

HOW ELWOOD HAYNES BUILT THE FIRST AUTOMOBILE

Veteran Manufacturer Gives Interesting Details of Early Trials and Tribulations in Motor Car Field.

By ELWOOD HAYNES.

In 1890 I moved from Portland, Ind., to Greentown, Ind., where I became field superintendent for the Indiana Gas and Oil Company, which company was about to begin the construction of a pipe line from the Indiana gas field to Chicago. Litigation and defective pipe delayed its construction.

During the delay in the work of constructing the pipe line I had a great deal of driving to do, and it occurred to me that some better means of locomotion over the highways than the horse and buggy might be procured. The great trouble with the horse and buggy was its lack of endurance, and this became more apparent when he was driven day after day.

I accordingly laid plans for the construction of a mechanically propelled vehicle for use on the highway. I first considered the use of a steam engine, but made no attempt to build a car of this description for the reason that a fire must be kept constantly burning on board the machine, and with liquid fuel this would always be a source of danger of collision or accident. Moreover, the necessity of getting water would render a long journey in a car of this description not only troublesome but very tedious. I next considered electricity, but found that the lightest battery obtainable would weigh over 1,200 pounds for a capacity of twelve horse hours. This showed little promise of success I gave it no further consideration and proceeded to consider the gasoline engine. Even the lightest motor of power at that time were very heavy per unit of power and rather crude in construction.

My work was confined to Greentown, Ind., in 1890 and 1891. In the fall of 1891 I moved to Kokomo and the following summer (1892) had my plans sufficiently matured to begin the actual construction of a machine. I ordered a one-horse-power marine upright two-cylinder gasoline engine from the Sints Gas Engine Company of Grand Rapids, Mich. This motor barely gave one horsepower and weighed 180 pounds. Upon its arrival from Grand Rapids in the fall of 1892, lacking a suitable place to install the motor, I directed to my horse and set up in the kitchen.

When the gasoline and battery connections were installed, the motor was started and ran with such speed and vibration that it pulled itself from its attachment. Luckily, however, one of the belt casters was wound about the motor shaft and thus disconnected the current.

In order to provide against vibration I was obliged to make the frame of the machine much heavier than I first intended. The "horseless carriage" was built up in the form of a small truck. The frame consisted of a double hollow square of steel tubing, joined at the rear corners by steel castings and by malleable cast-iron links in front. The rear axle constituted the rear member of the frame and the front axle was swiveled at its center to the front end of the chassis. This arrangement permitted the ends of the front axle to move upward and downward over the inequalities of the road without the "hollow square" in which the motor and counter-shaft were placed.

At that time there were no figures accessible for determining the tractive resistance to rubber tires on ordinary roads. In order to determine this as nearly as possible in advance a bicycle bearing a rider was lashed to the rear end of a light buckboard by means of a cord and spring scale. An observer seated on the rear end of the buckboard recorded as rapidly as possible "draw-bar" pull registered by the scale while the buckboard was moving at the rate of about ten or twelve miles an hour on a nearly level macadam street. The horse was then driven in the opposite direction at about the same speed in order to compensate for the slight incline. This experiment indicated that about 1-1/2 to 2 pounds "draw-bar" pull was sufficient to draw a load of 100 pounds on a vehicle equipped with ball bearings and pneumatic tires. With this data at hand it was an easy matter to arrange the gearing of the automobile so that it would be drawn by the motor. Crude though this method may appear, it shows a striking agreement with the results obtained to-day by much more accurate and refined apparatus.

The total weight of the machine when completed was about 820 pounds. July 4, 1894, when ready for test, it was hauled into the country about three miles behind the horse carriage, and started on a nearly level turnpike. It moved off at once at a speed of about seven miles an hour and was driven about one and a half miles into the country. It was then turned about and ran all the way into the city without making a single stop.

I was convinced upon this return trip that there was a future for the "horseless carriage," although I did not at that time expect it to be so brilliant and imposing. The best speed attained with the little machine in this condition was about eight miles an hour. It would hardly seem that the automobile had been in existence a sufficient length of time to justify a reminiscence; it seems rather to be a creation of yesterday, and the result of the development which had its beginning a quarter of a century ago.

I will be pardoned if I write to some extent of my own experiences in those early days, since at the time the automobile was unknown in the United States and was just in its incipient state in Europe. When my first machine was taken out into the street on preliminary trial people living in adjacent houses, men, women and children, rushed out and surrounded it, leaving only an enclosed circle, perhaps twenty feet in diameter, in which to start. Under these circumstances it was manifestly unsafe to make a trial, since not one of the persons intending to operate the machine had ever seen anything of the sort before, much less ever driven one. No attempt was therefore made to start the machine, but it was taken to the country behind a horse and carriage, and after being driven a short distance on its own power further into the country was turned about and headed toward the city.

At that time the bicycle was very popular as a pastime, especially among young ladies. I remember as the little machine made its way along the streets we were met by a bevy of girls mounted on wheels. I shall never forget the expressions on their faces as they wheeled aside, separating like a flock of swans and gazing wonder-eyed at the uncouth and utterly unexpected little machine. This was in 1894. A number of these young ladies are married now and have children nearly grown. To these children there is nothing new about the automobile, but many of them are intensely interested in its rapid growth and in the convenience which it has afforded to many of them.

for the damaged tomatoes and took his receipt in full. At that time there was some question in the minds of the public as to the right of the "horseless carriage" on the highway. Lawyers were consulted regarding the matter, and looking up the law they discovered that the question had been broadly covered, not only by the lower court but by the Supreme Court as well, and that the decisions were of sufficient scope as to unquestionably include the automobile and give it a full and unrestricted right on the highway.

I remember very well when the little machine was unloaded for the Times-Herald contest in 1895 at Englewood, a suburb of Chicago. I was riding down Michigan avenue, intending to drive to the central portion of the city, and had scarcely proceeded more than six or eight blocks when I was accosted by a policeman, who ordered me to leave the boulevard at once, as nothing like "horseless carriage" was permitted on that thoroughfare. I remonstrated, inquiring what harm the machine could do to the boulevard, since it was equipped with rubber tires and made but little noise. He simply replied that it was "Arden's air," so I could do nothing but obey. Contrast that state of affairs with the

part of the young ladies. Luckily, however, the horse considered himself safe when his forefeet were over the wall, and before I could reach him to give assistance he had got back into the road and proceeded quietly on his way without doing any apparent harm. On another occasion on the same trip we were met by an Irishwoman driving a load of vegetables to market. As soon as she came within hailing distance she called for us to stop and motioned wildly with her hands. We of course stopped the machine and I went forward to lead the horse, but she remarked apologetically: "I would not have asked you to stop, sir, but the horse is blind, sir." It is needless to say that I did not take pains to lead the horse by, but immediately informed the good woman that she was in no danger whatever, since a blind horse had never been known to take fright at a "horseless carriage." She seemed much relieved when we passed, and her horse paid not the slightest attention to the machine.

While perfecting the "horseless carriage" I had never lost my interest in metallurgy, and introduced aluminum into the first automobile crank case in 1895. The alloy for this crank case was made up for the purpose and con-

small quantity of boron. These latter alloys were extremely hard, especially that containing boron. It was a striking contrast to the time when my first car was made in a little machine shop and when I paid the mechanics who were hired to assist in the building of it according to my plans at the rate of 40 cents an hour.

These men had no faith whatever in the self-propelled vehicle and worked at the rate only when their regular work was "slack." But I had to guarantee them that payment. To-day the Haynes car is made in a big factory—a striking contrast to the time when my first car was made in a little machine shop and when I paid the mechanics who were hired to assist in the building of it according to my plans at the rate of 40 cents an hour.

When one contemplates the tremendous industry that has grown, taking into consideration the making of automobiles, tires, carburetors and all the varied appurtenances of the automobile, he is filled with wonder that so much as all this could possibly have come to pass in such a short space of time. For it was years after the first car was put into practical use that the automobile industry began to develop at all.

I am gratified too that it has been my good fortune to witness the automobile's inroad into the world's business life. Just as my first "horseless carriage" was designed with a view to facilitating my duties, so is the automobile to-day contributing beyond all power to realize to our every day business life.

A NEW "PARKING" ORDER.

57th Street West of 8th Avenue for Cars. A new ruling made by the Police Department provides for the parking of cars on Fifty-seventh street west of Eighth avenue and does away with congestion on Broadway. William C. Foerster, president of the Motor Club of New York. "No longer will cars be permitted to remain standing on Broadway's thoroughfare for more than ten minutes at one time. Owners can find plenty of space on Fifty-seventh street, for cars can be parked on both sides of this street and also in the center of it. It is said that when this section becomes popular as a parking space the police will super-vise the cars parked there. This move is the part of the police for public parking is a good one and it is hoped that other spaces will be found in other parts of the city."



Glenn A. Tisdale, the well known Franklin dealer in this territory, has set a mark at which other motorists may shoot. In the four passenger Franklin model shown in the photograph above, he recently drove from Cortland, N. Y., to this city, a distance of 232 miles, in nine hours without at any time driving faster than thirty miles an hour. It takes considerable of a driver and considerable of a car to maintain such a high average pace without an excessive speeding.

A TIP TO MOTORISTS.

Change the Oil Often, Says an Expert.

Here is a valuable tip to motorists furnished by E. A. Scheu, general manager of the King Car Corporation, which distributes the King 8.

"As much of the gasoline now being used is of low grade," says Scheu, "a part of it which is not always burned gets by the piston, drops into the crank case and takes the body out of the oil. With the lubricating quality of the oil lowered in this way the engine is likely to heat up, much to the astonishment of the driver."

"The solution of the problem is to change the oil often—each 500 miles for the first 2,000 miles the car is run and each 1,000 miles thereafter. By meeting the new conditions of car operation and maintenance as they arise, car owners will continue to get efficient service from their machines."

PEERLESS ARMY TRUCKS.

Veterans From Mexican Border at Many Camps. Three hundred and thirty Peerless trucks that have seen service on the

Mexican border are now doing good work at eight great army camps. Walter Woods of the Van Cortlandt vehicle Corporation, who recently was in touch with the various points where these trucks are in service, says that they are held in very high esteem by the army men who are in close touch with their operation. These trucks were instrumental in the building of many of the camps, hauling the materials that went into the construction of the buildings, etc. Now they are hauling food, coal, milk and other necessities every day. There are thirty-three Peerless trucks in each company, distributed as follows: Nos. 15, 26 and 48, Fort Sam Houston, Texas; No. 18, Fort Sill, Oklahoma; No. 18, Eagle Pass, Texas; No. 328, Annapolis Junction, Ind.; No. 50, Fort Huachuca, Texas; No. 325, Taphank, L. I.; No. 329, Petersburg, Va., and No. 66, Wrightstown, N. J.

RIESS IS AN OPTIMIST.

Says He Finds Good Market for Hupmobile. The nationwide thrift movement has had a very decided and a very good effect on the sale of this year's Hupmobile, says Charles E. Riess, local distributor, in discussing Hupmobile sales. "The motor car has demonstrated and is daily piling up additional facts as to its value—its absolute necessity in war-time. Proceeding from that established fact, the next step has been in choosing a car that is in harmony with the times, one that is economical. The new Hupmobile has demonstrated a remarkable economy in every thing connected with its operation—high gasoline mileage, high tire mileage, extremely low oil consumption and a mechanical sturdiness that makes for economical service with the absolute minimum of repair costs. "And combined with these essential war-time features there has been built into the new Hupmobile a previously unheard-of degree of comfort for cars of this size and price. The Hupmobile has always been a favorite with owners of the more expensive cars. This year more than ever before in the history of its sales is this case. The Hupmobile designed special features which are being mounted on the standard Hupmobile chassis is largely responsible for this, for class, comfort and economy are built in them. "The Sedan is proving more and more that it is the most favored type for year round use, while a line of special touring cars with Victoria tops is also meeting with great favor. Sales of automobiles this year," says Mr. Riess, "are being regarded by purchasers as investments of the most substantial sort."



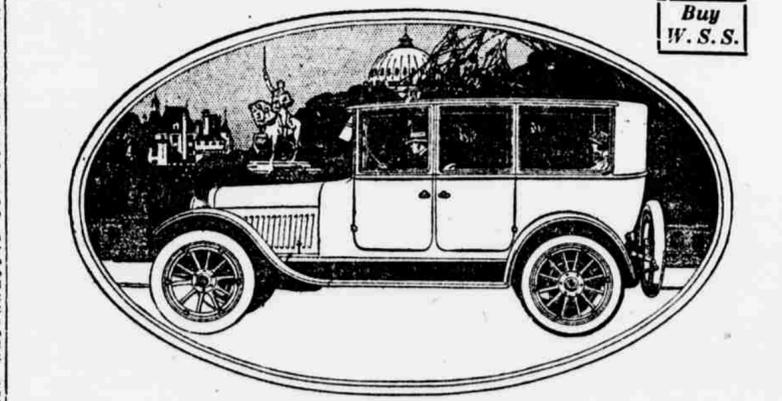
Elwood Haynes and the First Automobile in Chicago 1895.

Immediately the young man driving the horse ahead of us cracked his whip and urged his horse forward at full speed. The cutout was then closed until we again came within a short distance of the horse and carriage, when the operation was repeated; again the whip was brought to bear and the speed of the horse increased, much to the amusement of the young man who was driving with me. As a matter of fact, we were only driving about eight miles an hour, but this was enough to make the driver ahead of us get uneasy, and after three miles of intermittent speeding and slowing down he turned into a side road and let us pass.

On another occasion in driving the little machine I met an old gentleman seated on a load of crated tomatoes. He was so interested and watched us so closely that when he began to shy he dropped one of the lines, and with the other, pulled the team to one side and down a slight embankment, which caused the load to spill. Luckily the old gentleman was uninjured. I settled with him there and then

constant stream of automobile traffic over Michigan avenue to-day and you will be able to realize what vast changes have taken place since then not only in the mode of locomotion but in public sentiment as well. In 1897 I made a trip of about one thousand miles in a "horseless carriage" to New York city. There were many amusing incidents connected with this trip. Almost every horse shied at the "new fangled" vehicle, and some of them even bolted from the road, endangering the lives of the occupants of the vehicle. One incident, which came near having a serious ending, occurred on the way along the Hudson River. We met a party of "summer girls" who were evidently taking a vacation in the country. A sober, staid looking old horse was attached to an open spring wagon in which five or six girls were riding. About the time the horse came opposite the automobile he turned suddenly to one side and, doubling himself, proceeded to jump over the stone wall by the roadside. It can well be imagined that there were screams and consternation on the

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