



WEITENBECK

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CELEBRATING OUR 10th YEAR

EDITORIAL NOTES

This is it. When you get to the last page of this issue, you'll have seen the last of me; at least as SPARK Editor. I'll make as many of our meetings as possible and more than likely cross paths with a few of you elsewhere. It's time, however, to once again let someone else try their hand at putting (and pulling) together our newsletter.

Perhaps it's a little egotistical, but I think we've had a pretty good publication for the last 10 years. We've reported society news and published a number of excellent automotive mini-histories, as well as numerous pieces on writing, publishing and historical preservation.

Then, of course, there are all those things we wanted to do that we never got around to (for a whole bunch of reasons). Those things will have to go undone. Or get done by someone else. Which would be fine too.

Some parting notes: How about a Wisconsin Automotive Hall of Fame? We need a formal liason between WSAH, the national SAH, other chapters and the State Historical Society. It would be nice to see some WSAH members, or even the organization as a whole, get involved in some sort of Local History Project as an affiliate of the Wisconsin State Historical Society and Council for Local History. How come we've never had a meeting at the Elkhart Lake Historical Races in July or Wally Rank's great show in September? Where are the members we've lost? Is anyone working on any oral history projects? WSAH should develop closer ties with Wisconsin's other historical societies, museums and libraries. WSAH IS A HISTORICAL SOCIETY, NOT A CAR CLUB.

1990 DUES: Are your dues paid up, or are your dues due? Bob Gary (1316 Fourth Avenue, Stevens Point,

WI 54481) is still doing a terrific job as our Treasurer and will be more than happy to receive your check.

1990 WINTER MEETING: Plans for the annual meeting have been delayed somewhat, but are underway. The likelihood of a March meeting is slim. On the up-side, this may mean more people will be able to attend. Whenever it is, I'll see you there.

Chris Halla

#### DIRECTOR'S MESSAGE

Where does one start to follow an act like Bill Cameron? Maybe if I just get another forty years of experience behind me, so I catch up to Bill, I can be awe-inspiring too! At any rate, I'm happy to be your new Director. I'll do my best in the job.

Let me start with a little background information on myself, and you may find we have several things in common. I've just begun my fourteenth year of teaching the Parts Specialist program at Northeast Wisconsin Technical College in Green Bay, where I am also president of the 200 member Faculty Association. I'm just getting started on a fast-paced master's degree program in Management, but my BA is in Humanities and Fine Arts from UWGB. I dropped out of college at Platteville years ago after getting married and began work as Service Manager in the Ford dealership in Richland Center, the town where I was born. My father had died just a few months before I was born, so after my mother remarried we lived on a farm near the little town of Blue River.

Like many of you, I can't remember when I wasn't nuts about cars and anything connected with them, and so far all my work and play has revolved around cars. I spent six years in Parts and Service Management at a Ford dealership in Manitowoc just before I started teaching, and when I make time I run my small business, NimTrim Auto Interiors, for which I just built a new shop. I've lost count, but I receive about 35 car magazines a month (most are routed through our school library) along with about a half-ton of magazines from other organizations I belong to, such as APICS and Mensa. I like to write, and have had a few automotive articles and some short fiction published.

I have three sons, one each in the Air Force, college and high school, but have been divorced for several years and now share my house with my lady, Trish, her son, and our cat and dog. I just had a new house built, my second in the past four years, and really enjoy doing all the finish work, landscaping and decorating. Next summer, I swear, I'm going to do more fishing, golfing and motorcycling ...in between car shows, political conferences, and restoring cars. Yes, I do keep busy, but if I had nothing to do then I'd do nothing and that would surely drive me crazy!

I've been trying to think if there is some direction that I would like to see the society take, or in which I could help lead it. The first thing that comes to mind is to keep things simple and sociable; I don't think any of us need any more burdens or commitments. While a "society project" might pull us together, give us a cause or raise some funds, time and geography will be working against us.

Maybe what we should do is simply get together more often. Have a gathering in north-central or southwest Wisconsin, or any other place where one or more members is willing to organize such an occa-

sion. Any location, any time of the year, just give it a shot and see who shows up!

My greatest concern though, is the loss of what little contact we now have, if we don't continue to have a club publication. I certainly will not begin to fault anyone for not wanting to take on what Chris has done for the past several years. It not only takes time, which for many of us costs money, but money out-of-pocket, and a certain amount of stress to do a good job and try to keep a deadline. So the question is, "Will anyone out there take on this responsibility?" We don't really need anything elaborate; it could take the form of a newsletter, informative and inexpensive, or could continue in the present format with publication only twice a year or so. I wouldn't mind trying this myself, but that would be absolutely stupid and unrealistic to consider until at least this time next year.

Any ideas about a publication, what direction our chapter should take or anything else? Why don't you write or call me and we'll start developing them right now!

Ken Nimocks

#### THE AUTOMOBILE AS PRE-EMINENT ARTIFACT OF OUR CIVILIZATION

By Matt L. Joseph

(EDITOR'S NOTE: The following article is based on the popular lecture presented by Matt Joseph at several unique events during 1989. Everything

possible has been done to maintain the integrity of the original lecture. CH.)

Perhaps the history of the automobile goes back even further than we as automotive historians would suspect. Perhaps even we don't see it in its full perspective. This is what I'm going to try to do as I look at this question of the automobile and how important it is to the way we live; how it affects the way we live; how it determines in many cases the way we live. We after all live in physical settings in cities and in rural areas that require the service of the automobile.

It wouldn't work any other way. Look at what we've done in the last 75 years. Remember when you have a hamburger at a McDonalds stand, almost none of those, until fairly recently, were reachable any other way than by automobile. Only in the late 1970s, in fact, did McDonalds decide to install downtown locations.

So the whole shape of the physical culture we live in assumes the existence of the automobile; the kind of mobility we enjoy but perhaps don't think about as we should. Let's for a moment look at the context of the automobile.

The age of the practical auto cycle, internal combustion engine automobiles, is an age of less than 100 years. The practicality of the invention has been proven in the last 100 years or so. The mass production of automobiles involves a much shorter period. The automobile as a fixture in American life goes back to, say, the 1920s for reasons that we'll look at. So you're talking about 50 to 75, at the outside maybe 100 years. If you look at the history of humankind as a long afternoon, the automobile age is just about long enough in that afternoon to swat a fly. It's a great exception to how

most people lived throughout most of history. And it's a startling and wonderful exception. We're also learning that it's a two-edged kind of exception, that an automobile and an automobile culture has drawbacks, things that are problems that must be solved.

But let's go back. Back into the more distant past. Let's, for example, go back into the year 2000 BC which is not a period one would expect to find automobiles in. Has anyone restored a car from that period? Well, you never will, because the hardware to build the automobile didn't exist. But some of the software was in place, to use a very modern term. The idea was there. The idea was this, that you could get from here to there solely, unpredictably, badly, if the weather conditions were poor, but you could get there by very few means. And those means were on the back of an animal or drawn by an animal in a carriage, or on foot. That effected a kind of imprisonment. Man's mind always tended toward flight of fancy. Breaking the bonds that tied him first to a location, then the earth itself. First to land, then to water. And in that sense that man's mind sought an alternative to this bind of being dependent on feet and animals for transit, find in Alexander Pope's translation of the Iliad--we're looking at maybe 2200, 2000 BC-- the idea of the automobile. The idea of personal transportation as we would call it today. Mobility, being able to get from place to place not bound by feet and animals.

In Pope's translation of the Iliad he writes:  
"There the lame architect the goddess found,  
Obscure in smoke, his forges flaming round,  
While bathed in sweat from fire to fire he flew;  
And puffing loud, the roaring bellows blew.

That day no common task his labour claimed;

Full twenty tripods for his hall he framed,  
That placed on living wheels of massy gold,  
(Wondrous to tell) instinct with spirit rolled  
From place to place around the blessed abodes,  
Self-moved, obedient to the beck of gods."

That's the idea of the automobile. Some 2000 or more years ago the concept of mobility, the concept of being able to get from place to place, a dream which is so inextricably interwoven with the concept of freedom that they become inseparable. In this brief snippet from the Iliad you see a dream of freedom based on the dream of motion. The next 2000 years and then some resulted in the development of the hardware mentioned earlier.

The above is not an isolated quotation. There are others that one might have come across that are just as good. You'll find similar visions by the prophet Nahum and Ezekiel in the Old Testament. Ezekiel was a little confused about the thing. His automobile idea had certain aspects of an animal. The front of the self locomotion device might have nostrils and breathe fire for instance. (With the exception of some recent General Motors products that has not generally been the case.)

Nahum, in the Old Testament, says: "The chariots rage in the streets. They shall jostle one against another in the broad ways; they shall seem like torches, they shall run like lightnings." Here Nahum had not only a vision of the automobile, but a very specific reference to the Los Angeles freeway system in the 1960s and 1970s. There can be no mistake about this. Clearly the prophet Nahum was properly named a prophet. He had seen into the future with great exactitude.

Hero of Alexander in the second century BC, in his Pneumatica, speaks of a self propelled "Aeophile,"

and he says that this device blew steam from a round, or hollow, sphere. That's very interesting, because he's getting awfully, awfully close to predicting the actual physical kind of reality of that machinery. That's very close for somebody in that period.

On the other hand, Alexander the Great of Persia, was confronted with chariots that were wheeled downhill toward him with sythes projecting from the sides and swords sticking out in front of them. Again, a very early pledge of hardware capable of self locomotion. Everyone realizes that when you design a power source the great question is energy. In other words, to get motion you must have heat, and you must reject heat. It's the difference between two heats that gives you the possibility of generating mechanical motion, and unfortunately the possibilities of the energy gradient of a hill are rather limited as one might easily imagine. When you get to the bottom of the hill, you have just hit the bottom of your energy gradient. It is not in any real sense rechargeable other than by pulling the vehicle back up. But, interestingly, Alexander gave us the word "cars." He called the sythe bearing chariots "cars" and from thence came the term car.

In the 13th century a monk, a very bright monk, by the name of Roger Bacon, who was later imprisoned for insanity, described the chariots that Alexander had confronted. He also looked into the future and said: "We'll be able to propel chariots with incredible speed and without the assistance of any animals." He also foresaw boats and airplanes. An incredible man.

Other visionaries included Mother Shipton, the witch of Tudor times, who spoke of self propulsion, and as was often to be the case, what she said was

taken as demonic utterings. She was incarcerated, as was Bacon.

In the 15th century, there may have actually been what's probably the first real hardware, a spring driven Florentine car. But what's the problem with that? The energy gradient is no good. You have energy, but you have no practical method of storing it in the spring. (Of course in a vacuum with a balanced flywheel, who knows, but not in that period.)

In the 18th century, a Frenchman, Jacques Vaucenson, did build a mechanically spring driven carriage and demonstrated it to royalty in the streets of Paris. He also allegedly sold a copy of his spring driven vehicle to royalty. Yet despite this great achievement, I hasten to point out that Vaucenson is chiefly remembered for his invention of the mechanical duck; a device still shown and sold 100 years later in the hands of some sleazy New York promoters. As late as 1847, the Vaucenson duck was still being shown. It flapped its wings. It had a digestive tract and was said to be able to digest and excrete food. Vaucenson's automotive efforts went largely unnoticed.

The great breakthrough was what? We had the idea of the automobile. We had the reality, in a way, with springs, in going downhill, but that's sort of proof of the idea it's possible and not very practical. What's the great breakthrough? What do you need? Steam. External combustion. The first hardware is all steam hardware. This comes in the clumsy and impractical succession of devices that appeared in the 16th and 17th centuries.

The most interesting of these devices, of course, was never built. Here is a misconception promoted through the literature of early automobile studies; that being Newton's turbine and reaction car. It

is based on a picture that appeared in textbooks (and probably still does in historical rather than physical textbooks). That's a picture of a vehicle with a thing like a steam kettle mounted on it blowing steam out of the back of the kettle toward the ground which propel it forward. So there you have Newton's version of an automobile. A straight reaction. Actually I would love to claim Newton for the grandfather in the matter of parenting the automobile. We cannot, however, because that particular graphic was created by a secretary of Newton's, somebody serving as an amanuensis. The graphic was meant simply to illustrate that for every action there was an equal and opposite reaction. It was never meant to demonstrate the hardware for an automobile. That picture shows up over and over again as the first idea of an automobile. Newton was a little brighter than that. He understood that wasn't going to work. But it's an intriguing idea, and it does demonstrate the principle.

Savery and Newcomen worked with pumps to evacuate water from mines, as well as other mine machines. They basically developed the beginning of a practical steam engine. And of course, the final development necessary for a practical steam engine was the 1769 James Watt patent on a practical engine. On a practical steam engine with a practical valve gear and so forth, this was the basis for steam engines to follow.

By the 1760s, Nicholas Joseph Cugnot, from whose name and efforts the logo of our society is derived, either did or did not build an artillery tractor. A device capable of self locomotion. There may or may not have been a running model of this thing we all have a picture of in our minds by now. This Cugnot artillery wagon may or may not have been rebuilt and run in 1770. It was rumored that at the

speed of  $2\frac{1}{2}$  miles an hour the thing crashed into a brick wall, turned over and was never reconstructed afterward. It had a very limited range. It had a huge copper boiler hanging over the front wheel which was the source of its mode of power and also the source of its steering, making it rather an inconvenient thing to drive. (Not unlike a contemporary General Motors product.) Whether or not it crashed, whether or not it was ever really built, there is a replica sitting in France now. Whether these things happened, I don't know, but again, the idea was very specifically expressed.

Certainly by the 1790s a man by the name of Dallery had running steam vehicles on the streets of Paris. Our own Benjamin Franklin makes reference in his correspondence to these steam efforts of Dallery. Now you're beginning to get real hardware that can really run down the street.

As happens with so many inventions after you get past those first hesitating stages, you get a kind of snowball effect where alot of people are trying to figure out the solution to the same kind of problems in different places, but at roughly the same time. You get very rapid advance that replaces the very hesitant advance of years prior. You essentially build up enough background and knowledge that progress can take place. In that regard, consider the experiments of Nathan Reid at Harvard who probably ran a steam propelled automobile on the streets of Cambridge, Massachusetts in 1788.

In 1794 came the first publication of a book which was published for the next 50 or 60 years. The Young Millright and Miller's Guide by our hero, Oliver Evans, first of Pennsylvania. But he could not convince the Pennsylvania legislature to give him a patent--in those days that's how patents were issued--a patent on his self locomotion ideas and

approached Maryland where he obtained support in 1787. From that date onward and particularly with the publication of The Young Millright and Miller's Guide in '94, and for the next six editions, Evans did everything he could to promote steam. He was very much responsible for getting people this idea, because we're still dealing in ideas as well as hardware, that this could be done.

In '92, for example, he got a patent from Maryland on a steam carriage. In '93 he built the famous and horrible Orukter Amphiboles. The idea was that they had discovered a connection between typhoid fever and garbage. They wanted garbage removed from the banks of the river, and they wanted it done mechanically. Evans bid on this thing, creating the Orukter Amphiboles, which is a digger trencher, which was basically not a device designed at all for self locomotion, but for trenching, digging action and which was basically a water going vehicle. It was built about two miles from the river it was supposed to work on. Evans was a tireless propagandist for steam, and he had the very clever idea to put the thing up on a wagon. It's got an engine, we'll get some belts and pulleys, we'll locomote the wagon, and we'll drive it down to the river. In the pursuit of that they put it up on a wagon, and the axle quickly broke from the enormous weight. The thing weighed more than 16,000 pounds. They built another wagon with a better axle, and the thing actually did weave it's way down to the river and then it spent the summer trenching.

It was the next year shown in Philadelphia, and for a contribution of 25¢--they begged you for the 25¢ --10¢ of the 25¢ went to the workers who built it. The other 15¢ was kept by Evans who reinvested it in further steam research. The idea was in the air. The idea that this was possible, that you could self locomote. This was in the air. It was

available to people, and they wanted to see the early hardware. Picture in our own age when the first television appeared. You knew it was possible, but you didn't quite believe it, so you wanted to go over to that lucky neighbor's house that had a television that you later realized was a curse, but your first reaction, as with many things, was favorable. This was the same kind of thing. People wanted to see the hardware, which was much harder to find than a television set in 1950.

By the 19th century progress had been made on steam and gas. There are a number of names, and I'll probably leave some out, but the ones that come to mind are Roper, Curtis, Dudgeon and Long. All these people experienced primarily with steam, but in a couple of cases with internal combustion.

Importantly, in the 19th century, particularly the last quarter of the 19th century, internal combustion completely dominates what is happening. You have two cycles: the Otto cycle and the Brayton cycle. The Otto cycle is four, the Brayton cycle is two. In 1887, finally you get the Benz vehicle, which is an internal combustion engine; a very crude thing with a wick type carburetor, heat tube type spark plug, I believe, but none-the-less capable of fairly efficient self locomotion and a fairly light kind of thing.

You had as well, in that period, the great early efforts of Haynes and Duryea. And that's still never been settled as to who did what first. Smithsonian at one time said Haynes, then Mr. Haynes decided to advertise the Haynes automobile as America's first car, then Mr. Duryea took exception to that, and Mr. Duryea said he was a year earlier, '92, then Mr. Duryea's brother said, "No you weren't," and it got all messed up. Smithsonian finally took



the signs down, and they now have both vehicles displayed. They don't attempt to date either of them.

As with Paul Revere and his famous first ride, it's easy to forget there were many others who may have run that first automobile before either Mr. Duryea or Mr. Haynes. The names come to mind, for example, of Black, Pennington, Lambert and Schloemer. Schloemer might have been in there as early as '89. We don't really know that he wasn't. Schloemer was a lazy man in many respects, and he didn't promote his invention very carefully. Schloemer was a Wisconsinite whose car is on display in the Milwaukee County Historical Museum now. So it may have been invented here for all we know. It doesn't matter who was first. (I always favored the Haynes claim myself. Hard to say.)

The 1895 Chicago Times Herald race is credited with some, but not complete justice, as having provided the final proof of gasoline's superiority to steam. Remember, by this time, steam had been advanced to a much greater point than earlier times. We had more practical steam locomotion than Mr. Evans' experiments or Mr. Watt's experiments.

I would be remiss if I didn't mention the drawback of steam. Particularly I must mention the Carhart Spark, after which our publication is named; an experiment in 1871 which prompted the Wisconsin legislature in 1879, to sponsor a race. This was the famous race to Madison entered by the Oshkosh and the Green Bay, a 200 mile distance, -- going from Green Bay to Madison by way of Monroe, that's how you get the 200 miles. The two vehicles: the Oshkosh and the Green Bay (one of them did not finish) were both extremely heavy and cumbersome. The time to finish was something in the range of five days. The legislature which offered a

\$10,000 award to the inventor of the practical alternative to the horse, to be proven by this race, quickly did what legislators sometime do best, they reneged. In this case it had rather a good point to be made. The enormous weight of the Oshkosh, which won--and the Green Bay which collapsed in a culvert and had to be shipped by rail to Oshkosh and repaired--showed the impracticality of operating these things hardly met the specification of "practical."

We're going to leave it in 1895 and point out that from that point in 1895 to the world we live in, you manufactured 120 million automobiles. To get from the 1895 proof of the superiority of the internal combustion engine over steam, to the Hondas, Ford Escorts, Ford Ltds, Chevrolets and Chrysler products that people ride in today, you manufactured 120 million automobiles, and you realized, in that brief period of time--really 80 years or so--the age old dream that we spoke of self locomotion, something that had occupied, in some cases, preoccupied humankind for 2000 years. This was finally accomplished, in the 1920s and is really a fully realized dream today. But there were so many steps in between those two, and those are the ones we're going to skip, because it would be endless and lengthy to even think about them. But for example you would have to invent mass production, as Mr. Ransom Olds did and you'd have to perfect it as Henry Ford did. You'd have to make 15 million Model T Fords and four million Model A Fords. You'd have to create the concept of the modern industrial organization as Mr. Sloan did at General Motors. You'd have to completely change the American economy, the American culture, the American lifestyle. I leave it to you to connect the dots as to how you'd make those changes, how those changes would occur. But every one of those things and so many more had to occur.

The second half of my comments involve the second half of the question we posed earlier, which is the impact of the automobile on 20th Century life. Exactly what is the impact? Although it's obviously all around us, it's also difficult to see sometimes for that very closeness. In my capacity as Awards Chairman of the Society of Automotive Historians I've had occasion to read many articles on many aspects of automotive history.

One of the articles that was very good, and that ultimately won the Carl Benz award of your national society, arrived in the mail from professor Carl F.W. Larson, as published in the fall 1987 issue of North Dakota History. The article was titled "The History of the Automobile in North Dakota to 1911." What Carl Larson is talking about is just the kind of change I want to mention, the change in the whole concept of things created by the automobile. I would submit that the automobile has changed our very perception of time and space. When you start fooling around with that stuff, you're changing the kinds of human beings we are. You're changing whole value systems. Follow from that.

Larson writes: "Although the railroad opened North Dakota, the automobile transformed it. The vast space of North Dakota could not be fully reached by the railroad, but the automobile could go almost anywhere at the desire of the driver. This power and liberation from the restraints of distance and time were quickly grasped by North Dakota's people. So rapidly did they respond to the automobile that, by 1911, it was already a major force in daily life.

"Contemporary writers in the early 20th Century prophesied a great future for the automobile. Writers said the auto would free human beings from the constraints of space and time. Others foretold

an end to rural isolation, more personal freedom, and even a more interesting life. Such was the promise of the automobile at the beginning of the century, and, to a considerable degree, such was also its result in North Dakota; it worked a transformation whose effects are still being felt in the state."

One might point out, and I find this very surprising, that by 1914, North Dakota was the fifth state in the country in the per capita ownership of automobiles. You might also consider the situation in Wisconsin. I don't know how we fit exactly into that scheme, what number, but I think it would be a very high number; in the top 10 or 15 probably. Note that idea, that the automobile changed the concept of time and space.

Some years ago I was in North and South Dakota. I stopped at a junkyard I had spied, and sort of wandering around, an old fellow came along, and we were talking about the old days. The hidden South Dakota and places you could only go on horseback. He turned to me and said, "You know, the T opened up this country, but the Model A made it." That was absolutely true. I hadn't even thought of it, and at the time it just rolled off me. But after reading Larson's wonderful article, I got to thinking what this fellow said to me in that junkyard in South Dakota and how true it was that just the automobile wasn't enough, it took more than the Model T Ford, it took the Model A Ford, because distances were so great.

There is a wonderful theory of transportation which I think explains a great deal. It was propounded by Hiram Percy Maxim, who by the way, would also be a contender for operating that first automobile before Mr. Haynes and Mr. Duryea. He had one in Massachusetts in 1893. But he speaks of the early period of

auto building and he says: "The reason why we did not build mechanical road vehicles before this, in my opinion, was because the bicycle had not yet come in numbers and had not directed men's minds to the possibilities of independent, long distance travel over the ordinary highway. We thought the railroad was good enough. The bicycle created a new demand which it was beyond the ability of the railroads to supply. Then it came about that the bicycle could not satisfy the demand which it had created. A mechanically propelled vehicle was wanted instead of a foot propelled one, and we know now that the automobile was the answer."

What Maxim is saying--and he expresses this in his modestly titled autobiography, Genius in the Family --is his theory of transportation is each age, as you got to the end of the 19th Century, created a means of transportation which was unique and evolved from what had gone before, but was not completely satisfactory. But by creating that stage, it created the demand for the next stage and some of the hardware, some of the technology.

So the train creates the idea you can go faster than the horse. You can go faster than you can walk. You can go from here to there quickly but it's very inefficient. Because if you live in Wonevok and you want to get to Baraboo, you might have to go down to Madison, down a spur line, up a trunk line, up another spur line; you might have to travel 30 miles to go 10. It goes when it wants to go, not when you want to go. (At the hands of Frank Lorenzo, it doesn't go at all.)

The idea was you had the demand, but not the satisfaction. The primary industrialization of the train creates the basis for the secondary industrialization that creates the bicycle industry. With the

bicycle you can go when you want to go; personal transportation. But you can't go in bad weather, it's not very fast, and the roads tend to end on the outskirts of town. Together they create the demand for something that combines both features, speed and personal direction. That's the automobile. They create some of the technology. Who are your early automobile builders? Your bicycle builders. In some cases train builders. That creates the demand and the hardware for the airplane. Where are your early airplane engines coming from? Automobiles. Maxim wrote his book in '31, and he said the next stage might be the rocketship. (All good theories screw up somewhere.)

Some had suggested that the changes that occurred were not just substantive changes in lifestyles as a result of the creation of the automobile, but were changes in the very concept of freedom, so deeply, socially rooted as to change our whole concept of things. For example, cities became suburbs. This couldn't have happened without the automobile. By the 1930s you find that workers have decentralized from factories. You don't have them clustered and living around factories, but decentralized from factories. Cities were developing in the early 20th Century what was called the Star Pattern. They go out where the street cars ran. You change from the Star Pattern, with the automobiles, to the Galaxy Pattern, inclusive development. Not along street car lines, not in the Star Pattern, but was called the Constellation Pattern after that, a myriad of stars.

Shopping center communities were created. The isolation of farms was largely ended. Localism broke down into regionalism, regionalism into nationalism. Mostly, to use a word that was new in the 1930s, a general metropolitanism. It was a revolution that

was still in progress. Let me quote from the 1933 report of the Hoover commission known as "The Commission on Recent Social Trends," which, among other things, says that the automobile had, "erased the boundaries which formerly separated urban from rural territory and has introduced a type of local community without precedent in history." This metropolitanism, a whole new kind of community, comes into existence.

Consider this. Alexander Winton left Cleveland from New York in 1897 in an automobile and took 10 days to get there. Two years later he did it in five days. In 1901 Roy D. Chapin made it from Detroit to New York in 7½ days. In 1903 Dr. H.N. Jackson made it from San Francisco to New York between May 23 and the 26th of June. By the late teens the Lincoln Highway, sections of it, was under construction.

The automobile created what almost amounted to an assault on traditional values and preferences. We drew up a whole new language for it. Time payments, invented by the Southern Calendar Clock Company in the 1860s to help people pay for their clocks were applied to the automobile. The Benjamin Franklin idea of thrift gave way to the idea that everybody should have a new car. Used cars, a term coined in the General Motors advertising offices, was used at Mr. Sloan's suggestion. They needed a term to take the place of the then popular term which was "secondhand cars." "Used car" was somehow more acceptable. Go to a dealer today and you will hear about "executive driven" and "pre-owned automobiles."

Lynds of Middletown wrote in the late 1920s: "The automobile had become an accepted essential of normal living." You got the creation of satellite cities and you got the incredible exodus from the

farm. All facilitated and made possible by the automobile. The streetcar revolution was completed. The star patterns of urban development gave way to constellation patterns. Over 50% of the population of this country was engaged in agricultural activities. Something in the range of 53% in 1900. By 1920 it was 20%. Today it is 2½%. All of this facilitated by the automobile. Towns as regional shopping centers grew. The decline of the country crossroads store. The creation of mail order outfits, and the opening of department stores. Our whole language, our whole concept changed. Motels, drive-ins. Royce Hailey's Pig Stand; the first drive-in restaurant, opened in Dallas in 1921. Lynds also said, "the car had revolutionized American leisure."

Every aspect of American culture was constantly under assault under the forces of rapid change by the automobile. The trivial kind of change. CB radio and the changes in the language it's brought. Serious kinds of changes: Advertising, time payments. Very serious kinds of changes: Literature, Jack Kerouac, for example, dominated by the theme of the automobile. Music, graphic art, etcetera. In the most critical sense, and sometimes with the purposeful manipulation of those in charge, the automobile in its very essence has changed our whole concept of style. That's a massive change. That's a massive kind of effect on our collective psyche.

The effects of the automobile on our economy are almost incalculable. Thus, when the Japanese sneeze in the automobile market, we all seem to get a cold. That's only one small example. The automobile created the broadside prosperity to make possible the full dinner pail, social betterment, middle-class industrial democracy mentality that's dominated our thinking into the late 1970s. In many cases, it

still dominates our thinking. You couldn't have had those things without the automobile. You would've had an economy of scarcity. The whole abundance on which the social welfare economy is based comes from the automobile. For example, 37% of the economy of this country is involved in the sale, manufacture and distribution, maintenance or repair of the automobile. One in seven people employed in this country is either directly employed by the industry, or their employment is in some way dependent on that industry. This is the engine that drove our economy. The whole infrastructure of the country. The whole industrial infrastructure is organized primarily around pathways and specifications that involve the manufacturing of automobiles. We have simply taken the economics of building the Model T Ford and imposed those economics and the successors of those economics on our whole concept of industrial production.

For example WWI and WWII were in many regards one, because of the industrial model of the automobile. Who built the armaments? Who built the shipping? This came primarily from the ideas involved in automobile production. Facilities like the Rouge and Willow Run come to mind immediately.

The growth of the automobile has been exponential to the point that it has created what would amount to, or what one might call, a second industrial revolution. Some 8,000 automobiles in 1900, eight million automobiles in 1920, 25 million automobiles in 1930. In 1920 there were twice as many horses as there were automobiles, and in 1930, it was exactly reversed, twice as many automobiles as there were horses.

The automobile certainly came a long way from that first tentative suggestion in the Iliad of the

possibility of an automobile. The first halting experiments of pioneers like Benz. Interestingly the New York Times, on January 23, 1899, editorialized about the automobile in a way which massively failed to suggest any of what the future would be. But it's an interesting note to end on. They were talking about the name of the automobile, because they hadn't even decided that yet in 1899. The editorial says: "There is something uncanny about these newfangled vehicles. They are unutterably ugly and never a one of them has been provided with a good or even enduring name. The French, who are usually orthodox in their etymology if nothing else, have evolved 'automobile,' which being half Greek and half Latin is so near to indecent that we print it with hesitation; while speakers of English have been fatally attracted by the irrelevant word 'horseless.' Other nations have been equally unfortunate and it really looks as if the dispossessed or to be dispossessed animals are to get revenge on the ungrateful humanity by stumping us to find a respectable name for our noisy and odorous machine."



THE TUCKER PLANT  
A DIFFERENT LOOK

By Bob Gary  
As Told to Wally Wray

(Introduction: Highly touted at the time and ever since as "a complete manufacturing facility" and "the largest factory in the world under one roof," the old Dodge Plant is an integral part of the story of the Tucker car. Yet, automotive historians and Tucker enthusiasts have rarely if ever looked at it beyond the scope of the events that actually transpired there in the late Forties. What would have happened had the Tucker Corporation not become enmeshed in legal problems and indeed gone on to attempt mass production there? Would holding the lease to "the world's largest factory" have been a God-send, or akin business wise to a steerage class ticket on the Titanic? The following reflections on the Tucker story approach the subject from an entirely different angle than commonly seen; a hard analysis of the suitability of the Cicero Avenue, facility for manufacturing automobiles, or anything else.

The observations and opinions set forth here are those of Bob Gary, of Stevens Point, obtained personally and through conversations with others familiar with the facility. Bob has been closely involved with the automotive industry since 1954. A native of Chicago, he is a graduate of Loyola University and studied engineering at the University of Michigan at Dearborn. He worked at Ford Motor Company from 1954-64, has visited and studied various auto factories, and is currently a design engineering consultant for various firms associated

with the automotive industry. In younger years, he spent several seasons with the Excalibur racing team of Brooks Stevens as a team driver. His fund of Tucker knowledge dates to attending a stockholders' meeting, during which he toured the plant--prior to Tucker and Ford, known as the "Chicago Dodge Plant"--and later worked in the facility, where he met former Tucker employees. The following recollections were recorded at the Iola Car Show on July 16, 1989. WW)

"My first experience was that my father had given me an 18th birthday present of 100 shares of Tucker stock. I went to the first shareholder's meeting with a man who knew about the plant and forging equipment as a plant engineer. He was a very informed man, and had to do with setting up the original forging shop at the Dodge Chicago plant, which was also known as Defense Plant #39. That was the plant that Tucker had leased and was known in 1948 as the 'Tucker Plant.'

The meeting was very interesting, very upbeat. The highlight of the meeting was when Tucker, who was a very gracious individual and a very handsome man, to the cheers of the people there, got into the first car in line coming off the mock-up assembly line, drove it forward, and then backed it up, thus putting to rest all those stupid rumors that the car could not back up. From then on he was answering questions to which he responded, as I recall, fairly well.

I was given a partial tour of the plant. Tucker Corporation was in the main building of that plant, which is enormous. I don't have the dimensions. I'd have to do it by putting it down on paper and reconstructing where streets began, but it was at least a half a mile North-South. And then there was

an extension of the building on the North. The main building was built as one huge machine shop. It was supposedly, outside of Thompson Products (and may have been bigger than Thompson Products, which they called Tapco Main in Cleveland) the biggest plant under one roof. That was what I heard when I went to work there later for Ford A.E.D.

There were paint booths set up. And this was again in the front part of the plant, not in the administration building, but in what had been the big machine shop. We did not go beyond that, although this fellow had pointed out to me where things were, and I could see a lot of machinery sitting there. The War Assets Administration owned this machinery. It was all turning equipment, grinding equipment, for making reciprocating aircraft engines, and they had not moved it out. That was probably occupying at least two thirds of that building.

The section that Tucker was using was about the western third (Cicero Ave. side) and it was unlikely, according to this man, that this is where these cars were built. But it was a mock-up assembly line, and I do not recall hearing anything to the extent that this was the genuine assembly line, because there was really no place for the cars to be shipped from there. They were simply giving the idea.

I went to work for Ford's aircraft (Ford A.E.D.) engine division in the same defense plant. I worked in Assembly and Testing, as a product engineer. I got to know that plant fairly well, and one of the things that was evidenced to me, as anyone who worked there, was the cost of operating the plant. I had a good friend in plant engineering, and another in manufacturing engineering. We used to talk about the cost of Ford's building a J-57

engine vs. Pratt & Whitney's building a J-57 engine, and why Ford's must have been far higher. Ford had expended nearly a half billion of their own money to put tooling into that plant to try to cut the cost. One of the things automobile people know how to do is high volume production, so long as you maintain the aircraft quality.

The plant had no bays. This huge building went for at least half a mile, three quarters of a mile, North-South on the western side, then East and went a like distance, and turned North again. It may have been square or it may have been rectangular, I don't know, but there was no relief in it. The shipping and receiving docks were on the East side of the building toward the center, where Receiving Inspection was during the time of the aircraft engines--either the reciprocating or jet engines.

To the North was, during the reciprocating engine time, where Dodge assembled and tested engines and later Ford A.S.D. tested the reciprocating engines. The test cells for those engines were in the northwest building, which had a common outside wall. There was a separate wall for the machine shop. There was another like room to the East which was separate during the time of the jet engines, and that was used for jet engine assembly. During the time Ford ran the jet plant, the NW room was not used for anything but storage, and the test cells were not used in that as well. They built a new test cell section because they were so different for those kinds of engines. They required different testing equipment, in a slightly separate building to the North.

The plant was altered somewhat when I worked in it, but it came home to me, and was pointed out to me by people who knew far more about it than I, the high

cost of doing something there. And I began to question when we talked about it, about building an automobile there. The way that Ford was able to build an aircraft engine there, and Dodge was able to build an aircraft engine, was on a cost-plus basis. An engine that, let us say, and this is an approximate ratio, cost \$250,000 from Pratt & Whitney, would probably cost over \$400,000 from Ford, simply because of the cost of that plant and its inefficiencies.

There were six to seven salaried employees to one hourly at A.E.D. Its materials handling was a disaster. Everything had to be moved internally with forklifts or V-dumps. There were a lot of electric vehicles, and it was a constant flow. You could probably tolerate this for aircraft use, which is more precision. Automobile quality doesn't require that. This plant, I came to the conclusion, just wasn't suitable for that. In my opinion, Tucker would not have been able to build that car there reasonably. It would have cost too much, even if, say, he'd had \$125-150 million, which he should have had in order to launch the car properly. A minimum of that! He probably wouldn't have gone in that plant. That would not have been the place to do it.

What we speculated on since, was where these cars were assembled. Were they assembled on the premises? There were other buildings. There was a very substantial powerhouse just to the East of the main machine shop, just behind the receiving docks toward Crawford Avenue, or Pulaski as it is now. And next to that was a huge aluminum foundry--it was very generous--when you build with government money, you overbuild. So this was something that probably Tucker could have used, if he had been able to operate the aluminum foundry at a reasonable price.

To the East of Crawford Avenue, and we're talking a mile away from 7401 Cicero Avenue, where the plant address begins, there was the forging house--the forging shops--again very nice facilities. Whether Tucker would have been able to operate those economically, or whether he would have gone out to Harvey to Wyman-Gordon as some others did, is problematical. It might have been far cheaper, depending on his volume of production, to have these things made elsewhere, and I have no idea where Aircooled Motors were made, or had their stuff made, or whoever Ypsilanti Machine Tool's suppliers were.

I wonder where Tucker would have gotten transmissions. There are, I have learned, not that many transmission builders in this country, Warner Gear is the principle one outside the automobile companies. The Dana Corporation possibly--they do build truck transmissions--and a few others. But Warner Gear in Muncie is the only separate company, and that is part of Borg-Warner that does and did then build transmissions separately. Warner Gear held most the patents. They probably could have solved the problem of getting a supplier to supply that transaxle. I doubt if they would have been able to make that at Tucker economically.

I have long wondered where the Tucker automobile would have been manufactured had Preston Tucker been able to raise enough capital. I don't think Tucker was a fraud. He was a dreamer who wanted to build the Tucker 48 in series production and sell enough cars to continue what he had started."