"The Commissioner" said in an article, published in the November issue that the motorist must believe in signs in this day of rapid travel, otherwise he takes a chance, which often ends in the last chance he ever gets to take. Road signs are classed as necessities in these days of progress, for fast travel makes it imperative that traffic be safe at all stages. The need of marking roads with signs that even he who speeds may read, grows more imperative.

Various state highway commissions have taken the lead in doing everything possible for the safety of the motorist. The increase in travel accidents has caused the authorities to make even greater efforts towards eliminating travel dangers.

I want to see a law passed compelling the counties of the state to mark their roads so tourists can tell where they are going and also give them warning of the dangerous places along the roads. Road superintendents should make a special study of their counties, so as to learn what can be done towards making all dangerous places safe. It is important to warn of sharp curves or turns which occur suddenly after a long stretch of straight road. Such curves or turns are more dangerous than on a road that has many such curves, and as all turns and curves can not be avoided it is up to the motorist to believe in signs as he rides along.

There is one thing that I want to see removed from every road in the state, and that is all advertising signs. Such signs detract from the beauty of our roads and the scenery alongside. Removal of such obstructions will facilitate the maintenance of ditches and berms, and also will make the road safer by not interfering with the clear vision at railroad, traction line, and cross road intersections. Removal of these signs will make more effective the danger warning guides and other information signs. I am glad to see our State Highway Commission removing all advertising signs along state roads.

Every county in the state should adopt standardized signs, the same as used by the state, for the different states, with a few exceptions, are adopting practically the same signs used in Indiana. The different caution signs used by county or state are the school zone, cross road, side road, slow, oil, turn, curve, narrow bridge, narrow road, loose stone or gravel, through highway
stop, city limits, no parking on traveled roads, speed 25 miles an hour, no dumping, not safe over 5 tons, and railroad signs.

The most important of all is the railroad sign, yet people pay little attention to it. The Delaware state highway department is using a combination warning sign and partial barrier, designed to induce caution on the part of automobile drivers. The combination signs and barriers are fixed 75 feet on both sides of tracks. This sign is set in the middle of the road. The barrier, or post, is about six feet high, with two cross arms on the top, one reading “Look Out For Train,” and the other reading “Railroad Crossing.” The roadway at this point is widened to provide space around the barriers to a width of ten feet on either side. For the protection of night drivers there is a flash light that flashes 45 times a minute. Below the flashing light is a red flex mirror, which reflects the light of approaching automobiles at night, and back of this sign, leading to the railroad, is black and white lattice work painted on the road. Thus there are five different warnings at this crossing: first, the bend in the road; second, the flashing light; third, the red reflection; fourth, the standard crossing signals at the top, and fifth, the black and white lattice work. Devices similar to these are being used in Nebraska on the Chicago & Northwestern Railroad. It will take crossing protection of this kind to stop the motorist who usually pays no attention to railroad crossings.

County roads should be marked with the names of the roads, the same as state roads are marked. Also, for night driving, cross roads, dangerous crossings and all bad places in all roads should be marked with red flex signs. These have been adopted by Marion county and a number of other counties in the state and are proving satisfactory.

The marking which has been the best investment Marion county has made was adopted last year. This is marking the road by either a white line down the center or by using emulsified asphalt and making a black line. The latter gives the best results and lasts longest. We have watched the heaviest travel on Northwestern Avenue or the Michigan Road leading out of Indianapolis, and also, on the Crawfordsville Road, and saw hundreds of machines passing over these roads, all keeping on the right of the center line and making the 18 and 20 foot roads safe to travel.

Guard Rails

There are very many different types of guard rails, some of which are built for looks, some because they are cheap, and others are built for real protection to the motorist. I have experimented with all kinds. I built the wooden guard rail, which
was built for looks and served only as a warning. There were more people hurt by the wooden guard rail going through the car and wrecking the car than there would have been if there had been no rail at all. I have also had the post and cable type, which is being used in some of the states, but experience has taught me that the cable offers little visibility and has practically no elasticity.

As you know, it is not the policy of the Road School to boost any one product during the school, but as wire guard rail is now being made by several firms, it is a matter of general news to road builders and engineers that it is being found satisfactory as a protection at points of danger. Guard rails should be a real protection, as well as a warning of danger. This woven wire rail overcomes all objections in that it is painted white after galvanizing and, therefore, insures excellent visibility. The character of its weave makes it very elastic, and it stretches on impact to take up the force of the blow. Comparatively light machines at moderate speed break through the wooden rail or bound over the cable guard, while light or heavy cars are held on the road by the elastic wire guard with little injury to either car or passengers.

From the cost standpoint, figures show that the wooden and cable guards can be bought cheaper than the wire guard, but the installing costs are very much less with the latter, making the cost complete less than either of the former guards.

**Railroad Crossings**

The past year or two have witnessed many improvements in the type of railroad crossings and it would be difficult to name the many crossing materials that have been tried or are being used to determine their merits for this particular use. The materials offered include rubber brick, various bituminous bricks, concrete slabs, creosoted wooden blocks, creosoted edge set timber sections, iron plates, and the ordinary planking. I believe all these innovations should be welcomed by the engineers and authorities and the efforts towards improvement along this line should be encouraged. It certainly goes without saying that the worst part of our public highways is the general railroad crossing.

It will be generally conceded by all who are interested in the subject that the prime requisite for a highway crossing is that it should be smooth, reasonably hard and possess the ability to withstand vibration. Any discussion of the subject of railroad crossings must take into consideration several factors:

First and above everything else, the public demands a smooth surface road in order to cross railroad tracks.
Second, a crossing must be built and maintained by the railroad for the benefit of the public. I think safety conditions for both the railroad and highway traffic demand this.

Third, a crossing cannot be designed as a permanent structure, for the reason that improvements must be made from time to time in the track.

Fourth, the material that possesses the most points of efficiency and economy is a debatable point among those who are authorities on the subject. However, it would seem that a crossing composed of edge set timbers made into slabs, creosoted, will very well meet the requirements. It is well known that the exposed edge of green timber will stand the wear and tear of traffic better than a flat, green surface. Also, that edge grained timbers, when properly assembled into slabs, will withstand vibration. Slabs manufactured from edge set timbers are comparatively non-warping and are smooth and flat. When manufactured from 2x4s or 2x6s, the slabs are sufficiently heavy to stay put, but are still light enough to be easily removed for repair to the track.

One important advantage of these timbers assembled into slabs is the fact that they may be turned over and the bottom side used. Timbers set on edge are not subject to the trouble of cracking and checking, as is usually the fault with block and plank crossings.

Another important advantage of this edge set timber crossing is the freedom from expansion troubles. That the edge set timber crossing is growing in favor is shown by an article in the "Railway Engineer and Maintenance" magazine of August, 1924. This article, by Mr. John Foley, Forester for the Pennsylvania Railway System, states that better results are to be expected from flat, green scantlings laid on the edges and bolted or nailed together than from flat, green planks laid on their sides. In the April issue of the same periodical is an article entitled, "Highway Crossings Designed on the Southern Pacific," which also concludes that a plank crossing made of edge grained timber is best.