

DISCUSSION.

Mr. G. Fischer, in opening the discussion, stated that he had very little to say on the subject, in consequence of the author having confined himself to generalities unsupported by facts. There was no doubt that special cases might and would arise when it would be found economical to reduce the gauge of projected railways, and he joined issue with the author in the remark "that grave errors have been committed by our railway engineers in adhering to the standard gauge." Regarding the Nyngan-Cobar line, he considered that an inexcusable blunder would have been committed if anything but the standard gauge had been adopted, as this in a few years would form a portion of the great trunk line to South Australia and Queensland. The following statistics would, no doubt, prove of interest. Taking, for example, Central Europe, in which was included Germany, Austro-Hungary, the Netherlands, and Switzerland, the combined area of which was about 506,000 square miles; the total mileage of trunk lines in 1888 was about 52,000, or roughly about one mile of trunk line of standard gauge for every ten miles of area. New South Wales had at present 1,337 miles of standard gauge railways for an area of 310,000 square miles, or about one mile of track for 133 square miles of area. He was confident that by the aid of water conservation, artesian wells, and irrigation this Colony would in years to come be able to support as large an average population per square mile as Central Europe, and in the face of these facts the author asked us to give up the idea of standard gauge railways, which would become the main trunk

lines of the future, when the proportion of railway mileage comprised in New South Wales, as compared with Central Europe, was only 10 to 133. Railways in New South Wales were not being built to meet the requirements of the present population of large districts only, allowances had to be made to meet the traffic which might reasonably be expected in the future. He (the speaker) wished it to be understood that he was not antagonistic to narrow gauge railways, but he maintained that some of what might at the present time be considered branch railways would ere long be main lines from which branches might be tracked of gauges suitable for the probable requirements. The secondary railway systems in Central Europe only consisted of about 645 miles standard gauge and 1,710 miles narrow gauge, compared with 52,000 miles of main lines, which was quite an insignificant amount.

Mr. F. A. Franklin stated that the system adopted in countries where the population varied from a dense character to a comparatively sparse one, the railways should be constructed in proportion to the population. There was ample evidence of this in the main grand trunk line which was laid for a great distance through the heart of India, through the north-west province of Calcutta to Delhi on one gauge, and from this branched off a number of lines of narrow gauge, such as the line to Benares passing around the hills of the Himalayas from Delhi, Umaritsao Ombala to the Persian Gulf; also the line to Simla, all of which had been laid out on a most economical plan to meet the requirements of the widely-spreading population. Efforts should be made to reach the distant places by simplest means, and he therefore thought that it would be quite reasonable in the future to run narrow-gauge lines to such places as Cobar. The author had referred to the great objections which had been raised to a break of gauge in this Colony which had no foundation, for, as in India, judging from the nature of the country of New South Wales, future settlements might be fairly estimated and railways of a permanent

character, but light and cheap in construction, might be laid down with some certainty of immediate returns. Reference had been made to the 2 ft. gauge line from Sillaguri to Darjeeling, this he (the speaker) had had an opportunity of inspecting, and some further particulars might be interesting. Before the construction of railways, the journey from Calcutta to the Sanitorium at Darjeeling occupied some eight days of tiresome travelling and great discomfort. The journey could now be performed in twenty-six hours with great comfort, the first portion was from Calcutta by Eastern Bengal Railway to the Ganges, a distance of 110 miles; thence by metre gauge 196 miles to the foot hills of the Himalayas at Sillaguri, here a further reduction of gauge took place, viz. : a 2 ft. gauge, which passed through what was once the dangerous jungle of Terai, but it is now negotiated so rapidly as to be deprived of its former terrors, from this point an ascent was made on an eminently practical and certainly beautifully-located line. As the author had stated, much of this line was laid along the ordinary road; but, in some instances, considerable ingenuity had been exercised in scaling difficult points, and in traversing to higher levels on jutting spurs of the mountain side. As at first constructed, the gradients were 1 in 19, and the curves 90 ft. radius, but by Act of Council certain alterations had recently been made in reducing gradients to 1 in 28, and the minimum radius of curves was now fixed at 120 ft. The locomotives used were by Sharp, Stewart and Co., Atlas Works, Manchester, the weight being from eight to ten tons on a wheel base of 4·3 ft., the diameter of the cylinder was 9½ in., stroke 16 in., and they were capable of hauling a load of from twenty to twenty-eight tons up a grade of 1 in 28 at the rate of seven to 16 miles per hour. Steel rails were used, 40 lbs. to the lineal yard. The total distance run in making the ascent to Ghoom, the highest point, was 25 miles to an elevation of 1,310 ft.; the speed, including stoppages, was about 1,000 ft. per hour on an average grade of 1 in 28·7. Since the construction of

this line in 1880, the whole of the mountain slope had been brought under tea cultivation, and the results which had been attained had more than fully justified the most sanguine expectations of the promoters.

Mr. G. Ashcroft considered there was too much slavish adherence in the colonies to English precedents. A considerable economy would result by reducing the speed of goods traffic to ten miles per hour, and thereby reducing the wear and tear on the permanent way, the maintaining of which was the heaviest item in the cost of working railways. As far as he knew, not one of the colonial railways had any reliable public accounts of the cost of the maintenance of the permanent way; an ordinary business man could ascertain whether this item was properly met. One great reason why there was no limit to economy was that the people insisted on having luxurious accommodation, which involved an enormous expenditure. The country was crying out for better accommodation, but those who had ridden in country coaches for say eighteen hours, going from a railway to some inland town, knew that the rudest railway accommodation was a luxury compared with them. What was required was that people in thinly-populated districts should be made to understand that they could only have speed if they were prepared to pay for it; it surely did not matter very much if the journey to some of the small towns required one or two hours. He would go the fullest in advocating light railways through country districts, which would result in a considerable saving to the country. If they would be satisfied with low speeds and rough-and-ready accommodation, it would be much better than trying to imitate and adopt highly-organised railways.

Mr. P. W. Shaw stated that he agreed with the author on a number of points contained in the paper before them, but more especially as regarded the feeders to trunk lines; there were other points that were open to question, which would require to be proved before being accepted. The author stated

that "on the continent of Europe, and even in India, the basis on which railways should be constructed has now been definitely settled." If he would give us an idea what that basis of settlement was it would help us to overcome the difficulties in this country. If Federation was likely to bring about the uniformity of gauge of trunk lines in the colonies, the sooner it came the better as far as railways were concerned, as he (the speaker) considered it very bad policy on the part of our neighbours to lay down lines of different gauges of their own instead of following on with the one we had here—especially as it had been accepted as the best by ninety per cent. of railway engineers of the world. There was no doubt that before long a uniform gauge would have to be adopted throughout this country when a question would arise as to which of the colonies should make the required alteration. It would not be New South Wales if the best gauge were adopted. There seemed to be some doubt as to which were trunk lines and which branch lines. The line from Nyngan could not be considered a branch line, as in all probability it would be taken on to Wilcannia and Silverton, and then, if joined to the Northern line at say Wervis Creek, would form the trunk line between Brisbane and Adelaide. There were very few lines in this Colony at the present time which could be considered as branches, as they were only portions of what would, at some future time, be trunk lines.

Professor D. C. Selman said that the subject of light railways had received considerable attention in Europe, and, in those instances in which they had been adopted, they had proved a financial success, and a great benefit to the districts through which they passed. It was an established principle that increased facilities increased the traffic and enhanced the value of property and induced a better cultivation of the land. As an example, a tram line was constructed on this system to act as a feeder to the London and North-Western Railway, within a few months after it was opened it carried the entire

population of the district once a week ; and, in addition, a very large quantity of goods. The result of this was that in a very short time the value of land had increased twenty per cent.

Mr. C. Van-de-Velde, in reply to the discussion, said he was very pleased at the almost unanimous opinion of the members in favour of narrow-gauge railways. Mr. Ashcroft had expressed himself in favour of a reduction of speed in order to reduce the working expenses ; but, if the narrow gauge were adopted, a speed of twenty-five miles could be maintained, and the cost would be considerably less than at present, and at the same time meet all the requirements of the traffic on a number of lines. All the large companies had made great sacrifices by replacing wooden sleepers with either iron or steel, which had proved eminently successful, and considerably reduced the cost of maintenance.