

The Knowledge Bank at The Ohio State University

Ohio State Engineer

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The Rambling Engineer

By Howard H. Heffley

Barney Oldfield

ONE OF the best qualified men to express his opinion on the progress of the automotive industry is Barney Oldfield, and it was my pleasure and privilege to have a short interview with him on a few phases of that subject for THE OHIO STATE ENGINEER. Mr. Oldfield, as you all know, is of the old racing school and through his daring and driving of past years and his more recent work on safety factors for automobiles has engraved his name in automotive history as one of its most outstanding men.

May I digress from the subject for just a moment and comment on Mr. Oldfield as I saw him. He is of medium height, of rather heavy build, and carries his importance and popularity with a more or less unconcerned manner; but not forgetting old traditions, he was smoking a cigar; a situation rather parallel to the story of Mary and her lamb—everywhere Barney went a cigar was sure to follow. When I was introduced to the famous race driver by one of the Plymouth engineers, I felt a sense of ease that seemed to surround him even in a crowd. He met all questions with a short, decisive reply, very seldom expanding on any topic of discussion except on some of his early exploits in racing. He does not have, what you might call, an overwhelming personality but is of rather a conservative nature.

After all formalities of introduction were finished and my mission explained, I asked Mr. Oldfield if he would tell me about his first experience with streamlined cars.

"It was back in 1918," he said, "when I first experimented with streamlined cars. I built a racing car called the 'Golden Submarine' with a steel streamlined body, which had a two-fold purpose: first, to reduce wind resistance; and second, to insure better protection for myself in case of accident. It really proved the test, as I turned over in it several times and lived to tell the tale. This car was not only one of the first of any type car to be streamlined, but it also introduced what is now known as the safety steel body."

"Why," I said, "wasn't streamlining introduced into automotive designs before this time if it had already proved its merits?"

"You must remember," he replied, "that the sales curves of the automobile industry were high, up until 1930 or thereabouts, and to introduce a change then like Chrysler has done recently would have probably meant a drop in sales activities, but the depression has caused a change in most everything and in order to attract the buying power of the public the automobile industry had to present something new."

"Do you think," I inquired, "it is possible that American engineers will design cars with the engine in the rear like some European engineers have done and have claimed greater efficiency of operation and riding qualities?"

"No, I don't," he said, "because a car acts on the same principle as an arrow in flight; the heavy part tends to take the lead."

"Speaking of riding qualities, Mr. Oldfield, do you think that with the introduction of independent wheel suspension, the riding comfort of small cars will be increased enough to compensate for the short wheel base?"

"I personally," he smiled, "would rather have a car with a small wheel base because it handles easier, it is more economical to operate, it is faster, and can be made to ride as easy if not more so than a car with a long wheel base. This has been proved on the Indianapolis speedway. But the main trouble lies in the fact that the small stock cars that have been built have not been balanced. Several years ago I experimented with a car by putting longer springs on it, and, although this construction also presented its problems, it showed that easy riding could be obtained from a car with a small wheel base. Today with the independently suspended wheels the same result is obtained and comes closer to having more perfect balance than the conventional construction."

Rambling Through the Auto Show

Friday night, January 13, 1934, ended one of the big events in the automobile history in the city of Columbus. The automobile show held at the Columbus Auditorium was what you might call a success; all that display of fine looking cars, and not to forget, the high pressure advertisement.

When I go to any of the larger automobile shows where things are put up in such an attractive manner and see the looks on peoples' faces as they gaze at the highly polished cars, it reminds me of that old Biblical quotation: "Get thee behind me, Satan." In fact, I can almost hear a lot of them adding: "And don't push either." The American public surely craves their luxuries, but I often wonder if a lot of luxuries are not bought to show off to John Doe, the next-door neighbor. Maybe such an attitude is a god-send to our manufacturers, for if such was not the case, I'm afraid our economic situation would be a little doubtful most of the time. There are plenty of arguments both ways in this case, but we won't take up any time discussing them because no definite result would be accomplished in the end. Almost everyone has a different view on the subject.

It is interesting to note the people who buy certain auto-

mobiles. There are so many factors and reasons cited that one could write a volume on the subject, but being limited for space we can only consider a few. There is that technical inspired gentleman who likes a dash-board with a maze of instruments and gadgets, then there is always the mother-in-law who must have a wide back seat, with no respect for the husband's cry for power. But today we can safely say many are seriously considering that new feature, streamlining. This may be explained in two ways: first, streamlining offers greater economy in operation; and second, it makes possible better riding qualities. One might also consider beauty and novelty as factors.

Although streamlining is not a new principle in construction, as it has always been a fundamental principle in aerodynamics, there has been little or no application of such characteristics to automotive designs until lately. By that I mean there has been a limited use of it as far as stock cars are concerned, but there have been streamlined cars which were used for experimental purposes. Designers and drivers of racing cars and the freak vehicles built for a single try at a world's record also have utilized streamlining principles in body construction.

One of the recent changes made in American-made automobiles, is the method of suspension of the front wheels. This feature, unlike streamlining is not entirely new in the automobile field; European cars have used independent wheel mounting for a number of years. However, in the heavier and more powerful American cars the problem has been quite different.

The January issue of *Product Engineering* carried an interesting article of a non-technical nature on this matter. One object, it was stated, was to reduce the front spring rate to about that of the rear spring, and thus increase the riding comfort. To do this it was found necessary to use excessively long springs, but this in turn by increasing the unsprung weight defeated the primary purpose of the change. The cost was also an important factor.

General Motors is using two general types of designs: the one to be used on the heavier cars—Buick, Cadillac, LaSalle, and Oldsmobile; and the other to be applied to the smaller cars—Pontiac and Chevrolet.

For its heavier cars General Motors has mounted the front wheels directly to the frame through two "wish bones," one above the other and hinged to the frame. A spiral spring is placed between the two supports, doing nothing but carry the load and not subject to any driving or braking stresses. The principle of operation is based on parallelogram linkage.

The design used on Pontiac and Chevrolet has not been released yet for publication.

Hudson and the Essex Terraplanes have introduced the "Axleflex," which operates on the same principle as the General Motors' construction, namely: parallelogram linkage.

The parallelogram construction used in the "Axleflex" consists of two rigid drop-forged links pressed at both ends and mounted one above the other. These links have

integrally forged forks at their extremities through which the pins pass. Roller bearings are provided to minimize friction.

No alterations in the steering gear or spring suspension have been made to accommodate this design, thus the new "Axleflex" can be substituted for the old axle without making other changes.

Chrysler has almost the same construction in their wheel suspension design as General Motors is using in their heavier units. Practically the only difference is the position in which the force is taken from the wheels to the frame.

Streamlining

The approval of the public is a necessary qualification for any product. To insure the success of an idea means to make all its principles familiar to practically everyone. This is where advertising comes to the front. Almost every home receives a daily paper or a magazine, and it is through these sources that industry introduces its new products. I have been particularly interested in the extensive advertising of streamlining that has been undertaken by the different automobile concerns. Page after page of these colorful illustrations have preceded the changes in the construction of the automobile, and have presented to the people a new form of beauty for the "gas buggies" of the future.

I often wonder why educators haven't resorted more to this method for presenting knowledge to those who can't find romance in the pages of text books. For several years now, history has been coming to us through the medium of the comic sections of many newspapers, with no disrespect for any of the achievements of our ancestors. Pictures attract all types of people and I believe that through the sketches of the important moments in history and their accompanying explanations which have appeared in the newspapers there has been an interest stimulated in the past encounters of this world.

Educating the public to changes in industry is the factor we must pay particular attention to when we are considering the reaction of the human race to progress. The average person is rather slow in adapting himself to any sudden change without a thorough understanding of the situation, and it is this point that many manufacturers have to keep in mind. Hence we find the majority of them, especially the automobile manufacturers, continually trying to educate the public to follow their developments.

From the recent advertisements on streamlining, we can readily see that the manufacturer is including concrete examples of the surroundings of people in almost all walks of life. This might be more clearly understood by discussing typical advertisement. I was particularly interested in one which gave the air-flow conditions existing around a horse and buggy, an automobile of conventional design, and an airplane.

I can't imagine the reaction of a farmer who has gazed upon such an illustration, though for myself I can readily

(Please turn to page 10)

Streamlining

(Continued from page 8)

see the possibilities of air pockets, or what have you, around the buggy proper, but I am entirely null and void on the subject of air-flow around a horse. Maybe it requires a thorough knowledge of horse sense, who knows?

To those poor people who own cars of past year models, was given the startling fact that if they were to drive their cars backward they would have better streamlining than if they ran them forward. Harry Hartz, of race track fame, amazed New Yorkers not long ago by driving down Broadway in a sedan whose body was reversed on its chassis. This test was run to determine the efficiency of such an arrangement. It was found that by so reversing the body, it was possible to get more miles per gallon of gas.

The airplane has always symbolized speed. Its round graceful lines slip smoothly through the air as the whirling propellers force their way through the atmosphere. It is the least resistance in the air and now it is the least resistance on the road. The car of today, like the airplane, has sleek smooth lines and we find such comparisons in advertisements as the one referred to in the preceding example.

The Chrysler Corporation has extended to the public a visual means of determining the importance of streamlining. They have placed in some of the automobile shows throughout the country, small wind tunnels. These wind tunnels have a glass cage in which two car models are placed: one of conventional design, the other of streamlined design. Since chemicals which produce a vapor or smoke are not allowed to be used in a public demonstration, a silk string is placed inside of the glass cage and permitted to float along the air currents produced by a fan. The velocity of this air is rather high and when it passes over the models, the places of resistance are noted by the movement of the string.

Mine Engineering

C. L. Spangler, '30, is in the Gas Measurement Department of the Ohio Fuel and Gas Co. His work consists in tracing leaks in distribution of gas in cities.

Fred Buckwalter, ex-'34, left January 20 for Colombia, S. A. He will be engaged in gold and platinum recovery for the South America Gold and Platinum Co.

Roy Weed, Art, '28, who took considerable work in Petroleum Engineering, is manager of 58 service stations in central Ohio for the Ohio Oil Co. of Findlay, Ohio.

James T. Davidson, '32, returned from Oklahoma on account of ill health, but intends to return there in the spring.

Paul R. Maxey, ex-'27, who is the mine engineer for the Nellis Coal Corp. at Nellis, Va., wrote recently asking for the services of a graduate mine engineer. He also stated that if business kept up he could employ two or more students for the summer.

Joseph Haas, '26, is with the Code Authority, east subdivision No. 1, bituminous coal division, of the N.R.A. His office is in the Lincoln Trust Bldg., Altoona, Pa.