DISCUSSION.

MAJOR KNEESHAW said he had much pleasure in moving a vote of thanks to the author for his contribution that evening. He had listened with pleasure to the interesting data placed before them; quite a lot of it was new to him, although he had been on the western front for some considerable time. Of course, one must realise the difficulties of transport up to the rail head, but he was rather sorry that the author had forgotten to mention one very important method of transport extensively used at the front. He referred to the mule transport—it was a great asset, and proved of the utmost value on every occasion. He personally felt grateful to the author for putting the matter so lucidly before them that evening.

LIEUT. NORFOLK said it gave him great pleasure to second the vote of thanks. He considered the transport organisation the most marvellous part of the work carried out in France, particularly as the greater portion of the work was done during what he might call the "crisis" in France. The results proved that the care and forethought of those responsible had not been attempted in vain. The success achieved must surely have been gratifying to all concerned.

MR. VICARS, while congratulating the author on his paper, said that the very nature of the subject matter prohibited discussion.

MR. HARRICKS said he would like to ask the author some questions relative to the narrow gauge railways, as this was, he considered, a question of vital importance to Australia, and one that should be studied by engineers here. He was associated with a Company who used the same gauge railways as those referred to by the author—locos. of the 4-6-0 type, weighing about 15 tons. What was the author's experience with the British six-wheeled type? Also, could

he be informed what was the maximum speed on the narrow gauge railways at the front? Of course, it would be understood that the structure of the roadbed would have a distinct bearing upon the speed of the train. He was sure that the paper had been of intense interest to all who were present, and would now take the opportunity of joining with the preceding speakers in supporting the vote of thanks to Lieut.-Colonel Fewtrell.

Mr. Tournay-Hinde said that there was one thing the author did not dwell upon in his remarks that evening, viz., that the whole of the organisation of this remarkable work was carried out by Australians, included among whom must not be forgotten the author, Lieut.-Colonel Fewtrell. In conversation with an officer lately returned from France, he was informed that the work carried out was a great achievement indeed, and was very much appreciated by the medical arm of the service. He felt he must let the meeting know the regard in which the engineers were held by the other branches of the army.

Mr. Vicars said that he would again like to make a few remarks at this stage, for it gave them great pleasure to welcome back the author to the Association, as well as many other members present who had been on active service. One could judge from the remarks expressed during the rendering of the paper that the keynote of the success of the transportation system had been "organisation." It was gratifying to hear that the first successful light railway at the front had been constructed by Australians. Although the number of our men at the western front was comparatively small, he felt sure that the quality of the work done had earned for them the regard of all those in authority in England; and it was certain that they would be reverenced in the same way as many famous corps were in the British Empire. He considered that the paper was a

complete resume of the work done. A war of such magnitude as the one just concluded required first-class organisation, and the co-operation of military and civil life, and it was in reality the secret of the successful achievements during the war. He thought that if co-ordination like this could be carried over into the civil life of Australia, much good would accrue.

LIEUT.-COLONEL FEWTRELL, in reply, thanked all present on behalf of his brother A.I.F. comrades for the cordial welcome home, and on his own behalf for the many expressions of opinion during the discussion. It was very difficult to condense the data in order to make a presentable paper. Owing to the strict supervision exercised by the military authorities while in France, he could not avail himself of the opportunity of actual photographs of the transportation system. He considered the mule the bedrock of their transport system at the front lines—Australian drivers seemed to get the most of the animals.

Road transportation broke down during 1916, owing to the failure of the roadbeds, and they then decided to instal the 2ft. gauge light railway. Mr. Harricks asked why 4-6-0 locos were adopted? The first locos were 28-ton, six-wheel coupled, running on 16lb. rails, in the forward area, and they were found most suitable.

The author considered 15-ton locos were rather heavy for field work, but the Hunslett type, having an axle load of 3½ tons per axle, and using 20lb. rails instead of the 16lb., gave very good results. Another type of loco which met with a good deal of success was the "Baldwin" flexible frame loco.

With regard to the speed of the light railway system, the maximum on all the roads could be safely set down at 15 miles per hour, with perhaps the exception of that

portion of the track near Bapaume; there the speed very often attained to 25 miles per hour.

The German light railway system was an excellent one—much better than our own. They used heavier rails, 24lbs. per yard; these required less ballast, since they were provided with rigid steel sleepers 4ft. 3in. long by 7in. broad. The pine sleepers used on our light railways were 9in. by 4½in. by about 4ft. 6in. long. The bogie trucks carried 10 tons and the four-wheelers 3 tons each.

The Australian Pioneer Battalions had a good breaking in to light railway construction and operation.

With regard to a question re the trench tramways—the organisation under review did not embrace this system, as it was all front line work.

In conclusion, he thanked them again for the interest shown in his paper, and the hearty vote of thanks accorded him by the members.