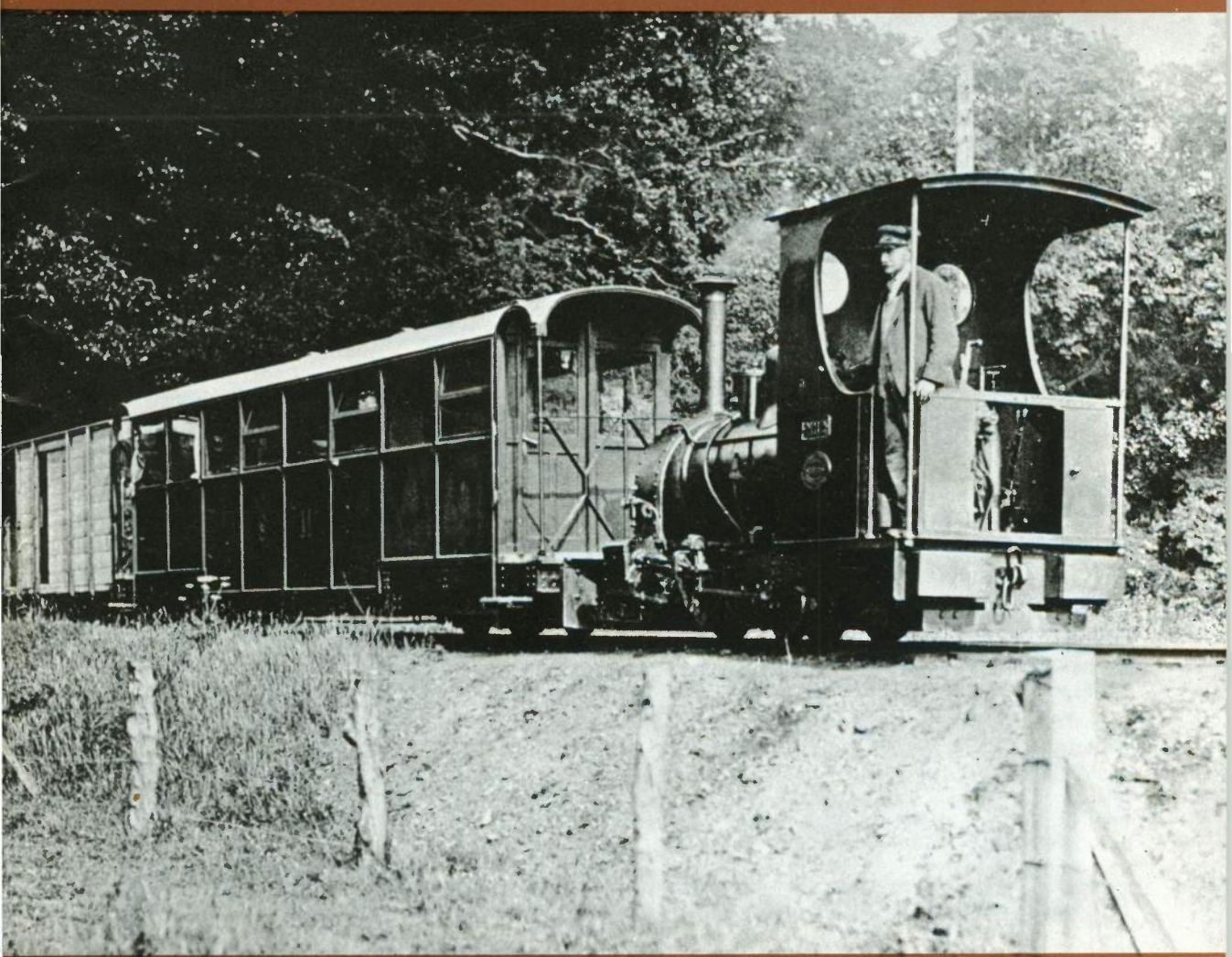
THE NARROW GAUGE

No.81



NARROW GAUGE RAILWAY SOCIETY

NARROW GAUGE RAILWAY SOCIETY

Serving the narrow gauge world since 1951

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The Society was founded in 1951 to encourage interest in all forms of narrow gauge rail transport. Members interests cover every aspect of the construction, operation, history and modelling of narrow gauge railways throughout the world. Society members receive this magazine and Narrow Gauge News, a bi-monthly review of current events on the narrow gauge scene. An extensive library, locomotive records, and modelling information service are available to members. Meetings and visits are arranged by local areas based in Leeds, Leicester, London, Malvern, Stoke-on-Trent and Warrington. Annual subscription £4.00 due 1st April.

THE NARROW GAUGE

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ASSISTANT EDITORS : R.N. Redman, A. Neale.
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Published quarterly by the Narrow Gauge Railway Society to record the history and development of narrow gauge rail transport. Our intention is to present a balanced, well illustrated publication, and the Editor welcomes original articles, photographs and drawings for consideration. Articles should preferably be written or typed with double spacing on one side of the paper only. The Editor appreciates a stamped addressed envelope if a reply is required. A range of back numbers, and binders for eight issues are available from the address above.

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EDITORIAL

No. 81 AUTUMN 1978

Sadly, this issue will be the last one that I will be producing as Editor. Over the last year or so I have been unable to devote the time to the magazine that it has needed and a recent change of employment has reduced my limited "spare" time even further and made it impossible for me to continue. My successor will be Mike Swift, who needs no introduction to most of you, having been Society Secretary since 1961 and an active narrow gauge enthusiast for far longer than that. Indeed, Mike has helped produce the magazine ever since my appointment as editor and has undertaken the majority of the work on the last few issues so that the change of editor is only making official what has been a reality for some time. I hope to remain associated with the magazine and will continue to edit articles in which I have a specific interest, but in future all general correspondence concerning the magazine should be forwarded to Mike at the address above.

This seems an appropriate time to record my grateful thanks to all those of you who have contributed articles, photographs, maps, drawings, letters of praise or criticism (both equally useful!) or helped in one way or another. An editor can only edit what he receives and without the wonderful amount of support I have had over the last four years this job would have been impossible. I'm sure Mike can rely on the same degree of support so that our magazine maintains its reputation for covering all narrow gauge topics in an accurate, comprehensive and responsible manner.

Cover: An attractive woodland scene on the Sand Hutton Light Railway between Sand Hutton Central station and the Depot. Hunslet 0-4-0 well tank No. 12 is at the head of a passenger train, made up of the bogie saloon carriage and brake van, returning to Warthill one sunny day in July 1927. (H.G.W. Household)

PETER PAN ON TOUR

PETER PAN is one of the three former Devon County Council "Wren" class 0-4-0 saddle tanks which survived into the 1950's, and were among the first narrow gauge industrial locomotives to be preserved. Their attractive appearance, small size and simple construction made them an ideal machine for preservation but, as PIXIE on the Leighton Buzzard Narrow Gauge Railway has shown, they are also capable of hard work over a relatively long run. PETER PAN originally passed to J.H. Hardy of Bromsgrove in the spring of 1959 but lay in pieces for many years. Then in 1972 it was moved to Leighton Buzzard for restoration. However, three years later it was sold to the Island Narrow Gauge Group and moved to their site at Albany in the Isle of Wight. The plans for this site could not be carried to fruition and PETER PAN therefore returned to the mainland once more.

During the past two years the Group have offered a complete portable railway for hire and PETER PAN has completely eclipsed its former travels by appearing at events as widely spread as Bristol and Knebworth Park in Hertfordshire. One of the first outings of 1978 was on May 29th/30th, when PETER PAN visited the Surrey Light Railway, operated by John Crosskey. The accompanying photographs were taken by D.H. Smith and show the smart condition of the locomotive.

PETER PAN (Kerr Stuart 4256/1922) with Gary Stevens of the Island Narrow Gauge Group (left) and John Crosskey (right) on the footplate. *(D.H. Smith)*

"TRIXIE" GOES ABROAD

M.H. Billington

During August last year I spent a few days in Belgium, partly in the company of B. Derek Stoyel, a noted British industrial steam locomotive enthusiast who has resided in Brussels for some years. He mentioned that in addition to the visits I had planned we should also see the most recent narrow gauge line to be opened in Europe, the Rail Rebecq-Rognon in the province of Hainaut, which started operations on July 2nd, 1977.

Our tour started at the wonderful Schepdaal Tram Museum, operated by the Association pour le Musée du Tramway (AMUTRA), and devoted to the many Chemins de Fer Vicinaux of both metre and standard gauge which once provided transport throughout Belgium just as the Chemins de fer Secondaires did in France. I am no expert on electric trams, but the collection is really impressive and includes exhibits from former town systems such as Ghent in addition to those of purely S.N.C.V. origin. The museum shed also held four 0-6-0 steam trams, three by the familiar Belgian manufacturers Haine St. Pierre, Societe St. Leonard, the Tubize, but the fourth surprising to me, built by Hawthorn Leslie & Co. Ltd. in Newcastle during 1917. However, the greatest attraction for me at the museum was the 60cm. gauge Krauss locomotive. It seems that AMUTRA originally planned to have a tourist railway operation, chose 60cm. gauge for economy and availability of motive power, and in due course obtained this little Krauss from Ponts, Tunnels & Terrassements SA, contractors, of Lambeek. Shortly afterwards the S.N.C.V. offered use of the metre gauge line at Pont d'Erezée, and this was quickly accepted. One or two steam tram locomotives operate on this line, titled the Tramway Touristique de L'Aisne, during the summer, and the 60cm. gauge locomotive now forms an attractive, if unusual load on a metre gauge wagon at the Museum.

The Tramway Touristique de L'Aisne was unfortunately too far away to visit that same afternoon, but on our way to Rebecq we did go to see a locomotive on the forecourt of a café at Maisieres on the Mons road. This is also of 60cm. gauge, an 0-4-0 tank built by Arn Jung in 1890. The café is quite close to the junction of the road to Rebecq, which is only some 35km. south of Brussels.

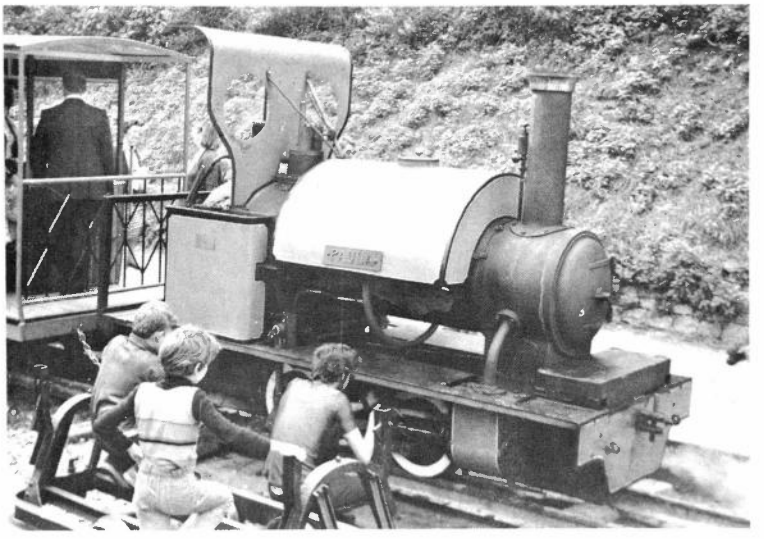
Rail Rebecq-Rognon, or "Le Petit Train du Bonheur" as it delightfully calls itself, is 60cm. gauge and laid on the trackbed of an SNCB standard gauge branch line which formerly connected Hou, on the Enghein—Braine le Comte line, with Tubize. The line commences just across the road from the former station at Rebecq, where the station building now serves as a booking office. The town itself is quite small, but has great antiquity and charm, enhanced during our visit by an exhibition in the old mill. This comprised the collection of an elderly resident, and in addition to many drawings and paintings was a most interesting series of photographic postcards depicting the local scene in Rebecq and surrounding villages. One view of the huge quarry at Quenast showed four locomotives at work, and there was a view of "La Gare" at almost every village in the area. It was all quite fascinating. However, to return to the railway. I did of course know that TRIXIE had returned to Alan Keef Ltd., at Cote following a sojourn in Wales, and after waiting for a purchaser had been moved fairly recently. Her destination was unknown and it therefore came as a complete surprise to find her, now renamed PAULA, on this new line in a very pleasant part of Belgium.

The train was made up of neat bogie coaches, some open from the waist and complete with end balconies, and the other the "Baladeuse" pattern completely open at the sides. Both are fitted with slatted wooden seats and give quite a comfortable ride. A more orthodox continental locomotive, PISTACHE, an Orenstein & Koppel 0-4-0 well tank 4852/1911 was at the leading end of the train. I understand that this came from a cement works, and it carries a small plate on the smokebox door bearing "Namur 441", which it seems is a boiler registration number. PISTACHE, which is somewhat larger than PAULA, hauled the train up the grade to Rognon, where the line ended just short of the station. The 3km. journey was an enjoyable experience, particularly at one point where it crossed the river Senne on a high viaduct. There were neither sidings nor a loop, so PAULA followed bunker first at a discreet distance, coupling onto the train at the terminus and hauling it back to Rebecq, while PISTACHE followed in reverse.

Having a different locomotive chimney first in each direction is ideal for the photographer, but hardly economic. A turntable was at an advanced stage of construction and was likely to be in operation last season, enabling better use to be made of the available motive power.

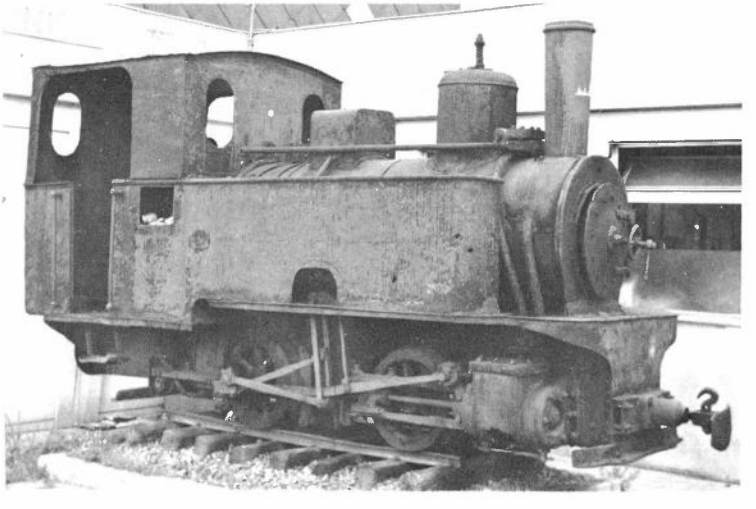
At 60fr. (£1) return fare this new line is fairly reasonable by European standards and I hope many other British enthusiasts will seek it out. It might even be possible to visit Schepdaal and Rebecq in a day by public transport, but if you have your own transport it is so much easier to fit in these and the other three preserved railways (two are standard gauge) in Belgium. The chance to discover the odd locomotive adding charm to a café or Palais de Dance brings an element of surprise, so that although there are no longer steam locomotives at work on the SNCB or the industrial centres like Charleroi, Belgium is nonetheless an attractive country which can offer more than beer and chips to please even the most British enthusiast.

May I sincerely thank B. Derek Stoyel who first mentioned these delights to me, the staffs of AMUTRA and Rail Rebecq-Rognon, and express the hope that others will visit Belgium to see for themselves—and report back their findings.



PAULA, formerly TRIXIE, built by T. Barber for Alan Keef in 1975, attracts a group of young admirers at Rebecq on the 14th August, 1977. (M.H. Billington)

PISTACHE on a train from Rebecq at Rognon. (M.H. Billington)



Standing outside this road-side cafe at Maisieres is this rather rusty Arn Jung 0-4-0 tank. (M.H. Billington)

BLAENAU REVISITED

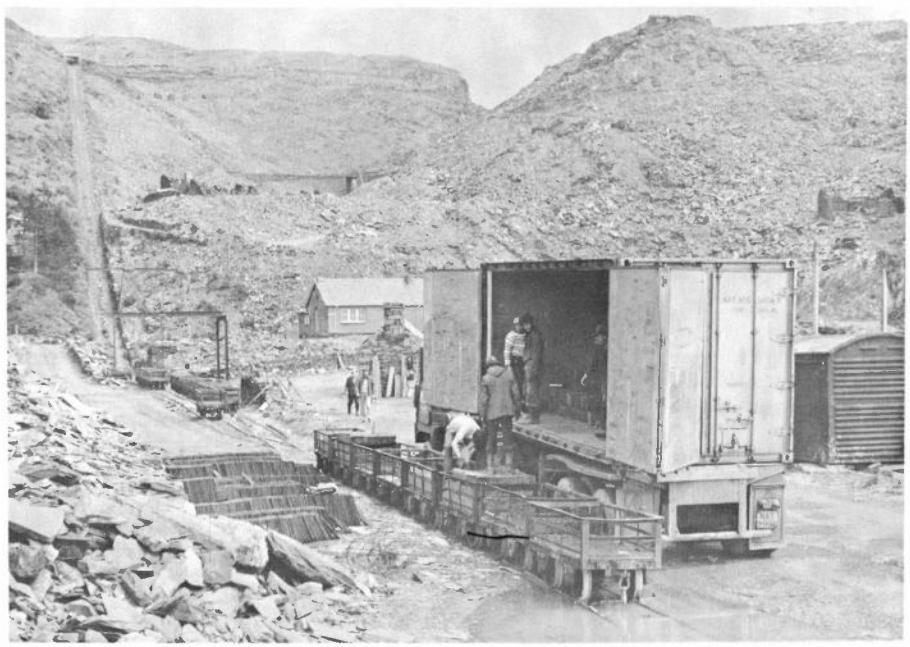
A. Neale

Since publication of my article "Narrow Gauge at Blaenau" in NG 70 the slate quarry systems have continued to decline, although fortunately not at quite the rate predicted.

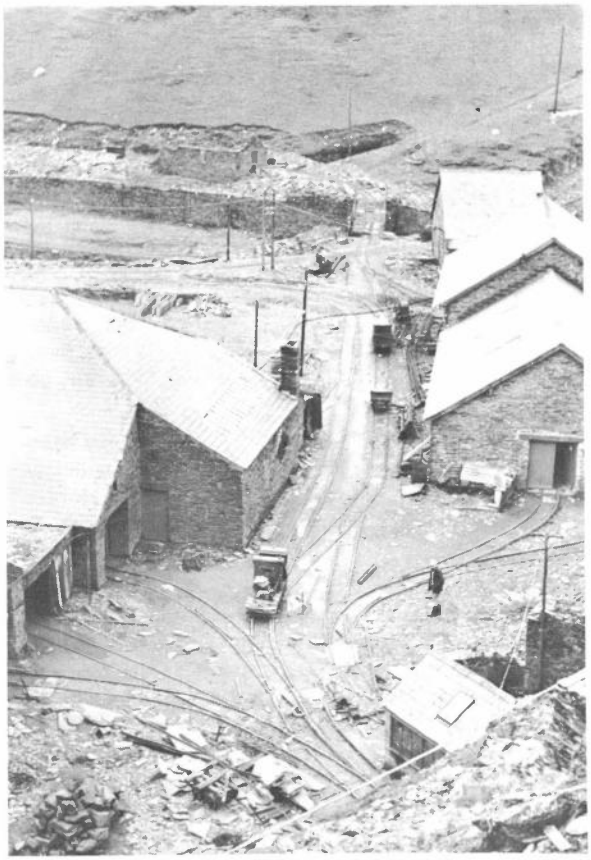
Surprisingly, of the three surviving systems in 1975, it is the isolated one at Manod that has closed first. A recent change of ownership has resulted in a decision to work open cast and introduce dumpers. On the lower level all track has been lifted and much of the mill demolished but the rail system on the upper level, with its fascinating array of primitive paintwork still survived in May 1978 and the ancient (it dates from 1917) Brush battery loco was dumped in the little shed outside the mine entrance.

At Llechwedd, active narrow gauge operations are confined to a single battery loco shunting around the slate mill on the main level. Dumped nearby are the ECLIPSE, a second battery loco, and a Ruston diesel borrowed from Maenofferen in January this year to cover a failure of the battery loco, and not yet returned. This is in fact the first diesel loco ever to work at Llechwedd, previous motive power having been steam, electric (battery and overhead wire) together with a solitary home built petrol now dumped on the upper level. A third BEV battery loco also remains on this level, the fourth having been broken up several years ago.

But the heartening news is that the threatened opening out of the mine at Maenofferen to open cast operation, which would have brought with it the total cessation of rail transport here, has not yet happened, nor is it likely to while there is still skilled labour available to continue mining by the traditional methods. The availability of skilled men prepared to endure the hard, dangerous and poorly paid conditions of slate mining is



Loading slates at Maenofferen in May 1978. The train of slates had been lowered down the incline (left background) earlier in the day and are now being loaded by hand into a container for transport to Hull docks and export to Holland. *(M. Swift)*



An overall view of the yard at Maenofferen, in May 1978 with 18/21HP class RH 174542 resting between shunting duties. The disused line to the waste tip can be seen crossing the bridge over the main line (see NG70, p. 26) in the middle distance. (M. Swift)

Maenofferen, May 1978. Looking down the three track incline into the mine. A trip on the open riding car is not something to be recommended to those of a nervous disposition! (M. Swift)

the key to Maenofferen's survival. At present ten men (three skilled rock men to win the slate, three ex N.C.B miners for opening up new galleries, and four labourers for clearing waste slate, driving the loco etc.) work underground and the slate mill's output is totally geared to what these men can produce. Currently a single Ruston diesel is in use underground, moving wagons from the working face to the foot of the incline, from the top to which they are hand trammed through the mine to the foot of the incline up to the mill. A second Ruston is responsible for shunting the greatly reduced trackage around the mill yard and working out the finished slates along the picturesque line that runs along the ledge to the incline top, from the bottom of which slate is loaded by hand into road transport. Waste is now tipped at a point adjacent to the mill, reducing loco haulage to the minimum.

Maenofferen represents the last remaining traditional slate quarry system left in North Wales, complete with working inclines, ancient rolling stock and peculiar pointwork, together with some of the oldest Rustons surviving in original form as well as employing traditional methods of winning and processing the slate. Long may it last.

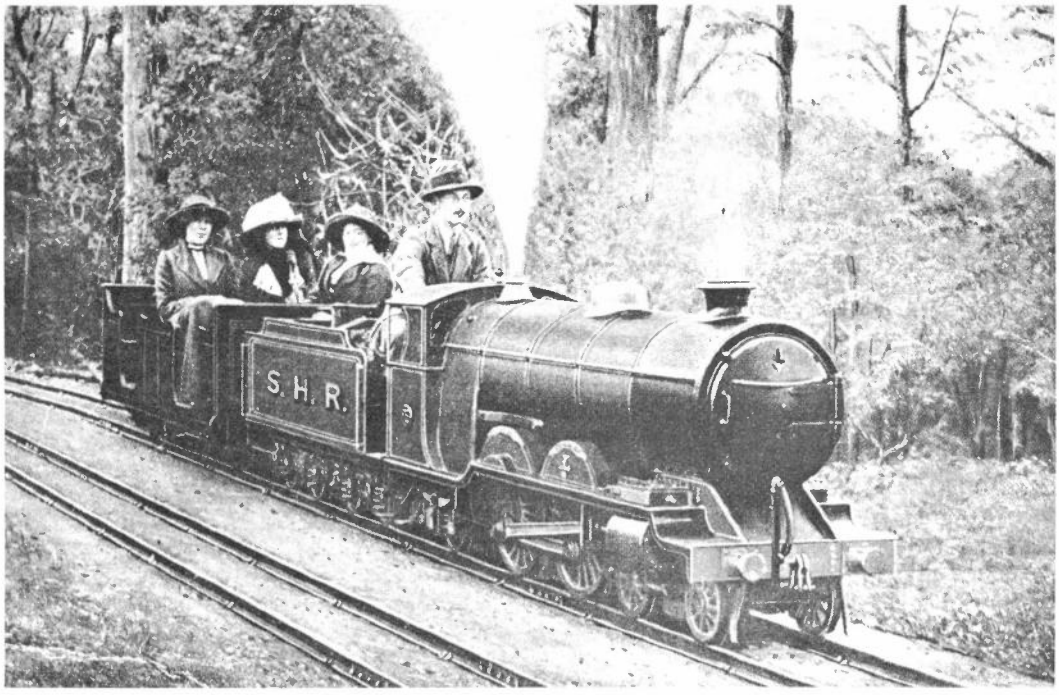
POSTSCRIPT TO SAND HUTTON

K.E. Hartley

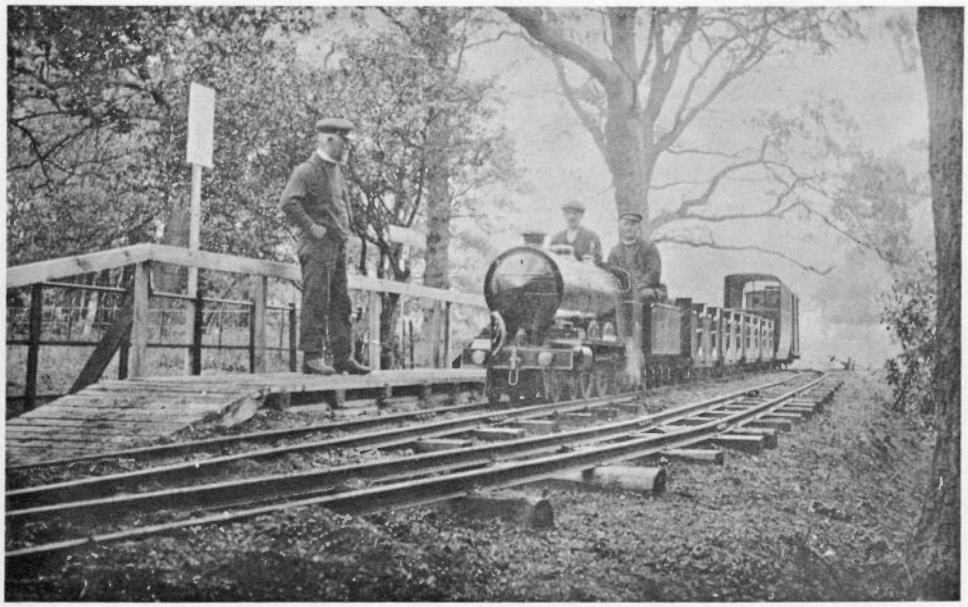
It is now fourteen years since the N.G.R.S. stand at the 1964 Leeds Model Railway Society exhibition displayed the first copies of *"The Sand Hutton Light Railway"*—after some anxious moments and a deal of hectic eleventh hour work by Henry Holdsworth and Barry McFarlane. This was not because the book had been a last minute idea—far from it. An announcement that a history of the S.H.L.R. was in preparation had appeared in *"Narrow Gauge News"* way back in 1958, and since I had been keenly interested in this little line since 1923/4, I was eagerly looking forward to the booklet. Alas, several enquiries during the next eighteen months all resulted in the same reply, nothing done. Thus, late in 1959 Ron Redman suggested that I did the job myself, rather quaintly adding by way of encouragement: 'After all you are probably the only one of us who was old enough to see the line in operation'. My own opportunities for site investigation were limited, as were Society funds, so that it was five years before the task was completed.

Since publication certain new information has come to light, notably about SYNOLDA. Inevitably there have also been changes in the Sand Hutton area as well as, sadly, the death of several local people who so willingly supplied information or loaned photographs, many of which could not unfortunately be included. R.J. Hunter and K. Hoole kindly showed me several S.H.L.R. items discovered at British Railways offices at York or elsewhere, and in view of the recent news from Ravenglass it is now an opportune time to tie up a few loose ends.

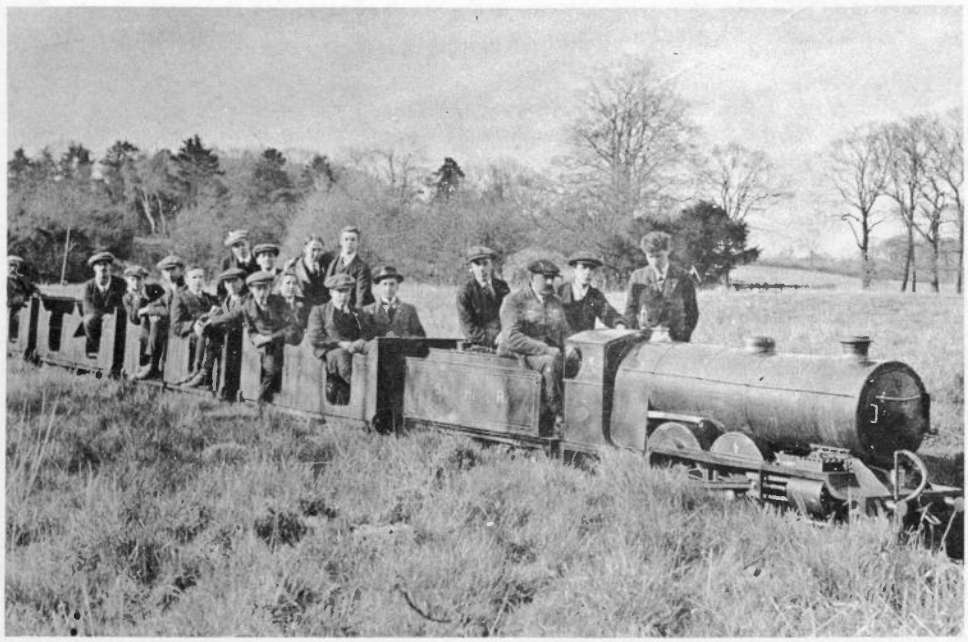
The first concerns two slight errors. On page 52 the overall length of the hay wagons should be 18ft, not 16ft as stated, and the length of the racks should, of course, be 16ft not 18ft. On page 67 spans should read span. I am only too happy to admit that the information given on page 15 regarding the ultimate fate of SYNOLDA was incorrect. Since *"The Sand Hutton Light Railway"* was published, a good deal more information has come to light on the history of a number of Bassett-Lowke 15in gauge locomotives.



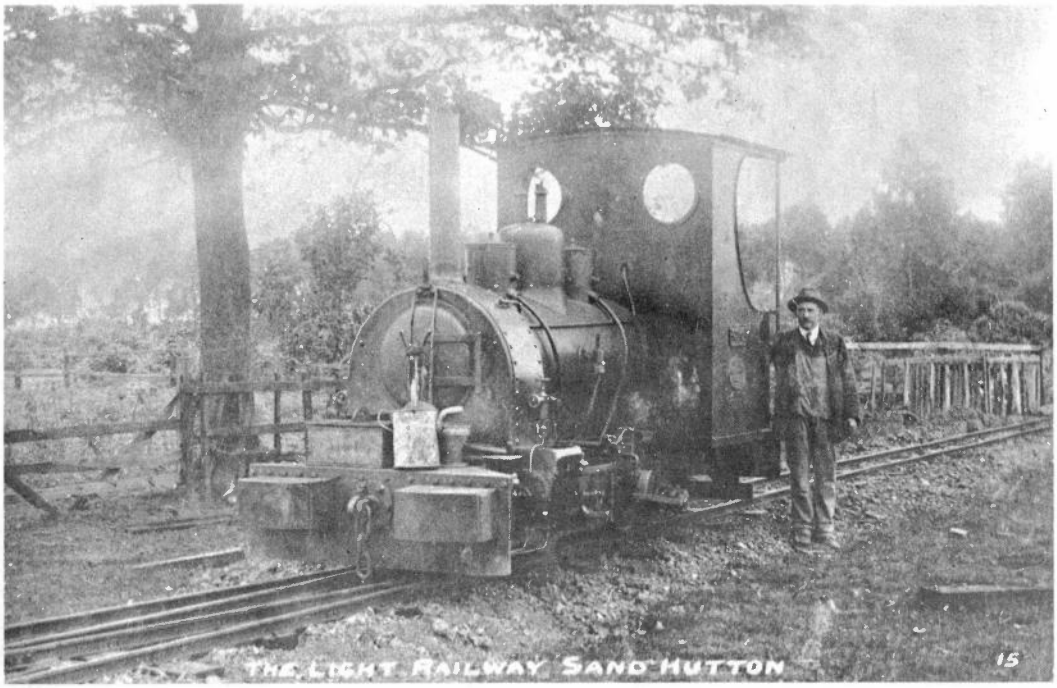
Sand Hutton Railway Bassett-Lowke "Class 30" 4-4-2 SYNOLDA and train. Sir Robert Walker is driving and Lady S. Walker (not identified) and friends are in the coach.
(collection K.E. Hartley)



SYNOLDA and the entire miniature railway rolling stock at Fishpond station, c.1913. The picture may have been taken during a series of load and speed tests. (collection K.E. Hartley)



A special train near the cricket field on the 18th April 1914. The passengers are the City of York Y.M.C.A. Cycling Club members enjoying an outing. (collection K.E. Hartley)



An early scene on the 18in gauge at Sand Hutton. Mr. Geo. Batty, the driver, stands beside a Hunslet 0-4-0WT. The stovepipe chimney is the result of removing the spark arrestor fitted when the loco arrived from Deptford. (collection K.E. Hartley)

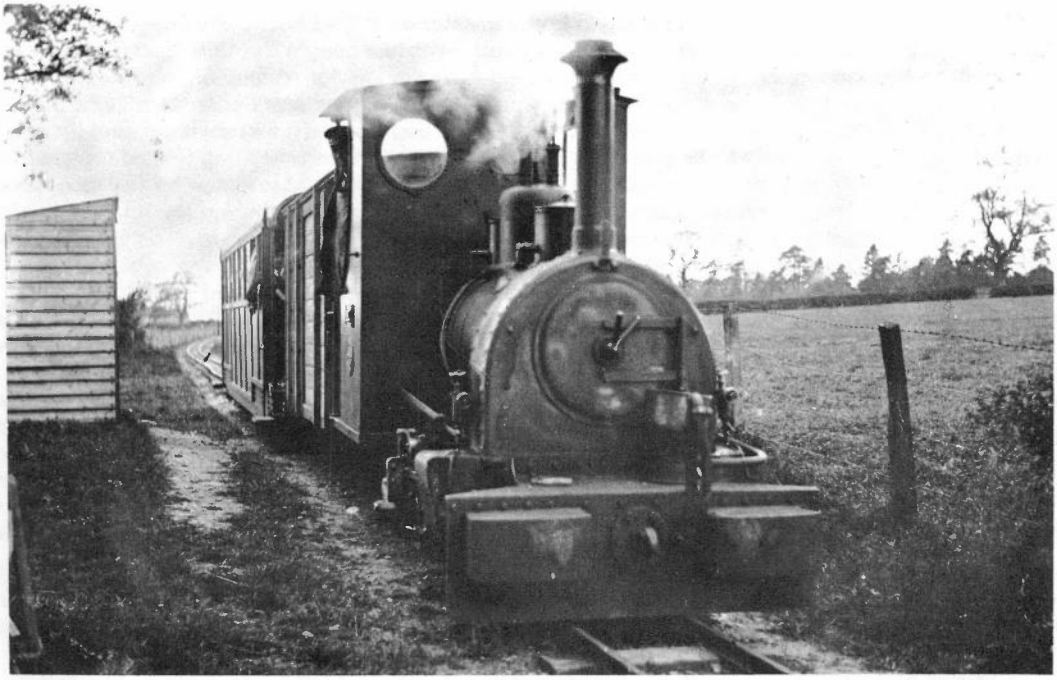
Even more surprising has been the chance discovery and superb restoration of such famous and historic locomotives as the original 4-4-2 LITTLE GIANT, the petrol engined 4-4-4tank BLACOLVESLEY, the Romney, Hythe and Dymchurch Railway 0-4-0 THE BUG and one or two others restored as static reminders of better days.

I am still not sure of the whereabouts of SYNOLDA during the period 1922-30 and do not propose to repeat one or two rumours concerning these movements. It appears certain that the locomotive was used on the Southend line for a number of years until about 1938, when it is said to have passed to a Mr. Dunn at Bishop Auckland, and then to Belle Vue, Manchester about 1942. It is possible that I did see it here very briefly in 1951 when I made a short visit to the Zoo after flying back from the Isle of Man, but at that time I had no idea at all where Sir Roberts class 30 had gone. Later I learnt that the operators at Belle Vue had crudely disguised SYNOLDA (now named PRINCE CHARLES) as an American old timer and photographs confirmed the unwelcome news. It was a monstrous insult to SYNOLDA, Henry Greenly and Bassett-Lowke, and a pretty poor compliment to H.R.H. Prince Charles to have such a lash-up bearing his name.

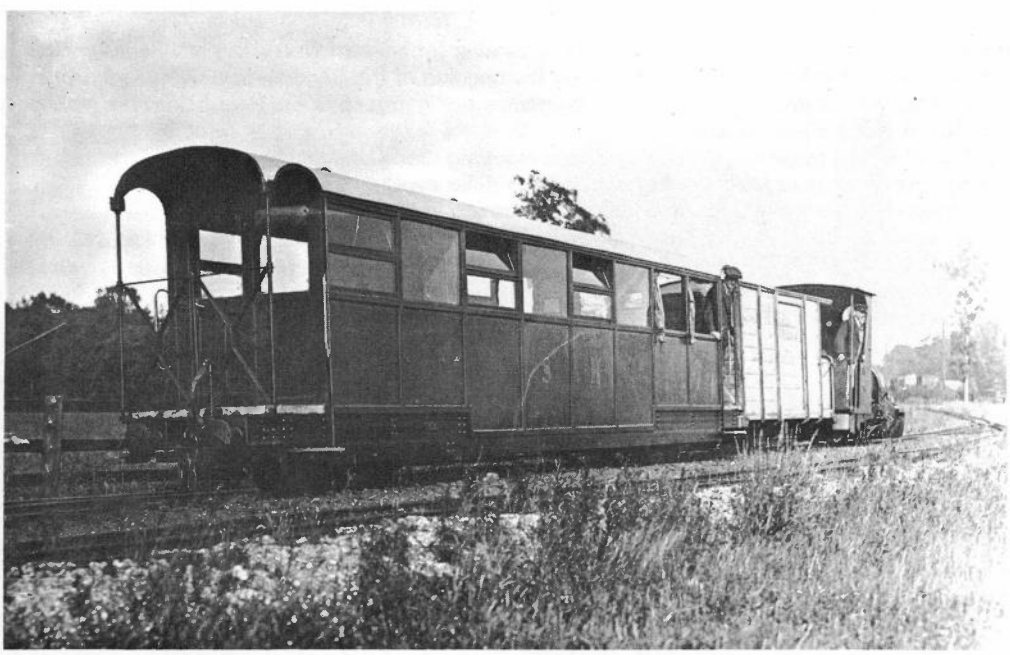
Happily the *"Ravenglass and Eskdale Railway Newsletter"* No. 68 (Winter 1977/78) contained the very welcome news that SYNOLDA had been bought by The Eskdale (Cumbria) Trust, and is now at Ravenglass where she was incorrectly reported to have gone in 1932. Her restoration, exhibition in the Ravenglass Museum and eventual return to full working order,* even perhaps working on the R. & E.R. on special occasions will surely delight all admirers of the products of the old Northampton firm. Is it too much to hope I wonder, that the first class 30 will also carry the original name SYNOLDA in the not too distant future? As to livery, it is fitting indeed that the locomotive will appear in that elegant blue which at one time adorned her younger sister SANS PAREIL, the pioneer Ravenglass and eskdale Railway 15in. gauge steam locomotive.

Another welcome amendment will, I dare say, now be fairly well-known for it concerns the 18in gauge saloon coach built by Robert Hudson Ltd. in 1924. After spending upwards of 35 years in use as a cricket pavilion in

**The rebuilding is scheduled for the winter of 1978/79 if capacity is available in the works.*



ESME on a passenger train from Warthill at Bossall station. A copper chimney cap has been fitted to the original stovepipe chimney. *(Real Photographs Co. Ltd)*



The passenger train at Sand Hutton in July 1927, made up of the Hudson bogie saloon and Hudson brake van. *(H.G.W. Household)*

Harton near Sand Hutton, the delapidated body was finally transferred to the Lincolnshire Coast Light Railway at Humberston on 17th June 1967 after an enthusiast in the south, who had bought it in 1966, decided that it would cost too much to transport to his home and had donated it to the line for restoration and ultimate use. At Humberston, a new underframe was made from two timber framed former War Department Light Railway D class bogie open wagons. These were stripped to floor level, one bogie on each was removed, and the solebars were reduced in length. New headstocks were then fitted and the half-frames were butt-jointed together. Steel plates were bolted along the sides of the solebars and finally tie bars similar to those on the reconstructed Ashover coaches were fitted. The result was a sound workmanlike job and the body was mounted on the frame when it eventually reached North Sea Lane. In the interests of safety a single floor level was decided upon in preference to the original raised sections at each end, so fillers were used where the bogies had been. The removal of the metal and old plywood sheeting, a rather formidable job as it turned out, revealed that the framework was in remarkably good condition and it was subsequently re-panelled with new plywood sheets. New iron handrails and fences for the end platforms were made to the original drawing of the coach which, with seating and details replaced, was finished in a rather pleasing light brown shade, with black underframe and running gear and the roof a creamy white. One or two windows had long been broken, so when these were about to be replaced, the opportunity was taken to dispense with the three small hinged upper sections on both sides. The coach is now reasonably close in overall length and height to the Ashover coaches. It was quite some time before I was able to enjoy a ride in this unique carriage, but I did finally manage this on 22nd September 1974 when I sampled all three sections, the private saloon, main saloon and semi-open portion. The running was satisfactorily smooth and steady—much more so I suspect than it had been on the S.H.L.R. shortly before 1930.

Around 1970/1 the old well in Sand Hutton village, no longer used, was very nicely restored to its one-time neat appearance and for the benefit of future historians there were buried in it various articles. These included an old half-crown, penny and halfpenny, a tape recording of childrens voices, photographs of local scenes and a copy of *"The Sand Hutton Light Railway"*.

Early in 1965 R.J. Hunter kindly loaned me Triffitt's Plans and Sections of the Sand Hutton Light Railway. These showed, to a fairly large scale, the proposed course of the 18in gauge Light Railway, but not the track layout as finally built (or altered) at Warthill. The end of the track here was shown straight up to the roadside, just as I'd remembered it from my 1925 visit. The later layout as shown on page 30 of the booklet had, I must admit, made me begin to doubt my own memory during its preparation.

Some weeks later R.J. Hunter also loaned me a circular letter from North Eastern Railway Headquarters Offices, York, dated 22nd March 1922, announcing the opening of the Sand Hutton Light Railway on 3rd April 1922, for "Goods, Mineral and Parcels Traffic," together with "Instructions and Regulations for dealing with this at Warthill, N.E.R. station" as follows:

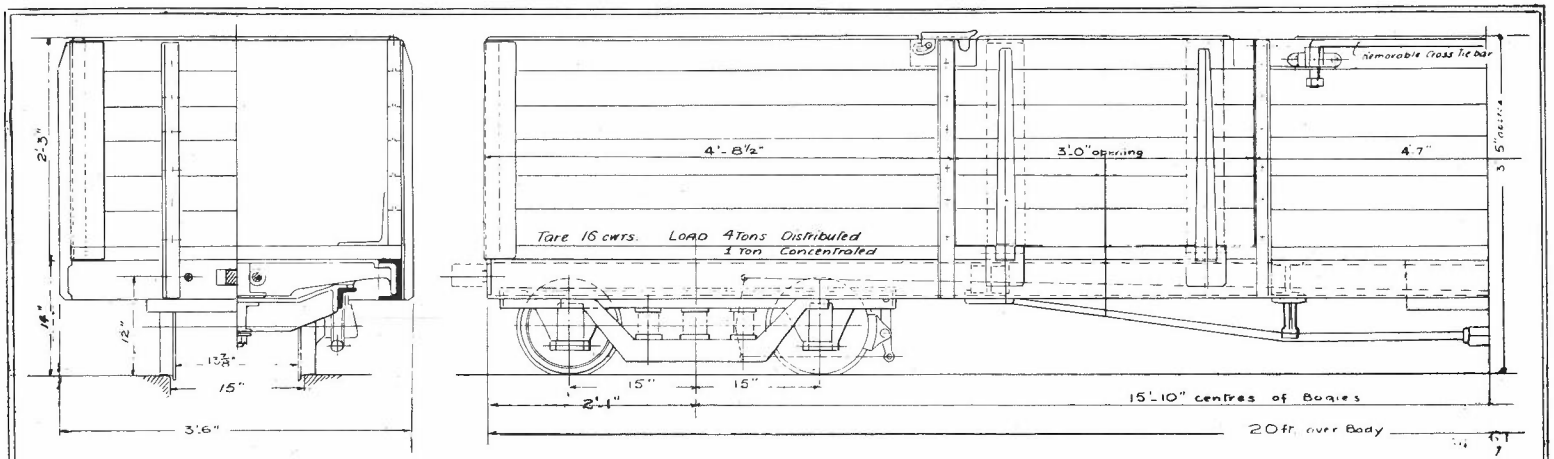
> "Transhipment required at Warthill; Goods requiring Crane Unsuitable.
> Enquiries to be made before consigning bulky articles over 18" gauge railway.
> Through Rates will not be quoted for any description of Traffic.
> Parcels and Miscellaneous Traffic to be Way-Billed and dealt with as at Warthill, N.E.R.
> Ordinary Live Stock NOT Received or Forwarded, but small animals packed (eg. pigs in crates) may be sent.
> Goods and Mineral Traffic—All Traffic for the Light Railway to be ticketed to Warthill N.E.R. for the point on the Light Railway concerned (eg. Warthill for Bossall) and invoiced to Warthill N.E.R. by authorised routes, at rates noted with that Station.
> Traffic for Claxton, Bossall and Sand Hutton, not specifically consigned to an N.E.R. Station should be forwarded to the Light Railway Co's station 'Via Warthill N.E.R.'
>
> Signed:— Alex Wilson, Chief Goods Manager.
> A.E. Williams, Accountant,
> Kenelm Kerr, Passenger Manager".

The official closure date of the S.H.L.R. was unknown at the time of publication, but K. Hoole later wrote to say that in the *"L.N.E.R. Magazine"* Vol. 22, Major H.A. Watson (a Director of the Light Railway) had quoted this as 30th June 1932.

Some four years after the book was published, I received prints of three outline tracings discovered in the British Rail archives at York. Two carried the name Jubb Ltd., Sheffield; drawing M.L.20 being entitled "Proposed 2-8-4 Type Articulated Loco: 15ins Gauge" and drawing M.L.21 "15 inch Gauge Open Bogie Wagon". The third drawing was not numbered but simply titled "Proposed 15 inch Gauge Open Bogie Wagon". The two Jubb drawings carry the signature of Henry Greenly, Consulting Engineer (though that on M.L.20 is not original, but a tracing), and this, coupled with the date 30th October 1919, immediately suggested that here were

Claxton station, the terminus of the branch from White Sike Junction, February 1928. Only goods traffic was worked over this section of the S.H.L.R. *(H.G.W. Household)*

Claxton Brickworks, November 1927, where a train loaded with coal is being positioned by one of the Hunslets. *(H.G.W. Household)*



SPECIFICATION

Max. Distributed Load	4 TONS
Max^m Concentrated Load	1 TON
Estimated Tare weight	16 cwt
Simple Vacuum Brake	50% Braked. Max^m Force 1500 lbs.
Steel Underframes: Wood Body.	
Centre Buffer Spring coupling	
Wheels	12" Chilled Iron Solid wheels
Axles	2¼ dia. Mild Steel
Journals	2" x 3½ long.

Axleboxes	Oil Pad Type C.I.
"	G.M. Renewable bearings
SPRINGS	Duplex for light +
"	heavy loads
Bogies	Steel Angle frames
"	C. Steel stretchers
"	Forged equalisers
"	Side bearings
"	Cast Steel Horns.

BODY.	Capacity 133 cub. ft. (3 TONS COAL)
"	Four Side Doors 3'0" wide
"	Floor 1½" x 7" T&G. fir boards
"	Sides & 1½ x 5" T&G " "
"	2 x 1½" x ¼ Steel Angle Battens
"	3/16 x 3½ x 3½ " Corner plates
"	5/16" thick Hinges: 2" x ½" Knees
Underframe	5" x 2½" x ¼" Channels: ⅞" Braces
"	Cast Steel Stretchers ⅞" Long^ml Ties

15inch Gauge

OPEN BOGIE WAGON

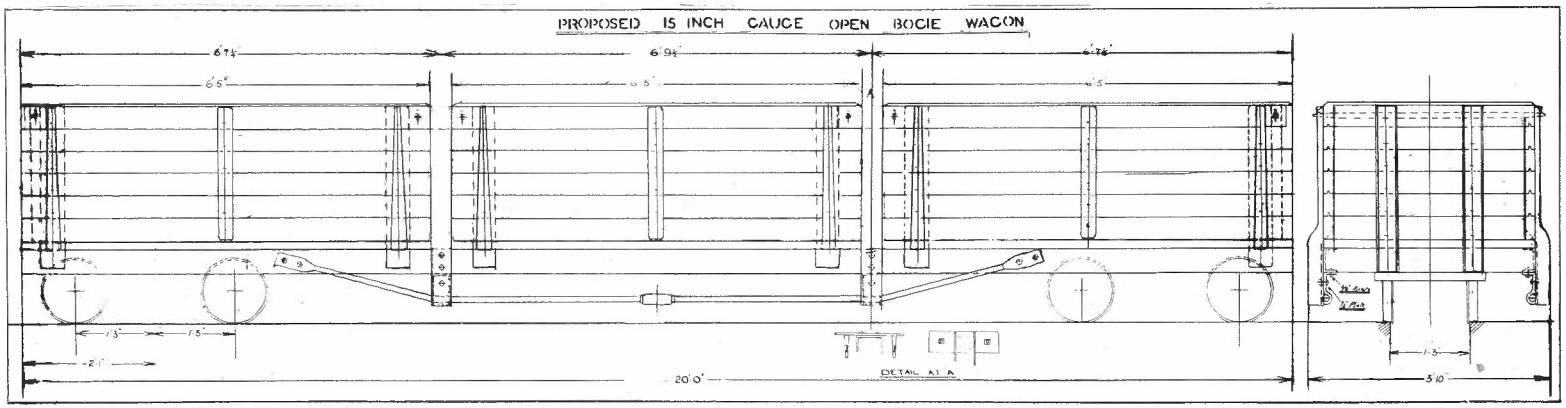
4TON MAX. LOAD

JUBB LTD SHEFFIELD

Henry Greenly A.I.Loco.Engrs
Consulting Engineer

Drg NO
ML21

PROPOSED 15 INCH GAUGE OPEN BOGIE WAGON



the proposed new locomotive and rolling stock for the extension of Sir Roberts 15in gauge miniature railway. Unfortunately there was no indication of this on the prints.

Searching for other possible users of this proposed equipment at that period, one has not many options. The Ravenglass & Eskdale Railway had recently ordered a new and rather more powerful version of the pre-war Bassett-Lowke 4-6-2 from Hunt & Company, Bournemouth. The Romney, Hythe & Dymchurch Railway was still very much a pipe dream of Captain Howey, and in the light of later events a 2-8-4 tank was certainly not the type of motive power envisaged! All the other 15in. gauge railways were short runs in pleasure grounds or private estates. This, and the fact that the drawings were originally with the N.E.R. at York backs up the suggestion that the proposals were for Sand Hutton, though it is now doubtful if the truth will ever be known.

SYNOLDA was capable of working the more or less level lines to Warthill and Claxton, though brick and coal trains on the latter section would sooner or later have required an engine of greater power. Beyond Sand Hutton, however, the terrain was undulating and ultimately involved gradients of 1 in 80,and even one of 1 in 65. Although the proposed 2-8-4 was to be a fairly large and powerful machine it was hardly in the same class as RIVER ESK of 1923 or the R.H. & D.R. Pacifics. It was however a great advance on former Bassett-Lowke designs, with outside cylinders and piston valves apparently worked by Walschearts valve gear. The side tanks were cut away at the front end, this detail and the chimney being very characteristic of London & South Western Railway locomotives of the same period, when R.W. Urie was in charge. A table of dimensions appears on the drawing, and also the outline of a 200ft. radius curve—again suggesting Sand Hutton. The general proportions are much larger than previous designs, and in fact approximate more closely to the one third scale of later 15in. gauge locomotives. One disappointing feature is the lack of any explanation of the description "articulated". The section shows a substantial girder frame which extends to the front of the side tanks, but there is no indication of a pivot under the boiler so perhaps the only articulation was in the pony truck and rear bogie.

The bogie wagon shown on drawing ML21 is also substantially designed with a heavy steel frame, modern bogies and vacuum brakes. If the design has any fault it is the small doors which could have been difficult to load and unload. This might be the reason for the alternative proposal drawing, obviously prepared by a junior draughtsman, perhaps at the N.E.R. carriage and wagon works at York. The overall dimensions are very similar to the Greenly design, but there are three large drop doors on each side with pin-and-wedge catches so familiar on main line wagons even today.

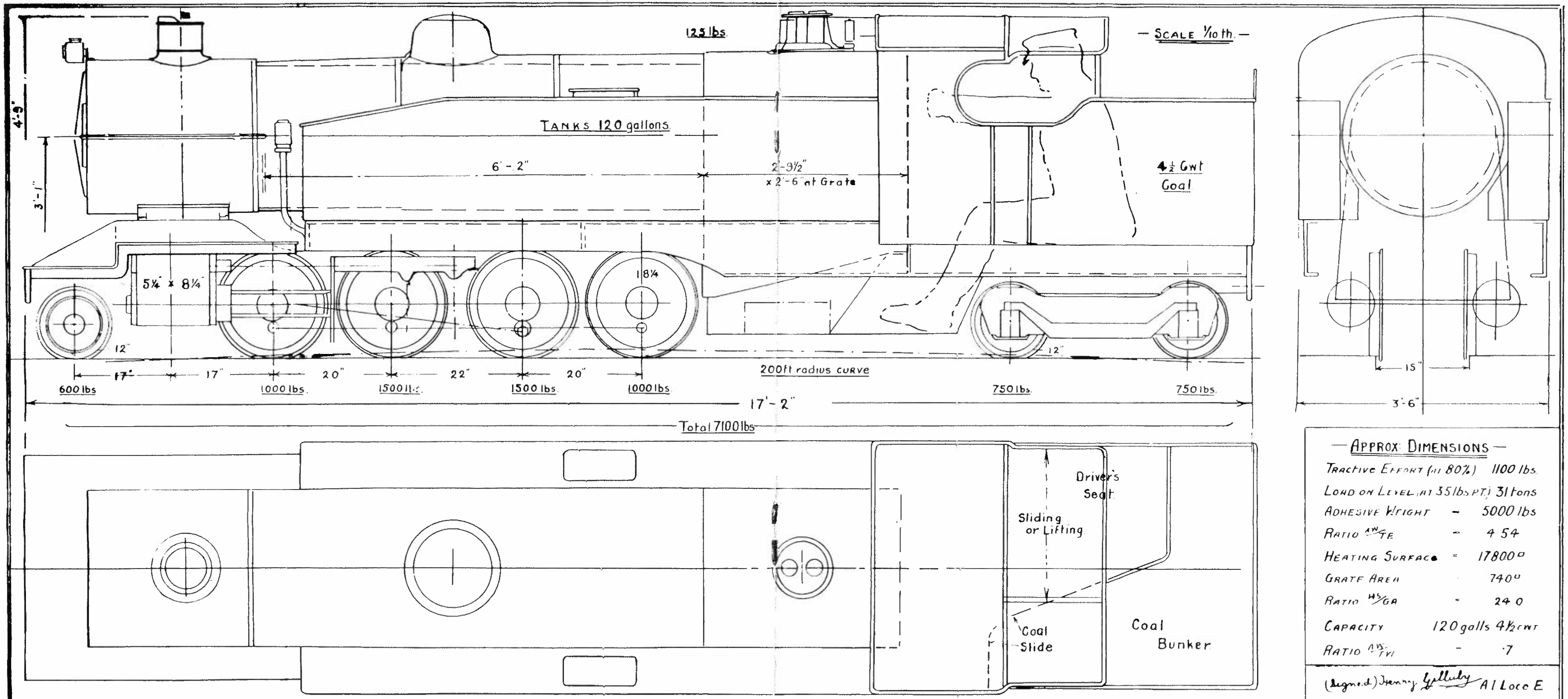
I have never seen any other reference to this 2-8-4 design, which perhaps was never fully completed in detail. The authors of recent books on 15in gauge railways or locomotives make no mention of it, and George Woodcock, despite his long interest in miniature locomotives has been unable to throw any light on Greenly's proposal. Whilst it is interesting to speculate on how things might have turned out on the Sand Hutton, at the critical moment the 18in gauge 0-4-0 well tanks and rolling stock from Deptford Meat Depot became available, most likely at bargain prices. Sir Robert decided to change the gauge to 18in. and use the more powerful Hunslet locomotives, thus effectively putting an end to any further developments on the smaller gauge.

The firm of Jubb Ltd. will no doubt be unfamiliar to enthusiasts today, but before 1914, W.H. Jubb, a Sheffield man who owned an engineering works, was a well known model railway enthusiast. Steam driven locomotives in 1¾in, 2in and 2½in gauges were popular, and gauge 0 was the smallest standard size until the introduction of 00 late in 1922. About 1920 Jubb put a range of gauge 0 and gauge 1 steam locomotives and wooden bodied rolling stock on the market. The cheapest was a freelance four wheel tank locomotive with outside cylinders but more ambitious types were reasonably good models of main line prototypes. The firm's catalogue, like the models, was comparatively expensive, certainly for a lad still at school.

However, Jubb was well known to both Henry Greenly and Proctor Mitchell of the R.& E.R., and operated the 2in. gauge Greystones Railway, which had complete signal interlocking and for which he built a number of locomotives. Bassett-Lowe built no more 15in gauge locomotives after 1914, with the exception of the class 30 4-4-2 COUNT LOUIS in 1925 for which parts were already on hand. Jubb Ltd. were therefore well placed in 1919 to enter the miniature locomotive construction business.

In 1922 they built a 7¼in gauge 0-4-2 tank for the Saltwood Railway which is, I believe, still running though converted to an Atlantic. This was their largest locomotive so far as I can discover. The model railway equipment could not successfully compete with the established Northampton firms products. and went off the market in the late 1920's.

For several years after *"The Sand Hutton Light Railway"* was published I paid occasional visits to the Sand Hutton area. During this period the old depot building deteriorated very quickly and in July 1964 almost half of the clerestory had fallen in. The final total collapse or demolition occurred in the early part of 1965 and a visit



Approx. Dimensions

Tractive Effort (at 80%)	1100 lbs.
Load on Level (at 35 lbs p.T.)	31 tons
Adhesive Weight	- 5000 lbs
Ratio AW/TE	- 4.54
Heating Surface	= 178.00□
Grate Area	7.40□
Ratio HS/GA	- 24.0
Capacity	120 galls 4½ cwt
Ratio AW/TW	- .7

(Signed) Henry Greenly A.I.Loco.E
Oct. 30.19 Consulting Engineer

PROPOSED 2-8-4 TYPE ARTICULATED LOCO: | 15 ins Gauge | JUBB LTD SHEFFIELD | Drg No ML. 20.

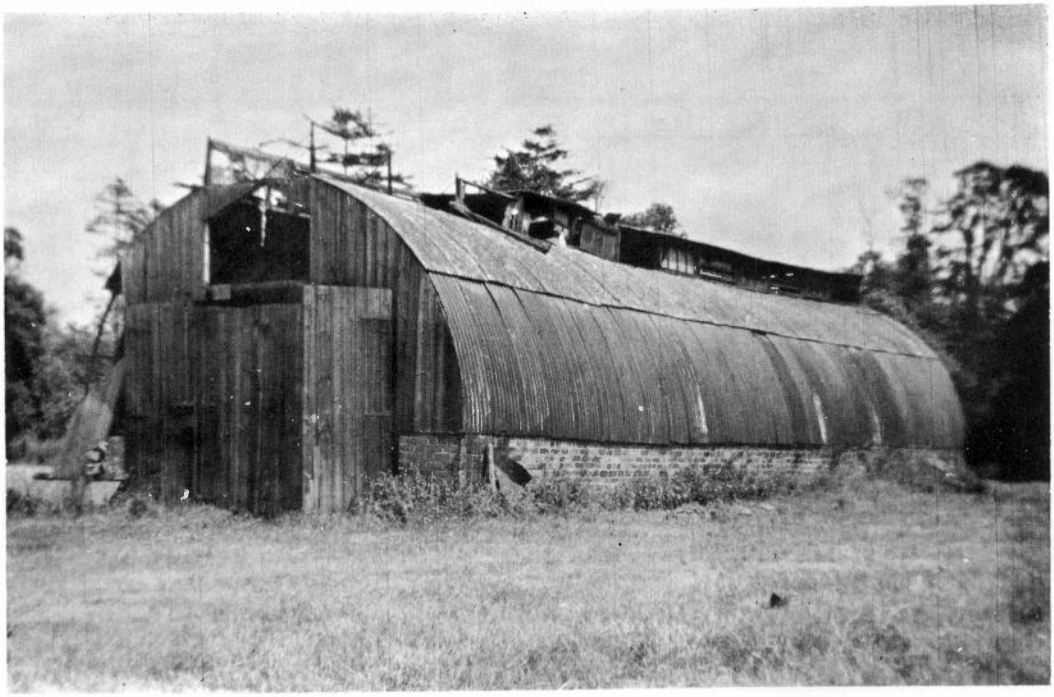
sometime later revealed no trace at all of the once familiar building, and crops were flourishing on the site. The coach also got steadily worse, and by 1967 its condition seemed fairly hopeless, but thanks to the stalwarts on the L.C.L.R. it was practically fully restored and ready for service towards the end of 1973.

Of Sand Hutton village, the Hall and the few remaining relics of the S.H.L.R. I had no recent news. Hence, on 4th July 1978, I cycled over to the area, turned off the A64 Scarborough road and passed Gravel Pit Farm before stopping at the site of the old Depot. The crops still flourished there and the bushes and trees near the Forth Bridge had spread considerably, in fact it was impossible to see if the third span and fourth pier were still there. The centre span is still complete with its four lengths of standard gauge rail, but the one nearest the lane to the Kennels now has only one length in position.

The picturesque little village was a scene of utter peace and quiet but the area within the Hall grounds has altered very considerably with the housing development mentioned on page 67 of the booklet, and is in fact almost unrecognisable. I was told that the Hall no longer exists, and learnt too that Fred Robinson, one time driver of the little Hunslets, had died some seven or eight years ago. The lake is still to be seen in parts, but trees and bushes have spread considerably and, with barbed wire fences and "No Admittance" signs it is impossible to see if the remains of the bridge which carried the 15in gauge line across a narrow neck of water still exist.

The cutting on the line near Bossall had been hard enough to locate in the early 1960's, so I did not re-visit this section, which had no other remains worth mentioning. I did, however, traverse the one mile of bridle path leading past White Sike cottages and on to Warthill station. The small bridge over the River Stank near the dwellings remains in good condition, but of the second similar one nearer to the station I could see no trace due to the overgrown edges of the path and adjoining fields. Warthill station, though long without any B.R. track, survives in good condition and is occupied, but the site of the goods yard and exchange siding is being occupied by an industrial concern.

In total then, there are now very few visible S.H.L.R. relics left, but the peace and tranquillity of Sand Hutton remains and makes a welcome change from the busy A64 road. Here one can still step back in time even as I felt to do in the early 1960's.



Sand Hutton Depot building in an advanced state of dereliction, 4th July 1964. (K.E. Hartley)

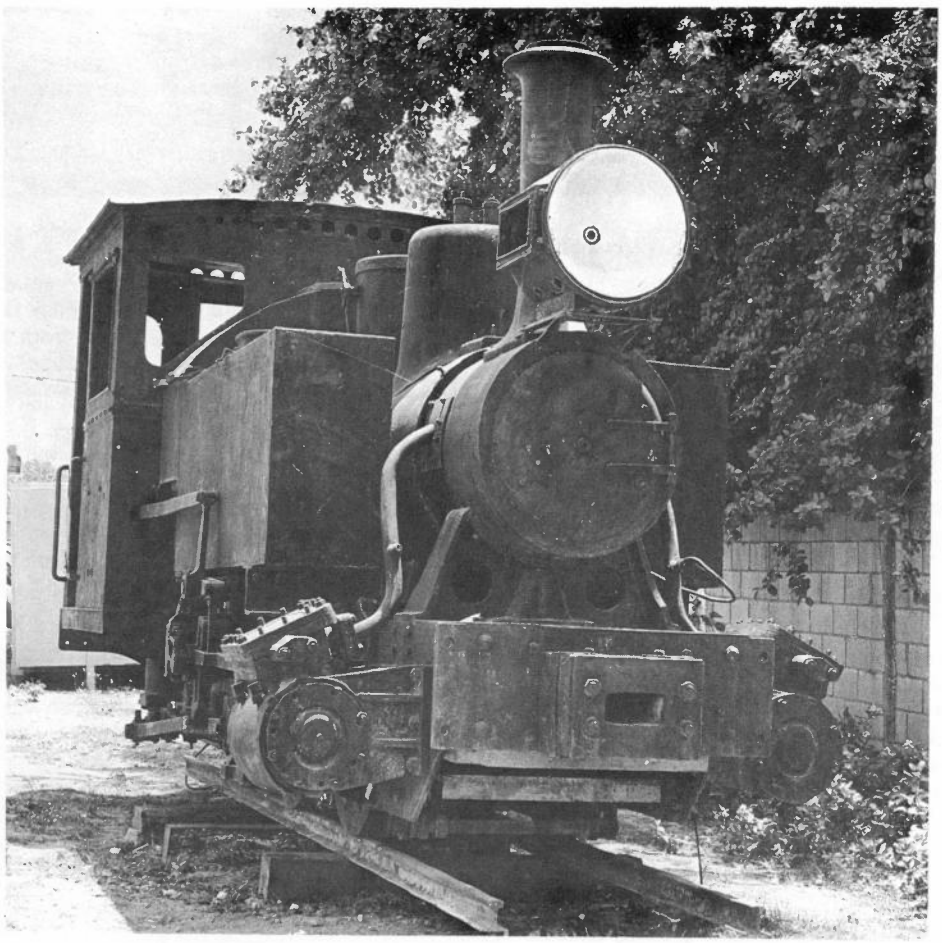
A JAMAICAN DISCOVERY

M. G. Satow

Comparatively little is known of the narrow gauge railways which served sugar cane plantations in Jamaica, and it was quite a surprise when a friend turned up recently with this photograph for identification. Apparently, the locomotive is lying in a sugar plantation owned by Aitken's and someone has an urge to restore it, to display condition at any rate.

They say that there are no plates or records and can't find any numbers, though they may not have looked in the right places. The right hand cylinder cover gives a clear indication of a hard life!

It is rumoured that the locomotive came to Jamaica 40-50 years ago, second-hand, probably from Scotland originally. My immediate reaction was that it might be an Andrew Barclay.



R. Wear kindly checked on this find and confirmed that it is in fact Andrew Barclay number 1852, supplied to Reginald Aitken, 3 Coronation Buildings, Kingston, Jamaica through the well known agent Duncan Stewart & Co. Ltd., London Road Ironworks, Glasgow who specialise in sugar factory equipment. It is a 2ft 6in gauge six coupled side tank with 9in × 12in cylinders, oil fired and carried the legend "JAMAICA SUGAR ESTATES LTD. No. 1" on the side tanks when it left the works on New Years Eve, 1924. The cylinder cover might have been obtained from another Barclay, number 1948, a four coupled well tank with slightly smaller cylinders delivered in 1928.

BRICKWORKS RAILWAYS OF SWITZERLAND

R.A. Bowen

While the heyday of the brickworks and their associated claypit railways in Switzerland is now over, there are still a few to see and also some interesting remains. Curiously the narrower gauges tend to be a little more common than in other countries of Europe, and one is left with the impression of rather more smaller scale systems than elsewhere.

Traditionally a brickworks is situated on the nearest piece of available flat land to the source of the clay, which in Switzerland is very often a working face cut out of a hill rather than a true pit. Rails are primarily needed to transport the raw clay to the works in skips, and systems of 40, 50 and 60 cm are to be found which almost always feed the clay to a hopper from where it goes to the mixing machinery. But subsidiary uses are to carry excavators at the working face and to move the finished products about the works. Tracks for the former have an overall width of between 1.5 and 2 metres—sometimes with two parallel narrow gauge tracks—and the excavators often include a storage hopper and devices for loading the narrow gauge skips. Systems for carrying the finished product are much rarer than, say, in Germany, but may take the form of either special systems of electrically driven carrying skips with roll on-roll off trucks of a narrower gauge or be extensions of the system used to bring in the raw materials. Sometimes too the main haul of raw material may be handled by a bucket line. In this case a small system usually exists at the pit end of the cable and very occasionally at the brickworks.

This then is a survey of the Swiss brickworks railways seen by the author during the last ten years. Some of the features are common to the gypsum, sonerite and stone industries but the railways serving these have been omitted.

Basel is one natural gateway to Switzerland and we will start our tour there and proceed in a generally clockwise direction round the country.

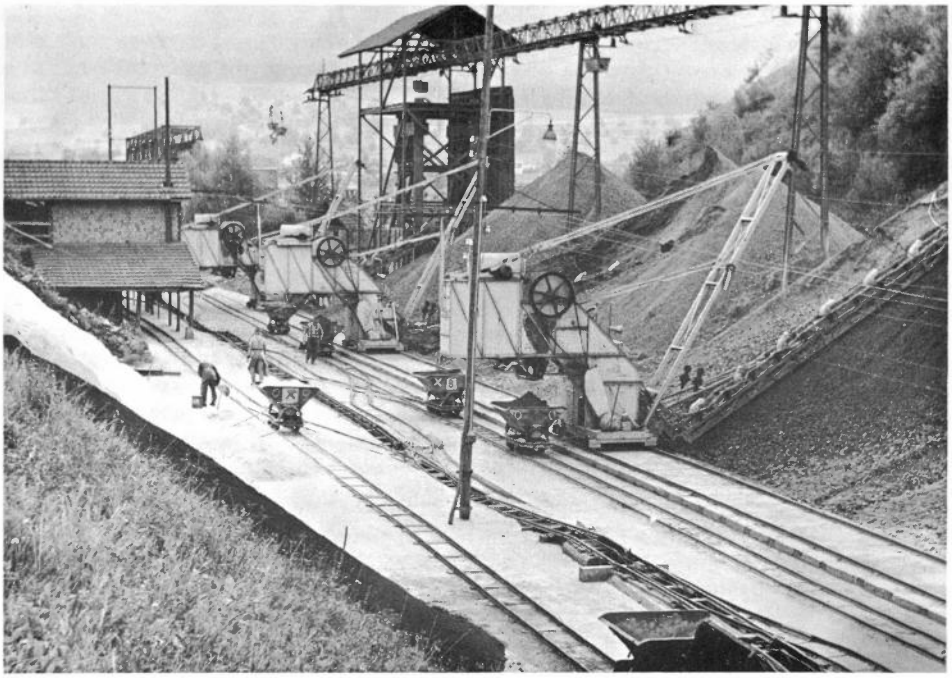
The first system to be described has no locomotives at all. On one side of the valley near Frick is a 60 cm system roughly in the shape of a square with cable haulage on one side. The skips run by gravity from the end of the cable to the loading points where they are stopped by sprags, and then finally go through miniature wagon retarders to the foot of the incline where they are emptied into a hopper. From there a bucketway takes the clay 1½km, crossing the SBB twice, to the works of **Dachziegelwerk Frick.**

Immediately adjacent is the larger plant of **Stahlton A.G.** They apparently used to have a 4 km. long cable line parallel to the one just described but going further into the hills. This has now gone but extensive use is made of the rail system in the stockyards which remain much as they were when the cable haulage was in use. Now man power mainly shifts the skips about, but a 1948 Brown Boveri battery electric locomotive is in attendance while three early Orenstein & Koppel diesels (3474, 3816, 4439) used to be stored. Broad gauge rail mounted grabs are much in evidence, and to complete the picture a self-propelled standard gauge trolley was used to move the finished products to the SBB sidings.

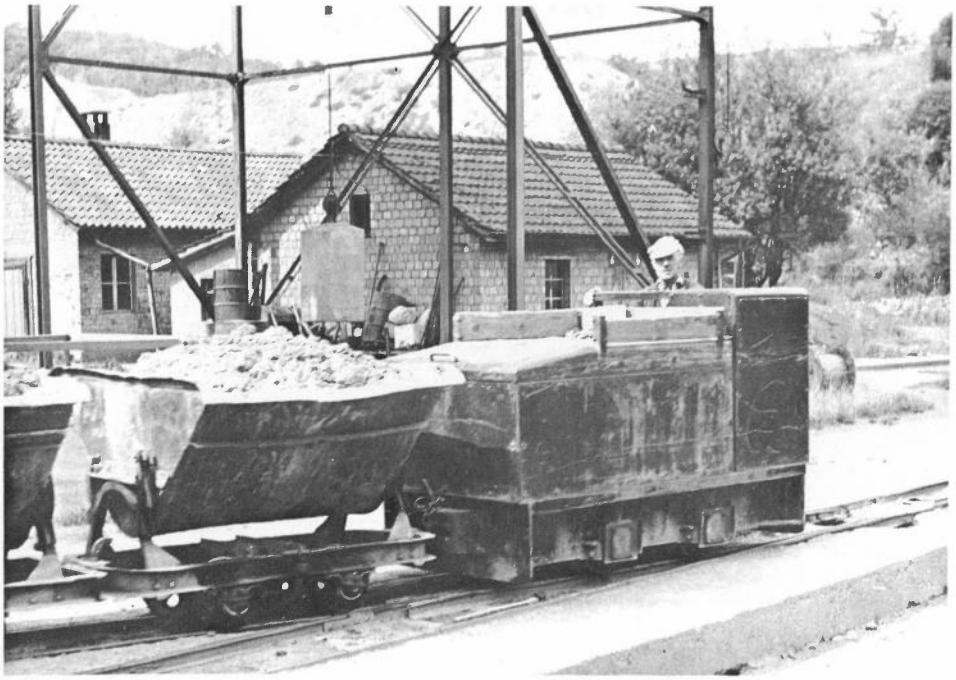
The station of Laufen lies on the floor of a generally wooded valley through which runs the Delemont-Basel line. There have been works round the area for a long while, with, in addition, some interesting early industrial locomotives. A cable worked line used to come down to the station area from the works of **Tonwarenfabrik Laufen A.G.**, situated on the plateau to the east. To serve the works, a short but heavily laid 60cm gauge tramway used to bring the clay from a slightly higher level. When visited the fleet of diesels consisted entirely of post-war O&K machines of which there were five or six. Works numbers recorded were 25044/1951, 25136/1951, 25155/1951, 25165/1952, 25542/1953 and 25738/1957, but the reason for the doubt as to the number is that the middle pair seem never to have been recorded together by the same person. Despite this large fleet, the actual work done seemed to involve only a relatively small number of skips. It is not clear if the line is still in use at present.

In the north east of Switzerland are two works of **Keller Ziegel** with track gauges of 50cm. One of these at **Dattnau** near Winterthur originally had a chain-worked incline to bring the clay in skips down from a pit to the works where a cable took them up to the upper level over an inclined wooden trestle. By 1976 the whole system was abandoned and the O&K locomotive lay derelict at the inner end of the incline, which was almost completely demolished and the buildings turned over to farm use.

The other recently modernised and still active plant at **Pfungen** used to have a 50cm system running up from the adjacent pits to the works over a wooden trestle which is also now derelict. The locomotive, which stands in



Stahlton A.G., Frick. Clay is brought to the stockyard by the bucketway in the background, and loaded into 60cm. gauge skips by reclaiming machines. Similar machines are often used in the quarries. *(R.A. Bowen 9/1969)*



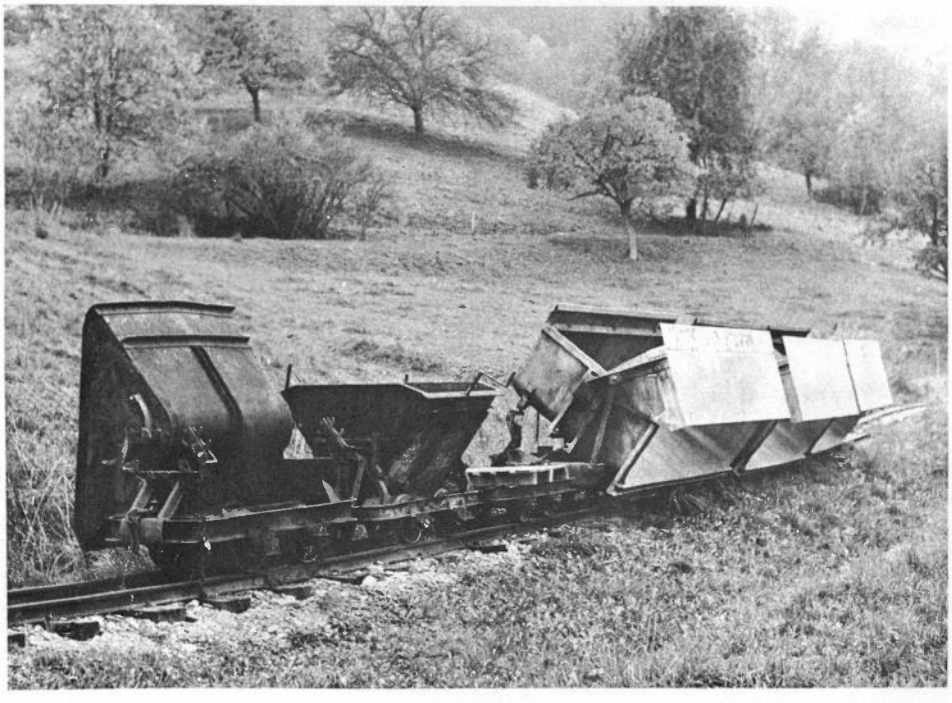
Stahlton A.G., Frick. This small battery locomotive (Brown Boveri 26/1948) assists in shunting the stockyard. *(R.A. Bowen 9/1969)*

the shelter of a nearby tree, causes confusion to visiting enthusiasts. The Orenstein & Koppel plate that it carries is from the firm's Italian subsidiary at Sesto San Giovanni and is sufficiently rare to cause some problems. To make matters worse the plate clearly gives the gauge as 600mm. However, the locomotive has at some time been modified to the narrower gauge and remains like that now. For the benefit of future visitors I should record that it is O&K type RL1S, works number 1550/1947.

Up at the standard gauge sidings one very small locomotive is available for shunting, although now looking somewhat forlorn. Being the smallest of Breuer's cabless locomotives (10/12PS number 642) it stands no more than waist high. It carries a running number 5800.

Flourishing systems once existed in the heart of the largest town, Zürich. Travellers on the electric line up the Uetliberg of the BZUe (now part of the SZU) may have noticed that shortly after leaving Geisshübel a siding has what appears to be a drawbridge over it. This, in fact, is exactly what it appears to be and carries the 60cm gauge tracks of the **Zurcher Ziegelei.** The total motive power owned by the company is not known to me but it included two more builders not mentioned so far—the Dutch firm of Spoorwijzer and the German firm of Diema. Photographs on sale show Diema locomotives at work on the Lehmbahn Werk Albishof. They may refer to this site—or any other! There has been some interchange of stock between here and the now closed plant and line from the pits at **Rafz,** on the German frontier near Schaffhausen. This latter site used the railway both to bring in clay over a main road and, using pallet wagons, to move out the finished product.

The firm also opened a new pit at **Schinznach Dorf,** which is at the end of a long road serving only the station—unusually for Switzerland this is some way from the village. Owing to the recession this new investment lies idle. The clay is carried in large capacity German side tipping wagons over heavy duty track, some of it originating from the Zürich tramway system but reset to 60cm gauge. At the station end is situated the locomotive shed and the line is carried above silos from where the clay can be dropped into rail wagons for transport to the works.



Zurcher Ziegelei, Schinznach Dorf. An interesting contrast in rolling stock on this new line, which is laid with very heavy rail. *(R.A. Bowen, 10/1976)*

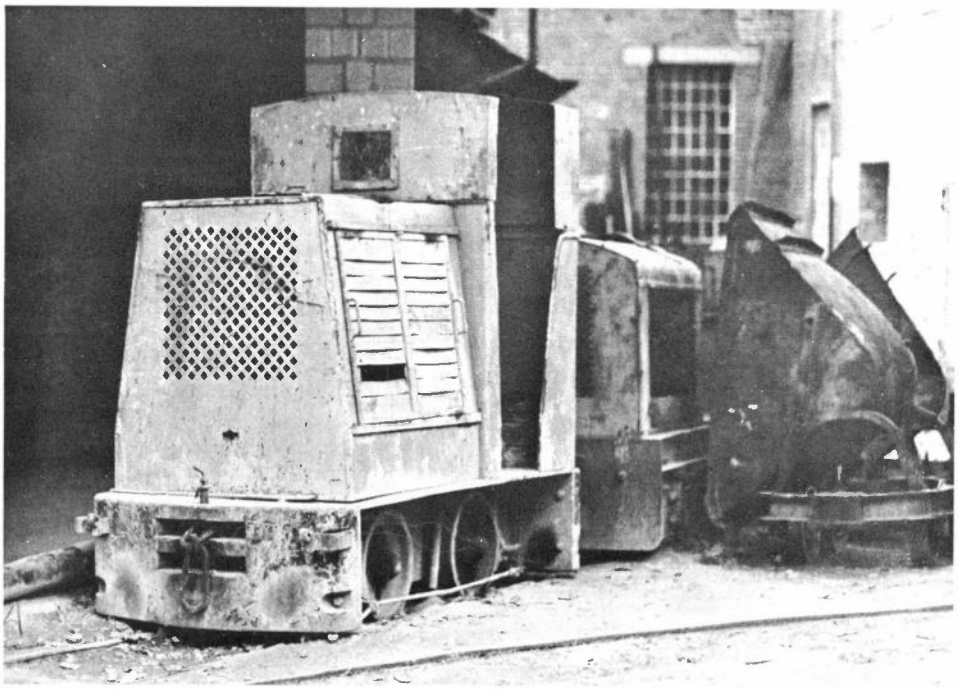
The locomotives recorded at any of the Zurcher Ziegelei plants are as follows:

Tm2/2	11	0-4-0DM	Deutz		55764	1954
Tm2/2	12	4wDM	Deutz		56807	
Tm2/2	14	0-4-0DM	Spoorwijzer			
Tm2/2		4wDM	Diema (Asper)		3200	1971
Tm2/2	28	4wDM	Diema (Asper)	DS 28	2580	1962
Tm2/2		4wDM	Diema (Asper)	DS 28	2581	1962
Tm2/2	78	4wDM	Diema (Asper)	DS 28	2702	1964
Tm2/2	1	4wDM	OK			
Tm2/2		4wDM	OK (MBA) S		1501	1947
Tm2/2	4	4wDM	OK (MBA) S		1520	1947

Returning to Zürich, we find what could be the most unusual system to be described and for which I am indebted to Herr W. Hefti for information. This rather short-lived works described in *"Zahnradbahnen der Welt"* was faced with a familiar problem, a considerable difference in elevation in a rather short distance. The conventional cable-hauled incline out of the pit did not suit for geographical reasons and a bucketway was not chosen either. The solution was therefore to instal rack sections in normal surface track where appropriate. To keep costs down elsewhere the track was of 40cm gauge and as most rack systems less than one metre are to the standard SLM 80cm gauge this was quite an achievement.

The owners state that the locomotive was home made and with the engineering capabilities of the firm shown in the track, this could well be, but a study of the photograph published in the reference makes me think that it is an extensive rebuild of a standard product: but of which maker? O&K, Schoema or Diema seem the most likely.

Nowadays the town of Zürich is expanding over the brick pits and it seems somewhat valedictory that the construction is mainly in ferroconcrete: one wonders how many more systems have gone from here and many other places around the country.



Schumacher & Co., Körblingen. The 15 PS Schoema diesel locomotive (1499/1953) waits for its next duty at the brickworks. (R.A. Bowen, 1/1976)

To mention some others known to the author, to the east of Frauenfeld the observant passenger on the SBB may have seen a 60cm gauge line tunnelling underneath. This belonged to **Ehrai Ziegelei Frauenfeld A.G.** and connected the pits on one side of the line with the small works on the other. The complete rolling stock was an O&K diesel supplied through MBA (works number 2003) and a few skips. The system was closed in 1971 and the present position is unknown.

Close to the RhV/SBB interchange at Heerbrugg was the plant of **J. Schmidheiny.** This had 60cm gauge track from the pit to the works and fairly recently the locomotives seem to have been honoured with a concrete garage. There was a standard gauge siding round a curve, worked apparently by winches. Most certainly this was one of the larger establishments but it too has closed and has been partially redeveloped. Just to the south, north of **Oberriet** near Altstätten and by the side of the SBB, was for many years a wooden construction with 60cm track leading into it and a pit not far away. From the train it appeared that the nearby Gips factory could have been responsible, especially as it has its own narrow gauge system, but on reflection it was most likely to have been part of the transhipment system of a nearby brickworks, **König Rob A.G.**, which is now completely converted to agricultural use.

Another small site of an unknown company lies above the village of **Orberriet.** Its interest lies in the very typical wooden two-road locoshed and workshop that still stands. The gauge was 50cm.

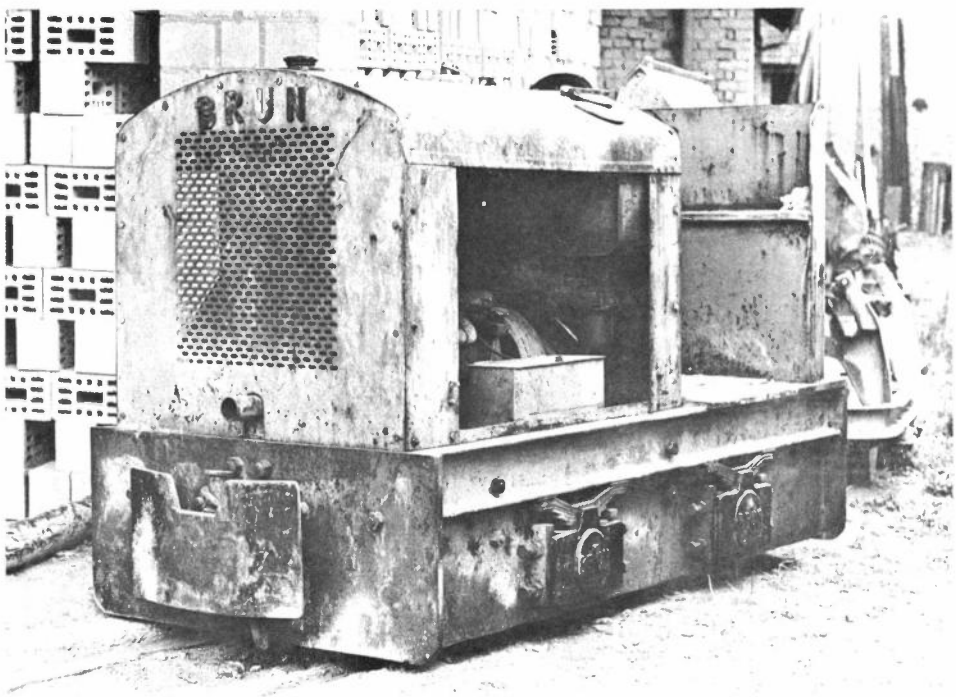
Another area where clay is found is around Luzern. At **Ziegelei Inwil** the pits are adjacent to the works. However the place is now closed though some 60cm track and skips remain. At **Horw** to the south a brickworks still stands in the village and clay is brought by lorry from the pit in the hills to the west. The cableway linking the two has now gone, though there is evidence to show that it was linked to a 60cm gauge system at the pit and unloaded straight into the plant at the lower end.

Schumacher & Co., Körblingen. A rake of skips ready for loading in the clay pit.
(R.A. Bowen, 5/1976)

In case this all sounds like past history, we continue with four operational systems all worked by locomotives. Extensively modernised and just visible from the SBB to the east of Gisikon-Root station is the relatively well-documented 50cm gauge line of **Schumacher & Co., Ziegelfabrik Körblingen.** An article appeared in *Eisenbahn Amateur, January 1975.* Although the firm was founded in 1860, the line was not built till 1908 in order to reach a source of clay some 1.2kms to the north on the hillside. Horses were used until 1926 when diesels took over. The present stock includes one of the standard small locomotives of Brun & Cie., Nebikon. Other locomotives in the line's history were a Diema bought in 1926, then rebuilt for battery electric operation and at work during the war, finally being withdrawn in 1946. A Deutz was bought in 1932 but has also now gone. Later came a 15PS Schoema (1499 of 1953) and then the 10PS Brun in 1960; the latter locomotive being normally used to shunt in the factory area. Finally a larger Schoema (22PS, 3t) number 2683 of 1963 completed the fleet.

The terminal installations at either end are simple, consisting only of tipping roads and loco siding at one end and two sidings at the other. When operating, some twenty trains of ten skips are run each day, but there is talk of replacement by road vehicles. The line does not enter the modern workshops and the locomotives have to be moved there without the convenience of rails.

Another is the rather small system of **Otto Schactler, Fabrikant Ziegel- u. Backsteinfabriken, Burgdorf.** The buildings are in an antique style and use wood extensively both for the framework and cladding. The buildings somehow appear larger at the top than at ground level.The 60cm gauge system brings the clay a short distance along a wooded lane to the factory, which, as its title says, produces specialised brick products like tiles and oven stones. The stock when last visited consisted of two early Orenstein & Koppel diesels, works numbers 2006 and 7576.



Schumacher & Co., Körblingen. This 10-12 PS Brun locomotive normally shunts skips in the brickworks. *(R.A. Bowen, 10/1976)*

Tuilerie Corcelles. An ornate tiled awning covers the haulage terminal in the quarry. The curved rods guide the cable into the wagon fork. *(R.A. Bowen, 10/1967)*

Tuilerie Corcelles. A locomotive has just brought a load of clay into the unloading hopper. *(R.A. Bowen, 10/1967)*

A minimum track gauge—40cm—is to be found at **Tuilerie Corcelles.** The stock is very modern and consists of two Diema diesels (2072/57 and 2527/62), while the layout is small, neat and functional serving the works only. It is perhaps significant that firms producing specialised ceramics in both France and Germany use a smaller gauge, but without locomotives.

I should also mention a system where visitors are likely to find themselves out of the country—literally—if they do not watch where they are going. Along one side of the pit of the **Tuileries Briqueteries S.A., Bardonnex** (near Genève) runs a main road and this is in France. The pit extends up to the French border and has taken up a curiously distorted crescent shape along the artificial boundary.

The system used to be classical but is now being partly replaced by conveyor belts. Firstly rail-mounted excavators run along the edges of the pits and dump the clay into 60cm gauge skips as they pass the built-in hopper. These skips pass round balloon loops at the end of moderately long runs from a central tipping point. The brickworks themselves are at a higher level but no attempt was made to connect them by a locomotive worked line. Initially a double track incline was laid on which the skips were hauled by cable, but this has now been replaced by a conveyor belt. The site introduced us to two minimum size locomotives from Hatlapa (4372/50 and 7915/54. The company has two O&K diesels (11049 and 25047/51) in addition to these and has now also acquired a Deutz diesel (works number 10811).

To conclude mention must be made of yet another system without locomotives at **Tuilerie Montricher** where, as commonly found in France, lorries bring the clay from the pit to a stocking yard outside the works. From this area it is put into narrow gauge skips, here probably 60cm gauge, and these are hauled up to the top of the works buildings where there are a few sidings and the mouth of the mixing plant hopper. Usually a system like this indicates that there was once a main line clay haul which is now lifted, but, as in this case, details are hard to come by.

A study of the map shows that this review has not included any brickworks in the country south of the Alps or in the Graubunden. In view of the extensive use of bricks in the Italian area this seems surprising, but reflection shows that these bricks are often of the light type requiring less clay per finished volume than the standard variety. Maybe railways were therefore less necessary, but I suspect that there are, or were, unknown systems in these otherwise uncharted areas.

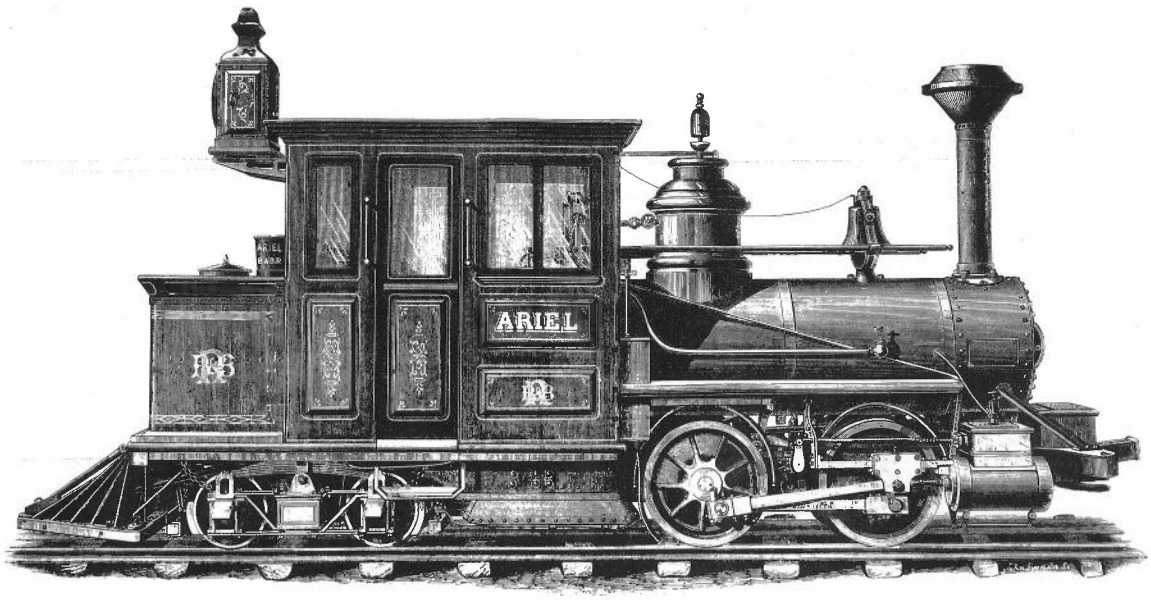
In the absence of a thorough amateur recording system as established in Britain, the locomotive observations are very much a personal matter. This is not to disown the vigilence of some colleagues and, of course, the firms themselves. However, many an enquiry about a departed locomotive leads to the answer that when it was disposed of, so were the records. Further details of these and other industrial railways in Switzerland can be found in the Industrial Railway Society Handbook CH *Industrial Locomotives of Switzerland,* (£1.25).

The mountain railway connecting Argovie, in Switzerland, with the neighbouring villages was recently the scene of a peculiar phase of railway operation, which cannot have conducted to "passenger comfort". Two extra coaches were attached to the train in order to accommodate passengers returning from market, and the engine appeared to be working under difficulties from the start. After a time the extra load proved too much for it, with the result that the two coaches were left behind, the occupants being obliged, under protest, to enter the already overcrowded compartments in front. On reaching a steep gradient the engine stopped working altogether, and the top of the incline was only surmounted by the combined efforts of all the passengers, who alighted and pushed the train up to the top. Shortly after the fuel supply gave out, and the driver had to visit a neighbouring farm, where a sack of wood was bought after much bargaining. The train was considerably behind time on arrival at its destination. *(The Engineer. Dec. 11, 1908).*

The need for a light railway, from Nowgong Town to the Kamrup station on the Assam-Bengal Railway, so as to link up the railway, the town of Nowgong, and the river, and to tap as many of the tea gardens as possible, having been felt for many years, the attention of the Government of Eastern Bengal and Assam was drawn to the subject, and it has now been sanctioned a survey of the proposed line being made, and it will be carried out during the coming cold weather by the agency of the Assam-Bengal Railway. The route proposed will be from Kamrup to Nowgong and on to Silghat, via Samaguru, Rangamati and Salonah. This alignment has been carefully drawn with the object of serving the most thickly populated part of the country and as many tea gardens as possible. The length of the proposed line will be about 50 miles, and it is estimated that the cost will be about Rs. 10 lakhs.. *(The Engineer. Nov. 6, 1908).*

ARIEL - A PIONEER TWO-FOOTER

M. Swift



Although 3ft gauge railroads were developed very rapidly in North America during the 1870's, so rapidly in fact that by the start of 1877 no less than 2700 miles were said to be operating, the 2ft gauge was slow to make an impact. It was May 1876 before the first two-footer was incorporated, this being the Billerica & Bedford Railroad, brainchild of George E. Mansfield who had apparently visited Wales a little earlier. The towns named in the title were about eight miles apart, located a few miles north-east of Boston and, most important, they wanted a railroad all their own! Track construction started during the spring of 1877, utilising 25lb. rail. Rolling stock was ordered from the Ranlet Manufacturing Co., Laconia, New Hampshire, and two locomotives from the Hinkley Locomotive Works, Boston. It is one of these which forms the subject of our engraving.

The two locomotives, ARIEL and PUCK, were constructed to the design patented by M.N. Forney. The ordinary American locomotive of the day had a leading bogie or truck, but Forney argued that because this carried one third of the weight of the locomotive, it reduced the adhesive weight on the driving wheels and hence its haulage capacity. His design was a four coupled locomotive with a four wheel bogie under the bunker, but arranged to travel bunker first. He claimed that the weight of the boiler and machinery, which did not vary, was therefore wholly on the driving wheels, and the weight of the fuel and water, which did vary, was on the truck. A separate tender was unnecessary and by running bunker first the locomotive was said to retain the good riding characteristics of the ordinary locomotive. In normal parlance therefore, the Forney type was a 0-4-4 tank, but because they usually ran bunker first they are often referred to in U.S. publications as 4-4-0T; to the confusion of foreign readers.

ARIEL and PUCK cost $3,500 each and presumably were delivered in time for the opening in November 1877. They were finished in the elaborate style so typical of the period, and well portrayed in the engraving which is probably taken from the builders photograph because it varies in several details from a similar view taken on the railroad. One unusual feature was the width of the firebox. The American locomotive normally had inside bar frames which especially restricted the firebox width on 3ft gauge locomotives, but ARIEL had a separate frame to carry the driving wheels and attached to the front of the firebox by an expansion joint. A plate frame was riveted to the sides of the firebox and extended under the bunker and tank to the bogie pivot and pilot beam. The

firebox could therefore be made as wide as was required, an advantage previously claimed only for double-bogie locomotives. (It is of interest to note that the Festiniog Railway 0-4-0 locomotives built by George England also have separate frames in front of, and behind the firebox.)

Two outside cylinders drove flangeless driving wheels, only the coupled and bogie wheels had flanges, and were fitted with slide valves actuated by Stephensons link motion. Sand boxes were fitted in front of the cab to deliver sand to the driving wheels. The bogie had long leaf springs and volute springs above each axlebox to cater for great variations in track level, and was also fitted with brake blocks, perhaps operated by the Empire Vacuum Brake fitted to both passenger and freight cars. Because ARIEL was intended to run bunker first the pilot and coupling bar was only fitted at that end, the smokebox end having a centre link-and-pin coupler.

The chimney was embellished with brass bands around the edge of the spark arrestor, and immediately below the cone. The boiler carried a large brass bell, and the steam dome barrel was also sheathed in brass. The panelled wooden cab had glazed sliding windows and doors and was elaborately lined and decorated. The rear water tank and bunker was also decorated and carried the B & B R monogram. A large oil headlight was carried on a bracket behind the cab and the equipment was completed by a personalised bucket on the tank top!

The leading dimensions were:

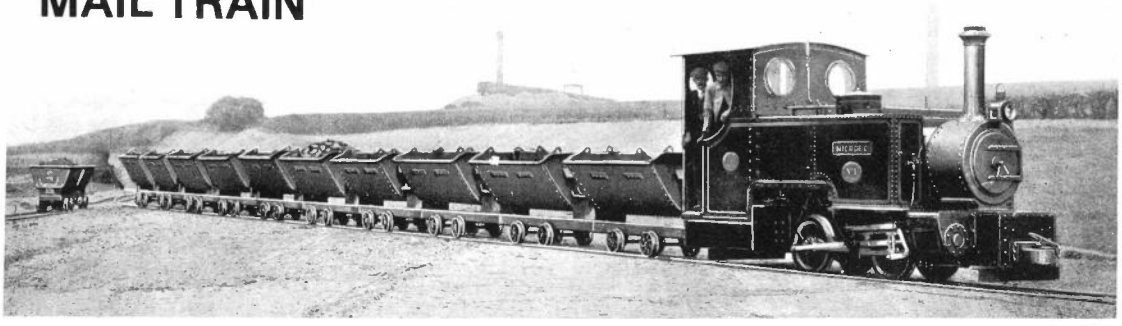
Cylinders	:	8in × 12in	Weight on coupled wheels	:	14350 lb
Driving wheels	:	2ft 6in dia.	Weight on bogie	:	9400 lb
Coupled wheelbase	:	3ft 6in	Total weight	:	23750 lb
Bogie wheels	:	1ft 6in dia.	Length over couplers	:	23ft 4 ½ in
Total wheelbase	:	13ft	Height over chimney	:	9ft 7in
Boiler	:	2ft 6in dia.	Width over cab	:	6ft 5in
Tank capacity	:	400 galls.			
Tubes	:	70- 1¾ in dia. × 6ft 7in long			
Firebox	:	2ft 3¾ in wide × 2ft 6in long			

Regarding the performance of the locomotives, George E. Mansfield reported: "The new engines on the 24in gauge are a double success. They pass the curves on the wye, 127ft radius, with ease. They make more steam than is needed, and use but little coal. We have been burning hard coal this past week and have made a speed of thirty-five miles per hour on our rough track. The side oscillation is done away with entirely. We ran passenger trains four days last week with the greatest satisfaction, the cars riding smoothly and with perfect ease and no side oscillations. We have never had any hot boxes on any of the cars since running, or on the locomotive. Last week we ran a train seventy-two miles each day, at a cost of 13 cents per mile. This includes all help, fuel, oil and waste, using less than ¾ ton of coal. The weight of train including engine was 23 ½ tons, the weight of cars 11 ½ tons with seating capacity for 100 passengers, which number we carried on some trips. One of the cars is a combination baggage and express car. There is one grade of 158ft per mile, two of 100ft, one-half mile each long, and numerous other grades of 40ft to 90ft. The rolling stock is carried on double four-wheeled bogies. The road has one passenger car, the SYLVAN, one combination car, the FAWN, and two excursion cars, which weigh 5500 lb and have seats for 55 passengers. There are five flat cars and one box car, each 22ft long over the body and 6ft 2in wide, or more than three times the gauge. The weight of the box car is 5600 lb and the capacity 16000 lb. The flat cars weight 4500 lb and have the same capacity as the box car."

Such was the promotor's enthusiasm for his creation, but there was one snag. No-one really wanted to travel or ship freight from Billerica to Bedford, or even in the reverse direction. The railroad rapidly lost money and ceased operations on June 1st, 1878, after a little more than six months life. A public auction was held to dispose of the equipment and ARIEL and PUCK, together with the cars, were bought by a Mr. Brown in New Hampshire. That might have been the end of George Mansfield and the two foot gauge, but the following year the Sandy River Railroad came on the scene, Mansfield secured the position as Manager and bought the two locomotives from Mr. Brown. They were sent to the Hinkley Locomotive Works for conversion to wood-burners, and were also altered to run chimney first. Possibly their performance bunker first was not so glowing in practice as the reports would have us believe. However, they continued in service on the Sandy River until 1915-20, a healthy period of service for a pair of orphans from the pioneer two-footer.

We acknowledge the assistance of Morgan-Grampian (Publishers) Ltd. for permission to reproduce the engraving and George E. Mansfield's report from *"The Engineer", February 15th, 1878;* the Huddersfield Railway Circle Library for loan of the original copy, and Linwood W. Moody, whose book *"The Maine Two-Footers" (Howell-North Press, Berkeley, California 1959)* provided much of the background information and introduced so many of us to the delights of the American two-footers.

MAIL TRAIN



THE STANTON COACH

Although my name appears in the acknowledgements following this article in NG 75, Mr. Parsons never contacted me. His article contains numerous factual errors, and it is a pity that many of the dimensions on the drawings are incorrect. Since I was responsible for the reconstruction and maintenance on this vehicle following its delivery to the Talyllyn Railway I have both records and drawings of the work done. The correct information follows:

Par. 4: The saloon did not have six drop lights each side. There were four fixed lights and two drop lights as correctly shown on the drawings. The axleboxes were quite conventional, having a pair of side lugs to carry the main springs. A small auxiliary spring was also mounted on top.

Par. 8: The actual purchase price was £25, transport £55, totalling £80. In 1958 there was no "Bodger's Corner" and it was largely on my recommendation that the body was scrapped. It was too high, too wide, and the eaves would have fouled the overline bridges. Moreover the saloon would only have carried about 20 passengers, and the T.R. urgently needed more capacity which could be obtained by rebodying. The original solebars were badly corroded under the body sills and new channel solebars were required. This allowed the length to be increased to match bogie vehicles 9 and 10 with a view to fitting a standard body at a later date. Apart from the solebars the original underframe was used again.

Par. 9: The new bogie frames were not fitted, and the original bogies are still in use almost unaltered apart from cutting down the cross-members by 9in to suit the narrower gauge.

Par. 10: The "Stanton" entered service for the 1961 season with five compartments and without brakes. It was subsequently completed with a Guards compartment and hand screw brake acting on all wheels, being then a 32 seater. It ran in this condition from 1962 to 1968, when the Guards compartment was enlarged to accommodate luggage, and the seats reduced to 24. No. 16 only resembled No.10 during the 1962-65 period prior to the reconstruction of the latter with a new body of quite different type. It was not particularly noted as being a heavy vehicle to pull at first, but did acquire that reputation later. The wheels were not machined until 1969 and now need further attention.

Drawings: The original body was 8ft6in high in the centre, 8ft high at the eaves and 6ft 6in wide—not 8ft, 7ft 6¼in and 6ft 9in as shown. The bogie centres were 13ft originally, and the bogie wheelbase 3ft 3in. On rebuilding the body was 8ft 3in high in the centre, 7ft 7in at the eaves (the standard T.R. roof profile) 5ft 8in wide, and 23ft 6in long—not 8ft, 7ft 6in, 6ft and 23ft 9in as shown. The bogie centres became 16ft 6in—not 15ft. Steel roof formers are referred to in the accompanying note but the roof bearers are of timber mounted on a skeleton frame of steel angles. Both ends of the vehicle were sheeted in at an early stage due to problems with rain and smuts, but it did run for a few weeks with only one end panel.

I have no firm information on the early history of the coach, but doubt that it was the one used at Vyrnwy if the reference to 21in wheels in correct, because the bogies would not accommodate this size. I think it was probably built for a contractors line during 1900-05 because the details seem more modern than a vehicle built in the 1880's.

TYWYN, MERIONETH. J.H.L. BATE, CHIEF ENGINEER, TALYLLYN RAILWAY CO.

(The drawings were prepared from the author's sketches and photographs. Some details on the sketches conflicted with the photographs and the latter were therefore included. I had no reason to believe that the facts or dimensions were incorrect, especially in view of the acknowledgements, and regret any embarrassment caused to Mr. Bate as a result of this article. Ed.)

THE STIRLING SINGLES

I was astonished to open NG76 because the toddler in the lower photograph on page 4 is me! I gave a print of this to W.A. Smyth of W.G. Bagnall Ltd. in 1956 when he was appealing for information on their early products, since I was then as ignorant as anyone about the identity of the Jaywick single. The photograph was taken by my father, and my mother can be seen coaxing me to look at the camera. There is a companion picture of me sitting on my father's lap in a corner of the first coach, with half the tender and the air reservoirs visible. In 1967 when I visited Ravenglass with Michel Jacot I amused myself by having another picture taken in a corner seat of one of the Jaywick coaches there, 30 years on.

I was born in February 1936, so the 1939 date given in the caption is too late. I am told that we visited Jaywick only twice, the first visit being in August 1937 and the evidence points to the picture being taken during this holiday. This also invalidates the date of the upper photograph on page 4, given as 1938, but evidently taken in 1936. The lack of a front buffer and air hose (not vacuum as stated) are obvious in a photograph in *Model Railway News,* October 1936. There were then no air reservoirs on the tender but the air pump can be seen on the cab side. The accompanying article states that there were loops at each end of the line, so the locomotive must have run in reverse in one direction. The air brake operated only on the tender in 1936, and could not be connected to the train when running tender first. However, the appearance of the reservoirs in 1937 suggests that the train brakes could not be operated satisfactorily before then.

WALSALL **COLIN PEALLING**

To supplement the very comprehensive article in NG76, I would mention that the *Colliery Gardian* of the day reported the recent completion of the Bagnall which it described as "one of the smallest railway engines ever made for practical use". It confirmed that the model was to run on a private estate, that its (maximum) speed was 12mph, and that it could pull a load of 5 tons. The *Colliery Guardian* was published weekly and as this news item appeared in the issue dated 12th October 1894 it seems unlikely that Bagnall 1425 was delivered to Lord Downshire more than a year earlier. Is it possible that Allan Baker's "delivered on 4th September 1893" should read "despatched on 4th September 1894"? As the loco carried an 1893 plate it would seem that something happened in 1893, but would it have taken Bagnall fifteen months to build it after receiving the order? Or did Bagnall build the loco in 1893 as a speculation and then receive an order from Lord Downshire's agent in June 1894? All very intriguing.

SHEFFIELD **K.P. PLANT**

Bagnall 1425 and her half-sister were the forerunners of the many miniature locomotives built in the present century. This claim is made safely because they were not simply big models of a Stirling 4-2-2 but were carefully thought out to reproduce the visual impact and easy motion of a big single driver without sacrificing good mechanical design. Thus an over-scale boiler was fitted, doubtless using standard flanging blocks, while the cylinders were reduced to keep the tractive effort down to a figure commensurate with the adhesive weight. Scale cylinders (6in × 9in) would have given a nominal tractive effort of about 2000lbs, equal to the adhesive weight!

The choice of a 4-2-2 may seem strange today, but I suspect this is because we are only familiar with coupled locomotives and have been brainwashed by certain writers into the belief that singles slip badly. In fact published performances confirm that a properly designed and competently handled 4-2-2 was the equal of a contemporary 4-4-0. Their more leisurely acceleration was balanced by effortless running at speed and it was this quality that endeared the Stirling locomotives to two generations of railway enthusiasts. When 1425 was ordered, the G N R 4-2-2s were probably the best-known locomotive design in the world and all the early manufacturers of model locomotives had one in their catalogue. One has the feeling that Baguley designed not a model of the existing Stirling locomotive but his idea of what Stirling should build next (1425 appeared two years before the final series of Stirling 4-2-2s) and that in the Bagnall locomotive at least the valve events, valve setting and regulator design received proper attention to ensure reliable performance on starting. If the Polytechnic locomotive did not receive such careful attention to detail it could explain its poor performance at Fairbourne and Jaywick.

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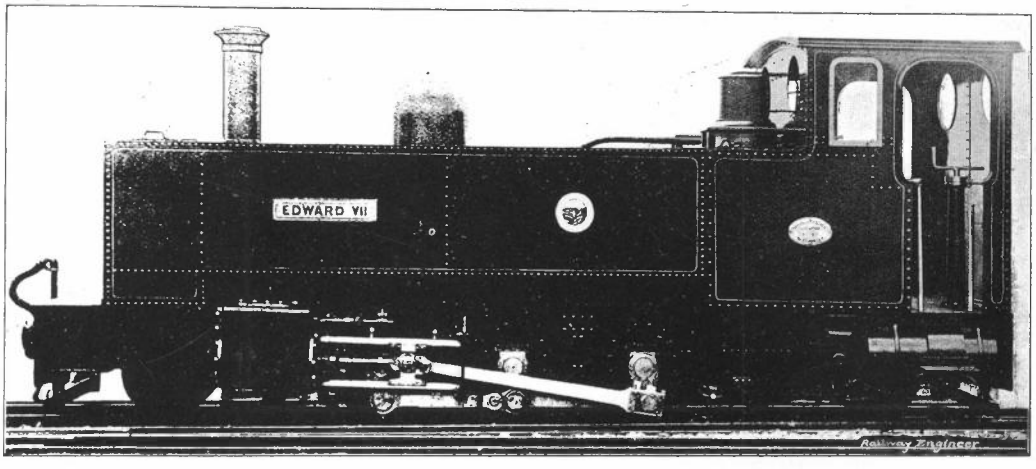
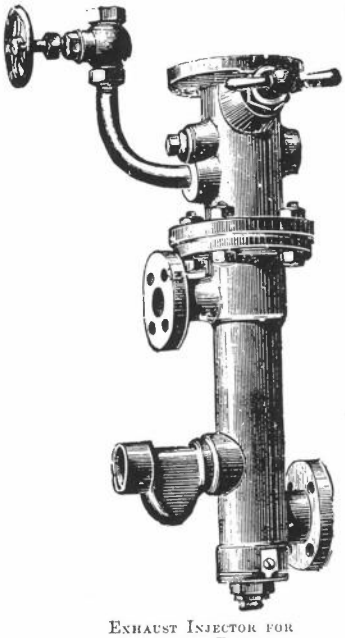


Locomotive Edward VII.; Vale of Rheidol Railway. Fitted with Exhaust Steam Injector.



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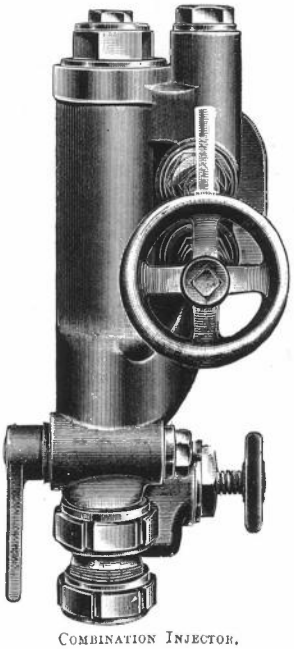

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This Davies & Metcalfe advertisement is taken from "Railway Carriages and Wagons—Their Design and construction" published about 1909. *(Collection S. Goodyear)*