PAPER No. 122.

THE FUTURE OF COMMUNICATIONS IN THE PUNJAB.

By Major H. L. Woodhouse, M. C., R. E.

The question of improving communications has been very much to the fore of late in the Punjab. There are three ways of meeting the demand in any locality:—

(a) a railway paying its own way,

(b) a railway with a subsidy from the Local Government for a few years,

(c) a metalled road.

(a) The Central Government provides capital on which it gets interest not below a more or less standard rate.

(b) The Central Government provides capital, but the profits being insufficient to pay the standard rate of interest are supplemented by a subsidy from the Provincial Government.

(c) The Provincial Government provides capital on which it gets no direct return, and also incurs annual maintenance charges.

There are few lines of communication in the Province which are financially able to support more than one of these means of communication. There are many on which no railway can ever hope to pay. It remains to consider those intermediate between the two extremes.

There is a considerable difference in the characteristics of the two means of communication. Take the railway first; the vehicles run on an expensive permanent way, the cost of which is met by those making use of it, (construction of the new lines in the Punjab is of either B or C standard, the former costing Rs. 80,000 to Rs. 90,000 per mile, the latter Rs. 60,000 to Rs. 65,000). From this permanent way springs the great advantage of a railway that track resistance is only about 5 to 8 lb. a ton against ten times that amount on a macadam road, hence motive-power costs are much less. The maintenance of this track being under one authority and inspected yearly by a government inspector is uniform. Floods, high winds and heavy rain are less liable to cause interruption. Steering of the vehicles is done by the rails, relieving the driver of responsibility and making for safety.

Being under strict regulations railways give regular service, at fixed timings and fixed fares. They cannot curtail their service to any great extent to meet temporary lulls in traffic, though they can increase it on the occasion of fairs and *melas*. This ensures that transport will be available every day for passengers.

On the other hand no railway can collect goods and passengers from their doorsteps. The unit of transportation is much larger and heavier than a motor bus, entailing a less frequent service, at present with definite stopping places, (though the introduction of something akin to a Sentinel coach may alter this), as the cost of starting again is heavy, and continual stops reduce through-speed enormously. In a land where travelling without a ticket is almost a national pastime, the arrangements required to cope with passengers picked up at halts, such as are being introduced in England, are difficult. Level crossings, anathema to road traffic, cannot be avoided, except at great expense, though in view of the indifference to time of the average third-class passenger, it is questionable whether the average bus passenger dislikes them as much as the motorist driving his own car.

Road traffic may be divided roughly into motors and bullock carts. The track is provided at the public expense, and the public at large pay for what some use far more than others. The rough cost of making a metalled road may be taken at about Rs. 20,000 a mile and maintenance Rs. 1,200 a mile yearly. Motor traffic is far more flexible than railway traffic. The units are smaller, and can get almost up to the starting point of either passenger or goods traffic. These small units, however, require a much larger driving staff for dealing with the same amount of traffic.

There are two main drawbacks. The first is risk. The driver of a car is responsible for its steering. At present there is no serious test of the vehicle when first licensed, and none at all to ensure that it is kept in repair. The drivers are not subjected to any annual test to ensure that they maintain their efficiency. There is a very generous maximum laid down for the number of passengers which can be carried in a vehicle, and nothing very much can be done to prevent the habitual over-crowding which goes on, without a large and expensive increase in supervision.

The second is that the passenger is at the mercy of the bus proprietor. If traffic is slack in one area there is nothing to prevent busses deserting a route in favour of one, where there is more to be made, leaving the people on the old route entirely in the lurch. Fares vary from hour to hour. Competition on the Lahore-Amritsar road brought fares down to one-third of the third-class railway fare, already the cheapest in the world, with the result that busses were run at very excessive speeds in order to make a sufficient number of trips per day to pay expenses. On the Amritsar-Pathankote road fares varied according to the train timing. Just before a train was due fares dropped well below railway

rates ; as soon as it had left they rose well above. Another way of meeting low fares was to charge very much higher fares to villages some distance from a station.

So far as can be seen at present motor passenger traffic is pursuing much the same course as in England and America, that is, up to 30 miles it beats the railway, beyond it gradually drops off till at 100 miles it is practically non-existent. The graphs show the relative monthly third class traffic from April to September for 1926 and 1927 taking the traffic for April 1926 as 100 in each case. At the same time roads suitable for regular high-speed motor traffic will be far more expensive to build and maintain than those at present in existence.

Things are rather different when we consider all but the very lightest and most valuable goods traffic. The zamindar will probably continue to take his produce to the *mandi* by bullock cart. It costs him little or nothing, as there are times when his bullocks are not otherwise employed. From the *mandi* it is much simpler and cheaper to despatch goods by train. The average lead of all goods traffic is 184 miles, beyond the scope of motor transport, and to send the goods part of the journey by motor entails transhipment, with its extra cost, delay and risk of theft or damage. The cost of transhipment incidentally is one of the serious drawbacks to short narrow-gauge lines, the necessity of keeping enough stock to carry peak loads, which has to lie idle most of the time, being another.

The problem is beginning to emerge as a rivalry between road and rail for distances up to about 50 miles. The two classes of traffic, passenger and goods, differ in their requirements. It is necessary to decide in each case which deserves more consideration. There is, however, another and very important aspect to be considered and that is the financial. Both road and rail are state-owned. The expenditure on the road brings no direct return to the state. The profits earned by motors as a direct result of road construction by the state go into the pockets of their owners. Expenditure on a railway, however, on which motive power and vehicles as well as the track belong to the state, produces a return. This return may not be enough to produce a commercial return on the capital expended, but the difference when capitalised is often much less than the capitalised cost of building and maintaining a road. There is the further point that once built a railway usually requires no further capital expenditure till traffic has very considerably increased. A track fit for two trains a day each way, can carry four without a very great outlay on improvements, whereas, as motors increase in size and speed, roads will require continual expenditure to keep them up to the standard required.

The present situation would seem to be that the Province is crying for more means of communication. It can get the main routes built for it by the railway either free of cost, or by paying a small subsidy. The provincial funds are limited, and to spend them on building or metalling

roads parallel to existing railways, or where railways can be built as a commercial proposition seems wasteful, as the same expenditure where there is no railway will meet a necessity by benefiting those who have no other means of communication, instead of providing a luxury for those for whom there is already a suitable form of transportation available. Moreover, there is already scope for very considerable expenditure on radial roads leading to the railway.

As an extreme case if one decided to concentrate first on providing arterial roads, leaving the great mass of the people without anything but *kachha* roads and hoping to metal these in the future, it seems by no means improbable that the cost of maintenance of these roads would rise so high on account of the motorists' increasing demands for widening and tarring that the time would come when maintenance would absorb all available funds, and that the Province would be left with a few main line railways, a number of branch lines with indifferent services owing to the impossibility of competing with short-distance motor traffic and consequent loss on operation, and a number of arterial roads more or less parallel to the railways, requiring large expenditure to maintain them; the rest of the Province would no more be able to move itself or its produce than it is to-day. In other words the large expenditure and constant recurring charges would have benefited nobody but private motor car owners and some bus proprietors.

Of course in practice such a state of affairs is absurd and could never come about. Apart from other reasons it is essential that there should be arterial roads to enable motor transport to adjust itself to trade conditions, concentrating where trade is brisk, and leaving areas where a temporary lull in trade renders some of the local motor transport superfluous.

There are already a number of arterial roads; the erection of new bridges for both road and rail traffic will tend to increase the number; and a time will come when radial roads serving one station will join up with radial roads serving another to form an arterial road between the two.

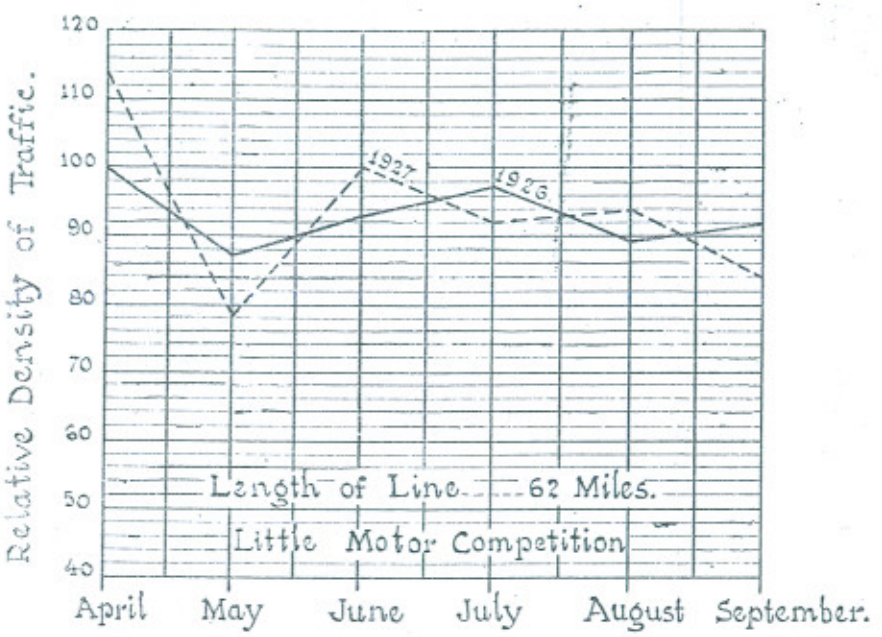
Provided these new roads do not run absolutely parallel to railways the impetus to trade and travel produced by them should go far to recompense the railway for any loss of traffic.

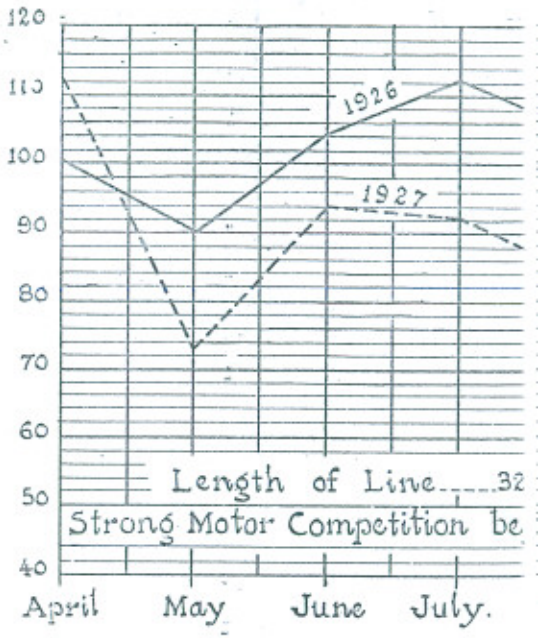
It will be appreciated what a very complicated business the extension of communications has become. Only by the close co-operation of all concerned can waste be avoided, and the number of those is very large. Besides the railway and road engineers directly concerned with the actual construction, and all the branches of the railway administration collected under the one head of "railways," there are also, the Punjab Government concerned with questions of finance and of the development of special areas, district officers on whose estimates of land values the financial prospect of a new line often depends and with whom, in conjunc-

tion with the road engineers, questions of alternative alignments, level crossings and feeder roads must be settled, irrigation engineers whose requirements for canal crossings affect costs of earthwork and bridging and electrical engineers who may before long be very much concerned with the provision of power.

This Congress seems a good means of obtaining the general opinion of the engineers of the Punjab on a subject which has so many aspects and of creating a reasoned public opinion. It is very difficult to write on such a subject without the intrusion of the personal equation to some degree, but a congress of engineers whose activities are so various should be able to arrive at a general opinion free from any personal bias. Whatever this opinion may be on details, it seems very clear that it will regard close and constant co-operation among all concerned essential if the Province is to derive full benefit from its expenditure on communications.

EFFECT OF MOTOR COMPETITION ON 3RD. CL

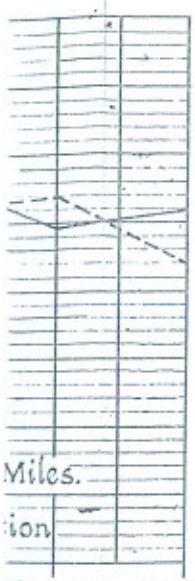


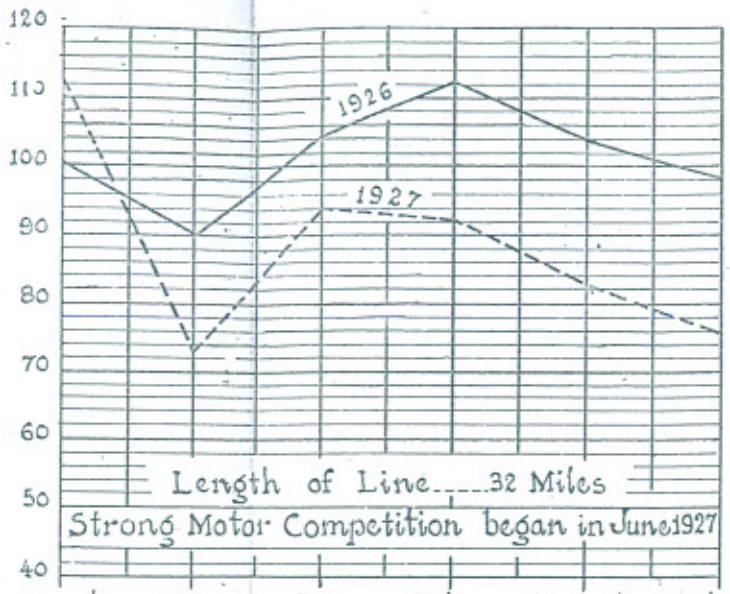


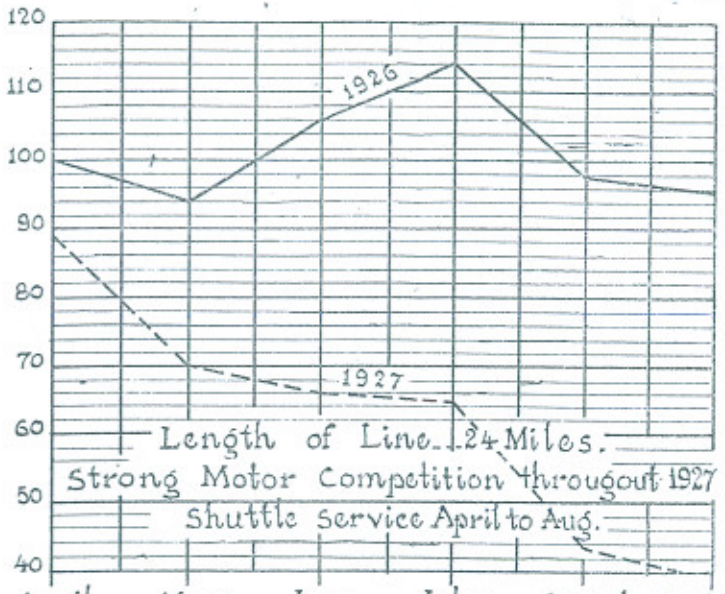
Proc. P. E. Congress Vol. XVI - 1928.

...R COMPETITION ON 3RD. CLASS TRAFFIC.

PLATE I







28.

H.L. WOODHOUSE, M.C.

DISCUSSION.

Lieut.-Colonel Anderson introducing the paper apologised on behalf of the author, who had recently been transferred at short notice to Quetta and had not been able to come down to Lahore owing to a rush of important work.

The paper was intended to provoke a discussion on the development of rail and road communications in the Punjab and to give some suggestions as to possible methods by which the growing need for improved communications could be met. He thought that he was right in saying that this should be done by co-operation rather than by wasteful competition, and in his short paper, Major Woodhouse mainly dealt with those places where a choice had to be made between development by a railway, temporarily subsidized by the Provincial Government, and a road entirely constructed from public funds.

He explained that the difference between B & C Class lines was really one of speed. "B" Class could give a better and faster service than the "C" Class. It was necessary to emphasise the fact that railways were strictly controlled by law, *i.e.*, the Railway Act and rules made under it which have the force of law, and they had consequently to run to fixed timings and fixed fares. They could not curtail their service to any great extent to meet temporary lulls in traffic, though they could increase it on occasions such as fairs and melas.

Another important point was that of level crossings and on that point an expression of opinion from members of the Congress would be of considerable value. He explained the procedure adopted for getting reliable figures of what was going on at any particular crossing. When an overbridge had to be substituted for a level crossing it cost something like rupees one to two lacs and it was difficult to justify such expenditure as remunerative. The usual procedure was to take a surprise census at any crossing about which complaints were made, but even then the question arose as to what amount of delay to traffic constituted justification for the expenditure involved. For example, in a place where only one car had to pass in 24 hours there was obviously no justification for putting in an overbridge, nor was there for ten cars; if a hundred cars came there might be, but it was almost impossible to fix a standard. In one case he had estimated the value of the loss of time to motor cars at a level crossing on the basis of what they would earn if they had been taxis, but the result was not satisfactory. The cost of maintaining a mile of railway track was practically the same as that of maintaining a mile of road, omitting, of course, the cost of maintaining vehicles in each case. Major Woodhouse explained in his paper how the problem was beginning to emerge as one of road and railway rivalry for the short distance traffic up to about fifty miles. This had been going on in most

of the countries of the world and railways, with the possibility of higher speed and greater facilities, would be able in the long run to cope far better with the passenger traffic where longer distances were concerned. For heavy long distance goods traffic the railway was undoubtedly a far better and cheaper means of transport than any other.

It was difficult to justify a large expenditure on the construction of arterial roads, which are more or less running parallel to existing railways and the question arose whether it was not advisable to divert the money to building radial roads leading to the railway stations. The former was wasteful, because the same expenditure in an area where there was no railway would do more by benefiting those who had at present no other means of communication and it would add to the railway traffic instead of competing with it.

MR. DORMAN said he was sure they were all grateful to Major Woodhouse for bringing the future of communications in the Punjab before the Congress, and thought he would find general agreement with his desire for the closest possible co-operation between all the interests concerned.

The Prime Minister of Australia, speaking at the Transport Conference in Melbourne in 1926, had said that he saw no reason for a clash between the genuine national functions of the two great branches of the transport industry (roads and railways) and that if any clash occurred, it was because peculiar interests or authorities were seeking to set themselves before the general welfare. Mr. Bruce admitted that there was considerable temptation to interfere with the natural development of transport, so as to guard vested interests, but he was clear that this must be resisted, as, in the long run, the most efficient transport—whatever form it took—meant the most efficient industry and the most prosperous people; and though a statement like that might be unpalatable to anyone who had invested his savings in railway shares, it could not be gainsaid.

Australia was now endeavouring to co-ordinate, fully, roads and railways, by spacing its main lines and stations well apart, and only laying down branch lines when the traffic had developed beyond the capacity of the road to carry it, and, although the railways were State owned, the Federal Government had recently made a grant of £ 20,000,000 distributed over ten years, for road improvements and maintenance.

It had also been emphasised at the recent World Motor Transport Conference in London, that road transport was an essential factor in the economical running of train services, and that, for leads up to 80 or 100 miles, railways could not hope to compete with them.

This was recognised in South Africa, where over 4,000 route miles of roads were worked by the South African government administration as an adjunct to their 12,000 miles of railway.

Both in Australia and in South Africa extended use was being made, of six-wheeled chassis over earth roads from villages to railway stations, for bringing in milk, butter, eggs, etc., to the city markets, and surely the same could be done in the Punjab.

The railways, however, had had matters their own way for so long that they were naturally rather astonished and a little annoyed to find their monopoly invaded and their supremacy suddenly challenged. They had rather got into the way of making the public accommodate itself to their convenience, instead of trying to make matters attractive to the public and this sort of thing did not encourage railway travel.

It was difficult in any country to avoid having roads and railways parallel to one another. Railways naturally sought the richest country and the most densely populated centres, and these were just the places which were also most insistent in the cry for good roads. In the early days, railways had invariably followed the then existing trunk roads, as, for example, between Lahore and Multan, from Ambala to Jagadhri, from Delhi to Rohtak, from Amritsar to Pathankot, and elsewhere, and the simple expedient was adopted of allowing the road to fall into disrepair as soon as the railway was opened to traffic. Fortunately the military importance of the Grand Trunk Road saved it from a like fate, but the railway, in the first instance, ran along its berm to Wazirabad. The Ambala-Kalka Road would have gone the way of the other roads if the Government of India had not vetoed its abandonment.

It was these old abandoned roads which were now being rehabilitated and by the irony of fate, were providing the means for the motor competition with the iron horse which had for so long almost crushed them out of existence.

A periodical examination of motors, and more especially of the brakes and lights, was most desirable as well as stricter regulations to limit the speed and loading. To have people hanging on outside should be a criminal offence, and the Automobile Association would do good work by reporting to the police any lorry seen carrying more than its licensed compliment of passengers, or exceeding its authorised rate of travel. All such lorries could then be watched and warned, and suitably dealt with if again found offending. This, however, while conducive to the safety of the passengers was not going to do much to reduce competition with the railways.

The only solution to the problem, as pointed out by Major Woodhouse, was the closest possible co-operation between all interests concerned. The Communications Board should be this co-ordinating agency, but in actual practice it rarely had the complete information necessary for it to arrive at a final decision. Once the need for improved communicati on was felt in any a ea, a preliminary joint engineering and traffic survey should be made by railway and road experts ; their reports considered by the local interests concerned—agricultural, official, and commercial—all opinions recorded, and the whole case submitted to

Government for decision, after taking everything into consideration as to the requirements of the area. Of course this was only possible in a comparatively undeveloped country like the Punjab. In Great Britain with its elaborate net-work of roads and railways, there was no such choice, and there seemed little hope of salvation for a large number of the branch lines.

They could not altogether accept Major Woodhouse's statement, on page 100, that level crossings could not be avoided. Surely he did not still wish to maintain that it was necessary to cross and recross the Lahore to Bhakkar Arterial Road three times within about twenty miles between Lyallpur and Jaranwala,—unless may be as a device for handicapping the motor traffic between these places.

With an anticipated increase of 1,000,000,000 passenger miles in 1927-28 as compared with 1926-27 and a promise of a substantial reduction in the rate for the carriage of petrol, he felt, however, that the railways still believed in their own future.

MR. NICHOLSON was pleased to find that the railways were now seeking co-operation in the matter of co-ordination of effort in the various departments regarding communications. He pointed out that the sanction which has just been accorded by the Railway Board to the new railway line from Chananwala to Lyallpur was made possible by the fact that the Suleimanke Headworks had been designed to carry a railway bridge. When the scheme came up the railway was not enthusiastic. The fact that the Irrigation Department had taken a far-sighted view was amply justified, and it would not only get back the cost of the bridge but also of the station at Chananwala and the railway line from there to the Suleimanke Headworks. In his early service, the question had arisen, when the Balloki Weir was to be constructed, whether it would not be desirable to find out from the North-Western Railway whether they would like the piers of the weir to be constructed so as to give an economical railway bridge across the Ravi. In those days, however, it was felt that there would be so much delay in coming to an agreement with the railway that the matter was dropped. It is rumoured that the railway engineers have now been looking at the piers of the Balloki Weir and feel satisfied that it could carry a railway, but that the Irrigation Department are conservative, possibly due to the fact that they have often been faced with conservatism when making proposals to the railway. Col. Anderson had referred to the question of taking traffic statistics to decide the necessity of replacing a level crossing by an over-bridge. This would not always disclose the necessity, for at Ludhiana, before the over-bridge was built on the Ferozepore road, nobody attempted to cross the level crossing, but avoided it by going a couple of miles round. He felt no doubt that road traffic conditions at level crossings could and would be materially improved when the attention of the railway was drawn to the fact. The North-Western Railway held pronounced views on the subject of roads running parallel to railways and he suggested that by giving a rebate of freight on road metal which was certified

to have been used on branch roads not parallel to the railways the desired object could be obtained. By the encouragement of such branch metalled roads more traffic would accrue to the railway, and would increase the revenue so as to re-imburse the railway for the rebate given, and save the loss from competition by parallel roads. Under such conditions he believed that very little development of roads parallel to railway lines would take place.

MR. MACFARLANE mentioned that last October, while he was motoring from Jullundur to Ambala he was stopped at a level crossing at Chiheru out for 6½ minutes. During the period concerned none of the signals were down nor did any train pass. He reported the matter to the railway authorities and the reply that he got was that in view of the interlocking arrangements the delay was unavoidable.

MR. OWEN ROBERTS stated that he was suffering from the want of knowledge of procedure. He had attended with a view to discuss a paper which he found had been taken as read, and as he had not obtained a copy, he was restricted to speaking on a few hasty notes. It might be interesting for the members of the Congress to know how vitally this question of railway development affected commercial people. His connection with trade dated from 1904, when he first went to Ludhiana and at that time railway development had not reached the stage that it had reached to-day. During the grain season, in the mornings, there used to be a string of carts a m le or more long loaded with wheat stretching down the Jagraon road on one side of the crossing at Ludhiana and on the other side extending to the *Mandis*. In the *Mandis* the confusion was fearful. Colonel Anderson had described himself as being in doubt as to the exact amount of road traffic that justified an over-bridge. He himself wondered how many years after the conditions described as existing in Ludhiana in 1904 the railway had felt justified in constructing an over-bridge there. Railway development had probably put more money in the pocket of Punjab agriculturists than any other form of development with the exception of irrigation. From 1904 to 1908 it was necessary for firms doing a produce business to maintain forty to sixty branches in the Punjab, whereas the progress of the railway made it impossible and unnecessary for firms to go on increasing branches indefinitely and business tended to develop on the lines of direct relations between firms and dealers without the intervention of numerous branches. It would thus be seen that the railway development had done a lot in fostering business in agricultural produce; the organisation of large firms was reduced to establishing branches for payment and gunny storage and hundreds and perhaps thousands of people had been brought into touch with markets who formerly had to do business through second and third hands. The improvement was gradual and he was of the opinion that the climax was reached in 1905 when the congestion on the colonies, particularly round about Lyallpur, was such that it might have taken anything from three to six weeks for a consignment to wait at a station before it was despatched. It was a few years after this, during the time

of Sir Henry Burt, one of the greatest agents the railway ever had, that serious railway re-organisation took place and the railway began to recognise that they had a public to serve and not only to cater for first-class passengers and the movement of troops. The two greatest problems which the railway had to face were the conveyance of goods and of third class passengers. The main difficulty was, so far as he could judge, the divorcement that existed between the central and provincial finances; that was the crux of the whole difficulty and it was not going to be solved easily. He referred to a debate that took place at the recent Session of the Punjab Legislative Council where a resolution was brought forward, which, if carried through, would have benefitted the small land holders to some extent, but on the other hand, would have deprived the Provincial Government of a large sum of revenue which under the present circumstances was difficult to replace, as the sources of the Provincial Government were limited. Industrial development was not going to help them as the additions to revenue through income-tax and customs went mainly to the central revenues. He was of opinion that the Provincial Government should have a stronger voice in finally deciding what railways should do in the Province. For the sake of argument there was the case of level crossings and the demand for over-bridges. The Provincial Government should not be expected to contribute a share to the cost of an over-bridge, and he thought that the last word on the subject should rest with the Provincial Government. If the Provincial Government was satisfied that an over-bridge was necessary the railway should provide it.

As regards the future development of railways, the Provincial Government was at present in a very indifferent position and they must have enlarged powers in the matter. One looked forward to provincial autonomy and if they were to meet the enemy at the gate, they must, as men endowed with commonsense come to an arrangement, and the Railway and Provincial Governments should come to an understanding in order to make the final settlement easier for everybody.

MR. DHODY considered that the question which had to be decided was whether in any place a road should be first laid or a railway. Hitherto in a developing tract a road was first laid, because it was regarded to be an easier means of introducing facilities for transport in the country, and then came the railway which followed more or less the alignment of the road.

As regards level crossings he had already contributed his experience to an article published in the *Motor Bulletin* some time back. He now wished to point out that the delay alluded to about the Wazirabad level crossing was a thing of the past as the railway authorities had since made considerable improvement by providing two gatemen and automatic gates in place of the old gates. This now made it possible to run through the level crossing in two minutes. Nobody would expect to pass through a level crossing when a train was running, but the matter became different when no train was running or when there was no man in charge of the level crossing, and any shunting train was allowed to

stand across it. If these things could be improved it was certainly worth while doing. At any rate he considered that if properly organised control such as now existed at important junctions like Wazirabad and Ludhiana, could be extended to other congested places also, one could do without an over-bridge, for some time at least.

BAWA BUDH SINGH considered that the paper was a fair statement of facts. The competition between motor traffic and the railways for short distances was really acute. This competition was due to the provision of better roads and to the economic advantages of motor travelling. No doubt the roads and railways were both owned by the State, but it was too late to recommend now that the roads should not run parallel to the railway lines in order to discourage competition between traffic by motor and railways. This would not only set back the hands of the clock by half a century, when roads were dismantled to give a free hand to railways, but would be greatly resented by the public.

Roads gave more personal freedom of motion than the railways, and in this century anything that curtailed liberty had no chance to withstand public criticism. Therefore the idea to retard the road programme had to be dismissed forthwith. The competition was both economic and affecting the personal comfort. Let the railway pay more attention to the comfort of the bulk of their passengers and they were sure to regain the lost confidence. It was unnecessary to dilate on the step-motherly treatment so far accorded by railways to the third class passengers as it was known to every one. That was the real ulcerated spot, which needed the balm of sympathetic treatment.

The swelling motor traffic required to be better controlled. There should be traffic inspectors to patrol the roads and enforce the law and regulations about the motor traffic. There seemed to be no reason, why privately owned cars should pay more tax than taxis. It was the latter that damaged the road most and evaded the rules, and yet they were let off lightly in the matter of taxes. The best propaganda for the Railway would be to show more regard for the travelling masses, and matters would then improve of themselves. There was scope; ample scope; for years to come, for the development of both railways and roads, hence there seemed to be no reason for any alarm at the increasing motor traffic. In Europe and America the motor traffic had developed to such great dimensions that compared with it the Punjab traffic was merely a baby in the cradle. He would therefore advise his friends, the railway engineers, to look upon this development with equanimity.

He would like to draw the attention of the author of the paper to the unfortunate sentence on page 100, produced below. "In a land where travelling without a ticket is almost a national pastime.....". These objectionable words should be withdrawn as this alleged national pastime was not an exclusively Indian one.

MR. CAMPBELL said that the question of roads parallel to railways was an extremely vexed one. There were one or two points which occurred to him as a business man who had to deal with the railways.

The first question was the carrying of goods to the railway station. He did not know the law in this country, but in England the railways had a lorry service which brought all goods from the outlying districts served by the main line. He thought that something of that sort would have to be done here if severe competition between the rail and road was to be avoided. In his opinion the number of trains in this thickly populated province was small and timings were not always convenient. He suggested the introduction of a faster through service between the important stations like Lahore, Amritsar, Gujranwala and Lyallpur, etc., by running small, high speed trains, which would only stop at main stations. In this country passengers contributed a greater portion of the railway revenue than goods. The carriage of goods by road over short distances was one of the things which the railway would have to look to and now was the time to overcome this competition. As regards the question of goods, he admitted that the railway had during the last few years, speeded up the carriage of goods between important points to an enormous extent. Goods from Calcutta on the main line came up at the rate of three miles per hour. He, however, understood that the timing which the railway were now aiming at was about ten miles per hour. Another big difficulty in his opinion was the booking of goods and still more the loading and unloading goods at stations.

The railway might do a good deal to popularise itself by increased courtesy to passengers and people booking goods. The main line stations no doubt did their best, but they were either understaffed or their staffs was not properly trained or organized.

MR. ASTBURY stated that Major Woodhouse's paper ended on the note of co-operation. One beneficial form of co-operation which might result from it would be to bring in more members of the North-Western Railway to join the congress. He wished that space had been found in the paper to mention the existence of the Communications Board and that it had a railway member serving on it. The Communications Board had as one of its special functions the co-ordination of all forms of communications. That was one of the means by which Government attempted to secure that the different aspects of communications were considered at one and the same time. Another was that the Secretary to Government who dealt with railways also dealt with roads, thereby giving him an opportunity of seeing correspondence on both subjects and of keeping in constant touch with what was going on.

Coming to the details in the paper, he remarked that the author had stated that the Provincial Government provided funds for making roads from which it received no direct return and also incurred annual maintenance charges. It would have been more complete to have mentioned that although the roads bring no direct return, yet they yield an indirect return to the provincial funds.

The author considered the railway to be unable to collect goods and passengers from their doorsteps. In London luggage and small goods were collected by the railways from doorsteps and as the Punjab

was developing on parallel lines to other countries he thought the Railway Department would find it beneficial ultimately to afford such facilities to the public.

The figures of Rs. 20,000 a mile for making metalled roads and Rs. 1,200 for maintenance per mile annually, mentioned by Major Woodhouse, were now probably an under-estimate owing to the fact that roads were being constructed in more out-of-the-way places in the Province remote from the quarries and because they had to rely upon stone where formerly they were able to use local kankar.

Government had recently formed a Committee to try and improve the working of the existing rules regarding licensing of motor vehicles and also to see if the rules themselves could not be improved so as to restrict what was really unfair competition.

In the paper there was a general tendency to stress competition between metalled roads and railways. His view was that the competition was not so much between road and rail as between the internal combustion engine and the steam engine. It seemed likely that in the near future the petrol motor would be driving vehicles even where there were no metalled roads.

COLONEL WALTON replying to Mr. Nicholson's suggestion that the railway should give concession rates for road metal for roads feeding a railway, pointed out that already all road metal was carried at concession rates which gave the railway no profit at all and it would, therefore, be seen that the railway was contributing to a very large extent in the construction of roads in the Province.

He deprecated the ventilation of public grievances at the Congress. While the railway authorities welcomed reports on specific cases of inconvenience, the public were not helping themselves or the railway by indulging in generalisations. There had been a marked improvement in the working of railways as would be seen from the railway budget presented before the legislature during the last week.

The North-Western Railway had a length of 6,500 miles, and covered an area in excess of that of the British Isles; thus detailed supervision was a matter of difficulty. The number of railway employees was about 11,600 apart from contract labour. It was, therefore, essential for the public to realise their difficulties and co-operate with them as far as possible. They had opened a training school at Lyallpur, where three or four hundred men were constantly under instruction at a time, and it was hoped that as these men came out and took up duty, they would help to raise the standard of the service.

Attention was being given to speeding up of goods, especially of small consignments. In their export traffic they had delivered as much as 18,000 tons of wheat into Karachi in a day taking only five days in transit from the Punjab.

As regards level crossings he, as a motorist, agreed that delays took place, but to some extent these were inevitable. No doubt the real motorist would like all level crossings to be replaced by over-bridges, and at the same time all bullock carts taken off the road.

As regards the question of over-bridges, the necessity for their construction was not so much due to increased road or rail traffic, but rather to the change of the character of the road traffic. Road and other public authorities must contribute their share towards the cost of constructing over-bridges. If the construction of over-bridges was to be pursued to any large extent, road and other public authorities must be prepared to contribute their share of the cost. At Wazirabad level crossing considerable improvements had lately been made to minimise delays.

He had the good fortune of attending the World's Motor Transport Congress in London and one thing that struck him was that they should do all they could do, by working together, to avoid such rivalry as had arisen in Europe and America. The problem was that of bridging the "economic gap" (a phrase he learnt at that Congress) between road and rail transport and in this connection it was recognised that the railway had done its best by providing cheap, feeder railways in the Province. On the other hand there was the question of road development, more particularly in regard to motor traffic. He admitted that in places it was taking away a good deal of their passenger traffic and consequently telling on their earnings, as the motor had the advantage of taking people from door to door. They had already tried short fast train service between certain stations where motor competition was severe, but they had not been altogether successful in competing with the motor traffic partly for the reason that motor traffic could bargain for the fares they charged.

He urged that it was in the financial public interest that roads and railways should be complementary to each other. In this country this could be largely ensured because both railways and roads were so largely under Government control, whether Central or Provincial.

Colonel Walton concluded by stressing the necessity for making commercial traffic surveys before road alignments were fixed—a point already alluded to by Mr. Dorman. Railway projects were always examined from this point of view to ensure sufficient attention being paid to the general good of the public, the peasants and traders in the villages, as well as the inhabitants of large towns. The commercial, industrial and agricultural interests would thus not be subordinated to the administrative.

COLONEL ANDERSON in replying said that most of the questions raised had already been replied to by Colonel Walton.

Mr. Dorman's remark that, with the introduction of railways, some of the older roads like the Delhi-Rohtak Road, etc., had fallen into disrepair—seemed to prove the truth of Major Woodhouse's point that there were very few parts of the Province which could afford to keep up these two means of communication side by side.

Referring to Mr. Nicholson's remarks about building railways over canal weirs, he said that this was actually being done at the weir near Gandasinghwala, but that it was always limited by economic and financial considerations. For example, the idea was considered in the case of the Sukkur Barrage, but was turned down owing to the enormous amount of bridging in which the railway would be involved to cross the large canals on either side of the weir. A complete new bridge near Sukkur would be cheaper.

Regarding the question of stringency of rules and regulations pointed out by Mr. Nicholson, the railway was tied down by the Railway Act to an extent which no road builder or road user could realise. It was due to these rules that many of the troubles regarding interlocking of gates, etc., had arisen, but on the whole, he considered that the rules had been wisely made in the interest of the general safety of the public, and it was difficult to see how to relax them.

Referring to Mr. Owen Robert's remarks about meeting the cost of over-bridges, in certain cases the Provincial Government had paid and would pay a share of the cost of construction when needed. One case which had come to his notice recently, in which the maintenance of the roadway over a bridge had been handed over to a local body and was so badly done that the railway had to threaten to close the bridge because it was becoming dangerous to the trains passing under it.

Mr. Dhody's remarks about the level crossing at Wazirabad were very helpful, and he was very much obliged to him, because they gave an indication of the effect of the improved arrangements that had been put into force there and which might with advantage be adopted elsewhere.

As regards Bawa Budh Singh's remarks, at present something like two million people were caught every year travelling in India without tickets. It was only possible to guess how many more were not caught, but if this could only be checked, he thought that the additional revenue would pay for many over-bridges. When on leave in England he had on several occasions enquired from English railway officers how this difficulty was dealt with, and always received the reply that it was of such small extent that no special efforts were needed to deal with it.

As regards Mr. Campbell's remarks about collection of goods and passengers, he said that it was doubtful whether traders would be prepared to pay for the extra cost of haulage by road.

As regards Mr. Astbury's remarks on the return from road construction obtained by the Punjab Government, he was doubtful whether Government got even any indirect return. He thought the returns from road construction went mostly into the pockets of road users. The figures given by Mr. Astbury about maintenance of roads were interesting, because they showed that it was now cheaper to maintain a mile of railway than it was to maintain a mile of road.