

## THE FUTURE OF THE AUTOMOBILE

TENDENCIES IN AMERICAN PRACTICE

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**T**HE two automobile shows held in New York City last January demonstrated conclusively that the American car is settling down to certain fixed types. Formerly in America the large single-cylinder car was very much in evidence, but the recent shows furnished only a very few examples of this class.

The American car to-day closely follows the general lines of the French automobile. It is a well-known fact that the so-called gasoline car, or internal combustion motor, has almost displaced the steam type. There is only one steam car on the American market that has

demonstrated its practicability. In gasoline automobiles, multiple cylinders are the rule. There are makers who are beginning to manufacture even six-cylinder cars, and these are found to be quite successful. The shaft-driven car is also largely taking the place of the chain drive. Formerly, it was thought that the shaft drive could not be used for the large car, but the success of the shaft-driven cars more recently has demonstrated the fallacy of this idea.

While there are some successful air-cooled motors, the majority of the leading American manufacturers cling to the water-cooled engine. It is doubtful whether a high-powered motor can be successfully cooled without the use of the circulating water system.

The pressed steel frame is used almost universally, and those who still cling to the wooden frame have strengthened it by steel plates. Heretofore, the steel which has gone into the construction of American cars has not been equal to the German and French material. Recently, an important move was taken, however, by the American Association of Automobile Manufacturers, in appointing an engineer to act in conjunction with an engineer of the Bethlehem Steel Co., of Bethlehem, Pa., in making a careful study of the kind of steel best adapted to automobiles. The importance of this move cannot be overestimated. The company just mentioned is now successfully making steel which is the equal of any to be found elsewhere.

A marked tendency in the design

of the automobiles seen at the recent shows is towards the elimination of "trappy" piping, and the simplification of the car in all its parts. Another strongly developed tendency is to decrease the weight of the car and increase the engine power. Where formerly 10, 12, 18 and 24 H. P. were used for the average touring car, we now see 24, 35, 40, and occasionally as high as 60 H. P. It is a grave question whether we are not swinging to the other extreme of too great horse-power. One reason for engines of such high power is that the operator may take hills comfortably, and that he may drive through crowded city streets on the high gear, controlling the speed entirely by the throttle.

Another tendency is to make the cars of greater strength, and of longer wheel base. It is also a question whether we are not going to the extreme in this matter as well. While a car with a long wheel base rides more easily and comfortably, it is much more difficult to handle, especially in turning around.

The principal criticism which has been made of American cars heretofore,—in fact I do not confine this statement to American cars alone,—is that they are unreliable. The idiosyncrasies of the gas engine are well known. It sometimes takes an expert an hour to discover a slight trouble, which when found may be remedied in 5 minutes. Through better material, better workmanship, and close attention to details and adjustment, the motor cars have become far more reliable than they were two years ago. It is now an exception to see an automobile laid up on the highway for anything except tire troubles, and even these are far less frequent than they were formerly. This comes about through two facts,—the tire makers are putting better material into their products, and the manufacturers of automobiles are insisting on the use of a larger tire for a given weight than heretofore.

Edison has pointed out a strange paradox in the automobile. He says that the only thing which makes the automobile possible and practicable is the pneumatic tire, and at the same time the pneumatic tire is the weakest point in the automobile. The solid rubber tire, while successfully used on commercial vehicles at slow speeds, has not been, and cannot be, successfully used on touring cars or racing machines. The writer has made some experiments along this line, and has found that the jar and hammer incident to driving a touring car over rough roads are so great that the machinery of the motor car will not stand the shocks and strains.

The fuel problem is becoming a serious one for the automobilist. Within the past ten years, the demand for gasoline has increased enormously, and the price has almost doubled, while the supply has increased but little. The oil fields of Texas and California do not furnish the kind of oil from which gasoline can be manufactured.

It is a fact not well known that the farmers of America use more gasoline than the automobilist. Eight hundred thousand gasoline stoves are in use throughout the Western portion of the United States where fuel is high in price. The supply of gasoline within five years or less will be entirely inadequate to the demand, and the price will necessarily advance to prohibitive figures. The most practical solution of the matter is to secure the passage of an act by Congress taking off the tax on denaturalized alcohol used for commercial purposes. This is now being agitated. The present tax is \$2.08 per gallon.

Vegetable alcohol may be made from corn, beets, potatoes,—in fact, from any of the starchy products. It can be made and sold at a price which is no greater than that now paid for gasoline. Last year over two hundred million gallons of vegetable alcohol were used in Germany.

It is very successfully used for general fuel purposes and in the internal combustion engine. By removing the government tax on denaturalized alcohol, the fuel problem for motorists would not only be solved, but a new industry would be encouraged in America, and one which would be not only profitable to the manufacturer, but which would furnish the farmer a substantial market for the surplus products of his land. Some of these are now entirely wasted.

For example, two years ago the potato crop in Maine was so abundant that potatoes sold at 25 cents a barrel, and many thousand bushels were left to rot in the ground. These potatoes could have been made into vegetable alcohol profitably had it not been for the handicap of the government tax. A bushel of corn will yield two and a half gallons of alcohol. The surplus corn crop this year would yield seven hundred million gallons. In years of surplus of farm products, alcohol could be manufactured and stored, and the price thus kept at a stable figure.

An important field which must not be overlooked is that of the electric car. Most of the electric trucks and commercial vehicles seen about American cities at the present time are driven by electric motors. As a pleasure car for city and suburban use, combining cleanliness, noiselessness, reliability, and ease of operation, the electric automobile cannot be equalled by any other type. It may be driven by the fair sex with perfect ease, comfort, and safety. As an illustration, Mrs. W. E. Scarritt, of East Orange, N. J., has driven her own electric car over 16,000 miles without the slightest accident of any kind.

The main problem involved in the use of the electric car is the battery, which has to be nursed and petted, and humoured and exercised much as a spoiled child. Some type of the lead battery is most used. If it is charged too rapidly, the plates buckle and are ruined. If it is overcharged,

that is, charged for too long a period, the same mishap follows. The car cannot be driven until the batteries are exhausted, because this is injurious. The car must not be permitted to stand without use for over 48 hours, as a sulphate will form on the plates, which will cut down the mileage of the car very seriously. It is just as necessary and quite as important to charge and discharge a battery, in order to keep it in good trim, as it is to exercise a horse.

These requirements are serious drawbacks to the use of the electric vehicle. But it is gratifying to learn that Edison has constructed a battery to which none of these objections apply. It may be undercharged or overcharged, slowly or rapidly, or it may be exhausted to the lowest ampere; it may be left standing for weeks or months, and no harm will come to it. The world will yet acknowledge its deep indebtedness to Edison for his storage battery as it has already done for the incandescent electric lamp.

The standard car of the future, whether for pleasure or business, will be of the gasoline type. It will be simple, and will be constructed of the highest grade of material known to the art. Reliability rather than speed will be the great desideratum. It will become standardized, and when standardized it can be made in large quantities at a low cost. I believe the automobile, so far as cost is concerned, will follow the way of the bicycle. In the near future I expect to see a very fair runabout sold for \$300, and the same grade of touring car for \$500.

In conclusion, it may be well to consider some problems which are to be solved by this new factor in civilization. First, it will tend to prevent traffic congestion in city streets. A single example:—What would it be worth if Broadway, New York's main thoroughfare, could be doubled in width from its lower end for a distance of, say, 9 miles?

Broadway is no wider than it was

a hundred years ago, and yet the traffic upon this highway is a hundredfold greater than it was then. A horse-driven truck starting from one end will make the 9-mile trip in two hours, carrying a load of a ton and a half. Substitute the motor truck, and what follows? The space occupied by the horse, which is about equal to that of the truck, is saved. Further, the motor car will carry three tons, and can make the trip in just half the time of the horse-drawn vehicle. Thus, it is seen that the use of the motor vehicle would not only double, but more than treble, in effect, the width of the street.

Second, the automobile will tend to solve the tenement house problem. Automobiles ultimately will be built and sold at so low a cost that the average city workman will be able to own one, as he now owns his bicycle. Thus, he will be enabled to own his acre, away in the country, and bring up his children in the sunshine and fresh air among far more pleasant and healthful surroundings than are possible in the crowded tenement house districts of large cities.

Third, the use of the automobile in country districts will tend to keep the

young people from flocking to the cities. The automobile will make life on the farm more pleasant. Young people will be able to go about visiting neighbours and friends even in adjoining counties, and in the future we shall probably hear less of "abandoned farms."

Fourth, the automobile will become indispensable to the physician, and I have no doubt that countless human lives will be saved, because, through the use of the motor car, the physician will be enabled to reach patients in a critical condition more quickly than by any other available means. The automobile will also become invaluable to firemen, to officers of the law, and to others in situations where great speed of transit is a desideratum.

It would take a man with a prophetic eye to look into the future and discover all the problems which the modern motor car is to solve. We may be sure that it is not a fad nor a plaything, but that it has "arrived," that it will remain an important factor in civilization, and that it will be for countless generations to come the faithful ally and servant of mankind.