

# DOWNLOAD PDF RAILWAYS IN THE TRANSITION FROM STEAM, 1940-1965

## Chapter 1 : tramshop - boekenlijst

*Railways in the transition from steam, , (Railways of the world in color) [O. S Nock] on [www.nxgvision.com](http://www.nxgvision.com) \*FREE\* shipping on qualifying offers. Railways in transition from steam, , (Railways of the world in color).*

Ancient systems[ edit ] The earliest[ citation needed ] evidence is of the 6 to 8. The Diolkos was in use for over years, until at least the 1st century AD. The guide pin fits in a groove between two wooden planks. Such an operation was illustrated in Germany in by Georgius Agricola image right in his work *De re metallica*. The miners called the wagons Hunde "dogs" from the noise they made on the tracks. Wagonways have been discovered between Broseley and Jackfield in Shropshire from , used by James Clifford to transport coal from his mines in Broseley to the Severn River. It has been suggested that these are somewhat older than that at Wollaton. In , the first railway in the America was built in Lewiston, New York as a wagonway. Wagonways were usually designed to carry the fully loaded wagons downhill to a canal or boat dock and then return the empty wagons back to the mine. Metal rails[ edit ] Until the beginning of the Industrial Revolution , rails were made of wood, were a few inches wide and were fastened end to end, on logs of wood or "sleepers", placed crosswise at intervals of two or three feet. In time, it became common to cover them with a thin flat sheathing or "plating" of iron, in order to add to their life [14] and reduce friction. This caused more wear on the wooden rollers of the wagons and towards the middle of the 18th century, led to the introduction of iron wheels. However, the iron sheathing was not strong enough to resist buckling under the passage of the loaded wagons, so rails made wholly of iron were invented. As a result, in , they began to cast iron rails. Subsequently, to increase strength, a similar flange might be added below the rail. This type of rail was known as the plate-rail, tramway-plate or way-plate, names that are preserved in the modern term " platelayer " applied to the workers who lay and maintain the permanent way. These are smooth edgerails for wheels with flanges. Another form of rail, the edge rail , was first used by William Jessop on a line that was opened as part of the Charnwood Forest Canal between Loughborough and Nanpantan in Leicestershire in This difficulty was overcome by paving or "causewaying" the road up to the level of the top of the flanges. Another example of the edge rail application was the Lake Lock Rail Road used primarily for coal transport. Edge-rails with a side rack were used on the nearby Middleton-Leeds rack railway a length of this rail is on display in Leeds City Museum. The wheels of an edgeway have flanges, like modern railways and tramways. Causewaying is also done on modern level crossings and tramways. These two systems of constructing iron railways continued to exist until the early 19th century. Lengths of fishbelly rail on stone support blocks. These are edgerails for wheels with flanges. The manufacture of the rails themselves was gradually improved. There was general doubt at the time that smooth wheels could obtain traction on smooth rails. This resulted in proposals using rack or other drive mechanisms. The Salamanca locomotive Mr Blenkinsop of Middleton Colliery patented the use of cogged wheels in and in , the Middleton Railway edgeway, rack rail successfully used twin cylinder steam locomotives made by Matthew Murray of Holbeck , Leeds. George Stephenson made his first steam locomotive in patented for the Killingworth colliery, [15] and found smooth wheels on smooth rails provided adequate grip. In William Stewart was engaged by Parkend Coal Co in the Forest of Dean for the construction of a steam locomotive, which when trialled was reported to be successful. Wagonways and steam-powered railways had steep uphill sections and would employ a cable powered by a stationary steam engine to work the inclined sections. British troops in Lewiston, New York used a cable wagonway to move supplies to bases before the American Revolutionary War. The Stockton and Darlington had two inclined sections powered by cable. The transition from a wagonway to a fully steam-powered railway was gradual. Railways up to the s that were steam-powered often made runs with horses when the steam locomotives were unavailable. Even in the steam age, it was convenient to use horses in station yards to shunt wagons from one place to another. Horses do not need lengthy times to raise steam in the boiler, and can take shortcuts from one siding to another. At Hamley Bridge tenders were called for the supply of horses, in part because normal railway staff

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lacked horse handling skills. Pole road[ edit ] Perdido, a steam pole road locomotive Wooden rails continued to be used for temporary railroads into the early twentieth century. Permanence was not an issue, as the lumberjacks moved on to other stands of timber as each area was cleared. Rolling stock typically had wheels either with concave treads that hugged the top of the pole rails, or un-flanged wheels with separate guide wheels running against the side of each rail. Steam traction engines and some purpose-built locomotives were successfully used for hauling trains of logs. This was a geared engine 4. A few passenger lines continue to operate, including the horse-hauled Douglas Bay Horse Tramway and the cable-hauled San Francisco cable cars.

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Peter Ball Tuesday, November 17, - The article is a must read for any railway enthusiast! The Highveld plateau of southern Africa which rises sharply from the narrow coastal plains means that most of the sub-continent is higher than metres 3 feet above sea level. This topography hampered the exploration and development of the hinterland as the escarpment proved to be a barrier to those who lived along the coast. Passes would in due course be made allowing hunters, missionaries and above all farmers, to make their way up to the top of the plateau. A generation after the Great Trek of diamonds were discovered, where Kimberley stands today and that was the impetus to be built a railway towards the interior from to Those railway builders would face the same difficulties in finding a way up the escarpment as had the Trek Boers. Moreover the permanent way was lightly laid as it was not financially possible to build to the standards of Britain. The limitations of the permanent way were to tax the minds of the railway establishment and although upgrading of the civil works of the system was the long term solution, something was needed in the interim. The mainline railway network, as built by S. The most attractive alternative was to use an articulated locomotive which would have greater power than a conventional tender engine, with no increase in axle loading. There were several types of articulated locomotive on the market and each had its devotees. In South Africa it would come down to just a two iron horse race, between the Mallet and the Beyer-Garratt. Hendrie, the first Chief Mechanical Engineer C. By early, a trial was deemed necessary to pit three classes of locomotive against one and other. His test report was forthright and made it plain that the Beyer-Garratt was superior in all regards. This ruffled the feathers of his superiors who were more familiar with the two other types 14B MH and further tests were called for, which only confirmed the original findings. The tests of were a triumph for the Beyer-Garratt articulated principle and they were no less so for the W. Cyril Williams, whose eagerness from the very outset had been a little too brash for his superiors. However his report and his zeal had not passed unnoticed by No. The only market that he could not crack was North America where they stubbornly held onto the Mallet locomotive. His crowning honour was to become President of the Institute of Locomotive Engineers. Now what is a Beyer-Garratt locomotive? To start with the name comes from the manufacturer and its inventor, The Beyer part refers to Beyer Peacock and the Garratt to Herbert William Garratt, who approached Beyer Peacock with his rough idea for an articulated steam locomotive. They saw the possibilities and worked on the details and patented the design in The Beyer-Garrett steam engine comes nearest to the ideal of an articulated locomotive than any other type and the idea came to Garratt whilst he was watching a bogie well wagon, loaded with a large boiler, traverse the sharp curves in a Scottish works yard. The Beyer-Garratt differs from a conventional locomotive in that its boiler is not directly over the engine chassis, wheels and motion, instead the boiler cab is mounted on a sub frame which is slung between the two engine sets which are allowed to pivot making the wheel base less rigid. A Beyer-Garratt with one crew can replace two double headed tender locomotives with two crews, e. The geometry of the design allows the boiler unit to move inwards when traversing a curve like a bowstring in a bow and this reduces the centrifugal force allowing faster running and less chance of overturning. It is a good steam raiser, as a very large diameter boiler with a short length thus short tubes and large firebox can be easily incorporated as it is carried clear of all the parts of an engine such as wheels and motion. Since the Beyer-Garratt runs equally well in either direction, turntables are not required. On sections with many tunnels, where trailing smoke is liable to obscure the cab view or make the cab uncomfortable the engine can run cab first. Garratt did not live to see the success of his invention as he passed away at the age of forty-nine, in, the year before the Great War and it was therefore left up to the engineers and drawing office of Beyer Peacock to develop his concept. Railway

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Engineers around the world followed railway matters avidly through technical papers and magazines and the British private locomotive builders had active sales departments that advertised their products through the technical press. Therefore it was not long before the word got out that there was a new type of locomotive which could increase pulling power without increasing axle load. In fact at times they were hard pressed to meet supply dates and other locomotive firms stepped into help and built the type under licence, notably North British and Henschel. They were built as a result of the backlog of merchandise that had built up at the port of Mombasa which could not be reduced because of the lack of railway capacity. When they were placed in service in they proved to be masters of their work and the backlog was quickly cleared. Alas the Beyer Peacock Co. The Beyer-Garratt was a very successful form of articulated steam locomotive and had it not been for Dieselisation and Electrification it could well have been developed still further. Fleming in the Trains Illustrated Annual

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