The Society of Automotive Historians

AUTOMOTIVE HISTORY REVIEW

SUMMER 1988 ISSUE NO. 23

1916 MILAC RACING CAR *(Photo provided by Charles L. Betts, Jr.)*

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MORE SPINNING AND WEAVING AT THE MOTOR MILLS

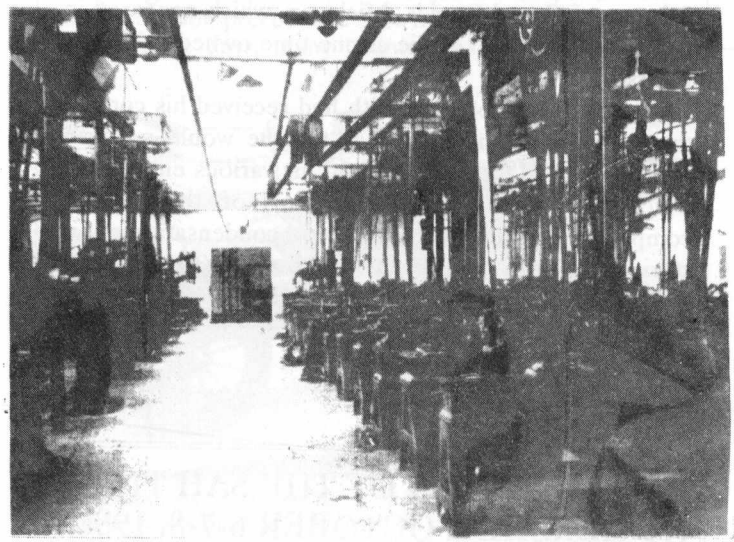
BY MAX GREGORY

In Issue Number 18 of *Automotive History Review* I set out some details of the early motor manufacturing at the Coventry "Motor Mills" by the English Daimler concern and The Great Horseless Carriage Company, which article was predicated on a delineation of the activities of the two operations.

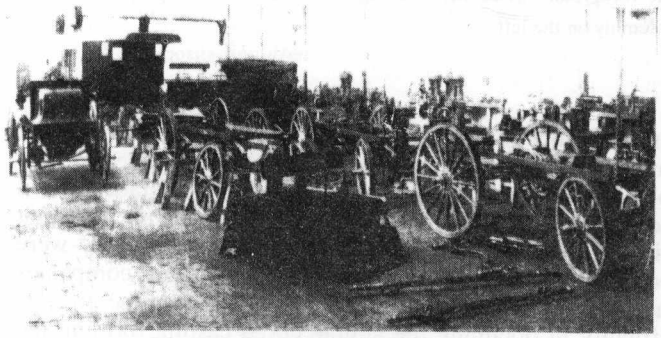
In Issue No. 19 Mr. David G. Styles, quite properly, drew attention to the deficiencies of the article in clarifying the relationship between the occupants of the Motor Mills and the other manufacturers in Coventry. With this criticism in mind I have recently taken an opportunity to obtain further photographs which show the interior of the Daimler works in the 1898-9 period and reveal the scale of manufacturing then being carried on.

There is, of course, no disputing that both Daimler and the GHCC were components of Lawson's British Motor Syndicate. Indeed William McNeil, on whose recollections these articles are based, sets this out clearly: "In anticipation of the passing of the 1896 Act, a syndicate had been formed in England which had considered the various Continental and American cars, and had actually purchased the British rights of the Daimler, Panhard and most other makes. This was the British Motor Syndicate which was formed, not to manufacture cars, but rather to sell and control licenses under their rights. They had two manufacturing firms floated immediately--the Daimler Motor Company Ltd.' and `The Great Horseless Carriage Company Ltd.', each of which bought licenses to make Daimler, Panhard and other motor car mechanisms.

"With these firms the British Automobile Industry had its inception, and to them the industry is far more indebted than it would probably admit, if thought were ever given to the matter. They stood the stress of public prejudice and educated the people to new ideas of transport and locomotion. Their work's officials started and organised big plants to manufacture machinery barely out of the experimental stage, and which was daily being improved and altered. I doubt if any of the original shareholders received a penny interest on their investments, and I believe many of them lost all their invested capital. When I look back at those three first years and remember that it was only for food and a few hours of sleep that we ever left the works, I wonder how the strain was endured. Youth and enthusiasm laugh at difficulties and hard work, and we were all young and enthusiastic--twenty-five years ago."



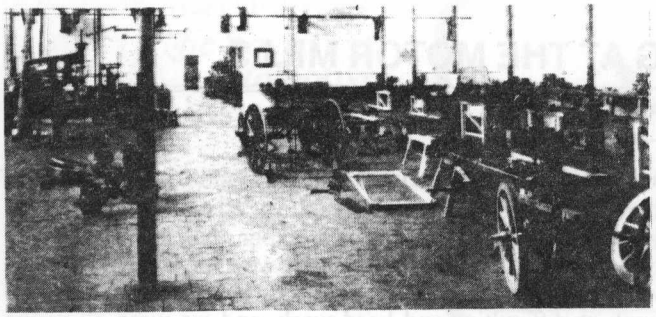
View of the No. 2 Machine Shop at the Coventry Daimler works in 1897, with machines driven by the then customary overhead shafting and belts.



A part of the Erecting Shop in 1897 with several chassis under construction and three complete vehicles in the background, including a delivery van. A two-seater body awaits mounting in the foreground. Two engines sit on a bench.

The chassis and mechanical layout of the production Daimler of 1897-8 is clearly represented in Mr. McNeil's account by three drawings: those of front and side elevations and plan (two of the gearbox also) which are identical with those found in Mr. Beaumont's contemporary book, *Motor Vehicles and Motors*, and will, therefore, offer nothing new to the serious student. In regard to the question of whether Coventry Daimlers of this time were actually German Daimlers out of crates, it is a matter on which someone with intimate knowledge of the German designs should pass judgement.

In support of the photographic evidence of regular production at the Motor Mills are a number of excerpts from the McNeil recollections: "In the meantime British Daimlers manufactured at our own and neighbor's works were regularly being turned out and making a name for themselves.... Both companies had attempted something outside the type described, but in neither case was it successful enough to offer to the public and cannot be considered other than experimental work.... Both companies concentrated their energies on the British Daimler which, for the first four or five years, was without competition amongst British cars ....pivot ends and stub axles were, for the first year or two, all imported from the famous Lemoine forge in Paris...The testing of the first car...turned out from the Motor Mills...was my first all-night motor ride. Mr. F. E. Brown...and myself started from the works about 3 p.m. on the date the car was finished (about the end of May 1897). We made a circular tour, passing through the counties of Warwick, Leicester, Stafford and Worcester.... Some four or five years passed before the British Daimler had a



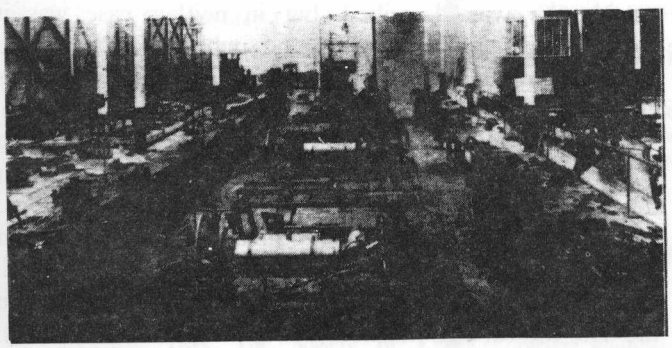
Another section of the Erecting Shop in 1897 showing two chassis, that in the foreground fitted with its engine. Mechanical components awaiting assembly on the left.

A further line of chassis being built up in the New Erecting Shop in 1898..

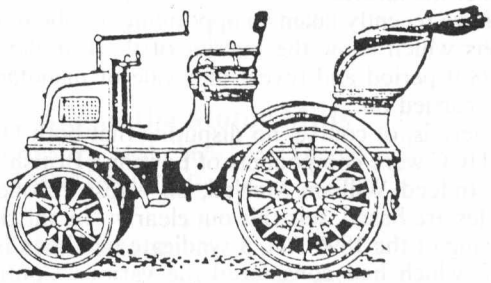
serious competitor made in the British Isles.... Amongst the earliest of these were the Argyll, Belsize, Napier, Arrol-Johnson, Humber, Wolseley, Lanchester and Maudslay. In the meantime the Daimler and GHCC concerns were not without their trials and vicissitudes as, although they were receiving orders faster than they could supply, both companies had to undergo reconstruction... In 1897 we had the greatest difficulty in obtaining the simple cored casting forming the Daimler cylinder head, and a large percentage of those turned out faulty during machining... At an early date we were called upon to produce a commercial motor car to carry goods... These were merely the standard chassis fitted with stronger springs and bodies to suit requirements... Owing to the necessity of constantly changing gear and the comparatively inferior materials the gears were made of, it was natural that these parts should suffer heavily. This was well illustrated by the fact that in 1898 and 1899, by which time a good number of cars were in use, the call for replacement gears became so great that it was almost impossible to keep pace with the demand without seriously affecting the output of new cars... Wheel steering and push pedals came in 1898 and 1899 and made driving considerably easier and safer."

Photographs of 1897 Daimlers illustrating the McNeil account show four different styles of passenger vehicles and two types of delivery vans.

In respect to the position of Riley amongst the motor manufacturers of Coventry, it would appear that its claim to being "As old as the Industry" is justified, the Motor Mills, of course, being the Industry.



A portion of the New Erecting Shop at the Coventry Daimler works in 1898. Two lines of chassis are under construction with a van and a car visible in the left background.



The first model of the English Daimler, 1896

A FAST RESPONSE TO A LETTER

Beginning on the next page is an article by Keith Marvin, outlining the varied career of Maurice Wolfe, founder of the Meteor Motor Car Company of Shelbyville, Indiana, and Piqua, Ohio. This company not only made Meteor and Mort ambulances and funeral cars, but also made other unrelated products.

Keith's contribution to this issue of *Automotive History Review* was prompted by a letter from Vic Johnson of Grand Rapids, Michigan, which appeared in *SAH Journal* No. 114. Vic at one time owned a Meteor Hearse.

Almost as soon as Keith had received his copy of the *Journal* he phoned to say that he would send an article about Maurice Wolfe and his various enterprises which culminated in the founding of the Meteor company. His article is a rewrite and condensation of his stories published in *Antique Automobile* (March-April 1966) and *Old Cars Weekly* (December 18, 1979).

THE LOCATION OF THE SAH TENT AT HERSHEY, OCTOBER 6-7-8, 1988, WILL BE: ROW BV, NOS. 43-47.

THE CURIOUS HISTORY OF THE METEOR

By Keith Marvin

Of all the "professional" car manufacturers of our time, probably no one will ever better the late Maurice Wolfe who made his Meteor ambulances and funeral cars among the best known in these United States and elsewhere. And if there is any truth in the old adage that "A jack of all trades masters none," it just didn't apply to Mr. Wolfe, an enterprising promoter who, among his many and diverse accomplishments, sold a car to a Crow Indian chief in 1903 and then went on to build the Wolfe automobile in Minneapolis between 1906 and 1909. In 1912 he took over the moribund Clark Motor Car Company of Shelbyville, Indiana, and subsequently changed its name to the Meteor Motor Car Company.

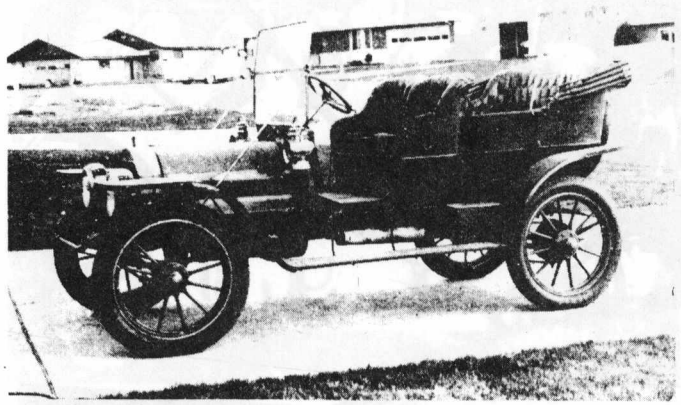
I have never learned what possessed Wolfe to leave Shelbyville for Piqua, Ohio, but leave he did, and while marketing Meteor touring cars in that community, joined forces with A. J. Miller & Co., a name in funeral carriages. The first Miller automobile hearse bodies were thus wedded to Meteor chassis.

There had been eight or nine cars, both here and abroad, which had been sold under the Meteor name and it has been used throughout time, very successfully in particular by the gussied-up Canadian Ford. A handsome car it was, too, especially in the mid-1950s when I visited Montreal and wondered why the United States couldn't produce as attractive a Ford car. But that's another story.

Firmly established in Piqua, Maurice Wolfe branched out in every direction. By 1920 he was marketing a complete line of hearses as well as a limited number of touring cars and roadsters, plus a handful of closed cars, which could be used for the bereaved family of the deceased, mourners or bearers in a funeral procession and, incidentally, come in handy as a personal automobile for Sunday afternoon rides with his family.

By 1920 he had adopted his radiator insigne which included, in its design, a meteor in flight. By then he had become seriously involved in the production of ambulances, thereby augmenting his already established line, and Meteor ambulances took precedence over the hearse business.

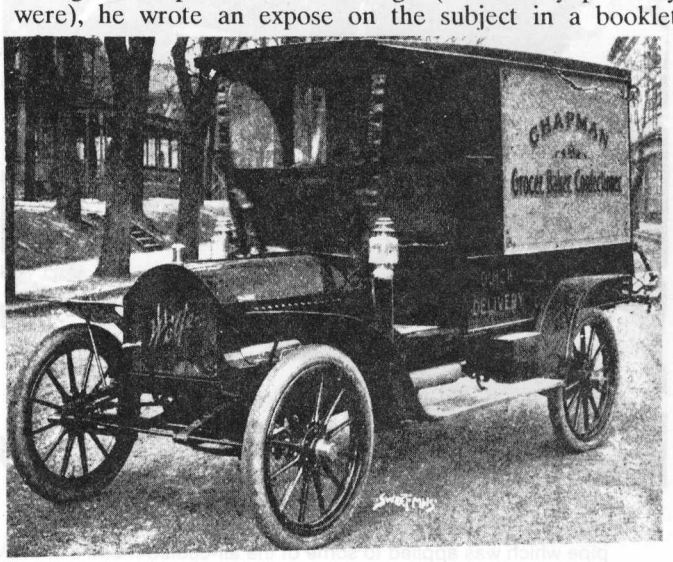
In those days, many country funeral directors were



Wolfe touring car (1907-1909), a four-cylinder car with air-cooled Carrico engine or optional water-cooled Continental engine. At right is a Wolfe light truck, a passenger-car chassis fitted with a delivery body, of which few were produced.

confronted with the problem of first trying to save the ill and injured but, from an economic standpoint, could afford but one professional vehicle. If the patient didn't make it to the Hospital in the Meteor ambulance in time, well--it was a simple matter to make minor changes such as removing the cross insigne (the ambulance motif) and adding dark curtains, plumes and such for the obsequies which would be held in two or three days. The problem was to perfect a vehicle which could get to the hospital as quickly as possible and, by the same token, head a funeral procession at slow speed in the heat of summer without boiling over. Wolfe solved that problem and Meteor ambulances, hearses and combination vehicles were in great demand.

Wolfe was only getting started. Becoming convinced that gasoline prices were too high (which they probably were), he wrote an expose on the subject in a booklet



entitled *The Big Gasoline Mystery Revealed*, meanwhile building a chain of service stations stretching between Piqua and Cincinnati in which gasoline could be bought at a reduced figure.

Somewhere along the way, Wolfe decided that he would like boating. He was instrumental in widening the Miami River at Piqua, and then started a boat business, producing speedboats and pleasure craft, all, of course, carrying the very same trademark which graced his professional cars.

He was also fond of music, and formed a band at the Meteor plant. Being an ardent Democrat, he sent the band to the Democratic Convention at San Francisco in 1920 to beat the drum (and play other instruments, of course) for the Presidential and Vice-Presidential candidates, Ohio's Governor James M. Cox and New York's young Assistant Secretary of the Navy, Franklin D. Roosevelt, who, alas, went down in defeat to Ohio's Senator Warren G. Harding and Massachusetts' Governor Calvin Coolidge.

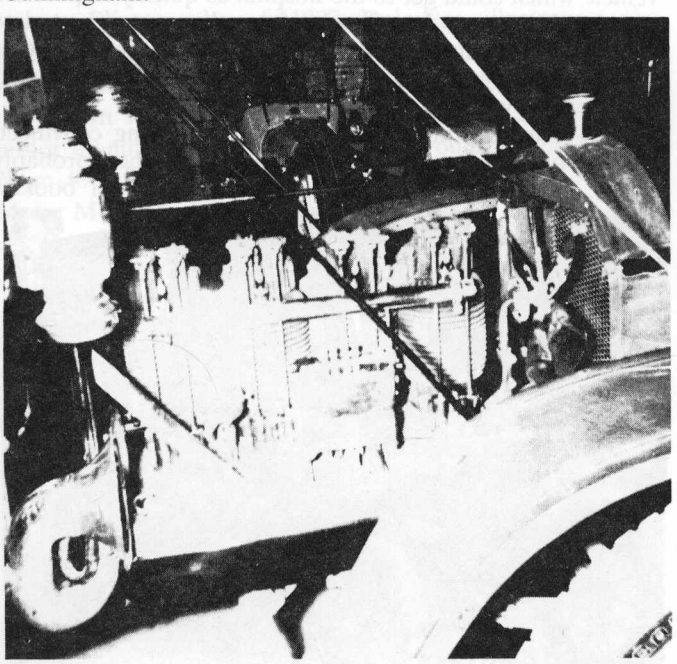
And, being musical, he decided he'd take a fling at manufacturing phonographs, and both the cacophony of jazz bands and the dulcet tones of Carrie Jacobs Bond songs were recorded on Meteor records and played on Meteor phonographs, both, of course, emblazoned with the star-and-tail Meteor badge. And when radio burst upon the American scene, Wolfe switched over to that. Soon Meteor radios and cabinets were made available to this musical land, vying in popularity with the Victor Talking Machine, the Columbia Graphophone and the Edison Diamond Disc Phonograph.

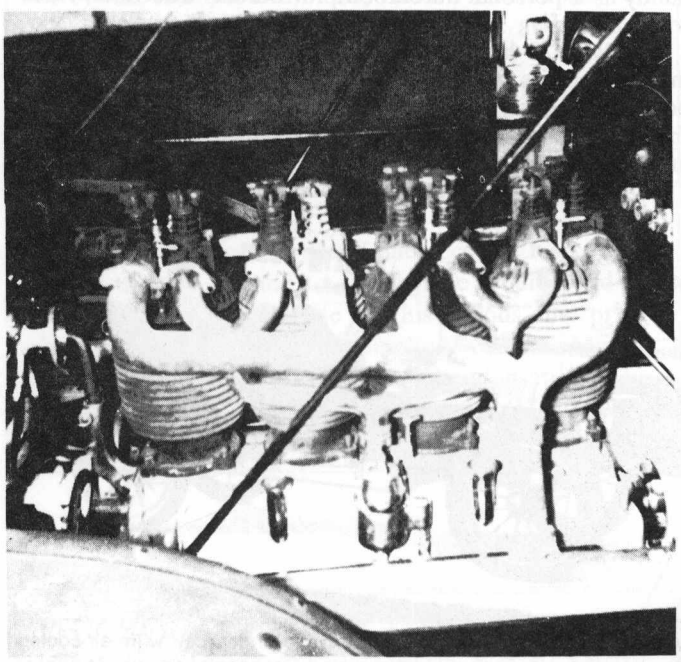
About this time, with an increased demand for ambulances and funeral cars, Wolfe began encountering a good deal of competition in those fields. There was the luxurious Cunningham and many other specialists including Henney, Riddle, Rock Falls and Sayers & Scovill, which made competition keen. And, unfortunately, a number of them were true threats as they fell into the basic price range of the existing Meteor line, if not above it, as did Cunningham.

What to do? With anyone else the problem might have been insurmountable. With Maurice Wolfe it was a piece of cake. He acted accordingly and brought out a line of companion vehicles – funeral cars, ambulances, combinations and even sedans – a bit smaller, a bit less powerful, but with the quality which had made Meteor a watchword in its particular field, and at about a thousand dollars less than either Meteor or its competition could charge.

Its name–the Mort–always seemed rather singular to me since it is the French word for death. And yet the Mort fitted nicely into the pattern of things during its four year life span between 1923 and 1926.

From 1916 or so, Meteor had built its own chassis and, with a few exceptions, carried its own coachwork. But the times were changing, and by 1926 – the year the Mort was discontinued – Meteor was increasing its body distribution to other chassis, although it would maintain its own identity as long as it could, which happened to be with its 1932 line. The Buick chassis had become exceedingly popular for Meteor bodies, so it wasn't exactly unnatural for the general appearance of the Meteor to become more and more Buick-like.





Right and left sides of the four-cylinder air-cooled engine, 4" x 4" bore and stroke, as used in the Wolfe cars. Note the dummy radiator fill pipe which was applied to some of the air-cooled models of the Wolfe cars.

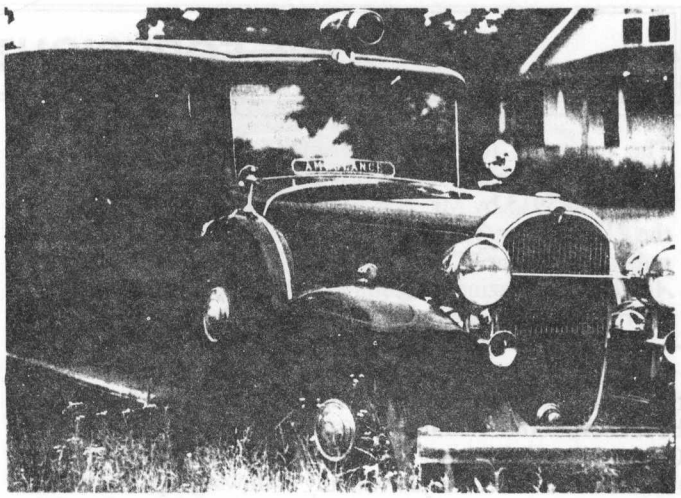
The accompanying picture of a 1932 Meteor ambulance will, I think, be taken at first glance for a Buick by most readers.

But look again. Notice the absence of the slight fluting on the radiator shell and back into either side of the hood as with all 1932 Buicks. And then look closely at the radiator badge. Is it Buick? Nope, it's Meteor. But that was as far as Meteor individuality went. Meteor subsequently became closely aligned with Cadillac chassis and, later, parts from Chevrolet and Pontiac got into the act as well.

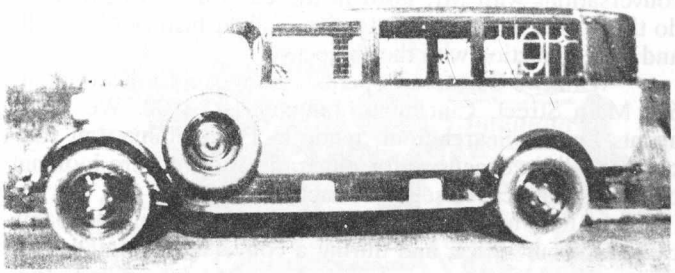
It is sad, perhaps, that Maurice Wolfe lived to see his beautiful Meteor badge sacrificed to plain Detroit iron. He left this life in 1935.

Meteor and its Miller-related interests merged and were taken over by the Divco-Wayne Corporation as the Miller-Meteor division, but continued for many years in its specialty field of professional vehicles, even if the neophyte or even the keenest observer couldn't discern any trace of Meteor on the vehicles marketed.

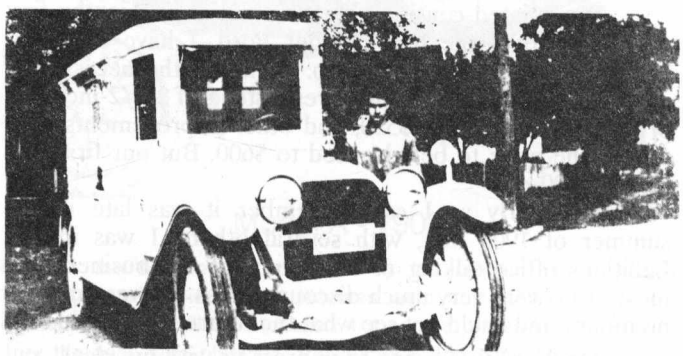
"Old soldiers never die; they just fade away!" Remember that one? Well, I suppose it's the same story for old ambulances, hearses, bearer's cars or pleasure automobiles--and in Meteor's case we can throw in a few other items such as boats, brass bands, phonographs, records, radios and political conventions, collectively the things which were accomplished by one man in his time. Thus, in 1979, with the phasing out of the Miller-Meteor operation by the Wayne corporation, few were even aware of the action as Miller-Meteor vanished into the oblivion from which it had sprung so many years earlier--the living dream and accomplishment of a man who started his career by selling a car to an Indian chief!



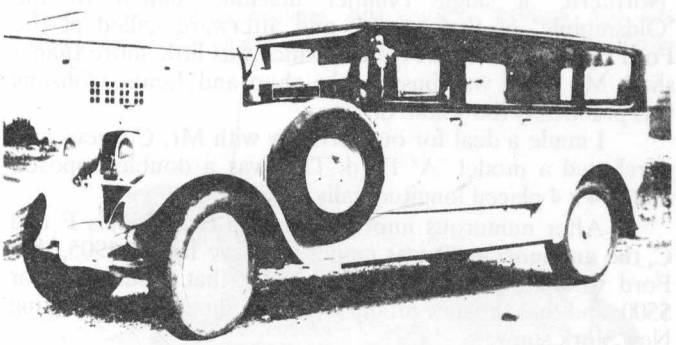
This Buick-based Meteor was the last to bear the Meteor name. At first glance it might be taken for a Buick but it lacks the fluted Buick radiator shape.



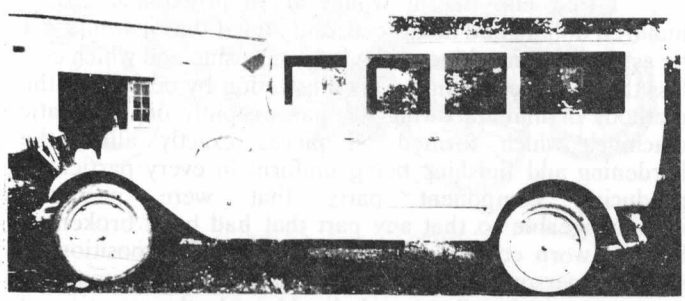
Pride and joy of the Troy Hospital (now St. Mary's Hospital, Troy, New York) in 1927 was this white and black Meteor. The hospital took delivery on July 26, 1927, replacing a 1917 Cadillac. This model was priced at $3,000, and was powered by a 70-horsepower Continental engine. (Photo courtesy St. Mary's Hospital.)



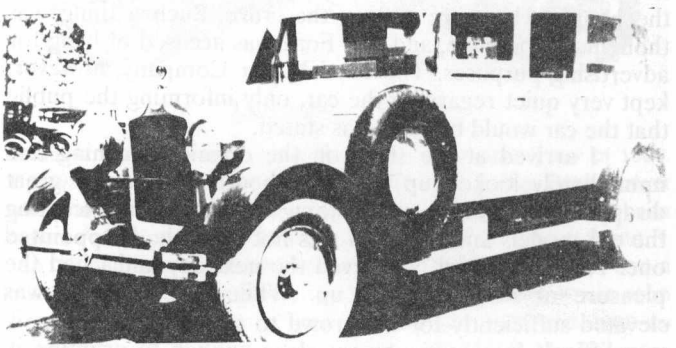
Filigree carving to the nth degree was the trademark of workmanship of this Meteor funeral car, a 1917/18 model, the Model 81, which had glass sides. Alternate model was the Model 80 on which the sides were fully carved, with no glass.



A 1926 Cadillac-Meteor ambulance.



Box-like utilitaranism is depicted in this 1923/24 Meteor hearse which, according to its door-plate, was operated by a party named Clothier. In a pinch, this could double as an emergency vehicle.



The fluted radiator shell distinguished the 1927 Meteor funeral coach.

THE FORESIGHT OF HENRY FORD

The following text was contributed by member Tom Crotty of Beecher, Illinois. It is a reproduction of a letter written in 1915 by Mr. E. C. Shumand, an engineer with the U.S. Motor Truck Company, Cincinnati, Ohio, and published in the "Correspondence" column of *Scientific American* magazine, December 25, 1915, under the title "Foresight of Henry Ford."

A few days since, a man who has been connected with the motor car business for a long time remarked to me that he believed the remarkable success of the Ford Motor Company, and the great popularity of the car, was due more to Mr. Ford's luck in just blindly following up a line that proved to be the right one, rather than to any foresight regarding the popular type of car, or the large proportions that the business has attained.

Having many times before heard similar remarks, I have concluded to offer some of my experiences and conversations with Mr. Ford in the early days. In order to do this it will be necessary to give a slight history of myself and my connection with the subject.

With two partners I opened garage and salesroom at 640 Main Street, Cincinnati, January 1st, 1902. We were agents for the Searchmont, made in Philadelphia, but this car was a little expensive for our trade and we were looking out for a small car to sell in connection.

In 1903 a man who was representing an oil company came into our office, and during a conversation stated that there was a new car being brought out called the "Fordmobile" in which he was greatly interested because of his acquaintance with Mr. Ford, and upon looking through his grip he found a little catalogue which he gave to me.

Shortly after, I went to Detroit and tried out the "Northern," a single cylinder machine similar to the "Oldsmobile" of that period, and afterward called at the Ford factory on Mack Avenue, which was little more than a shed. Mr. Ford was busy in the shop and James Couzens was practically the whole office.

I made a deal for our territory with Mr. Couzens and purchased a model "A" Ford. This was a double opposed motor 4 x 4 placed longitudinally in the body.

After numerous improvements in the Models F and C, the announcement was made, I believe late in 1905, that Ford would build a four-cylinder car that would sell for $500, and that the new model would be shown at the coming New York show.

It is difficult to imagine at this time the excitement this announcement caused in automobile circles, and among the people who were getting the craze. Such a thing was thought not possible, and Mr. Ford was accused of lying for advertising purposes. The Ford Motor Company, however, kept very quiet regarding the car, only informing the public that the car would be shown as stated.

I arrived at the show on the opening morning and immediately looked up the Ford booth, but to my great disappointment there was nothing on exhibition excepting the old models and I guess I was not the only disappointed one. The car, Model N, arrived the next day and I had the pleasure of helping lift it up. While the platform was elevated sufficiently for the crowd to see it was placed, it was difficult for anyone to get close enough to examine it while the show lasted.

We, like hundreds of others, placed an order for a sample. Deliveries, however, were delayed until late the next summer, and finally, in desperation, I went to Detroit accompanied by Mr. Tom Scott, a young mechanic. I told Mr. Ford that I had come to stay until I got our sample and that we proposed to drive it to Cincinnati, and after two or three days they were so tired of seeing us around the factory that they finally gave us our car.

The engine was so stiff that we were compelled to hitch it behind an old Model B and drag it around with the clutch engaged until we got it running under its own power.

Mr. Ford learned that we expected to leave after luncheon for Cincinnati, in spite of protests that we would "never make it." He and Mrs. Ford with their little boy, who is now secretary of the great company, came down to see the start.

We loaded up with extra oil and started the motor. Mr. Ford called me aside and quietly told me that, owing to the deep sand the entire distance, it was doubtful whether we could get out of the state of Michigan and advised us to go by night boat to Toledo, where we would find good roads south. We refused to take his advice, however, as we had stated that we would drive it through, so amid the cheers of the crowd we started. We made Toledo without serious trouble and spent the night, continuing our journey the next day through rain which stopped us several times, and we arrived in Cincinnati the second day, well covered with mud and oil.

We created considerable excitement on this, the first overland trip of the four-cylinder Ford. I have clippimgs from papers describing this trip. Owing to the necessity of equipping the car with 3-inch tires instead of 2-1/2-inch, the price was advanced to $550, and other improvements later caused the price to be advanced to $600. But our first cars sold at $500.

As nearly as I can remember it was late in the summer of 1906 that, with several others, I was in Mr. Pellitier's office talking of the future of the business and most of us were very much discouraged as we were making no money and could not see what the future might hold.

Mr. Ford was trying to impress us with his ideas, and called our attention to a lady who was at an open window across the narrow street running a sewing machine. He turned to me and asked whether or not I knew the cost of a modern sewing machine and when I pleaded ignorance, he stated that it was less than $9. He also asked at what price, with ordinary shop tools, I could build such a machine.

I told him that it would in all probability cost a hundred dollars and he agreed, and added that it would not be as perfect a machine as the lady was using and which cost less than $9. He continued his illustration by describing the methods of manufacturing the parts rapidly on automatic machines which formed all pieces exactly alike, the hardening and finishing being uniform in every particular, producing component parts that were positively interchangeable so that any part that had been broken or become worn could be secured and placed in position by most any person. This conversation was leading up up to the statement which follows and should settle the question of Mr. Ford's certainty regarding the future.

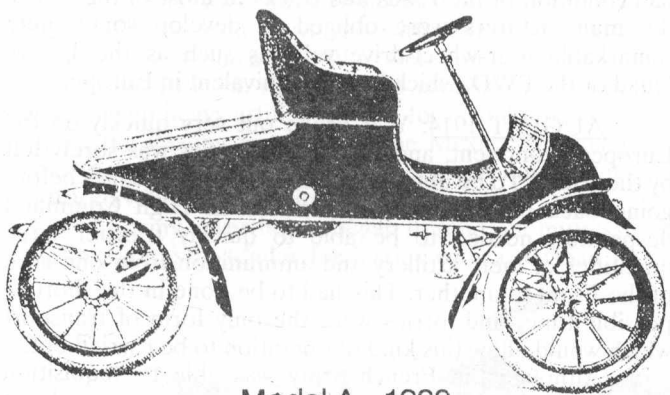
"You gentlemen," said Mr. Ford, "have been accustomed to the slow, tedious cut and fit method that we

have been using in our manufacture of automobiles. This method will not do, the costly automobile will not do. The success of this company depends upon our producing a car that is cheap enough for the salaried man to buy; light enough in weight so that the cost of the upkeep, tires, etc., would not be prohibitive; so simple in construction that the average man could keep it in repair; so perfect and uniform in its components that these parts would be on sale in all hardware stores and could be purchased at as low a comparative price as the parts for the lady's sewing machine. We do not want to cater to the rich man, we should drop the large car (they had marketed two of the larger type, a four-cylinder Model B in 1905 and a six-cylinder 50 horsepower in 1906 or 1907), we will perfect the Model T, design special machinery to produce it at a lower price than any other car on the market and stick to the one model.

"*It is my whole ambition* to build a car that anyone can afford to own, and to build more of them than any other factory in the world."

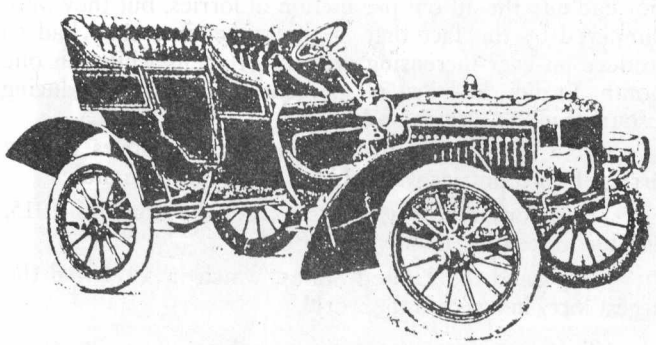
E. C. Shumard,
Eng. U.S. Motor Truck Co.
Cincinnati, Ohio.

THE FORD MODELS MENTIONED IN MR. SHUMARD'S LETTER



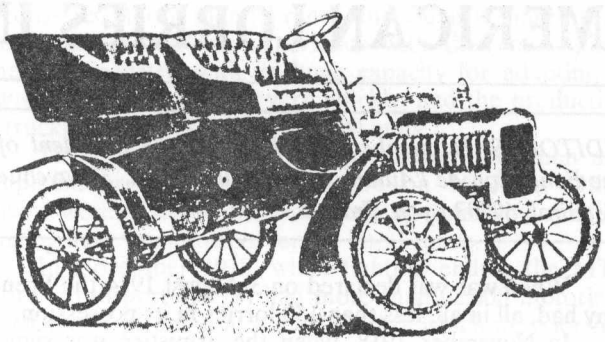
Model A - 1903

This was the first model produced by the present Ford Motor Company (two previous Ford ventures were unsuccessful). It was powered by a two-cylinder opposed 4x4 engine placed longitudinaly under the seat, with planetary transmission and chain drive. Price, $800, or with tonneau, $900.



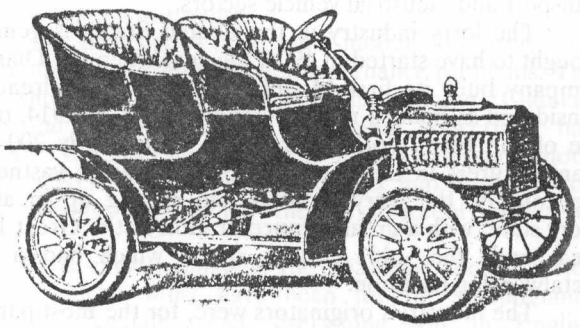
Model B - 1905

The Model B had a four-cylinder vertical engine with shaft drive. At $2,000, it marked Ford's first entry into the higher-priced field. This, along with the six-cylinder Model K (1906-1907) was built at the insistence of Henry Ford's financial backers, despite his opposition. (This situation was corrected later when Ford bought out his major stockholders).



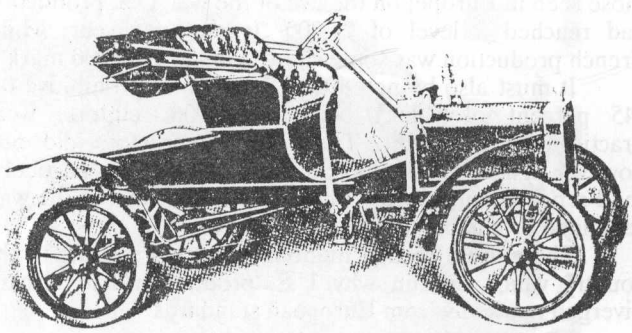
Model C - 1905

The Model C used a two-cylinder opposed engine of slightly larger dimensions (4.25 x 4.25) than the Model A, and the wheelbase was increased from 72 to 78 inches. The C was offered as a two-passenger runabout for $850, or with an optional detachable rear-entrance tonneau for $950.



Model F - 1905

Model F was essentially an improved Model C. Engine size was now 4.5 x 4 inches, and the wheelbase was increased to 84 inches. This model carried a four-passenger, side entrance tonneau, and was priced at $1,000. Introduced as a 1905 model, some were carried over into 1906.



Model N - 1906

Model N was presented at the New York automobile show of 1906. This was the first Ford to use a transverse front spring. Gone forever were the chain drive and the two-cylinder engine which had been features of all previous Ford cars except the large Models B and K. The "N" had a four-cylinder vertical engine of 15 horsepower and a multiple-disc clutch. Originally priced at $500, this figure was soon increased to $600. The "N" was followed into 1907 and 1908 by Models R and S, which were actually the Model N with many refinements. This series of Models N, R, and S were the direct ancestors of the Model T.

AMERICAN LORRIES IN THE FIRST WORLD WAR

by Paul Berliet

EDITOR: SAH member Paul Berliet is the President of the Fondation de l'Automobile Marius Berliet, 39, avenue Esquirol, 69003 Lyon, France.

When war was declared on 3 August 1914 the French army had, all in all, less than 150 lorries in its possession.

In November 1918, when the armistice was signed, there were more than 80,000 lorries and tractors on the French front alone. The French Heavy Road Vehicle Industry had of course performed wonders in increasing its production by 700 percent, but 55,000 American lorries had also been delivered, without which the war would have had a different ending.

This huge mass of equipment, most of which was left behind once the war was over, was to have a radical and durable effect on the French economic situation in the road transport and industrial vehicle sectors.

The lorry industry in the United States is generally thought to have started in 1904, the year when the Diamond company built its first Model T, which could already be considered as being a real industrial vehicle. In 1914, on the eve of the First World War, there were nearly 200 lorry manufacturers in the country. Considering the vastness of the country, the lorry industry had sprung up in almost every state, with a greater concentration in the Great Lakes area and the old eastern states which had a long metalworking tradition.

The industry's originators were, for the most part, car manufacturers whose catalogues included commercial vehicles assembled from chassis, engines, and other components used in the manufacture of their cars. This was the same approach as that followed by French manufacturers such as Renault and Berliet, whose first lorries were directly derived from the bigger cars in their range. Starting from this basis, the U.S. manufacturers gradually built up their production of lorries, and by 1914 had reached production figures out of all proportion with those seen in Europe: on the eve of the war U.S. production had reached a level of 24,000 "trucks" per year, whilst French production was somewhere around the 2,000 mark.

It must also be noted that, because of prohibitive tax (45 percent of value) begun in 1906, imports were practically non-existent. The U.S. constructors did not, however, ignore the European producers, and in particular the French manufacturers who, up until the start of the war, remained a valuable technical reference.

There are a certain number of factors specific to the country which explain why U.S. production had already diverged markedly from European standards:

> The state of the roads (when they existed at all) called for strong, hardy materials to be used.

> It was a pioneering country, with a lot of money in circulation, where nobody was too worried about making things last as long as possible. So, a lorry would be used until it wore out and then dumped because its second-hand value would be next to nothing.

> Only the essentails were considered the necessary, with comfort and looks being seen as unimportant.

> U.S. companies went into long distance road transport at a very early stage; this meant that larger payloads and more powerful engines were needed.

> We must also not forget that in a country that was still the world's largest petroleum producer, fuel prices were incredibly low; in real terms, the price of a litre of petrol in the New York area was about a quarter of the price in the Paris area. Thus an engine's fuel consumption was not considered to be very important.

These factors allow us to understand the main characteristics of U.S. lorries:

> A very sturdy design with a minimum of equipment.

> Very strong components.

> Very "thirsty" engines.

> A large part of the production and the vehicle pool was made up of heavy vehicles (five tons and over).

> It should also be noted that because of the very bad condition of the roads and tracks in most of the states, the manufacturers were obliged to develop some quite remarkable four-wheel-drive vehicles such as the Jeffery Quad or the FWD, which had no equivalent in Europe.

AUGUST 1914: War broke out very quickly on the European continent, and the lack of lorries was sorely felt by the Allies. To be able to hold the Front at all costs before going back onto the attack, the French High Command desperately needed to be able to quickly transfer large quantities of men, artillery and ammunition from one area of the Front to another. This had to be done in the shortest possible time, and lorries were the only form of transport which would allow this kind of operation to be carried out.

Although the French army was able to requisition about 6,000 lorries in the early days of the war, a large number of these had to be left in enemy hands during the retreat after Charleroi.

Although the episode of the Marne taxis was a glorious one, it served only to give a striking example of the dramatic lack of the proper means of transport.

The French lorry factories, of course, put everything they had into the all-out production of lorries, but they were hampered by the fact that at the same time they had to produce an ever-increasing amount of shells whilst, in one month, France had lost 60 percent of its steel-producing resources in the German advance.

So France had to turn to other countries to buy lorries. Two countries were able to meet this demand:

> Italy, which was not to enter the war until 1915, with lorries coming mainly from Fiat.

> and the United States, which in 1914 had the largest lorry industry in the world.

Trade missions, dropping everything, rushed to these two countries straight after the battle of the Marne. As far as the United States was concerned, orders for thousands of vehicles were placed with manufacturers who could deliver very quickly, no matter how different the vehicles ordered were from each other. In all, 12 makes seem to have been ordered, the largest of which were Federal, White, Pierce-Arrow, Mack, Packard, Nash and FWD.

Overall, delivery times were met and the first deliveries reached French ports during November. Largely delivered in crates along with their bodywork and equipment, the lorries were swiftly unloaded and prepared for use, after which they left directly by road to join the various transport sections. By the time the United States entered the war in April 1917, the American manufacturers had already delivered nearly 15,000 vehicles to France. These characteristic lorries, many of them conjuring up images of the wagons used for conquest of the West by their shape, gradually blended in with the vehicles made in France; they posed no problems in convoys at least, since as far as performance was concerned, they were practically identical to their French counterparts, with an average speed of 25 km/h.

They soon became a familiar part of the French war scenery. For a population severely shocked by the invasion of their country, they represented a tangible, comforting sign of the support of a great friendly nation, which was seen as being something of a promised land with enormous resources.

APRIL 1917: The great American nation entered the conflict and threw itself into the preparation of an expeditionary force of 3 million men.

This called for a lot of improvisation since the U.S.A. hardly had an army at all to start with. The country had not seen a real war since the War Between the States and, unlike France, ran no risk of being invaded. Thus, nothing was ready: no heavy artillery, no air force and few lorries, in spite of the lessons provided by the Mexican campaign of 1916. At the time, no theory really existed about the use of motorised vehicles in wartime.

The army nevertheless began to send out impressively large invitations to tender for lorries with a payload up to six tons--120,000 of them! French and English shared their three years of wartime experience with their new allies. American industry, with its huge capacity for adapting to new situations, responded very quickly, and the production of "trucks" in 1917 exceeded 100,000 units.

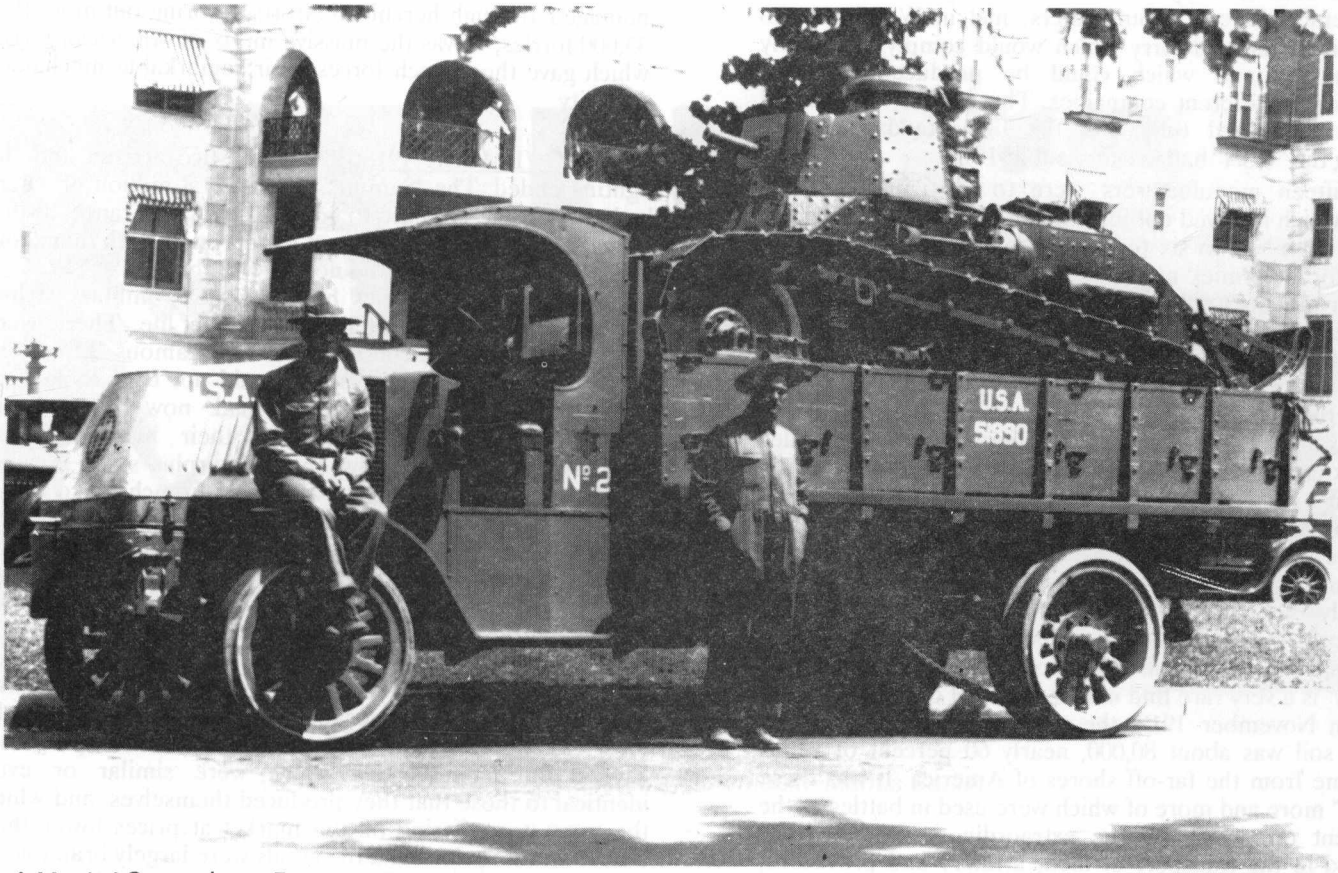
The first convoy of 19 ships packed with men and equipment arrived at Saint-Nazaire on 16 June. Other convoys were to follow without pause up until the armistice, bringing huge quantities of lorries into France.

In November 1918, when fighting ended, the MTC (Motor Transport Corps) had more than 62,000 motorized vehicles in its possession, some 33,000 of which were lorries.

These vehicles arrived in France mainly through Saint-Nazaire and Boudeaux/Bassens, but there were also large deliveries at other ports, and in particular at La Rochelle, Rochefort, le Havre and Marseilles. Vast assembly workshops had been set up in these ports where the vehicles, often delivered in crates, were assembled and prepared for the road. The finished lorries were then formed into convoys and left, fully loaded with military equipment, for the theatre of operations. The route was marked on the maps and the roads taken were lined with road signs written in English.

The diversity of makes and models, however, soon created almost insurmountable maintenance problems. The MTC, who had wisely chosen only three makes (Cadillac, Dodge and Ford) as far as cars were concerned, had brought 23 different makes of light lorries to France, along with 21 makes of 3 ton lorries and six makes of 5/6 ton lorries, without mentioning the 34 different makes of trailers.

It is easy to imagine the headache such a mixed pool of vehicles must have been for the maintenance personnel, especially since everything was in English measurements and it was impossible to find even a



A Mack AC carrying a Renault FT 17 tank

Photo from Fondation de l'automobile Marius Berliet

A 1917 Nash Quad (with onlookers) in France *Photo courtesy of John Conde*

replacement bolt where they were stationed.

Faced with this situation, our allies reacted very swiftly: in the early autumn of 1917, a group of engineers from the SAE (Society of Automotive Engineers), working for several different manufacturers, met in Washington to agree on a standard lorry which would comply with army specifications and which could be produced in large quantities by different companies. The project was carried through in record time and the first standard lorries carrying the "USA" badge came out in 1918.

Fifteen manufacturers were to participate in this project which involved not just one model but a full range of models from two to six tons, intended to meet at least 75 percent of the armies' needs.

In practice, only one model was actually produced, the type B with a payload of 5/6 tons, and even then less than 10,000 units were made, 8,000 of which reached France before the end of the hostilities. Although this model carried the "USA" badge on its front, the "boys" and the French soldiers soon renamed it "Liberty," and it was under this nickname that it was to go down in history.

Just for the record, it appears that the promoters of the standard lorry project had obtained an assurance that, once the war was over, the vehicles which had been built would not be shipped back to the United States. There was obviously the fear that their reappearance would create rather embarrassing after-sales problems among the various partners. It appears that this agreement was kept, since a "Liberty" is a very rare find in its country of origin.

In November 1918, the total number of lorries on French soil was about 80,000, nearly 60 percent of which had come from the far-off shores of America. It was these "trucks," more and more of which were used in battles as the war went on, which by the extraordinary mobility they provided in the transport of men, artillery and provisions, shifted the balance in the Allies' favor and away from the cumbersome German war machine which had to rely mainly on the railways for its transport.

In August 1914, the French army had gone to war with less than 150 lorries, and although the French industry managed, through herculean efforts, to bring out more than 35,000 lorries, it was the massive influx of American lorries which gave the French forces their remarkable mechanical mobility.

NOVEMBER 1918: The Armistice arrived and the fighting ended. The "Sammies," nearly 1.8 million of whom had crossed the Atlantic to come to fight in France, swiftly returned home. The equipment they brought with them, and the lorries in particular, did not go with them.

Many of the lorries had a typically military styling which rendered them useless in civilian life. There were transport costs to be considered for the famous "Liberties," and the American industrialists would not have looked on gladly as the vehicles, which had now become an embarrassment, arrived back on their market. These glorious machines had now become surplus stock–a stock which now included a lot of lorries of French make which had lost their usefulness to the French army overnight–and were gradually let out onto the civilian market through auctions. It was to take nearly ten years to exhaust these gigantic stocks which were far larger than the home or colonial markets of the time could absorb.

The release onto the market of these surplus vehicles was to profoundly change the French economic environment in the industrial and road transport sectors. In most cases, lorry manufacturers were to come up against competition from lorries which were similar or even identical to those that they produced themselves, and which the army was offering on the market at prices lower than their own cost price. And the goods were largely brand new.

This price gap continued to grow over the months

and years as rising inflation pushed up manufacturers' cost prices. Many lorry companies such as De Dietrich and Barron-Vialle were to disappear in this upheaval, or to drop their heavy goods vehicle branches, as Peugeeot did. Berliet, far and away the largest lorry manufacturer during the war years, was able to survive only by extensively diversifying its production, going as far as to the repair of locomotives. Renault also took the road of diversification, throwing everything into the production of small mass-market cars, which were better suited to a country impoverished by war.

This was a very difficult period, as is reflected in the comments of the chroniclers of the time, some of whom went so far as to remind us that the American lorries which had become such a burden on our industry had never paid customs duty!

The war was really over!

But there were also consequences of a very different kind: a lot of American firms who had, in one way or another, delivered goods to France, took the opportunity to settle there permanently. This was the case for not only lorry manufacturers but also makers of components and accessories. Most of them were to remain in France until the Second World War.

Some of those who had adapted U.S. lorries broadened the scope of their activities and gradually became full-fledged manufacturers in their own right, producing ranges of lorries of a size never approached by the French industry.

Among these was Willème who, starting from a basis of the 5/6-ton Liberty lorry, managed to develop a range of excellent heavy goods vehicles. There was also Bernard et Labourier who, starting from the same surplus stock, brought out new products improving the traditional French lorry both in terms of size and performance.

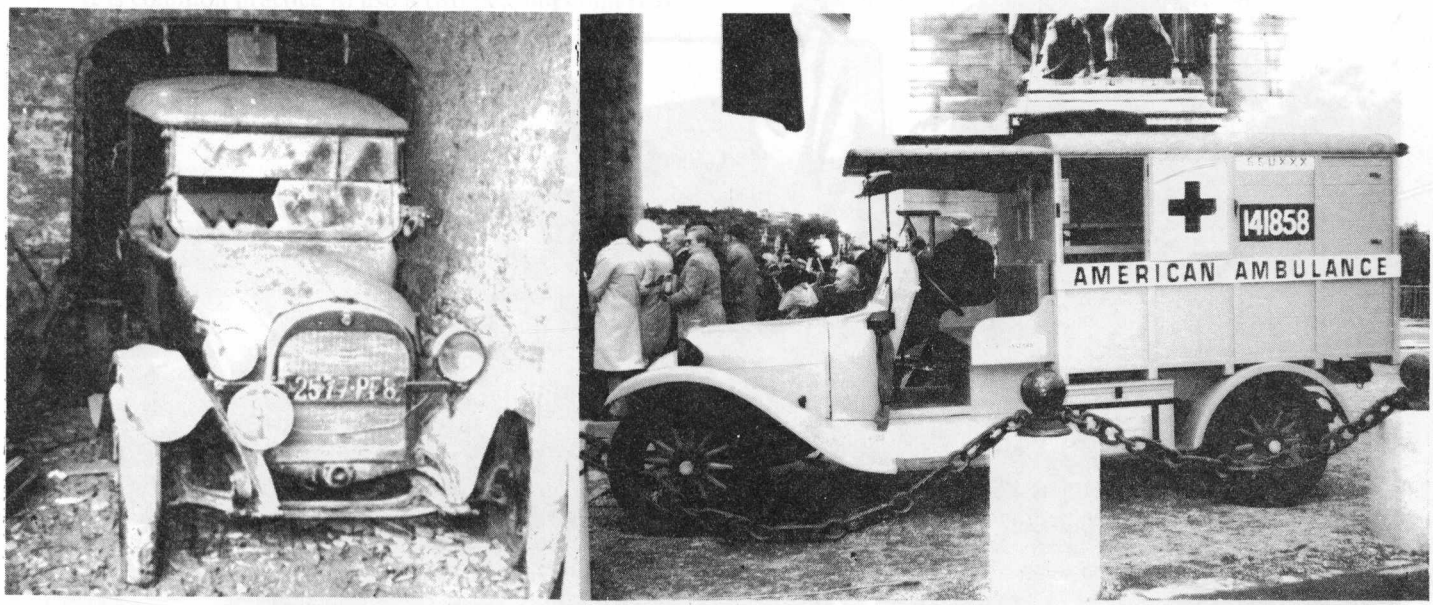
In general, the comparison between French and American products in the field had been rich in lessons for French engineers and manufacturers. First and foremost came the surprising strength of the engines and components used in the American lorries. Although they were built, in the main, by workers who were only semi-skilled, they were made from excellent steel produced from minerals with a high iron content, which are abundant in North America.

The American manufacturers were also equipped with American-made machine tools which were far more advanced than the equivalent French equipment and which were capable of fast, accurate machining. French industrialists quickly learned the lesson, as far as both equipment and raw materials were concerned.

Lastly, for the purpose of classification, it must be noted that, for the greater part, the American lorries landed in France came into the "heavy" category of vehicle. Our allies had gone into long distance road transport long before European countries, and this called for lorries with a high payload, at least for the period, and thus for engines and components which were suitable to the loads carried and the distances covered.

The Americans had already overcome these problems in their immense country, and they demonstrated this in the best possible way by organising regular convoys of fully-loaded lorries between the delivery ports (Borbeaux or Saint-Nazaire among others) and the combat zones, nearly 1,000 km away.

By doing so, they gave long distance motorized transport its spurs in Europe. Five years later, with the development of the pneumatic tyre and the diesel engine, this type of transport was to undergo an extraordinary development, successfully attacking the up to then almost total monopoly of the railways.



A WWI Dodge Brothers Ambulance, as found in a farmer's barn--and after restoration.

Photos from Fondation de l'automobile Marius Berliet

SOME FACTS AND FIGURES

Lorries requisitioned by the French army in 1914	6,000
French production during the war years	37,800
Lorries purchased by France from the USA	15,000
Lorries purchased by France from Italy	5,000
Lorries brought by US Expeditionary Force	33,000
Lorries brought to France by the British army (many of them of American origin)	15,000
	111,800

Of these 111,800 lorries, we can estimate that about 80,000 were left when the armistice was signed in November 1918.

Lorries were, of course, taken out of service, scrapped, or destroyed in one way or another during the fighting. 60 percent of these 80,000 lorries came from America.

Main makes used by the American Expeditionary Force:

FEDERAL - FWD (4x4) - GM - NASH QUAD (4x4) - PACKARD - WHITE
PIERCE-ARROW - REPUBLIC - USA (Liberty)

Restored 1916 Mack AC, as photographed in June 1987 *Photo from Fondation de l'automobile Marius Berliet*

The Golden Oldies

The Hupmobile of 1912

The following article is reprinted with minor editing from Automobile Trade Journal *of March 1, 1912.*

A new, long-stroke, five-passenger touring car selling at $900 is the latest creation of the Hupp Motor Car Company, of Detroit, Michigan. This, like previous Hupmobiles, is of distinctive design. E. A. Nelson is the designer of this new car. The long stroke, which is now quite common and conceded to be the proper thing, is well expressed here, the en-bloc motor being 3.25 inches bore, 5.5 inches stroke, so the stroke overlaps the bore by 2.25 inches, prices are f.o.b. Detroit, Michigan, and equipment includes windshield, gas lamps and generator.

It is quite to be expected of a designer introducing a new model to make use of the en-bloc type of motor, which construction certainly has its advantages, especially for the lower powers. This new Hupmobile motor is neat in appearance and the valves are enclosed, which is the practice now followed by the majority of designers of the 1912 cars. Such disposition makes for quiet action, and the elimination of noise is both essential and demanded. Compression in this new engine is medium, and care has been exercised in the design to insure ample water jackets which are formed integral with the cylinders.

The valves are all on the left side. They are of large diameter, have alloy steel heads and carbon steel stems which operate in long guides.

Pistons are fitted with three compression rings, and the wrist pins are secured in the connecting rods and thus have the advantage of increased bearing surface on the piston bosses. The drop-forged connecting rods have four alloy steel bolts in reamed holes to retain the bearing caps.

It is common practice to use a two-bearing crankshaft in a small unit, but here there are three main bearings, the crankshaft forged of special high-carbon steel. The crank pins and main bearings are 1.5 inches in diameter, except for the rear main bearing which is 1-9/16 inches. Crank pin and main bearing bushings are made of bronze lined with special bearing metal. They are split in the usual manner and easily adjusted. The shaft may be reached through a large hand hole in the bottom of the crankcase.

The power plant in this new, long stroke Hupmobile is a unit, the upper section of the crankcase and the gear case being cast integral. Alloy aluminum is the material used. The bottom of the crankcase is pressed steel, which serves the purpose very well without adding materially to the weight. It extends to the side members of the frame, supporting the unit and also serves as a tight dust pan.

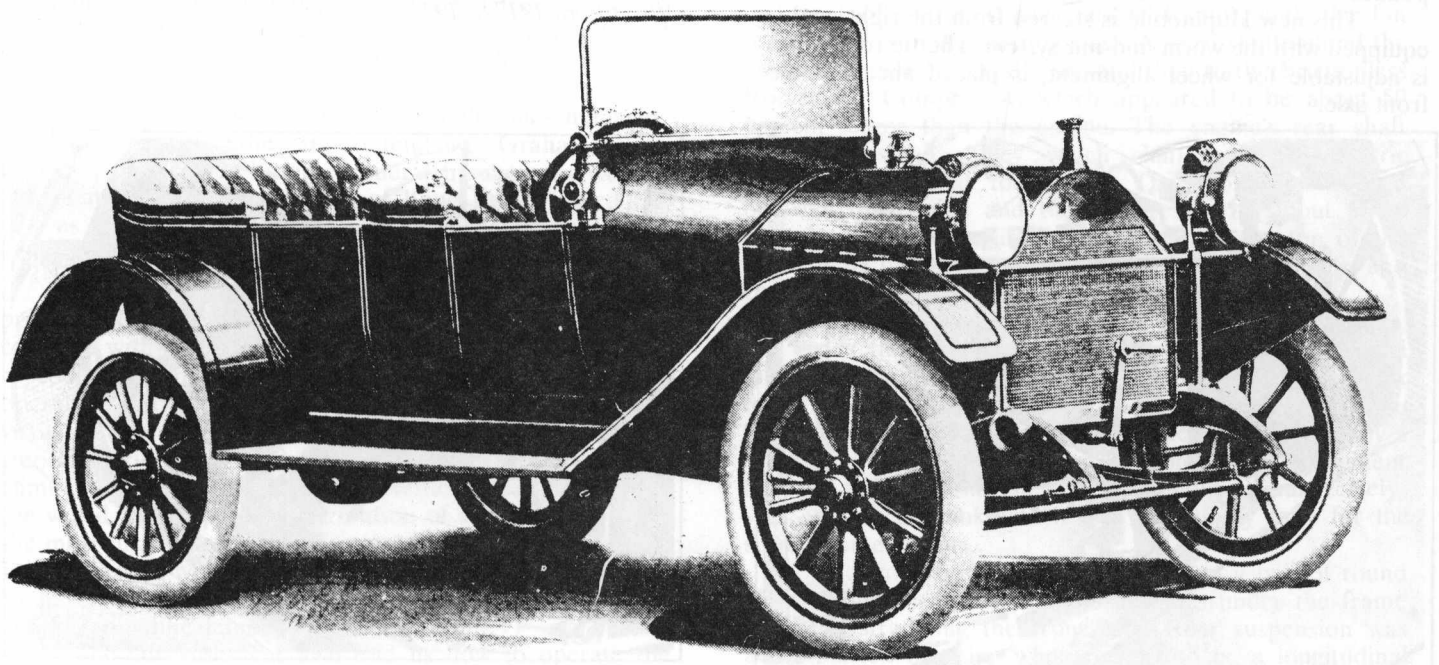
The clutch is of the multiple disc type with 13-inch plates of tempered saw steel, fully enclosed and operating in oil. The clutch thrust is taken by a thrust bearing, and the springs are readily adjustable. A clutch brake is fitted which prevents the member from spinning after disengagement and spares the gears when shifting from one speed to another.

The flywheel is fully enclosed at the rear of the crankcase and is anchored to the crankcase flange.

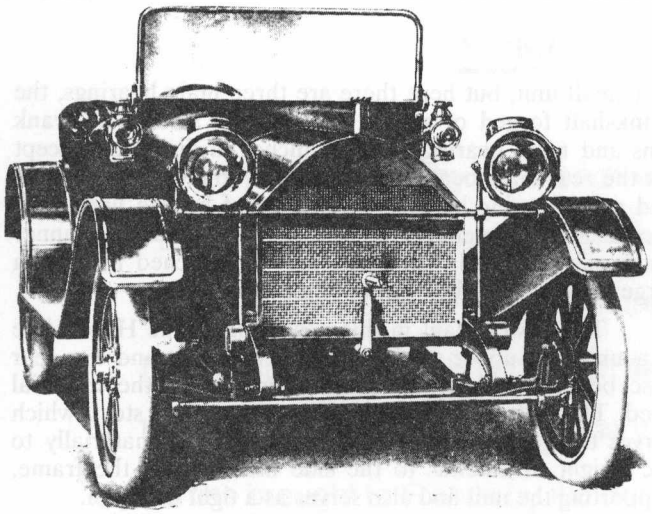
The selective transmission affords three speeds forward and one reverse. High duty ball and roller bearings are used throughout

The sliding shaft having four integral keys is 1.5 inches in diameter, and the universal joint is of the trunnion block type such as is being used on the best of high-priced cars. A torque tube encloses the propeller shaft and is tapered with a ball at the front end, which seats in a spherical socket at the rear of the gear case.

The rear axle is a full floating assembly. The bevel gear is made of open-hearth steel of the highest grade, and the pinion of the best grade of alloy steel, carefully hardened to insure smooth and quiet action.



This Hupmobile (Model 32) was announced in 1912 and continued, with seasonal improvements, into 1915. Total production of this model exceeded 25,000 cars, of which 5,791 were built in 1912, and which quickly earned a reputation as durable and reliable automobiles. It was probably the first American car to have an all-steel body, preceding the Dodge Brothers by more than two years.



Front view of car showing method of holding the gas headlamps, the steering tie-rod ahead of the front axle, and the self-positioning crank handle. In 1913 and later, Westinghouse starting and lighting was available.

The front axle is a drop-forged I-beam section of high carbon acid open-hearth steel. The steering knuckles are formed integral with the axle and the wheel spindles are 1.5 inches in diameter, with the high-duty steel roller wheel bearings.

The frame is made of pressed carbon steel and is 42 inches wide at the rear; 28 inches at the front. Mid-section depth is 3.5 inches with a 1.5 inch top flange and 2.5 inch bottom flange.

The front springs are semi-elliptic, 34 x 1.75 inch alloy steel leaves with bronze bushed eyes. The rear spring is the Hupmobile cross type which has been successfully featured on previous models.

The wheels are wood, artillery type, with the rear wheels having twelve spokes; front wheels, ten spokes. Tires are 32 x 3.5 inch clincher type. Wheelbase is 106 inches; tread, 54 inches. The car weighs approximately 1900 pounds.

This new Hupmobile is steered from the right, and is equipped with the worm-and-nut system. The tie rod, which is adjustable for wheel alignment, is placed ahead of the front axle.

Engine cooling is by the thermosyphon system with cellular radiator. The water pipes are 2.25 inches in diamater. An 18-inch ball bearing fan is mounted back of the radiator, and is belt-driven.

Ignition is from a Bosch high-tension magneto, driven through a Coventry silent chain. The magneto is located under the dash at the top of the toeboard, yet is quite accessible.

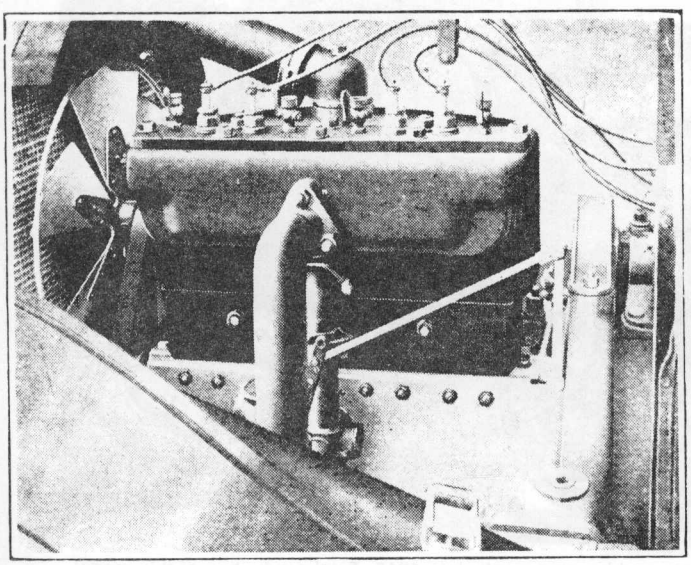
Engine lubrication is circulated by the flywheel which runs in oil, lubricant being lifted by centrifugal force and delivered to the main and connecting rod bearings through the drilled crankshaft [see also *SAH Journal* No. 111, page 5]. This system also delivers oil to the clutch and transmission bearings.

There are two sets of brakes, internal expanding and external contracting, 12 inches in diameter and 2 inches wide. The service brakes are the contracting bands; the emergency the internal expanding.

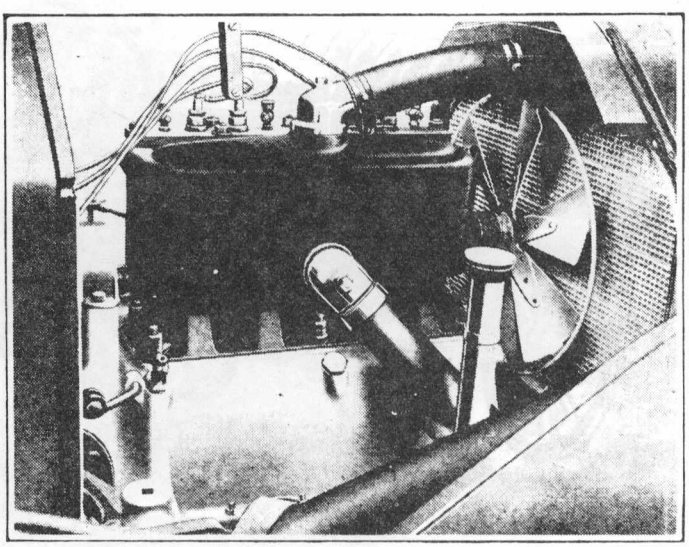
Gears are shifted by the usual hand lever which is located in the center of the car as is the emergency brake lever. The clutch and service brakes are worked by the usual pedals, and between these is the foot accelerator. Spark and throttle levers are under the steering wheel. The fuel tank is placed in the cowl, and fuel feed is by gravity.

Bodies are made of sheet steel stamped to shape. The front seat is 41.5 inches wide and 17 inches deep; the rear seat is 41.5 x 20 inches. The running boards and full splash aprons are of similar material. The starting crank is carried in a vertical position, which does away with the usual boot or sling. The fore doors afford ample protection for both driver and passenger. Five persons can be seated in this car.

The Model 32 Hupmobile was designed by Emil A. Nelson who, with Robert C. Hupp, had also designed the first Hupmobile, the very successful Model 20. Hupp left the company in 1911 and went on to found the R.C.H., Hupp-Yeats, Monarch and Emerson, all short-lived. Nelson, who had also served with Oldsmobile and Packard, launched the Nelson, a four-cylinder car with overhead camshaft, made in Detroit from 1917 to 1921.



Left side of engine. The mounting bracket for the magneto, which is accessible from the inside of the passenger compartment, is visible at the right, atop the flywheel housing.



Right side of engine. The support block of the ignition wires was hung from the radiator tie-rod.

The Four-Wheel-Drive AIRMOBILE

Jim Valentine (Our Man in Los Angeles) has sent this article about the Airmobile, a car designed to run on compressed air. Jim is a member of the California Chapter of SAH, and has done a great deal of research concerning early automobiles, especially those made in southern California, and has also been a frequent contributor to the SAH publications.

Many of the early self-propelled vehicles used steam or electric power as a part of the then-continuing search for the "right" method of propulsion. Other unusual means were also suggested, promoted, and sometimes actually constructed, such as springs, compressed air and even liquid air designs. Engineers in both Germany and the United States experimented with liquid air before the turn of the century. Hudson Maxim (any relation to Hiram Percy Maxim?) conducted experiments with the handling and use of compressed air for propulsion, using a calculated value of 1000 pounds per square inch as a reasonable figure. In 1899, J. H. Hoadley, of the Boston firm of the Hoadley-Knight Company, agreed to supply the city with a test vehicle using the compressed air system. The Rotary Air Brake Company, 209 South Main Street, Los Angeles, was founded in 1911. Ernest D. Foster was president; Charles R. Harris the vice president; Herbert C. Steele was secretary and treasurer; and Albert T. Stedman was their auditor. Steele was also treasurer of the Mechanical Educator Company at 408 South Main Street. Soon Oliver B. Graham had joined the firm as chief designer, and Rutherford G. Goldman as an engineer.

In 1913 their offices were moved to 108 West Second Street in the Higgins Building, quarters they then shared with the Mechanical Educator Company for whom Foster, Steele and Harris were then president, vice president, and secretary-treasurer respectively, along with their other functions with the Rotary firm.

The 1914 Los Angeles auto show program and the Los Angeles Times newspaper both listed the firm as an exhibitor in the show with a product undefined and undescribed. The show ran from January 5 through January 10.

About this time Stedman was made sales manager, Goldman became the superintendent, Graham their engineer, and Foster became general manager as well as president. Charles W. Verden of Long Beach joined the firm as salesman. Stedman was regularly seen about town demontrating their rotary air brake.

The February 1914 Santa Monica Road Race program, kindly lent me by SAH member Claud Neal, was centered with a two-page advertisement for the Airmobile, reproduced herewith, is a drawing of the chassis plus operating instructions and a list of the car's astounding virtues: "The lightest car in the world in its class; the smoothest riding car in the world; the most marvelous hill-climber in the world; the first scientifically designed car in the world, giving proper distribution of weight and power; the most luxurious and satisfactory car in the world, at any price." (Strong words, these, for a firm which did not seem to have a finished vehicle, though its engines had been running in public demonstrations).

The advertisement also told us how to operate the car: "Move the throttle lever forward which lets air from the tanks into the air motors on all four wheels. To reverse, push the pedal down half way. To stop, push the pedal all the way down; that makes brakes out of the air motors. The power plant is automatic, burns crude oil, is extremely light and vibrationless, and simply keeps the tanks supplied with air at a uniform pressure, and requires no attention whatever from the driver.

"There is no limit to the speed or hill-climbing possibilities of the Airmobile. If you want more speed or more power, simply open the throttle wider. The perfection of the Rotary Principle by the Company makes possible the Airmobile. Output for 1914 sold already. Order now for 1915 deliveries."

The car was advertised as a five-passenger or roadster type at $1,000, or as a seven-passenger type. The ad indicated that "All Airmobiles will have Streamline Bodies and full standard equipment. A postal card will bring you Catalog and Story of the Rotary." This was offered by the Rotary Air Brake Company, 601 Higgins Building, Los Angeles, Calif. Phones Main 743 or F1688.

The plan view drawing of the chassis showed a rather straight frame with a slight narrowing just aft of the front wheels. Its radiator was used as a structural crossmember at the front, immediately forward of the axle. Gusseted crossmembers appeared near the center of the car at the steering wheel position, and another a few inches in front of the rear axle. A smaller-section subframe, just inboard of the main frame, bore the rotary air compressor and engine, and some of their accessories. Both compressor and engine served as crossmembers of this subframe.

One fixed crossmember appeared at the front of the subframe, mounted to the main frame on round air cushions at each side. These were supported by brackets on the inner side of the main frame rails. The rear corners of the subframe were likewise suspended on single air cushions mounted to brackets attached to the underside of the main frame.

Their Frictionless Rotary Engine was mounted near the front of the subframe (engine frame), with the fan projecting out in the usual fashion. A short shaft behind the engine led to a universal joint, and then to the Frictionless Rotary Air Compressor, which appeared to be about 50 percent larger than the engine. The engine's rear shaft carried a small pulley which shaft-drove an electric generator, mounted to its left. The subframe widened between the engine and the compressor by about 18-20 percent. A water manifold led back from the top of the radiator to fittings at the top center of both engine and compressor.

Suspended below the first and second crossmembers, just inside the main frame rails, were two long cylindrical tanks about nine or ten inches in diameter and five or six feet long. The left one was the service tank; the right one the reserve tank of compressed air. These were joined by a small pipe with a flow valve to control air movement between them. Behind the rear axle, mounted transversely, was another air tank which was the supply tank for the suspension elements.

The front suspension was limited to a pair of round air cushions, mounted on opposite sides under the frame rails and straddling the front axle. Rear suspension was accomplished by using what appears to be a longitudinal leaf spring at each side, beneath which two of the round air cushions straddled a bracket atop the rear axle housing.

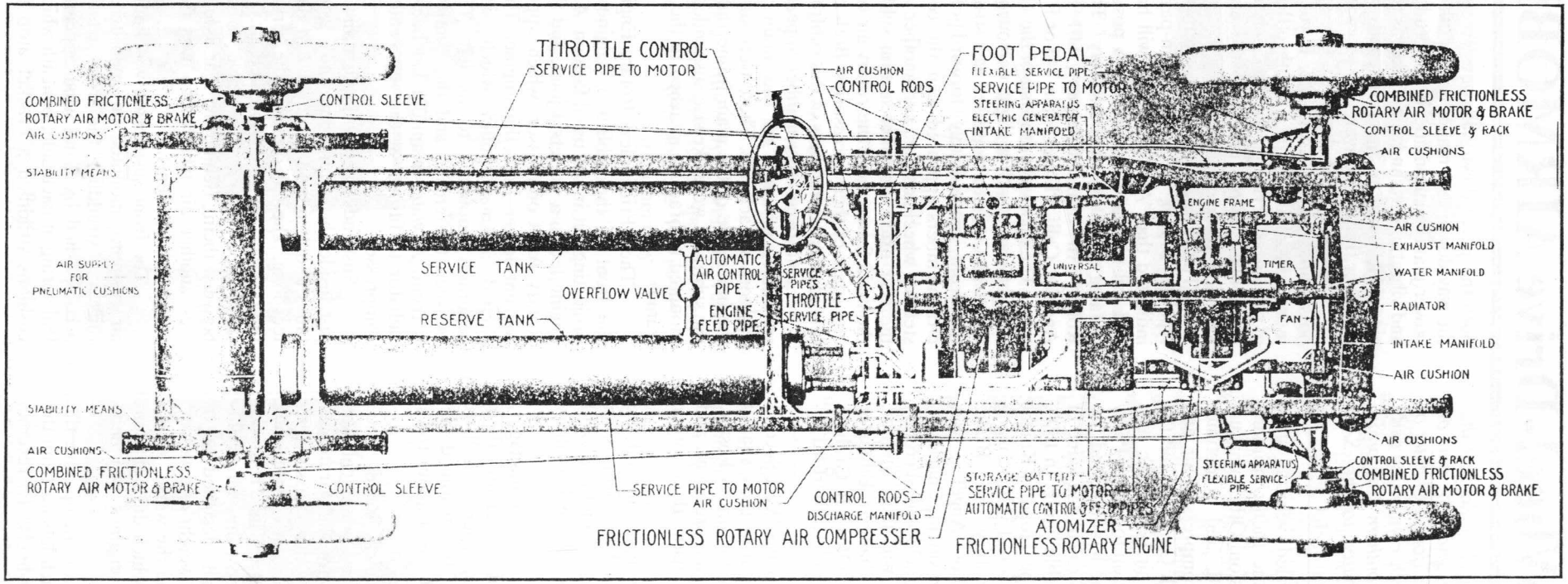
AIRMOBILE

Four Wheel Air Drive Car

Using Frictionless Rotary Engine and Compressor and combined Air Motors and Brakes. Eliminating crank, and cam shafts, fly wheel, clutch, transmission, differential, levers, springs and friction brakes.

Reducing weight and cost, and giving the most simple and flexible drive ever known, traction and braking on all four wheels, pneumatic cushions and tires, reducing vibration to a minimum.

Revolutionizing the Motor Vehicle Business



TO OPERATE THE CAR

Move the throttle lever forward which lets air from the tanks into the air motors in all four wheels.

To reverse, push the pedal down half way.

To stop, push the pedal all the way down; that makes air brakes out of the air motors.

The power plant is automatic, burns crude oil, is extremely light and vibrationless, and simply keeps the tanks supplied with air at a uniform pressure, and requires no attention whatever from the driver.

There is no limit to the speed or hill-climbing possibilities of the Airmobile. If you want more speed or more power, simply open the throttle wider.

The perfection of the Rotary Principle by this Company makes possible the Airmobile.

Output for 1914 sold already. Order now for 1915 deliveries.

ADVANTAGES OF THE AIRMOBILE

The safest car in the world.
The simplest car in the world.
The easiest operated car in the world.
The most marvelous hill-climber in the world.
The first scientifically designed car in the world, giving proper distribution of weight and power.
The most luxurious and satisfactory car in the world, at any price.
The fastest car in the world.
The lightest car in the world, in its class.
The smoothest riding car in the world.

Five Passenger or Roadster type - - - - - $1,000
Seven Passenger type - - - - - - - 2,000

All Airmobiles will have Streamline Bodies and full standard equipment.
A postal card will bring you Catalog and Story of the Rotary.

ROTARY AIR BRAKE COMPANY

601 Higgins Building, Los Angeles, Calif.
Phones Main 743 F 1688

These leaves were mounted above the frame rails, immediately outboard of these rails. The company's description of the car's unique features indicated that springs had been eliminated, and the leaf springs were labeled "stability means."

Each of the car's four wheels had a Combined Frictionless Rotary Air Motor and Brake installed at its inner side. These had circular control sleeves at their inner sides, actuated by long control rods from a transverse central shaft which was operated by a foot pedal near the floorboards.

Compressed air from the service tank was piped through a throttle valve, linked to a control on the steering wheel. This valve was in the center of a transverse pipe which supplied the service pipes running inside the frame rails to feed the air motors mounted at the inner side of the wheels.

The reserve tank was fed by pipes from a pair of outlet ports on the right side of the air compressor. A smaller pipe led from the same tank to the intakes of the rotary engine at the front, and also on its right side. At left center was the engine's exhaust pipe which, though broken away in the drawing, probably leads to the left-center intake manifold of the compressor behind it. Another smaller pipe led from the front of the service tank to the rotary engine, an automatic air control pipe. The entire arrangement was a closed-loop system.

Looking at the drawing of the chassis design, we see the "frictionless rotary engine" driving a "frictionless rotary air compressor which feeds the service and reserve tanks, which in turn supply the "frictionless rotary air motors" at each wheel. The dictionary defines "engine" as "a machine for converting any of various forms of energy into mechanical force or motion." "Motor" is "one that imparts motion" or "a small compact engine," or "a rotating machine that transforms electrical energy into mechanical energy." In the IEEE electrical dictionary, "motor" is "a machine for the purpose of producing mechanical power or mechanical torque or force by means of a rotating shaft or through linear motion." An "air brake" is "a brake operated by a piston driven by compressed air." It would appear, from analyzing these definitions, that the "engine" up front drove the air compressor behind it, which compressed the air that filled the tanks. These tanks supplied air to the "motors" at the wheels which converted the energy into rotary motion by causing the wheels to turn.

1915 found two attorneys joining the firm: Samuel B. Smith as its counsel and Ralph W. Schoonover as its general counsel. By then, Charles Verden had also become involved in the Mechanical Educator firm. Later in the year, Rotary moved to larger quarters at 1013 South Los Angeles Street, along with the Mechanical Educator Company.

In November a press release went out describing the rotary engines as ready for the market. The engineering had been done by Foster, Goldman, Graham and Harris, using design, study and experimentation to evolve their principles. It had taken a year to develop the designs, two more to build and test before publicly demonstrating their air engines and brakes.

Rotary indicated that several engines were on "dynamic display" (running) at its plant. $50,000 worth of tooling would be installed and in production by the end of the year to begin producing its new product. This was called the "frictionless rotary engine," and would run on compressed air, steam, gas or water. It was claimed to be usable as either a creator or transmitter of energy, or could be used as an air brake. Later in the year the firm name was changed to Rotary Products Company, Inc.

In December they advertised the availability--wholesale only--of the "Diverglo" accessory for automobiles which, attached to the front of a vehicle's headlights, would eliminate headlight glare by means of a series of "tapered blades and diverging angles." Four main features were listed: (1) cuts off the glare; (2) gives better driving light; (3) complies with all laws; and (4) its the tapered blades. This accessory could be seen at your dealer or at their factory.

In 1916, control of the Mechanical Educator firm was passed to separate persons, with Foster, Steele and Verden concentrating on Rotary Products and civil engineer Charles Harris leaving to start his own company. The renamed Rotary firm also began advertising under the category of engine builders, most notably gas engines. With Harris gone, Schoonover took over the vice presidential slot. Samuel B. Smith also left, to give counsel elsewhere. The next year Albert Stedman left but William H. Brown joined in an unspecified capacity.

In 1918 Schoonover became first vice president and general counsel. Verden was second vice president and sales manager. Charles W. Beers joined as third vice president and assistant manager, and Fred Gillett joined as secretary. Brown became the treasurer and Herbert Steele moved to the job of purchasing agent.

By 1920, Ernest Foster was also involved in the music business as secretary-treasurer of the C. R. Foster Company, Inc., music publishers. William Brown also joined as vice president. By then Beers and Gillett were gone; Verden was doing double duty as assistant secretary of Rotary; Steele was secretary as well as purchasing agent. Rotary was now advertising in the categories of air brakes and air clutches, but not gas engines. Also available were air compressors and air-driven industrial trucks. This last item lends credibility to the listing of SAH member Professor Donald F. Wood of San Francisco State University showing Rotary as a commercial vehicle producer in *Wheels of Time* magazine, March/April 1983.

Whatever the product line was, the end was in sight as indicated by the persons leaving, joining other ventures, and assuming multiple positions within Rotary. Rotary Products Company, Inc., was gone by early 1921. I have found no definite indication that the firm completed any passenger automobiles.

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I would like to thank SAH members Ralph Dunwoodie and Claud Neal for assistance in the preparation of this information.

UPPERCU'S ULTIMATE FOR THE UPPER ECHELON

- by Keith Marvin -

Back in the golden period of individualism in automobile design, roughly the decade-and-a-half between 1915 and 1930, there were many rare and wonderful motorcars plying the highways and byways of the United States. Not only were there a huge number of manufacturers producing all sorts of cars in every price range, size, and quality of performance, but there were the custom designed models for the affluent, the fanciful and the eccentric to whom cost was secondary to ownership of the esoteric and the arcane. Some of these were truly beautiful; others were not.

It was a time of froth and festival, when the wealthy and famous frequently went out of their way to have automobiles of individuality constructed, and where there were many examples of Cadillacs which resembled Pierce-Arrows, Pierce-Arrows which looked like Rolls-Royces, or any number of likely or unlikely combinations. Perhaps the most flashy of these were spawned by the Don Lee Studios of Los Angeles, designed by Harley Earl for stars of the silent screen. These were interesting automobiles. Some of them were exotic. All of them commanded attention.

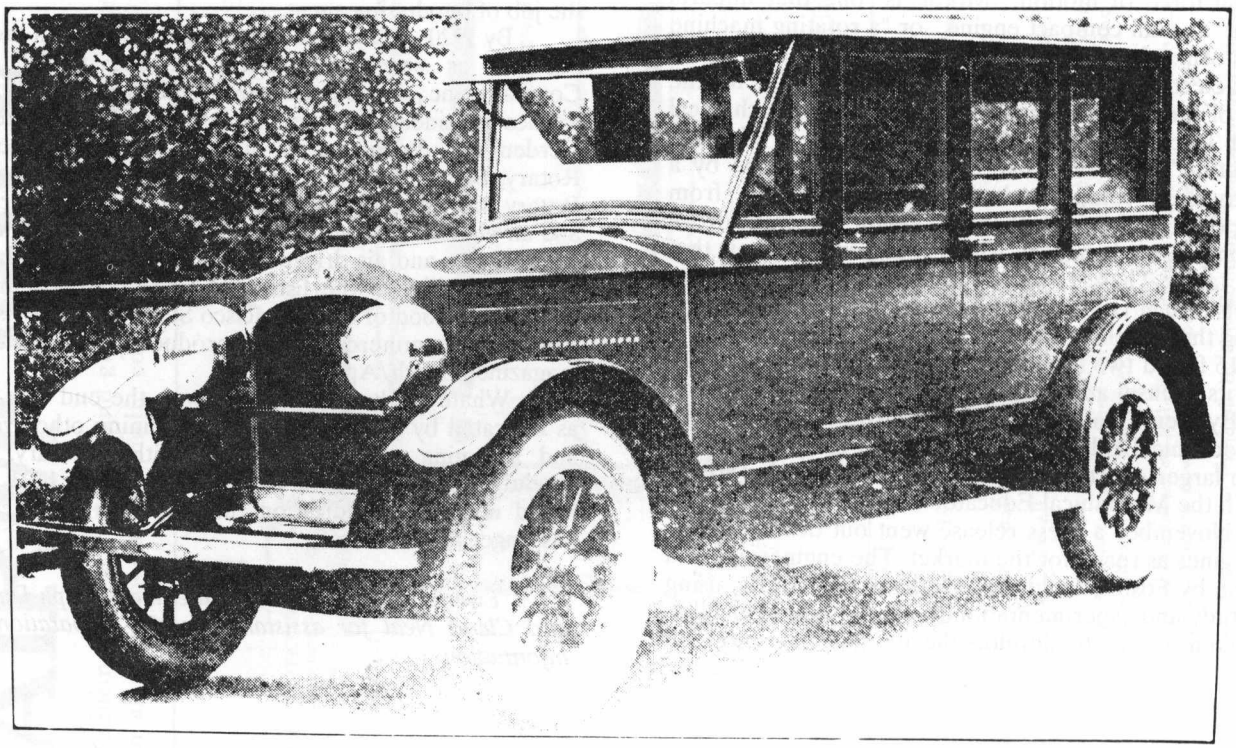
Among the more interesting custom-built automobiles at this time was the line which was sold by Inglis M. Uppercu on special order. Uppercu was a highly successful Cadillac dealer in New York City, president of the Uppercu Cadillac Corporation and subsequently president of the Detroit Cadillac Motor Car Company, also both of New York. He was greatly interested in aircraft, and headed the Aeromarine Plane and Motor Corporation with a factory at Keyport, New Jersey. In 1921 he acquired the staid and respected coachbuilding firm of Healey & Company in New York City.

Healey & Company had been in business since the 1890's and was highly regarded as a carriage builder in the horse-drawn days, but had turned to custom automobile coachwork early in this century. It was Healey which built the striking one-off front-drive touring car for J. Walter Christie in 1905 when Christie was considering the augmentation of a passenger car line to his already established front-wheel-drive racing cars. Subsequently Healey coachwork would be seen on Cadillac, Packard, Stevens-Duryea and other established and expensive chassis. Later, Healey would produce the first airport bus bodies for Uppercu's Cadillac company and then merge with the latter's Aeromarine Bus Company (nee Aeromarine Plane and Motor Company) around 1926. In 1922, however, Healey was still occupied with custom work on quality chassis, most of which was designed by J. R. McLauchlen, who headed the body department at Uppercu's New York City headquarters..

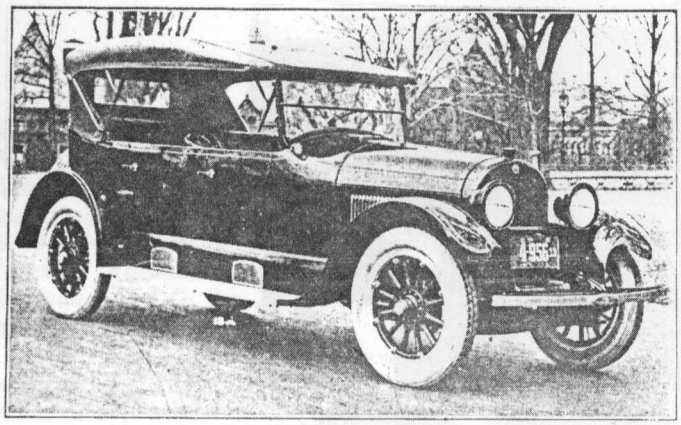
About 1921, Inglis Uppercu decided to add something with a little more originality than the current Plain-Jane lines Cadillac offered. Uppercu's Cadillac business, of course, centered primarily around the standard Cadillac--solid, dependable and unimaginative as it was--and business was flourishing; but there was a snag, and this lay in the stolid appearance of the Cadillac itself.

Back then there was no specialty line available such as the Cadillac Fleetwood or the V-16--no `High Church' custom bit to attract the individual who really wanted a Cadillac but who also desired something a little more exclusive than the run-of-the-mill workhorse, called Type 61, and later Type V-63.

With his acquisition of the Healy concern, Uppercu was planning a jim-dandy solution--a customized Cadillac with special coachwork and a few added furbelows here and there.



Early Uppercu Cadillac limousine built in late 1922 or early 1923.



The conventional Cadillac of the 1922/1923 era had a painted radiator shell. The Uppercu cars' radiator shells were nickel plated.

At the time, the shape and style of a radiator had a great bearing on the appearance of any automobile. In some cases it could make or break a car, and toward this end this new design was focused. Whether Uppercu actually designed the radiator or it was designed for him is unknown, but it was unique, especially in its square lines so different from the mass-produced Cadillac. It was fashioned by Hollander & Morrill of Amesbury, Massachusetts, an early custom-body firm which had done some pretty fancy work itself since 1908.

In place of the conventional but rather dull Cadillac painted shell, the new design was substituted. The outer line simulating the square cooling system favored by Rolls-Royce and its stable of imitators. The inner line curved toward the top, giving the overall appearance of something tasteful and yet unique among its peers. And, deviating from the conventional painted shell, the new design was nickeled, which added to the clean lines of the Healey designers and craftsmen, offered a handsome car which exuded both quality and good breeding, free of any ostentation.

And Inglis Uppercu didn't overdo the effect, either, although there are reasons to believe that some of his dealers may have added certain embellishments, especially to the radiator badge in which the Uppercu name and address may have been present.

In New Zealand historian Maurice D. Hendry's excellent book, *Cadillac: Standard of the World,* (Princeton Publishing, Inc., Princeton, N.J., 1973) he writes: "Many Cadillac dealers found that customers often preferred special badges, and sometimes they could even get away with listing locations of large agencies....

"This unique device was done in myriad colors in jeweler's cloissone, and does revert in many ways to the original trademark, with its floweret wreath (dropped after 1924 on standard badges), seven-point crown, and long-necked merlettes or swans."

A sketch accompanies this passage showing such an emblem on which is printed "DETROIT CADILLAC MOTOR CAR CO., INGLIS M. UPPERCU, DISTRIBUTOR, 59TH ST. & BROADWAY, N.Y."

Whether this badge was used or only designed, I don't know. I saw only one of the Uppercu Cadillacs and this was fifty years ago, a phaeton, parked in front of the Red Lion Inn at Stockbridge, Massachusetts. I cannot recall whether there was any difference in the badge but somehow I think that if there had been a difference, I would have noticed it because I looked at it closely, trying to determine what make of car it was. By the same token, the 1923 sedan pictured in this article carries a badge which doesn't appear to be round, which was de rigueur for Cadillacs of the time. Thus, a special badge might have been used on some of the cars, and it may have graced many of them, in which case my lack of memory may be attributed to the less-than-complete memory of a 13-year-old boy. My only other recollection of that radiator is that it suggested that of the Jordan without being quite like it. Too, the car was considerably larger than its Cleveland stablemate.

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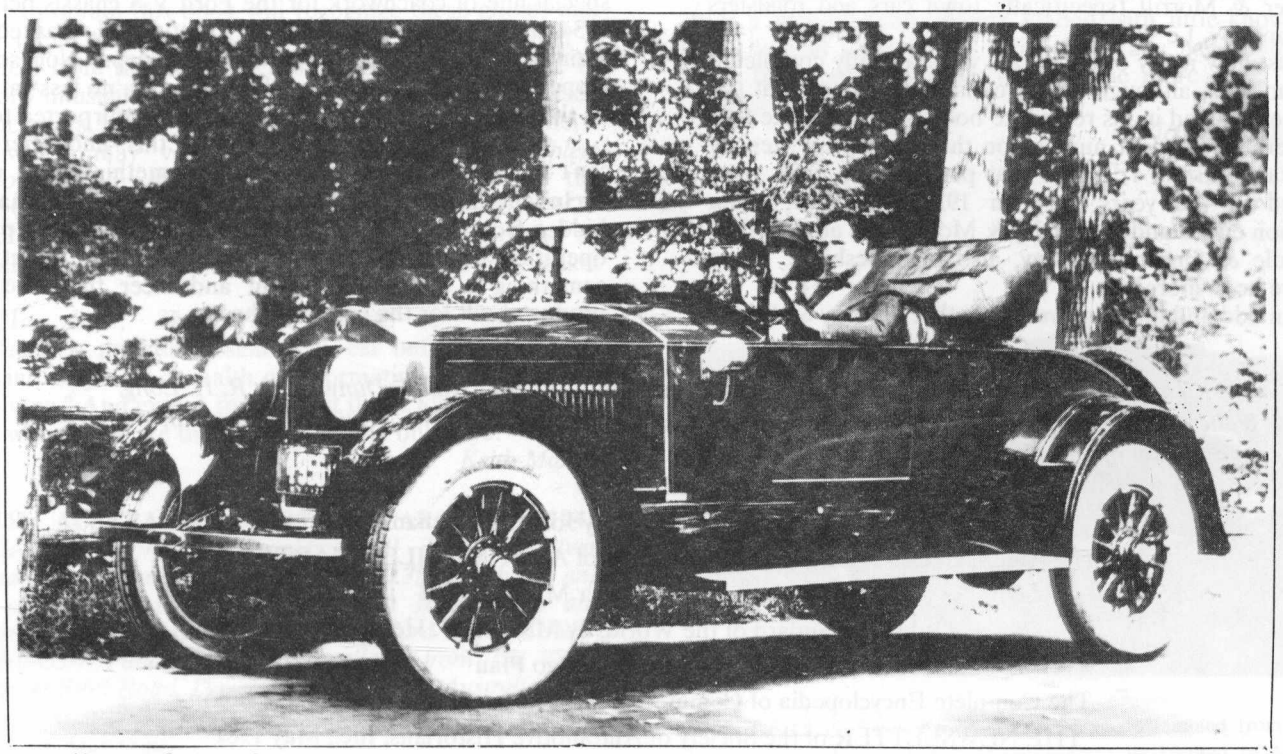
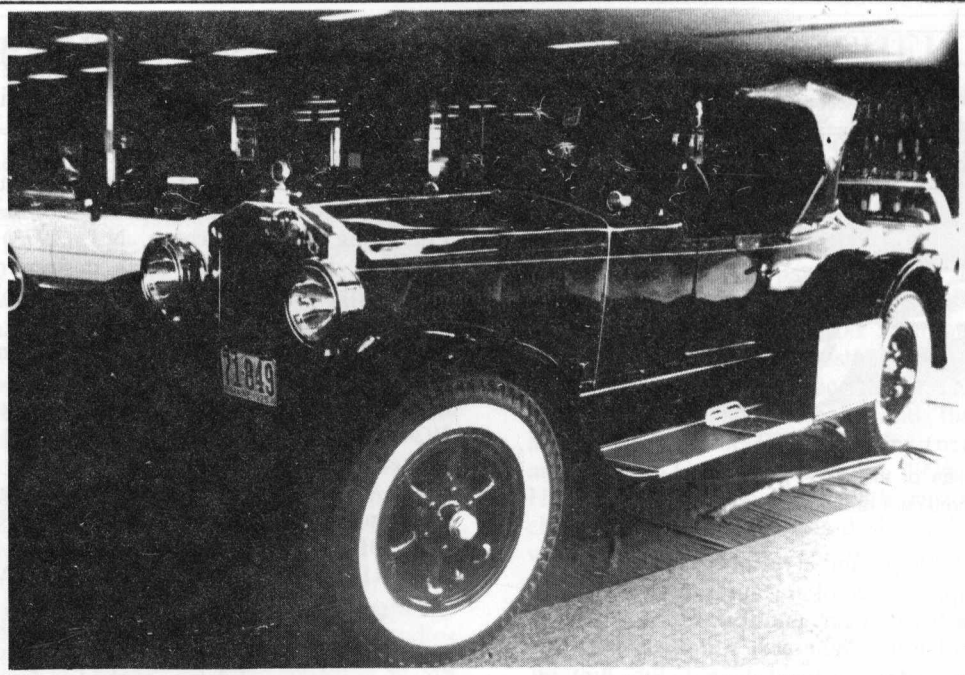


Uppercu-Cadillac Sport Roadster. Note that the license number is dealer's plate 4-956, which was assigned to the Uppercu Company. The same number appears on the standard Touring Car shown at the top of this page.



This Bay State straight-eight roadster carried a radiator identical to Uppercu's Cadillac cars. Some of Uppercu's bodies had the conventional Cadillac radiator.

Though the cars were never common, a considerable number of them were made, or at least enough to satisfy the demand. In Sgt. John F. Brennan's *Automobile Identification* (Scientific American Publishing Company, 1924), in which the sedan, shown here, appeared, the compiler considered the Uppercu Cadillac common enough to be illustrated and explained alongside the conventional model. And the picture shows what a handsome car it was!

But the sedans and limousines, although the first custom Cadillacs produced under the Uppercu aegis, were not the only body styles available, and the cars were built at various locations: at the home turf in New York City; at the airplane-cum-bus works in Keyport, New Jersey; at Hollander & Morrill (specifically town cars and roadsters there); and by Le Baron.

Just how many of these cars were actually completed I have no idea, although Sgt. Brennan's insistence that the model be included in his reference book would indicate that there were a sufficient number on the road to be seen by the average citizen. I'd guess that perhaps 100 units were marketed in the years between 1922 and 1925, when production ended and Hollander & Morrill was absorbed by the Biddle & Smart Company, also of Amesbury. There may have been more.

An odd and little-known fact is that the Bay State car, produced in nearby Framingham between 1922 and 1925-6, is also known (in at least one case) to have used the identical radiator which had graced the Uppercu specials. The car in question, a roadster, owned by the family that bought it in 1925, is completely restored and in Maine today. This is one of the Bay State straight-eight models of which few were made, and which differ in many ways from the earlier sixes. All of the Bay State straight-eights may have been equipped likewise. The question is: did the Hollander & Morrill connection apply solely to the radiator, or were the cars built there?. We shall probably never know.

It is an interesting reflection on the times, and a study in the indivduality of people. When Brewster produced a special line of coachwork for the Ford V-8 chassis between 1934 and 1936, the coachwork pretty well masked the identity of what was otherwise "tin deep." Not so the Uppercu Cadillac. It was Cadillac--no more, no less--at least on the surface. It wasn't much more than it purported to be.

There was a certain honesty in this, and whereas I can't argue with those who wanted something even more exclusive with, perhaps, the true identity of the machine hidden from view, I take my hat off to the Cadillac-Uppercu operation, such as it was. Nothing to crow about; just something a little bit different and nicer than the base product, built for the common throng.

The author would like to express his appreciation to Philip Dumka, Ralph Dunwoodie, R. H. Long, Walter M. P. McCall, Frederick D. Roe and Hayden R. Shepley for their collective assistance in the compilation of this article.

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THE NEWSLETTER of the Society of Automotive Historians, Inc., May 1981

THE UPPER HUDSON VALLEY AUTOMOBILIST. December 1960 and February 1963

BOOK REVIEWS

THE WORLD GUIDE TO AUTOMOBILE MANUFACTURERS, *by Nick Baldwin, G.N. Georgano, Michael Sedgwick and Brian Laban. 544 pages, 950 color and black and white illustrations. Hardbound, 9" x 11.5". ISBN 0-8160-1844-8. Facts on File Publications, New York, NY and Oxford, England, and available from Motorbooks International, P.O. Box 2, Osceola, Wisconsin 54020. 1-800-826-6600. $50.00.*

This book has been underway for the last several years and is a study of 1,000 different makes of cars over the years, or approximately one quarter of all makes built since the inception of the motorcar in our society. In choosing their subject matter, the authors have included all makes which were in business for ten years or more as well as such other considerations as mechanical innovations, special designs and myriad other reasons. And if the result gives us a mixed bag, it is a most attractive, revealing and interesting mixed bag.

The work is primarily the result of a triumverate of historians, although the late Michael Sedgwick has been credited as both mentor and coordinator of it. The book was printed in Yugoslavia and it is outstanding in appearance, general format, binding, and "one of those books you sort of don't want to lend to your friends."

Illustrations consist of mostly photographs, but both black and color ads are interspersed which give the work a nice balance.

There are minor errors here and there, as one might expect in so ambitious and comprehensive a project (e.g. Duesenberg appears under Auburn as an Auburn "S 1," a Chandler touring car is designated as a Case, and the first six-cylinder Essex is identified as the "Essex Super Six," a term which was reserved exclusively for its Hudson parent of the era).

But these are minor things, as anyone with the interest to obtain this book will recognize these glitzes and slough them off accordingly. Personally I have learned a great deal from this work because of the focus on some of the more unusual and interesting cars which I've bypassed over the years. I regard the project as a very valuable one; a book which may very nicely augment *The Complete Encyclopedia of Motorcars* by Nick Georgano and the Kimes-Clark *Standard Catalog of American Cars 1805-1942.*

Perhaps the most salient (and sensible) reason for its ownership has best been summed up on the rear dust jacket thusly:

"In short, *The World Guide to Automobile Manufacturers* provides researchers, car buffs and students of the industry with a wealth of information in one easy-to-use volume." And except for the fact that I loathe that word "buff," whoever wrote those words hit the bulls-eye!

Keith Marvin

SOUTH AUSTRALIAN MOTOR CARS 1881...1942, *compiled by George H. Brooks (SAH #98) and Ivan Hoffman. Hardbound, 130 pages 8.5" x 10.75". 117 black and white photos plus five color plates and 16 drawings and diagrams. National Library of Australia Card No. and ISBN 0-7316-0485-7. Published by and available from The Vinall Family, 95 Strut Road, Dover Gardens, South Australia 5048. Price (in Australian funds) $29.95 plus $4.35 packing and postage (surface mail).*

This book claims to be nothing more than a scrapbook containing what is known, to date, concerning the passenger automobiles and the commercial vehicles which "even if not wholly made in South Australia were peculiar to that state." But what an elaborate scrapbook it is!

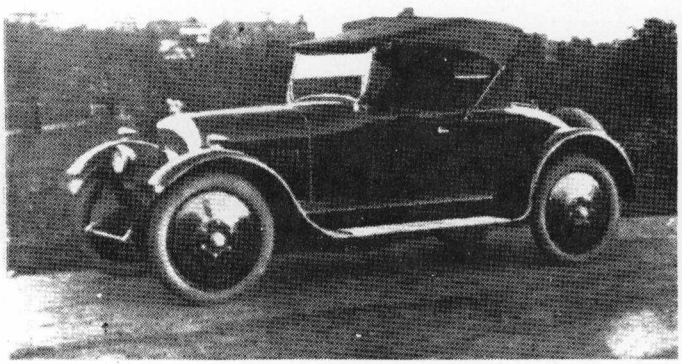
Printed on fine glossy paper, its pages include photographs of cars dating back to the beginnings of the industry and powered by steam, electric, and internal combustion power sources. The photos are, for the most part, very good reproductions, with a few in the "fair to poor" category which is to be expected in a collection which dates back to the 19th century. In most cases these are pictures of cars of which no others exist, and even poor pictures are better than none at all.

No less than 125 brand names are listed in this book. Many were one-of-a-kind machines, built and registered by their owners and subsequent owners over a surprising number of years. Others, produced in some quantity, were assembled cars built from standard components made abroad, usually in England or the United States. The Besst, a product of May's Motor Works in Adelaide, consisted of an Australia-made body on a chassis supplied by Crow-Elkhart of Elkhart, Indiana, U.S.A., who supplied chassis or even complete cars (rebadged, of course) to other would-be auto makers. (At least one chassis was shipped to May's still bearing a "Birch" nameplate.)

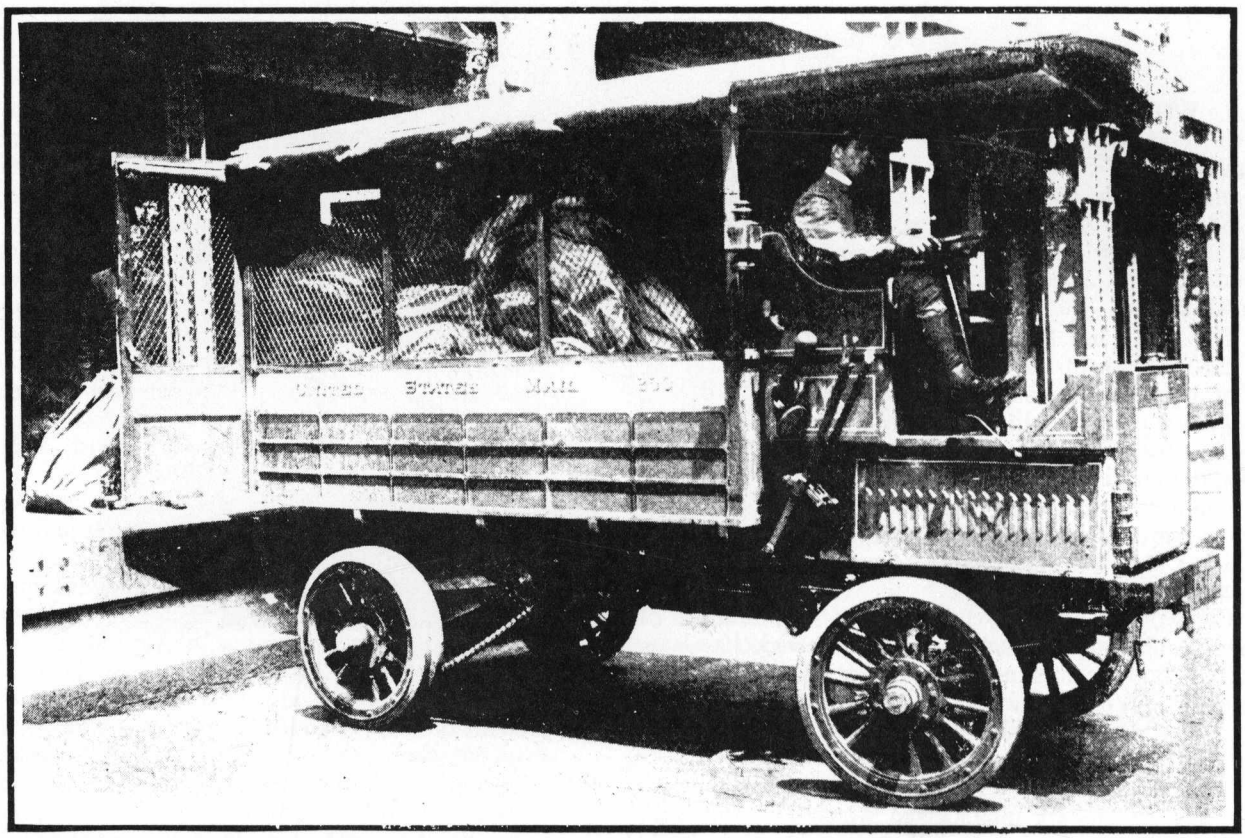
Several electric vehicles are pictured and described in this book. "Both" electric vans were made at Adelaide from 1941 to 1943. These were quite modern-looking three-wheeled vehicles with their electric motors mounted above the single front wheel, an idea pioneered by Cugnot back in 1769. This arrangement is clearly shown in a patent drawing included in the van's description.

South Australian Motor Cars 1881...1942 should be a most welcome addition to any automotive historian's library. It is a well-planned volume loaded with little-known and hard to find information. Open it to any page and you'll soon find yourself turning to "just one more page" before putting it down.

Richard B. Brigham



14/40 HP CHIC ROADSTER. The Chic was assembled from British components and Australian bodies by "Chic" Cars Limited, of Adelaide, South Australia, from 1923 to late 1926.



ALCO MODEL 2-T TWO-TON-TRUCK. This vehicle, manufactured by the American Locomotive Company, of Providence, Rhode Island, was one of a fleet of 80 ordered in the first half of 1913 for the New York City Post Office. Its 10-foot bed provided 34 square feet of loading space, propelled by a 32 horsepower four-cylinder engine at a speed of about 17 mph. The chassis, which weighed 4,500 pounds, was carried on solid tires, 36 x 4 inch in front, 36 x 3.5 inch dual at the rear. 1913 was the final year of production of this truck, for in September of that year the American Locomotive Company withdrew from the manufacture of automobiles and trucks, with a promise that parts and service for existing vehicles would be available for at least five years.

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