THE NORWEGIAN STATE RAILWAYS: 1854-1954

BY VINCENT H. MALMSTRÖM

THIS year, on September 1, Norway celebrates the one-hundredth anniversary of its railway system. In few other countries of the world will such a celebration be as meaningful as in this rugged, sub-arctic land, for in the century since its inception the railroad has not only revolutionized the land transport of Norway but it has also unified the country to a degree never before known. These accomplishments, impressive though they are, become all the more noteworthy in view of the great obstacles that have had to be overcome in their realization. Certainly, the hundred years that have gone into the building of the Norwegian State Railways constitute one of the most inspiring chapters in the story of Man's unceasing struggle against Nature.

A cursory glance at a railway map of Norway may seem to belie the magnitude of these accomplishments, and in fact, a very natural first reaction is one of surprise at how few railways the country has. Yet, to anyone familiar with the terrain of Norway, it is an even greater source of amazement that there are as many railroads as there are. True enough, when the railway density of Norway is measured in the conventional way, that is, in "miles of railway per inhabitant" or "miles of railway per square mile of area," the country ranks a poor third to its Scandinavian sister states of Denmark and Sweden, and far behind the United States. But when we measure its railroad density in terms of "miles of railway per square mile of productive land," which after all is a more accurate gauge of
a country's natural wealth than mere numbers of people or gross area, we find that Norway has narrowed Denmark's lead from six lengths to two, is close on the heels of Sweden, and is abreast of the United States!

In a country that measures more than two-thirds of its entire area as unproductive mountain land, the difficulties of railway construction and operation are not hard to appreciate. In Norway, the first and foremost obstacle has been the terrain itself, for although the mountains are not especially high (averaging 4000-6000 feet with passes at half that elevation), the range in local relief is great and grades are steep, particularly on the west-facing slope. The choice of routes open to the railway builder has been sorely limited, with the result that most of the railway lines of Norway follow the same age-old tracks along the valleys as did the travelers of Viking and medieval times.

Even in the valleys, however, it has been necessary to blast through one mountain spur after another and to bridge an endless succession of rivulets and gorges in order to achieve a gradient gentle enough for the Iron Horse. It is not surprising, then, that of the total mileage of the Norwegian State Railways only 42% is straight, no more than 26% is level, and no less than 4% is in tunnels. Not only has the terrain exacted a high toll in construction costs but its influence is also continuously felt in the operation of the railways. When trains are constantly laboring up-grade or braking down-grade, it stands to reason that their running speeds cannot be high. Thus, unlike their Swedish or Danish counterparts which whiz along at a mile a minute, the Norwegian express trains have been held by the unyielding mountains to speeds little in excess of forty miles an hour. It might be added, however, that what the Norwegian railways lack in speed is more than amply
compensated by the constantly changing panoramas of awe-inspiring beauty through which they pass. It is easy to understand, therefore, why the same mountains which slow Norway's trains also constitute her greatest single tourist attraction.

At Norway's latitude, the climate likewise poses a serious challenge, especially in the higher mountain districts. There, at elevations of little more than 3,000 feet, most tree growth has ceased and only two thousand feet higher the line of permanent snow is reached. Railways linking one region with another across the mountains have therefore had to leave the shelter of the forest and to find their way over the desolate vastnesses of the *vidda*, often within the very shadow of great glaciers. In these higher areas, construction has been encumbered by a short outdoor work season, for seldom do more than eight or ten weeks pass between the time the frost leaves the ground in the "spring" and the snow returns in the "autumn." Once completed, the mountain railways have had to battle great snowdrifts piled up by the free-sweeping gales, enlisting in this struggle the aid of powerful rotary plows and long miles of snow-fences and sheds. Each year the coming of spring brings in its wake numerous other challenges, among them the problems of frost heaving, rock falls, and local floods. And, as if the topography or climate were not obstacles enough in themselves, they not infrequently combine forces to impede traffic with an avalanche or landslide. Certainly, in view of the numerous topographic and climatic handicaps under which the Norwegian railways must labor, their long record of safe and efficient service stands out as all the more creditable.

If Norway had been a wealthy country, the challenges posed by her terrain and climate might not have been as serious or enduring as they are. But, in this rugged land with its rigorous climate, resources are few and investment capital has never been
abundant. Faced by great natural obstacles on the one hand and limited financial means on the other, Norwegian statesmen have sometimes found it difficult to formulate sound railway policies. In many instances, particularly in the early decades of railroading, the builders were forced to compromise their standards of construction and maintenance, and, in an effort to save money, many lines were built with narrow gauge, winding alignments, and light-weight rails. Such initial economies proved illusory, however, for as running speeds and traffic have increased, many older lines have had to be rebuilt one or more times, costing in the final analysis considerably more than they would have if they had been systematically built at the outset. But, if the construction and maintenance of railways in Norway have been financially difficult, so has their operation. Due to the dispersed nature of the population, traffic potentials over long distances are low, and as a result many miles of railways must be operated which cannot conceivably pay for themselves. Fully one-eighth of the mileage of the Norwegian State Railways lies above 1500 feet elevation, where few permanent habitations - and no customers - are to be found; yet without these deficit trans-montane links, the railway system of Norway would be a hodgepodge of local lines serving no national end whatsoever.

Looking back over the history of the Norwegian State Railways, we will see that virtually every page bears the imprint of the obstacles with which they have had to contend. The very birth of the system was attended by such economic difficulties that fully two-thirds of the construction costs of the first line from Oslo to Eidsvoll had to be advanced by British financiers. In fact, no one less than Robert Stephenson, the son of the inventor of the locomotive, was called upon to study the problems entailed in its building. Although the Storting was staggered by the cost and reluctant to let foreign investors win control over a segment of the country's communications, it finally approved construction of the 42-Mile line in March, 1851. Three and a half years later, on September 1, 1854, Norway's first railway was officially opened for service and during its first year of operation it carried some 128,000 passengers and 83,000 tons of freight.
Soon after the successful completion of Hovedbanen, or the "Main Line," as it came to be called, the clamor for railways was heard from many parts of the country. But the economic obstacle was still formidable, and, rather than allow foreign capital to further extend its control over Norway's communications, the Storting adopted the policy of approving railway construction only in those areas where the major part of the costs could be raised through popular subscription. This policy, while momentarily expedient, had three serious drawbacks that manifested themselves as time went on. First, the only areas that got railways were those that could afford them, irrespective of need. Second, the building of railways proceeded without any over-all plan of integration. And third, since the local communities were called upon to advance most of the necessary capital, there was the inevitable temptation to build the railways as cheaply as possible. As a result, the following two decades witnessed a rapid but disorderly growth of the Norwegian rail system, as many local lines sprang up in the low land parts of the country. Apart from those railways that connected with the Main Line or the Swedish rail net, however, they were all narrow gauge.
By 1875 Norway had some 340 miles of railway, but the folly of planlessly building with two different gauges was fast becoming apparent. In the Storting, where the issue of private versus state ownership had never been a serious bone of contention, a bitter debate began shaping up as to which gauge should be selected as a basis for the standardization of the system. Abetted by an economic depression in the late ‘70s, this debate dragged on for a decade and a half, with the result that no further approval for railway construction was granted until 1896.

One of the events that may well have helped to initiate the lengthy debate over gauges was the completion of the Drammen line in 1872. Through its completion, Oslo became the most important rail center in Norway, a position that it has held ever since. To the north it had connections with Eidsvoll (and via Mjøsa, with Gudbrandsdalen), and to the east with Østerdalen and Sweden. To the west it was linked through Drammen with the valleys of Numedal and Hallingdal, and with Randsfjord, which in turn afforded access to Valdres. Within Oslo itself, however, the connection between the eastern and western lines was imperfect, for not only was there a difference of gauge (standard in the east and narrow in the west), but there also was no physical link between the two systems across the city of Oslo. As a consequence, two separate terminals developed in the Norwegian capital - an East Line Station handling standard gauge traffic to the eastern valleys and Sweden, and a West Line Station handling narrow gauge traffic to Drammen and the west. Thus, at one and the same time Oslo became the bottleneck as well as the focal point of the entire Norwegian rail system - a dubious distinction that she continues to hold today.
Even while the Storting wrangled over the choice of gauge, a milestone in the history of the Norwegian railways was being passed. On a blustery day in mid-October, 1877, Norway's first transmontane railway was opened for service - the narrow gauge Røros line that linked the regions of Østlandet and Trøndelag across the Dovre mountains. What a triumph of technology it must have seemed, for only two decades earlier the Trondheim press had publicly declared that it would not lower itself to engage in the discussion of anything as ridiculous as a railroad across the mountains!

When railway construction was resumed in 1890, a clear-cut policy regarding gauge still remained to be adopted, though to all but the most dogged supporters of narrow gauge the final outcome now appeared certain. The last decade of the 19th century saw the settlement of two other issues, however, for the state railways were hereinafter to finance all main lines themselves and accordingly to become their sole and immediate owner. Furthermore, they were given the right to purchase the shares of any private or communal railway in which they were interested, and thus incorporate such railways into an integrated national system.

When Norway celebrated its fiftieth year of railroading just after the turn of the century, there were almost 1,750 miles of line in operation, of which all but 205 miles were state-owned. By then, traffic had grown to nearly ten million passengers and three and a half million tons of freight a year, though most of it was still local in nature. Apart from the Røros line, there were no other transmontane inter-regional railways at the time, though the long awaited link between Oslo and Bergen was nearing completion.

Among the railroads of Norway the Bergen Line stands out as perhaps the masterpiece of all time, for never before had Norwegian engineers been confronted by such tremendous obstacles of terrain and climate. Unlike the historic pass routes across the mountains, which, on the western slope, invariably ended at the heads of fjords, the Bergen railway was to form a continuous overland link between the two largest cities of the country. As a consequence, it was obliged to survey and build a "pass" of its own -- a route which led it up the 4,100 foot western slope in thirty miles - an average rise of 136 feet per mile! When it was finally opened for service in 1909, the Bergen railway had no less than nine per cent of its total mileage in tunnels, of which it had taken 120 to ascend the western slope and 59 the eastern, and an additional six per cent lay in snow sheds. Today, almost half a century later, the steel rails of the Bergen Line still constitute the only dependable all land, all-year connection between Norway's two chief cities.
Since 1900, the construction of most new railways has gone on within the framework of two comprehensive building programs. The first of these was the Railway Plan of 1908 that authorized the construction of a second transmontane link between Østlandet and Trøndelag and the starting of lines both to North Norway and along the south coast. Its successor, the Railway Plan of 1923, was even more ambitious and called for the completion of both the so-called Nordland and Sørland railways, as well as the building of several local lines, many of which have since been supplanted by automobile roads. Though 1940 found that neither the Nordland or Sørland railways had been completed, under German pressure the latter was made trafficable to Stavanger in 1944, and the former was pushed to within a few miles of the Arctic Circle. Since the war, the Nordland railway has been further extended until today its rail-head lies only 100 miles from its ultimate goal, the town of Bodø.
Concurrent with the programs of new construction have been the conversion of most older narrow gauge lines to standard gauge and the progressive electrification of several of the more heavily trafficked railways. Today, at its one hundredth anniversary, the rail system of Norway measures some 2,760 miles in length, of which all but 40 miles are state-owned. Of the total, only 60 miles remain as narrow-gauge lines and fully 700 miles, or 25%, have been electrified. Traffic on the Norwegian State Railways now amounts to nearly 39 million passengers and 14 million tons of freight a year, having virtually quadrupled since the turn of the century. And, as its services to the nation have expanded, the Norwegian State Railways have become Norway's largest single enterprise, giving employment today to almost 30,000 persons.

The changes wrought by the railroad in the life of Norway have been numerous and profound. Having been introduced upon a stage hung with medieval backdrops, the railway, as the first modern means of overland conveyance, completely revolutionized the prevailing concepts of distance and time. Wherever its rails were laid, it quickly supplanted the pack-horse, two-wheeled cart, or sledge. It linked towns with rural districts, the coast with the interior, and one region with another. It permitted a much wider and more rapid dissemination of goods and ideas than had ever been possible before and it made for a much-increased movement of people. Its stations and junctions served as nuclei around which whole new settlements crystallized and grew. It may be said that much of Oslo's preeminence as the largest city of Norway may be traced to the excellence of its railway communications. Today, trains arrive in or leave the Norwegian capital on an average of one every three minutes, day and night. Like great arteries
radiating from the economic, political, and cultural heart of the country, the lines of the Norwegian State Railways pulse with the lifeblood of the nation. In a way in which no other means of transport could, they have become a unifying force, symbolic as well as actual, in the life of Norway.

But great tasks still lie ahead as the State Railways begin their second century of service. Having nearly reached the full stature of its growth in its first hundred years, the NSR will concentrate its chief attention in the future on improving the system which has been so laboriously built up. One of the top priority projects will be the elimination of the bottleneck in Oslo through the construction of a Central Station and an underground link between the eastern and western lines. To increase the operating efficiency of the system, several connecting links will be built between existing lines, others will be double-tracked, and still others shortened by extensive tunnel projects. The replacement and modernization of coaches and equipment, which was impossible during the war and extremely difficult in the first post-war years, will also be accelerated. And finally, a major part of the improvement will come through further electrification, a long range plan embracing over 700 miles of line having already won the approval of the Storting.

Thus, as Norway pauses on September 1 to commemorate the centenary of her railway system, she will do so with pride in the triumphs that have been won and with respectful dedication to the tasks that lie ahead. We, too, join in saluting the Norwegian
State Railways with a hearty *Takk for turen og fortsatt god reise!* ("Thanks for the trip and may you have a continued good journey!")

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