.F.A.
9	2 - 8 - 2 T	No. 41 C.F.A.
10	0 - 8 - 2 T	No. 61 "
11	0 - 4 - 2 T	"Gazengo" S.A.C.

FOR DETAILS SEE ROSTERS PAGES 46 & 47

An Automatic Railway

Sydney Leleux

Redlands Brick Ltd., North Holmwood near Dorking (Sussex & Dorking United Brick Cos. Ltd. at the time of my visit in August 1965) have a 2' gauge automatic railway in the claypit. In 1965 the layout was a Y with a loop and incline to the works on each arm. Trains of 5 or 6 jubilee wagons were loaded by a navvy and then propelled by a small battery locomotive to one branch or the other. There were two trains and each kept to its own branch.

At the end of each branch, the loaded wagons were pushed into the left hand side of the loop, where 2 or 3 wagons from the previous train still waited to be tipped. When the stock of clay in the works fell sufficiently, the next loaded wagon was hauled up the incline to the tip by a steel rope from a winch in the works. The empty wagon then ran down the incline, dragging the cable with it, and entered the right hand side of the loop. The incline was not operated continuously but at 4 or 5 minute intervals. Periodically the locomotive was eased forward under manual control to bring the loaded wagons nearer the incline foot. When 5 or 6 empties had accumulated the locomotive was attached and hauled them back to the pit.

The plant served by the right hand branch was making purple bricks at the time of my visit. The colour was obtained by mixing coke breeze with the clay, and to this end half a dozen shovels full of coke were put into each empty wagon before it went to the pit.

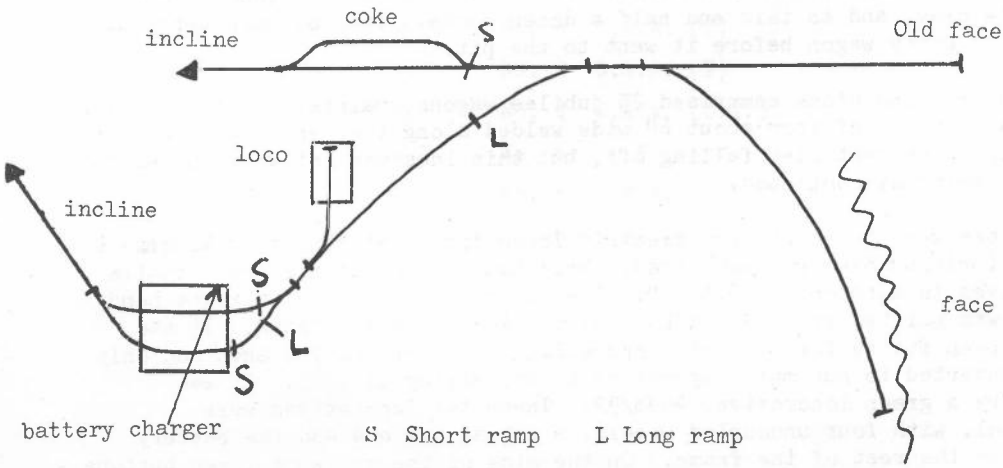
The rolling stock comprised 25 jubilee wagons, painted green or brown. Some had a piece of iron about 6" wide welded along the top of each end of the skip to prevent clay falling off, but this idea was not very successful and was being discontinued.

There were three battery electric locomotives, all built by Wingrave & Rogers (British Electric Vehicles). None had plates visible, but details were given in a recent "N.G.News". The locomotive working the right hand branch was painted red and had been at the works about 5 years. It had always been fitted for automatic operation. The left hand branch had only been converted to automatic operation in the spring of 1965. It was worked by a green locomotive, 4998/52. These two locomotives were identical, with four uncoupled wheels, a cab at one end and the battery taking up the rest of the frame. On the side of the cab were three buttons - stop, start, coast.

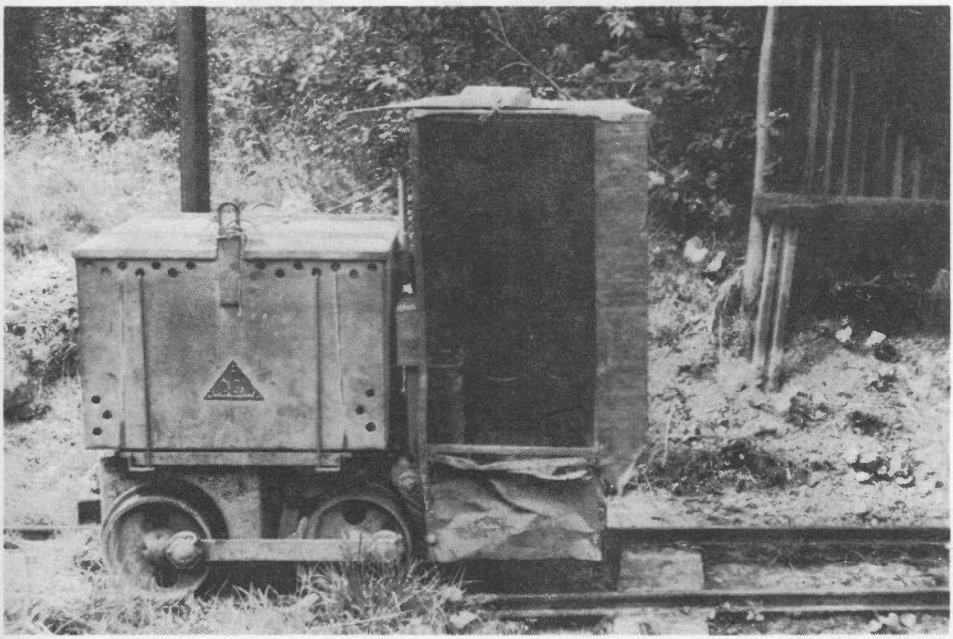
During shunting a man walked alongside to control the locomotive. When on the main line the train was stopped by means of a small ramp fastened to the sleepers between the rails which engaged a trip under the locomotive. The junction was protected for trains approaching from the longer left hand branch by a longer ramp which could be raised or lowered by rodding connected to the point lever. The guard irons at each end of the locomotive were pivoted so that they could be displaced slightly if there was an obstruction, or in the event of derailment, and thereby cut off the current to the motor. The third locomotive was a grey painted 0-4-0,4634/51. It was not fitted for automatic operation and was kept as spare in a small corrugated iron shed by the left hand incline foot. The loop at this place was inside a low brick building which doubled as locomotive shed. A battery charger was provided on the right hand road, batteries being charged overnight.

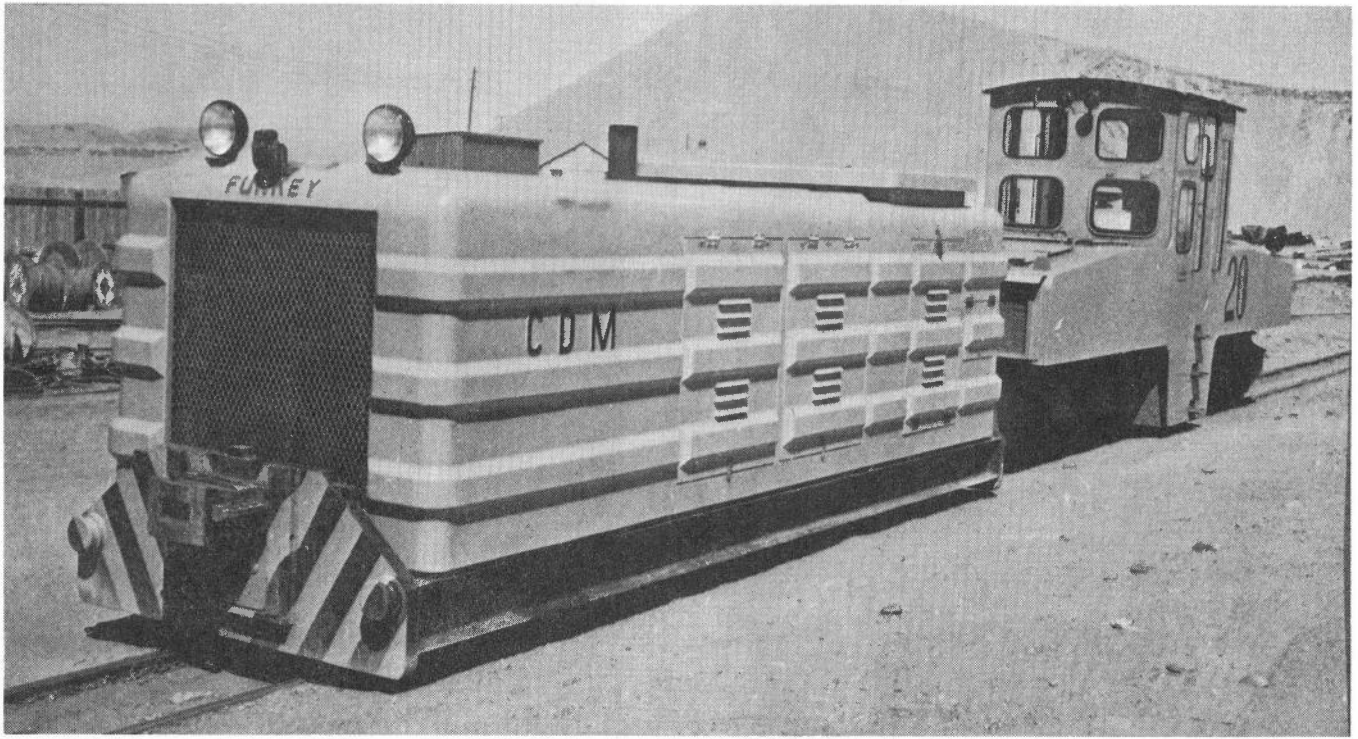
The flatbottom rail was spiked to wood sleepers 9" x 3" x 42". Many of the sleepers were supported on heavy longitudinal timbers. The points at the loops were all spring.

Within the works was a 2'1" gauge system to carry unfired bricks. The flat wagons were 3' x 6'9" with 3'9" wheelbase, and had a vertical metal frame at one end to act as a handle. The wagons were loaded in the brick making plant then carried by low flat battery driven road trolleys with rails on their decks to the kilns. Here the wagons were off loaded and pushed into the kiln along temporary track supported on wooden blocks.



Not to scale




FURKEY
CDM
20

The Logical Locomotive

SYDNEY MOIR

Strictly speaking, all locomotives are logical, being designed for the work they are called upon to do. However, extraneous circumstances enter into matters, and in this case the circumstance was the high corrosion rate of the copper overhead wires ... for these locomotives work over the metals of the Consolidated Diamond Mines in South West Africa, where the installation is exposed to salt air driven off the Atlantic and the scouring of desert sand from the Namib.

Replacement of the overhead became uneconomic: replacement of the existing electric locomotives was likewise uneconomic. The solution was beautiful in its simplicity .... remove the overhead, and provide each electric locomotive with a trailer carrying a complete generating plant.

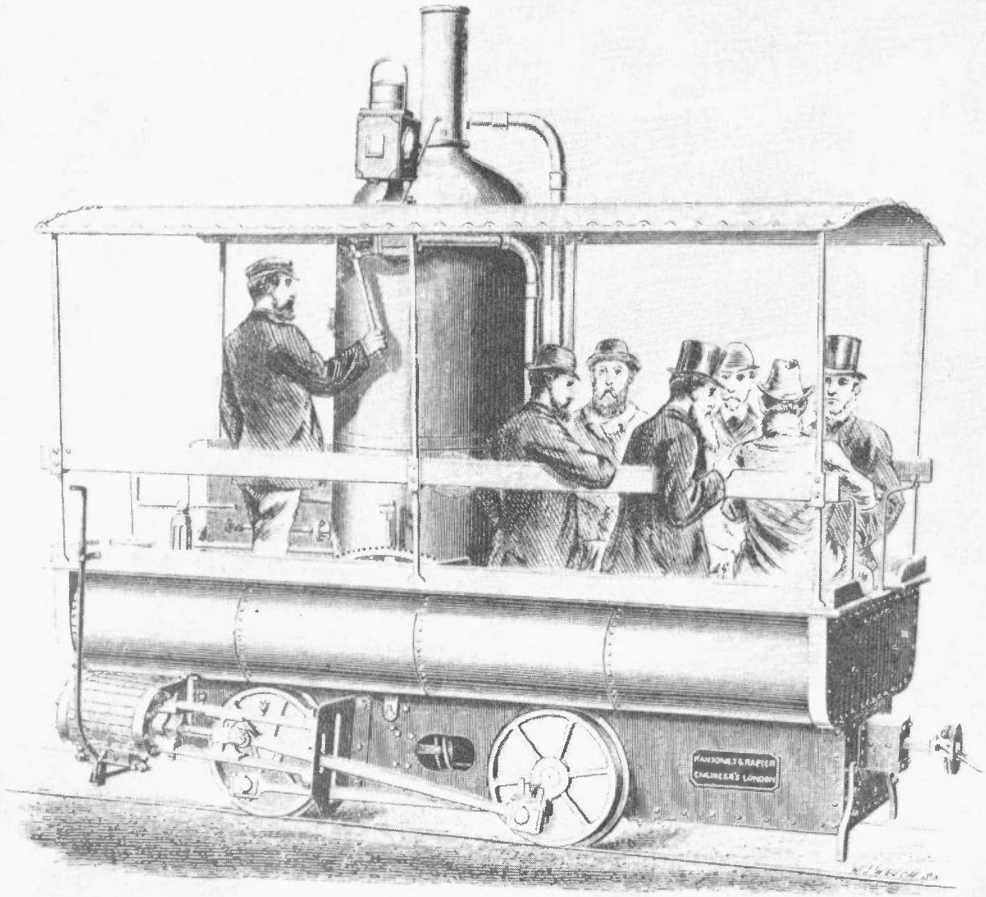
The construction of the Power Trailers was undertaken by Messrs. C.H. Funkey & Co., sub-contracting to Messrs. Barlow's Tractor & Machinery Co., who supplied the diesel engine, generator, rectifier and control gear. The bodywork was sub-contracted to Messrs. Halmatic S.A., who produced a complete body-shell, self-coloured, corrosion resistant, of glass-reinforced plastic.

This body - which took six weeks from the drawing board to delivery - was the largest glass-reinforced plastic moulding made in South Africa until then. Proving completely successful, it has set a precedent, and Messrs. Funkey have now adopted G.R.P. construction as a standard for body-work on their diesel locomotives.

The trailer houses a Caterpillar 200 kw diesel generator set: the diesel engine is turbo-charged and after-cooled, being a six-cylinder unit with four valves per head. The a.c. rating of the set is 380 V, 50 cycle, 3 phase .. this output is available when the trailer is used as a portable emergency a.c. power-plant .. rectified by an oil-immersed silicon rectifier for use in the locomotives, the output then being 400 amperes at 500 volts.

Photo Consolidated Diamond Mines of S.W.A. Ltd.

STEAM CARRIAGE.



Steam Carriage to convey passengers and goods.

This type is most useful as an auxiliary, even on established railways, and for Contractor's work it is unrivalled.

It is mounted on springs, and on very small wheels, and consequently it can pull a good load.

The Boiler being vertical affords room for a good large firebox, with very ample grate: this is suitable for burning wood, or other inferior fuel.

Weight in working order, 6 tons.

Diameter of Cylinder, 6".

Diameter of Wheels, 1' 8".

Rigid Wheel Base, 5'0".

This Engine is fitted in all respects in the highest manner and quality.

The Engine carries enough water for 15 miles.

Price of one Steam Carriage, £520.

Price of six, £430 each.