 Reprinted from: Gloucestershire Society for Industrial Archaeology Journal for 1985 pages 39-45

THE COUNTRY RAILWAY

by IAN PARSONS

Rural transport has of course always been a serious problem because it has been costly to provide an economically viable service to scattered communities with a low population. It may therefore be of interest to recount this story of a successful country railway based on a lifetime of study from many books, magazines and travel. This is in order to demonstrate what could have been a very different existence for secondary railways in the United Kingdom if only there had been careful pre-planning.

When the high profits of the Liverpool & Manchester Railway became known, the general public went railway mad. Intoxicated with the vision of high profits, oblivious of difficulties, promoters rushed in with plans for building railways all over the country. In 1846 the 'Railway Mania' was at its height. It was no longer necessary to invest thousands of pounds because anyone with even small savings was welcomed by the railway promoters. Thus the boom gathered strength and thousands of miles of railways were recklessly launched. The boom broke in 1847, capital was lost on worthless lines, and thousands of small investors were ruined. Although six major government committees discussed railway policy between 1839 and 1853, finally only one was successful in getting an Act passed in 1855 for a gradual take-over by the state. The development of the railway system continued to be the result of private enterprise given form where necessary by private Bill. However much it might be criticised, it was a system outstandingly successful in unifying the country into an economic whole. The 1855 Act accepted the existing method of developing the primary network, but created a new method for the secondary network.

The primary railways presented few problems because they linked the maincentres of high population, but the companies did not believe that secondary railways for scattered centres of low population would be economically viable. Promoters in these areas felt that it ought to be financially possible to connect their communities to the primary railways. They approached the companies, usually without success. They then attempted to raise money and to obtain an Act to build the line. This was frequently bought up by the primary railway company at less than cost, and operated. There were usually no excess profits above the agreed percentage for the promoters. The 1855 Act therefore established a secondary railway corporation and this story of a successful country railway illustrates how the corporation worked.

The primary railway through the district obtained an Act and started construction. Promoters in what was to become the branch railway town, requested the company to obtain a second Act for a branch railway from what was to become the branch junction to that town. When this request was refused, they approached the new corporation who outlined this procedure.

First, the corporation traffic staff came and stayed in the district. They discussed with all likely people exactly what tonnage they would expect the secondary railway to carry for them. The total minimum figure being more than 30,000 tons a year, it was agreed that a railway 9 miles long (in this case) would be economically viable. Passenger traffic estimates were unnecessary because any taking would be pure profit. At that date it was impossible to forecast what effect the new primary and secondary railways would have on movement in the district.

Then engineering staff came and stayed. The land was surveyed accurately and the most economical route was clearly shown on drawings together with details of engineering structures. An estimate of land acquisition and construction costs was prepared.

The corporation considered these estimates and agreed that money should now be raised for land acquisition and construction of the railway. Complete reports were sent to the promoters in the district so that the public could have all the facts before considering if they would subscribe. The corporation would, if necessary, grant up to 50% of the total cost. The local councils would have to make this up to a total of 67% to prevent control by speculators.

After the money had been raised, the corporation submitted to the Board of Trade a formal application together with the report and drawings, and approval to this railway was given. The corporation obtained powers of compulsory purchase of land as necessary, the whole route was acquired, and the railway was completed in 1857, the same year as the primary railway.

Shortly before the secondary railway was completed, the corporation sent to local councils and private companies who might be interested in operating the railway, detailed reports on the corporation-owned line, equipment and rolling stock, all to be taken on a 30-year full repairable lease. In this case the primary railway submitted the lowest tender and operated this secondary railway from 1857.

The standard specification of the corporation for all their secondary railways was as follows. The track gauge was 2' 6" because this gauge had the highest traffic capacity relative to its cost of any gauge. In difficult country it was better able to follow contours and gave worthwhile savings in cost even over 3' 3" gauge. The rail weight was 35 pounds per yard. The maximum axle load was 5 tons. The minimum curve radius was 250 feet. The maximum gradient was 1 : 50. The specification ensured that this well-designed and laid track should require no heavy maintenance for 30 years, yet permitted a maximum speed of 25 miles per hour. The railway was as far as possible to be unfenced and ungated. Where required by local landowners at level crossings, cattle grids were provided, and cattle-proof fencing extended 100 yards only on each side of the crossing. Station platforms were at rail level because passenger coaches had adequate steps and handrails. All request stops were clearly indicated by the corporation standard sign. No platform canopies were required. See the Diagrams which show that the standard major stations normally consisted of an island platform, with the single-line track straight past one face, and a loop on the other. A freight siding off the loop fronts a platform level with the floors of primary railway wagons, on which is built a freight dock, freight shed, and at ground level a passenger station comprising passenger booking hall and waiting room combined, staff room and stores, and above a flat for the stationmaster. No signalling system was provided unless authorised, because most secondary railways were only allowed one locomotive in use at any one time.

The corporation owned and operated regional workshops for the construction and maintenance of all rolling stock. This was delivered by the primary railways on their transporter wagons to the secondary railways and off-loaded by mobile cranes. All rolling stock have axles on pivots at each end of locomotive, carriage or wagon to give smooth riding on the track and therefore reduce maintenance. The maximum permitted axle load of 5 tons was a challenge to the locomotive designers and resulted in a minimum of 4 axles. See the Diagrams, which show that the secondary transporters consisted of 2 steel beams with the inner faces as the gauge of the primary railway, and the top surfaces 2' 6" above secondary rail level. The transporters had screw couplings to draw each other tight together, and to the end of the primary railway

siding where the rail level was exactly at the tops of the beams. Removable plates connected transporters and siding. Primary railway wagons were shunted onto these siding and collected by the secondary railway transporters. No transhipment of freight was required and the secondary railway only required a few goods wagons for internal use. The loading gauge had to be 2' 6" higher, the cost offset by the economies in layout and materials resulting from the narrow gauge.

This country railway started operation in 1857 with the following staff paid by the primary railway which had secured the contract. At the town: 1 manager and stationmaster, 1 clerk who acted as deputy manager and stationmaster when required, 1 locomotive driver, 1 fireman who acted as relief driver, 1 fitter who acted as relief fireman, 2 conductor guards, 3 platelayers - total 10. This establishment therefore made provision for staff absences due to sickness or holidays with pay. Like all the staff, the 2 conductor-guards were fully occupied. They were responsible for the safety of passengers and were trained in first aid and emergency drills. They issued and collected tickets, including season tickets for onward travel on the primary railway. All other passengers using that railway had to book again at the junction. The guards had to load and unload parcels and mail. They had to act as shunters when moving primary wagons on and off transporters. They did not have to be freight porters, and this introduces the subject of road transport.

All customers arranged with the operator for the supply of appropriate wagons on production of documents acknowledging receipt and carriage payment of goods at the end of the journey. The customers then arranged for the goods to be brought by road to the town freight shed or dock, and loaded into the primary railway wagons. The operator was therefore involved in no further costs of loading, unloading and road haulage. In 1857 the roads in the district were bad. The maximum cart load was 1 ton and one horse could only average 3 miles an hour. The carter could make a living taking a load from his yard and another load back in a maximum of 8 hours on the move. Therefore the maximum radius served from the freight shed was 4 hours x 3 miles per hour, which is 12 miles. It follows from this example that if over the country was a whole, primary and secondary railways were to serve country districts producing the minimum traffic, they would have to be at a maximum distance apart of 24 miles. This was so in this district.

The maximum annual freight traffic handled by the primary railway at the junction was 5000 tons. After all these years there still is no direct road to the town because of a high ridge. The indirect roads link villages in hollows between steep hills. This country railway still is successful, because the railway is the only direct link between junction and town and especially when the very narrow roads between high banks are blocked by snow. Finally, the main factor is that the minimum annual freight traffic handled by the secondary railway at the town is 30,000 tons. This is made up as follows: coal and gravel 12,800, sundries 4520, cattle 4520, milk 4520, vegetables 920, grain 800, fertilisers 800, flour 680, and potatoes 440 tons.

As on the railways nationally 1914 was the high point of the services provided on this country railway. Although motor buses and lorries were on the roads, their operators were not sufficiently well organised really to compete with the railways until 1930. Soon after, the primary railways introduced containers moved from lorry to wagon at the freight stations. The cranes at the town and the junction were able to cope. Then in 1946 a second Act gave the secondary railway corporation powers to substitute bus services where rail passenger services could no longer compete. By 1962 there were few regular passenger services on non-electrified lines. Buses and trains connected with each other, and with primary railway services. This country railway continues to run 4 mixed passenger and freight trains each way daily. The bus services in the district consist of 5 each way daily from the town to the

county town, and on Friday mornings only 2 each way from the town to the nearest villages. Neither service goes to the junction or the village nearby.

From 1935 to 1955 the design of diesel railcars on the primary railways gradually became more reliable and then the secondary railway replaced all their steam locomotives with special units having these features: an additional low-gear for hauling 1 transporter carrying a 20-ton loaded primary railway wagon up a gradient of 1:50; 1 winch and loose pulley blocks for hooking on the primary railway sidings, for hauling wagons on and off transporters; driving alcove at each end to avoid turning the unit; central double doors for easy access to the parcel space. These railcars by 1963 gave a minimum daily saving of £29 on this 9-mile branch excluding the salary of the steam locomotive fireman, thus reducing the total staff to 9.

1963 was the year of the report "The Reshaping of British Railways", justifying the policy decisions made over the years by the secondary railway corporation. First, the discontinuance of many stopping passenger services. The Report recommended the closure of the junction, but this has not been implemented. This country railway passenger service was considered for closure by the corporation in 1974, but this was not implemented because of the inadequate roads and bus services already mentioned. Second, the closure of small stations to passenger traffic. Several of these on the primary railway have now closed, but the country railway still allows request stops. Third, the reduction of the economic freight traffic passing through small stations by closing them progressively, but with regard to the preservation of potentially good railway traffic, and by adjustment to charges. On this country railway both town and junction freight station are still open, although the nearest main primary railway station is 30 miles north-west by road, 55 by rail.

Thus ends the story of this successful country railway ... but story it is and NOT fact, and it is now essential to emphasise the points that are NOT true, and by so doing suggest why the country railway failed in the United Kingdom. In 1844 Gladstone's Bill embodying a measure of government control of railways was mutilated in its passage. There followed a new surge of railway enthusiasm, and investors gained fresh confidence in the railway's freedom for expansion and profits. NO secondary railway corporation was established in the United Kingdom. One was set up in Belgium in 1885 where the method described in this article for the construction and operation of secondary railways was successfully executed. In the United Kingdom, the Light Railways Act of 1896 allowed rural railways to be built subject to certain speed and weight restrictions, but freed from some of the strict obligations imposed on the standard gauge railways.

In 1836 the 1' 11½" gauge railway 13 miles from Blaenau Festiniog to Portmadoc was a great influence on the development of secondary railways. In 1864 it approached the Board of Trade which arranged for the line to be inspected, and for the first time in the United Kingdom permission was given for passengers to be officially carried on the narrow gauge. In 1869 it put into service the first steam locomotive with powered bogies on pivots at each end, followed in 1872 by passenger coaches and goods wagons with bogies. These developments of rolling stock demonstrated the beliefs of the Spooner family for narrow gauge railways by using the principle of bogies to obtain a favourable ratio of weight to axle load and to improve riding on the track.

There was NO specification for the construction of secondary railways in the United Kingdom before 1896. In this article the ideas outlined were those of the engineer Calthrop of the Barsi Light Railway in India. This 2' 6" gauge railway was opened in 1897 and still runs 204 miles from Miraj on the primary railway south of Pune, north-east to Kurduvadi and Latur. In England, Calthrop designed the 2' 6" gauge Leek & Manifold Light Railway, 1903-35, from Waterhouses on the standard gauge from Leek, 8 miles north to Hulme End. See the "Table of Four Secondary Railways" for comparisons between these 2 railways which used transporters, and 2 other lines which did not: the 2' 6" gauge Welshpool & Llanfair Railway, 1903-56, now a preserved line, 9 miles, and the 1' 11½" gauge Lynton & Barnstaple, 1898-1935, 19 miles.

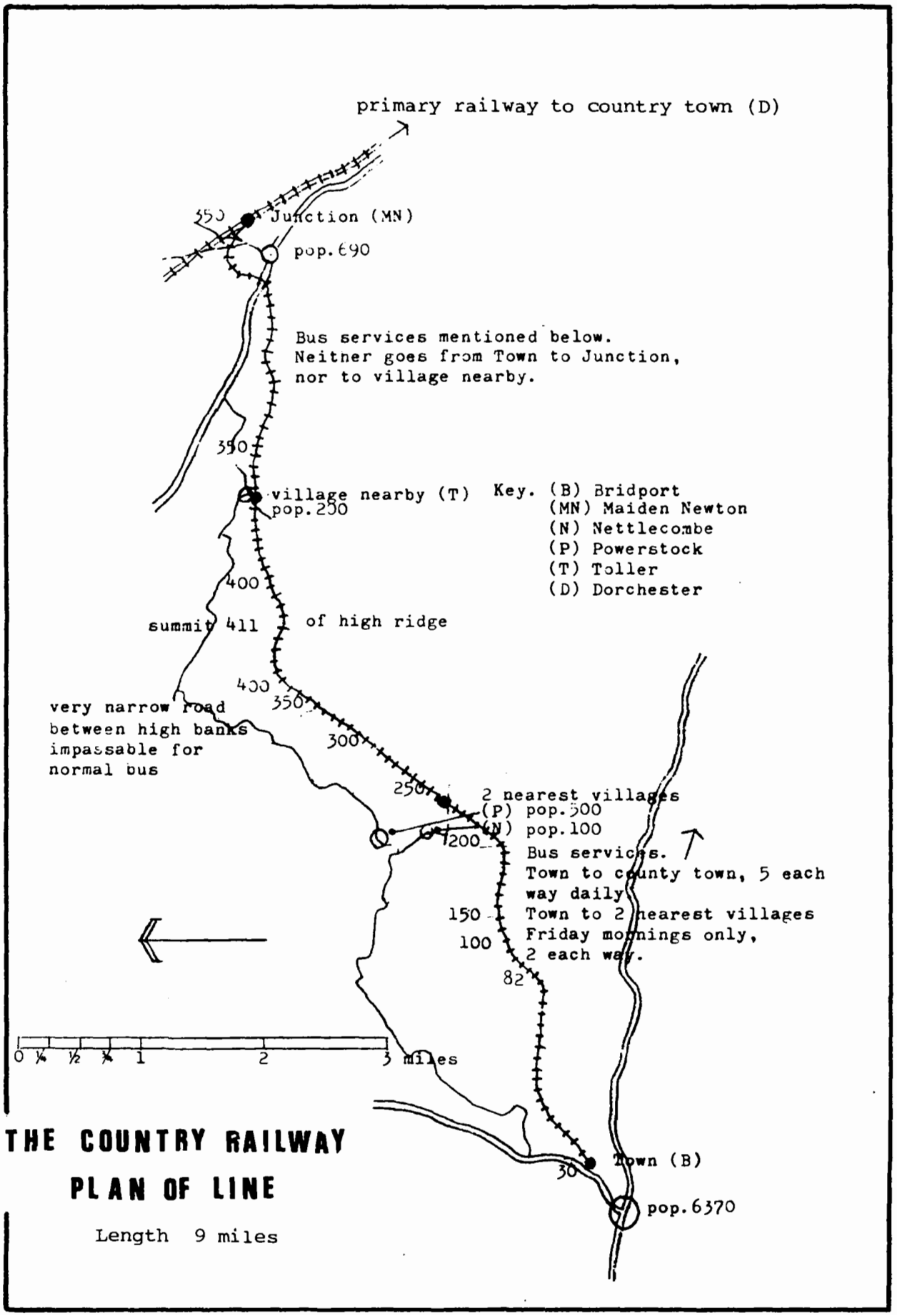
THE COUNTRY RAILWAY: TABLE of Four Secondary Railways.

	Item	Barsi	Leek & Manifold	Welshpool & Llanfair	Lynton & Barnstaple
1	Minimum freight traffic: tons/yr	228,000	unknown	10,000	8,000
2	Total cost, incl. stock: pounds/ mile	3585	6070	5920	5000
3	Track gauge: feet/inches	2' 6"	2' 6"	2' 6"	1' 11½"
4	Track, rail weight: pounds/yard	35	35	45	40
5	Track, max. axle load: tons	5	5	6.7	5.4
6	Track, min. curve radius: feet	425	unknown	165	330
7	Track, max. gradient	1:50	1:41	1:30	1:50
8	Locomotives, axles on pivots at each end for smooth riding	yes	yes	no	yes
9	Transporters to carry primary railway wagons	yes	yes	no	no

The country railway described DOES exist, and was the 4' 8½" gauge branch from Maiden Newton on the Yeovil to Weymouth line, 9 miles south-west over a high ridge to Bridport. The freight traffic total was similar to, but the make-up was expanded from, that on the Lynton & Barnstaple Railway. The bus services were quoted from the Public Notice Withdrawal of Railway Passenger Service on this branch from 5 May 1975. So this country railway was in fact successful because it served the public for 118 years even if from 1965 all freight was taken by road. If the United Kingdom had had a secondary railway corporation it would still be in business providing road and rail passenger services, and probably freight as well.

In conclusion, it is hoped that this article may give industrial archaeologists something to ponder when on their travels by road they come across the remains of yet another country railway.

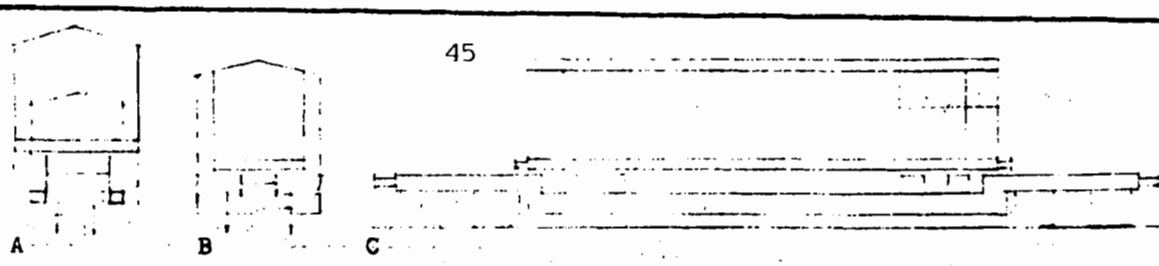
---oOo---



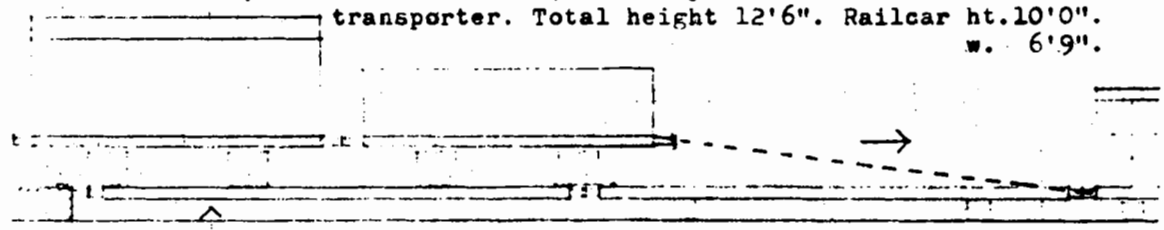
THE COUNTRY RAILWAY

PLAN OF LINE

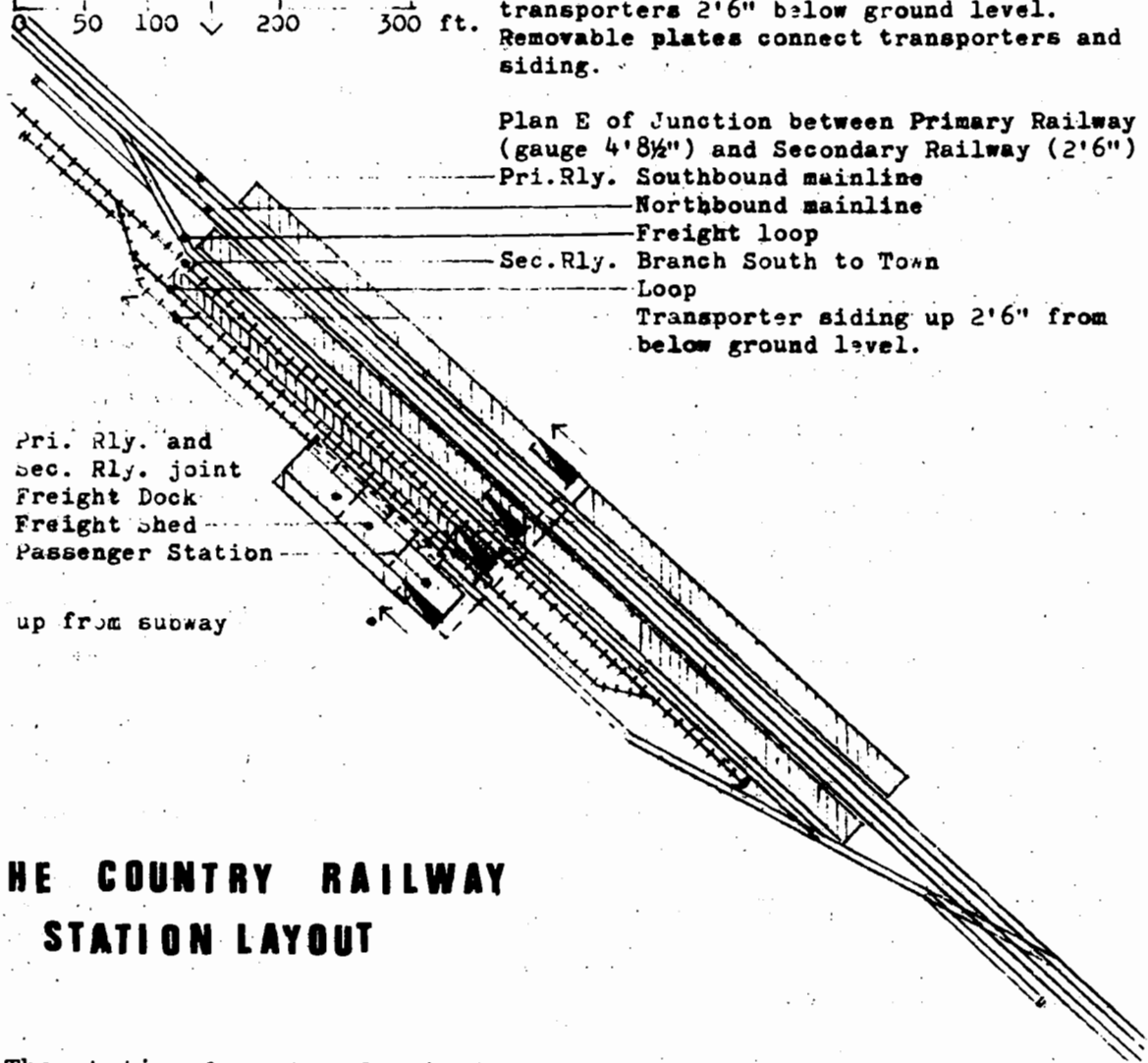
Length 9 miles



Section A thro' Primary Railway wagon on Secondary Rly. transporter. Total height 15'0". Width 8'10".
Section B thro', and Elevation C of, Sec. Rly. Diesel Railcar on Pri. Rly. transporter. Total height 12'6". Railcar ht.10'0". w. 6'9".



Elevation D of Sec. Rly. Railcar winching two 20 ton Pri. Rly. wagons from Pri. Rly. siding at ground level onto Sec. Rly. two transporters 2'6" below ground level. Removable plates connect transporters and siding.



Plan E of Junction between Primary Railway (gauge 4'8½") and Secondary Railway (2'6")
Pri.Rly. Southbound mainline
Northbound mainline
Freight loop
Sec.Rly. Branch South to Town
Loop
Transporter siding up 2'6" from below ground level.

THE COUNTRY RAILWAY
STATION LAYOUT

The station layout and buildings described in this article, and as shown on the Diagrams, were NOT used in the United Kingdom, but are as seen in France and Portugal. The transporter wagons described are in West Germany, hauled by diesel railcars. The staff establishment was based on hopeful logic.