

rather than 30 feet wide. They should, however, nowhere be less than this figure. Having regard to questions of economy 20 feet should be the standard width for a main thoroughfare between towns. Immediately outside the built up area of a town a width of 30 feet is ample, and in the built-up streets, so as to allow for standing vehicles, 45 feet between the kerbs is for ordinary streets very good. Streets made wider should be separated into divisions for fast and slow traffic, cycles, &c., both for the better direction of the traffic and also for the safety of the pedestrian when crossing.

Having now dealt with the road from the point of view of its direction and construction in relation to the requirements of motor traffic, let us consider for a moment its influence on the town and country through which it has to pass. It may at once be stated that in a residential suburb which is connected with the town by a railway, the main traffic route is altogether an evil, and in any case so long as such a suburb is connected with a main road system by a good secondary road it is to its interest to be situated quite apart from a main road. Even the residential suburb, which depends upon the motor bus or tram for access to and egress from the city, is placed in the best relation to it when it passes immediately outside it, not through it. Indeed, the main traffic route, unless it is bordered with a parkway, is as destructive to the interests of a residential district as is a railway line. Consequently, when planning main roads it is best to avoid the centre of districts which are likely to become popular residential areas. In the ideal planning of a district both railways and main roads would be outside rather than through residential districts. It might be of interest here to recite the resolution of the Third International Road Congress with reference to this. It was as follows:—

"As a general principle it is better that new main roads be constructed to pass outside rather than through towns, and when an existing main road passing through a town is unsatisfactory for through traffic, it is often better, in preference to widening an existing narrow main road through the centre of a town, to construct a new one outside. New roads should be planned according to the principles of the science of Town Planning."

We would, however, point out that the application of this resolution is exclusively advanced with a view to safety as regards the townsfolk and convenience as regards the motorist. However, at times it is best to take the traffic right through the centre of a town. A motorist likes to do his journey in stages, and does not mind slowing down say at intervals of 10 miles. It relieves him from the monotony of a too-continuous run at high speed, and adds interest to his journey to pass through a town. But the new town designed for this should have parkways where there are houses, and at least 45 feet between kerbs where there are shops.

We now come to the question of gradients. In the first place, it must be remembered that the steepest gradient which may be allowed for horse-drawn

vehicles is necessarily much less than that which can easily be negotiated by motors. All cars can easily surmount a 5 per cent. gradient on a high gear, and if the conditions of surface are good, most cars will ascend a 10 per cent. gradient on top speed. Therefore, whilst for motor traffic, as for other traffic, it is best where possible to keep the gradient low, a 10 per cent. gradient need not be regarded as impracticable. But the question of a satisfactory gradient is one which to the motorist is intimately connected with other issues, such as the length of the hill and the straightness of the road. To light cars, a straight road with a series of short steep hills forming a switchback track offers very little more resistance than the level road, the reduction of engine power and impetus attained in the downgrade almost completely compensating for the extra power required in the upgrade. The worst form of road for the motorist is that in which there occur sharp curves, sometimes becoming almost hairpin corners on a steep grade. Here, in the case of the right-hand ascending curve, where possible, there should be a wide grass margin on the left. Indeed, the planning of a wide grass margin on the outer edge of all sharp curves, both on the grade or level, is a provision for safety not generally appreciated. The tendency of all motorists when rounding curves is to keep on the outer edge of the curve, and experiences are endless where motorists ascending hills on the outer side of a curve have suddenly observed a descending car appearing at top speed on the wrong side of the road. It need hardly be mentioned in this connection that with round sharp curves it is an added advantage to slope the whole of the road towards the inside in its cross section.

As yet nothing has been mentioned about cross roads. There exists to-day two schools, each with a different view as regards this. The one advises the placing of all roads entering a main road in such a position as is not opposite another road; in other words, cross roads are everywhere to be avoided. Others make no particular effort to plan in this way; indeed, preferring a straight course in every direction, they depend upon standardized rules being adhered to in the use of the road, and features such as islands and refuges for the prevention of collisions. Surely it ought not to be always necessary to take a zigzag course when crossing a main thoroughfare, and all things considered it is best to run roads across one another.

But in this connection the importance of in some way clearly marking the entrance to a main road cannot be over-emphasized. It is absurd that motorists when going ahead on a main road should, as is almost always necessary at present for absolute safety, be required to pull up at every cross road. Without exception, on the left side of every secondary road, at least 50 yards before it enters a main road, there should be a fixed sign, bearing the inscription in clear letters, "Main Road." There are innumerable cross roads of equal importance; the Local Authority or County Council should decide as to which is to be regarded as of prior importance,