



# AUTOMOTIVE HISTORY *Review*

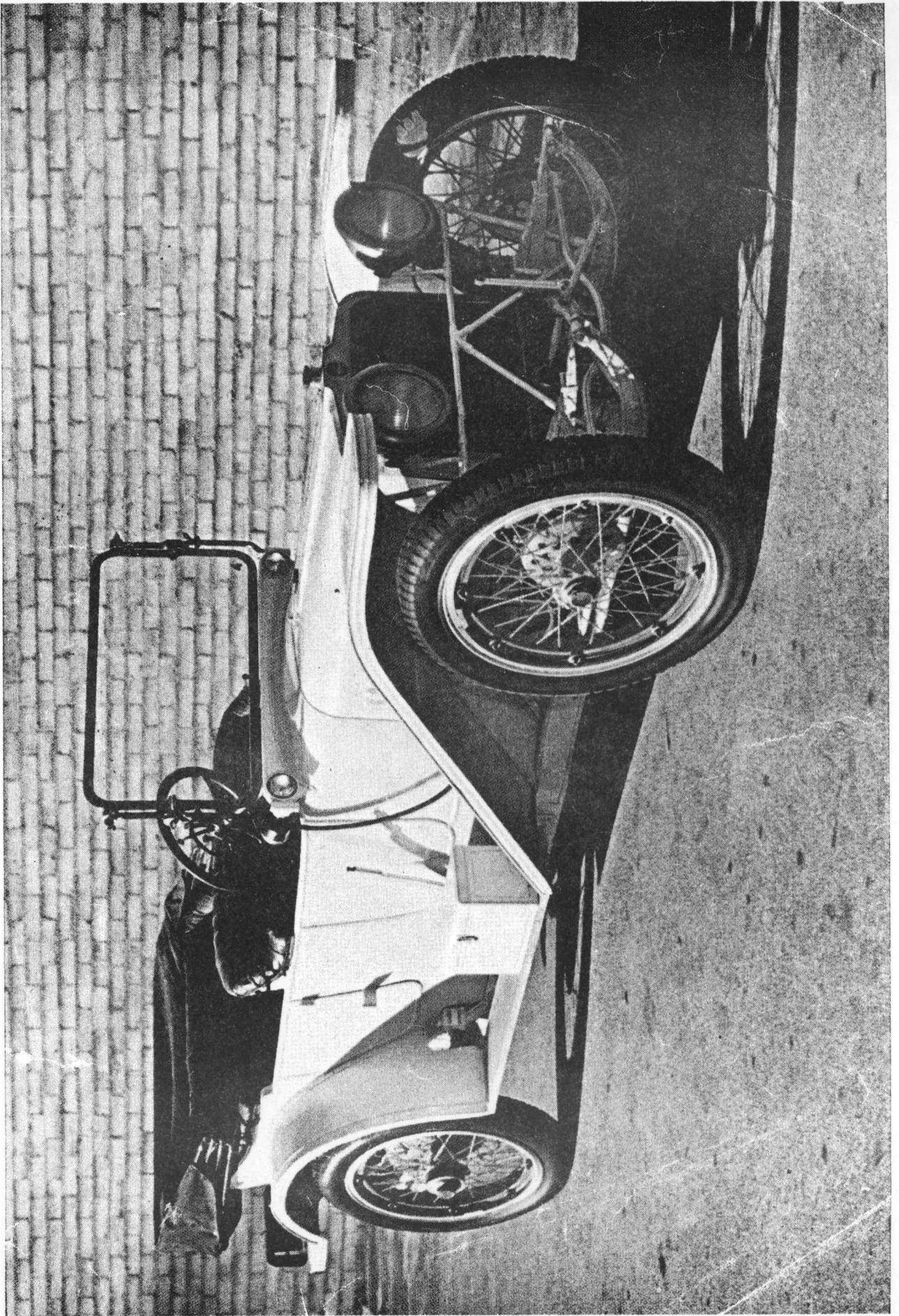
SPRING, 1976

ISSUE NO. 5



CHARLES W. NASH, 1864 - 1948

*The Society of Automotive Historians*





# AUTOMOTIVE HISTORY *Review*

A PUBLICATION OF THE SOCIETY OF AUTOMOTIVE HISTORIANS  
RICHARD B. BRIGHAM, EDITOR

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## CONTENTS

EDITORIAL PAGE.....	2
VIEWPOINT.....	3
CHARLES W. NASH.....	6
THE AUTOMOTIVE INDUSTRY, 1909.....	9
1909 PRODUCTION FIGURES.....	10
THE DEVELOPMENT OF MOTO METERS.....	12
OCEAN TO OCEAN, 1912.....	25
THE FRONTMOBILE.....	28
IDENTIFICATION REQUESTED.....	30
THE FADGL FLEXIBLE CAR.....	32
THE PENN SERVICE CAR.....	32

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The Society of Automotive Historians, Inc.

## THE COVERS -

FRONT - Charles W. Nash, about 1930. Picture from the files of the Automobile Manufacturers Association.

BACK - Jeffery advertisement, from THE AUTOMOBILE, March 18, 1915.

INSIDE FRONT - 1913 American Underslung, Picture from the files of Brigham Press.

INSIDE BACK - 1907 Aerocar, Model D. Enlarged from a postcard in the collection of Richard Sagall, Toledo, Ohio

## EDITORIAL COMMENT

### IN THIS ISSUE ---

#### FRONTMOBILE -

From SAH Member R. A. Wawrzyniak, Berlin, Wisconsin, an interesting item on the Frontmobile car has been received. The author of this account, however, is a non-member, Arthur B. Graisbury, of Audubon, New Jersey. Pictures sent with the manuscript were of the copy-machine variety, barely acceptable for reproduction, but a phone call to SAH Treasurer Fred Roe produced quick results. Fred knew that SAH Member Harrison Bridge had an original Frontmobile brochure in good condition, and asked him to loan it to us. Within a few days a well-insured package arrived containing the folder, and pictures from it are included with the article. Needless to say, the folder so willingly loaned by Harrison Bridge has been returned to him, equally well insured.

Mr. Graisbury's article may bring additional correspondence. In his writing he refers to the one car of which he knew personally as the "one and only" Frontmobile, but there is a sprinkling of evidence that several cars were built. Many years ago in *Road to Yesterday* magazine we ran a series of pictures of New Jersey cars, and one of these was a photo of a Frontmobile roadster. Mr. Graisbury refers to a touring car, as pictured in the folder. Our roadster picture was from the collection of the late Alexander Telatco, and the source is unknown.

Rumor says that a number of Frontmobile Delivery Cars were made. And there is another rumor that a Frontmobile car still exists in an antique auto museum. Any solid information which will confirm or discredit these rumors will be welcomed.



#### OCEAN TO OCEAN -

About two years ago we received from Nick Georgano, of the National Motor Museum at Beaulieu, Hampshire, England, a package of eight photos of unidentified American motor cars. These pictures were reproduced in Issue No. 2 under the heading "Identification Requested". To date we have only two positive identifications, plus one "maybe". These are: Picture No. 1 - Lexington; Picture No. 6 - Pope-Hartford; Picture No. 3 - Pope-Hartford?, maybe. Picture No. 8, which at first glance appeared to be easiest of all, drew several wild guesses, none of which were even close, for reasons which are now apparent.

Early this year we received from SAH Member Harry Mann, of Cleveland, Ohio, a letter concerning No. 8 with which he enclosed a set of three pages taken from *The Horseless Carriage Gazette*, November/December, 1958. Here was the whole story of this unusual car along with several photographs, including the one we printed.

A letter to Fred Hayward, Editor of *The Gazette*, requesting permission to reprint this entire article, brought an immediate and favorable reply. That was followed by a letter from Richard Phillip, author of the original article, who also expressed his approval.

The entire story is reprinted in this issue directly from *Horseless Carriage Gazette*.



#### THE MOTO METER STORY -

SAH Member Harry Pulfer, who probably knows as much about Moto Meters as anybody, has compiled a mass of information concerning the history and development of this device which was, without doubt, the most successful and long-lived auto accessory ever made, with the possible exception of the auto radio and the speedometer.

This material has been in the hands of the Society for a long time. There is so much of it that it could not be used in the newsletter, and after discussions between the editors of the newsletter and this magazine, it was decided that the story should be presented in two parts. SAH Member Grace Brigham took this project under her wing and has devoted uncounted hours to additional research, as is indicated by the list of 60 references (and this is only Part One!).

In a letter included with the original material, Harry Pulfer says, "This is just one of the inventions which was such an outstanding success in the formative period of the automobile's development. Others that were the right thing at the right time included Gabriel Shock Absorbers, Watson Stabilators, windshields, rear-view mirrors, demountable rims and demountable wheels and bumpers. All of these things originated as accessories which had to be purchased as "extras".

Perhaps some of our members would be interested in doing a bit of research into the history and development of some of these items, to be shared on these pages with the rest of us.



# VIEWPOINT

COMMENTS OF OUR READERS

## THE DUESENBERG PLANT

*Frederick D. Roe, Holliston, Mass.*

CORRECTION! Please be advised that John Willys did not control Duesenberg Motors Corporation. This company was the creation of men primarily associated with the American Can Company and functioned in 1917-18-19 in premises first supplied by American Can on their property in Edgewater, New Jersey. As war work expanded they built - presumably with government backing - a plant on 9½ acres at North and Newark Avenues in Elizabeth, New Jersey. When the war ended the Duesenberg brothers had had their fill of big business, and the Can men apparently saw no way in which the business could continue profitably in the big plant without government contracts. Therefore, the rights to the 4-cylinder side-rocker-arm Duesenberg engines which they had planned to continue in the building, were sold to Rochester Motors Corporation, an existing business which had been making airplane parts during the war. The Duesenberg brothers converted whatever interest they had in the corporation to cash and took off on their own, operating out of a small shop a mile or two up the street until they arranged the formation of their new corporation. This left the plant and some equipment, plus what would now be known as the "corporate shell" consisting of the name "Duesenberg Motors Corporation" and whatever legal rights went with it. The plant, etc., is what was purchased by the Willys Corporation in 1919. I have suffered considerable eyestrain reading Elizabeth newspapers of the period on microfilm machines at the library there and find no evidence of Willys involvement prior to that. This plant still exists with further enlargements added by Durant. I have been trying to research this period of Duesenberg history for a long time and have found no connection with Willys at all, except for the above purchase, but the story keeps popping up.

.....

The Duesenberg-Willys-Durant plant at North and Newark Avenues in Elizabeth, N.J., as it appears today. I took several more of this plant but this one seems to show how the place stretched along Newark Avenue for a great distance. I suspect much of the length in the background was added by Durant, and the front brick portion as well as the part out of the picture to the right was the original Duesenberg Building. - *Fred Roe.*



## PRODUCTION FIGURES

*Richard Langworth, Hopewell, N.J.*

Serial number spans (AHR #4) really confirm or prove nothing. Companies such as Cole, Packard and countless others commonly allotted spans for models which were rarely exactly filled in practice. Dr. Croll's figures, backed by his eminent Cole research, should stand - if for no other reasons than that and the fact that they are specific, until proven otherwise. Can't we stop relying on secondary sources of information, compiled long after the fact, or at least treat them with a degree of skepticism? Hope so.

*Editor's Note: We completely agree that serial number spans prove nothing, and in our note which followed the letter in question we said, "Serial numbers are an admittedly unreliable source for production figures...." However, the figure in question, 1920 Cole production, was not based on Dr. Croll's research, but was taken, as stated, from Business History Review, September, 1956 - 36 years after the fact. The figure given by James Dalton, editor of MoToR, was published in 1925, just a few months after Cole production ended.....*

## U.S. LONG DISTANCE

*John Peckham, Troy, New York*

Just a quick note on that U.S. Long Distance item in Issue No. 4. First, it was not uncommon in the early days to refer to a full tank of gasoline as a "charge" of gasoline. This could be what is meant in the ad. Second, I seriously doubt that a car weighing 950 pounds and priced at \$900 could have been an electric, since the weight and price do not seem right for a vehicle with heavy and expensive batteries.

.....

## IT'S A THOMAS

*George Risley, Detroit, Michigan*

Re the picture at the bottom of page 19, AHR No. 4, the car shown is a Thomas of 1903-04. I think Mr. Coey was the Chicago distributor for this car in those days. Sorry I'm not a member of the Society but I work in the automotive collection at the Detroit Public Library which makes me a sort of close relative.

.....

AUTO POSTCARDS

Richard J. Sagall, Toledo, Ohio

As a new member of the SAH I was very pleased to receive my first copy of Automotive History Review. I found it both enjoyable and well put together. I have one question - what is the distinction in function between the Newsletter and the Review? Except for size, both seem to have somewhat similar material.

In your editorial you ask if AHR should be a quarterly publication. You can count on one vote "yes". After saying that I feel I should help in any way I can to supply articles and other material for the Review, as I would guess the hardest thing with the venture is getting articles for publication.

My special interests in the automotive field are auto postcards, auto slogans and auto "firsts". I have a collection of over 5000 postcards which range from 1900 up to 1976. They are of cars, trucks, factories, dealerships, race cars, fire engines and anything else that fits this general area.

I have been compiling auto slogans for the past few years. I have thousands of them that have been used by auto makers from the early years to the present.

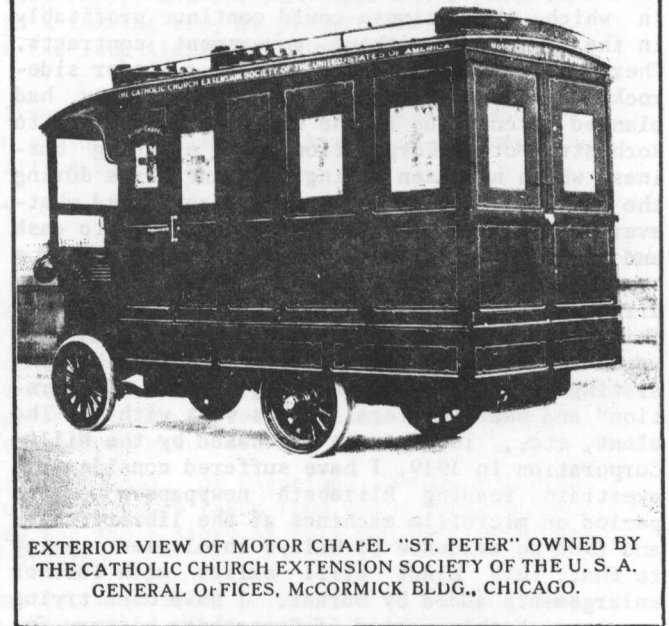
My third, and newest, area of interest is the automotive "first", and I have a small file of them which might be of interest. For example, according to what I have found, the first car with air conditioning was the 1938 Nash. The first car on Antarctica was a 1908 Arrol-Johnson driven by Sir Ernest Shackleton (for a picture and description of this car see Newsletter No. 23, February, 1972. - Ed.), the first highway department was organized in New Jersey in 1891, etc., etc.

If you feel that an article on any of these topics would be of interest I would be glad to try my hand at writing one.

Editor's Note: Several of Mr. Sagall's postcards are reproduced herewith, and the Aerocar photo on the inside back cover is an enlargement of one of them. The offer to contribute an article is most welcome. The similarity of material in the two SAH publications is obvious, and would make a good topic for discussion at any SAH meeting. An accurate list of "firsts" would be of historical worth and should result in a lively exchange of opinions and references.

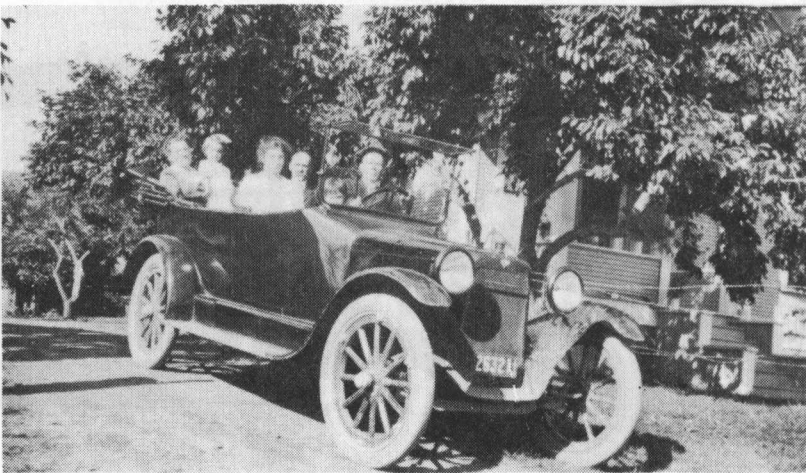


SOLEMN HIGH MASS ON MOTOR CHAPEL "ST. PETER" ON A RANCH NEAR BROWNSVILLE, TEXAS.



EXTERIOR VIEW OF MOTOR CHAPEL "ST. PETER" OWNED BY THE CATHOLIC CHURCH EXTENSION SOCIETY OF THE U. S. A. GENERAL OFFICES, McCORMICK BLDG., CHICAGO.

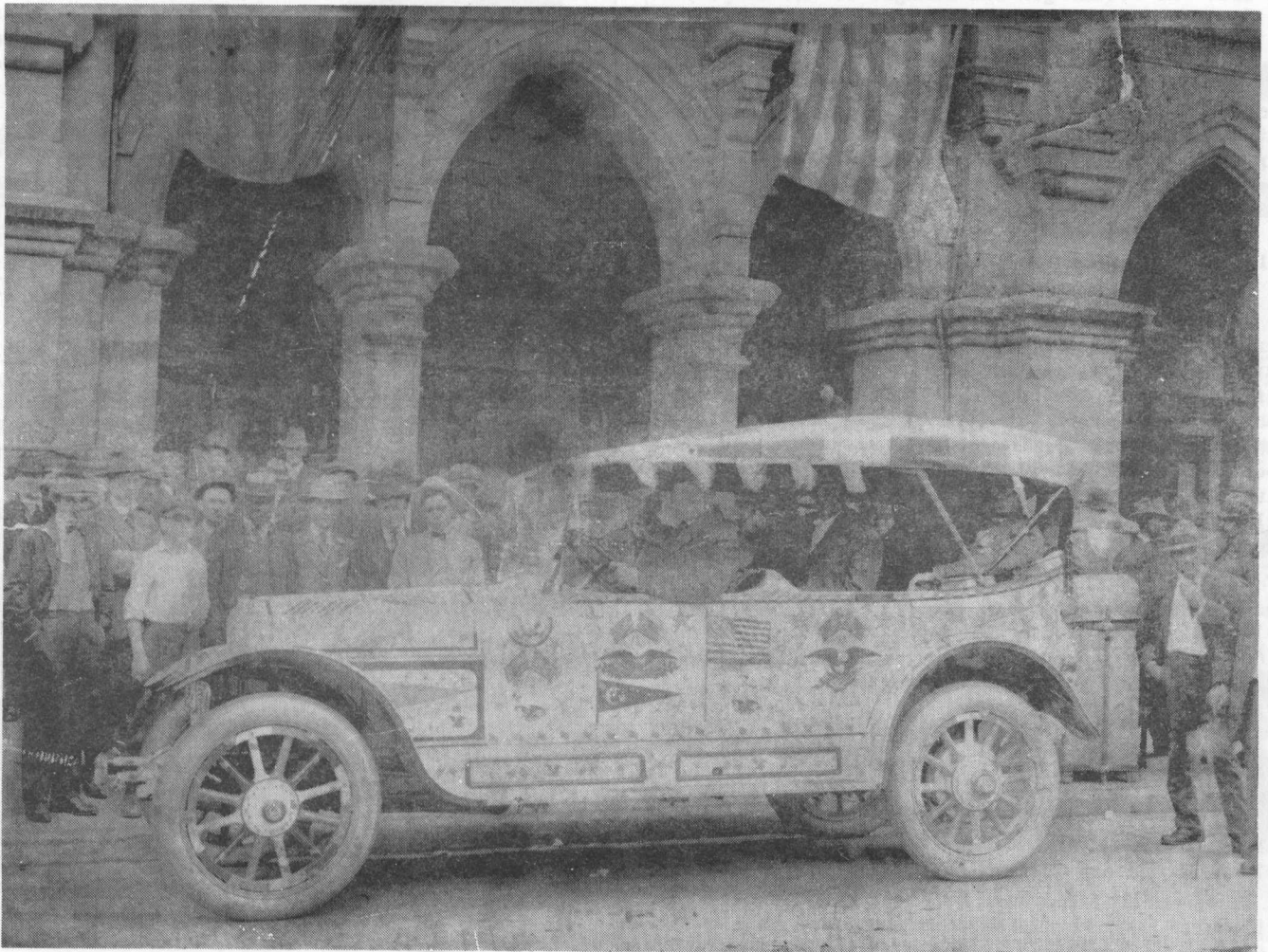
The date of this church on wheels is unknown, but the postcard was mailed (1¢ postage) from North Bend, Oregon, in August, 1923.



Postcard picture of a Saxon Six. The date on the license tag is 1916.



This postcard picture appears to have been made in France, during or at the end of World War I. The white lettering on the truck's radiator can be read in the original picture. It says HERBIE. But who built it, and where, and when?



This is the best reproduction we could make of a very faded photograph from the collection of Richard Sagall. The car is a Willys-Knight, 1917 or 1918. But what was the occasion? Any why all the flags and emblems painted all over the car?

# CHARLES W. NASH

by Richard B. Brigham

An account of the career of Charles W. Nash is surely a story in the tradition of Horatio Alger. Born in poverty, orphaned in childhood, given little formal schooling, Nash rose from the position of a day laborer to become the president of a huge motor car manufacturing firm, and to eventually found his own automobile company.

He was born on a farm near DeKalb, Illinois, on January 28, 1864. When he was two years old, his family moved to another farm near the City of Flint, Michigan - a move which was to have considerable bearing on his future. Orphaned at the age of seven, he was "bound out" to a neighboring farmer. Five years later he ran away, and worked several years as a farm laborer and carpenter.

In 1890, while working as part of a cherry-picking crew on the Dort farm, he made the acquaintance of J. Dallas Dort, of the Durant-Dort Carriage Company. Mr. Dort, perhaps recognizing latent ability, gave Nash a job as a trimmer at the carriage works. Here he advanced rapidly, and in 1904 he became general manager of the company to fill the vacancy left by the departure of W. C. Durant.

Durant had left the carriage works to enter the automobile business. He bought control of the Buick Motor Company, a move which paved the way for the next major advancement in the career of Nash. In 1910 Durant asked him to become president of Buick, from which position the next step, in 1912, was the presidency of General Motors. He held this position until the spring of 1916, when he resigned to found his own business.

The Nash Motors Company was incorporated in Maryland on July 29, 1916, and on August 16 acquired all properties and assets of the Thomas B. Jeffery Company of Kenosha, Wisconsin. This company was builder of the Jeffery car (formerly the Rambler, 1902-1913). The Jeffery was continued as model 671 until mid-1917 when the Nash name made its initial appearance. This first Nash car, also called model 671, differed from its Jeffery fore-runner only as to nameplate and radiator design.

The first Nash-designed car, a six cylinder model with overhead valve engine, was offered in 1918. A four cylinder Nash car was added to the line in 1921 and built through 1924. In 1930 a straight-eight cylinder model, with dual ignition systems, was introduced.

In 1919 Mr. Nash was one of the backers of the Lafayette Motor Company. The Lafayette was an expensive V-8 in the luxury class, designed by D. McCall White, designer of Cadillac's first V-8 car in 1914. Production of the new car began in 1920 at a factory in Mars Hill, Indiana, a suburb of Indianapolis, Indiana. Sales of this handsome, well-built car were disappointing, and in 1923 Lafayette was acquired by the Nash Motors Company and moved to Milwaukee, Wisconsin. There it was operated as a subsidiary company. In the following year the car was discontinued, but the name lived on to be applied to a low-priced Nash Six made from 1934 through 1939.

This, however, was not Nash's first venture into the low-priced field. In January of 1924 the Nash Motors acquired the plant and grounds of the Mitchell Motor Car Company at Racine, Wisconsin, and a new subsidiary, Ajax Motors Company, was incorporated that year on June 30. The Ajax, a low-priced six-cylinder car, failed to catch the fancy of the motoring public, and in 1926 Ajax Motors was absorbed by its parent company. The car became the Nash Light Six.

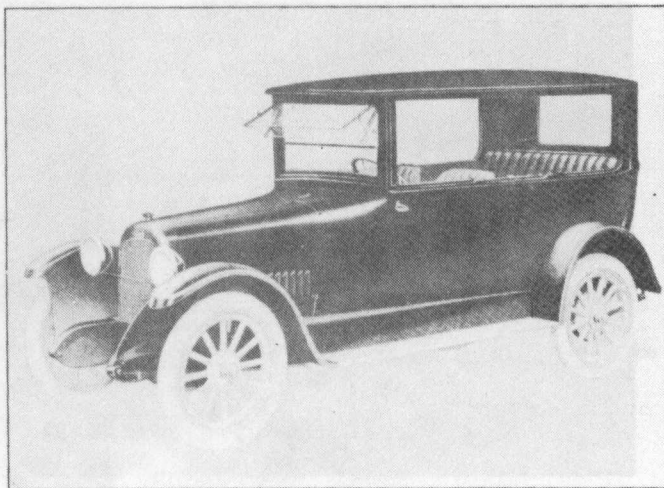
A corporate change took place in 1936 when Nash Motors was merged with the Kelvinator Corporation, makers of refrigeration equipment. The resulting company was named the Nash-Kelvinator Corporation, and Charles W. Nash became its board chairman. Within a few years he retired from active participation but remained in an advisory capacity. His death occurred in 1948, at the age of eighty-four.

In 1954 the Nash-Kelvinator Corporation merged with the Hudson Motor Car Company to form American Motors Corporation. The Hudson, which had been built since 1909, was discontinued June 25, 1957. Shortly thereafter the name Nash also was dropped. Nash Rambler was now the Rambler - the original name of the first product of the Thomas B. Jeffery Company. It was produced in a variety of models: Rambler Six, Rambler American, Rambler Rebel, Rambler Ambassador, Rambler Classic; other names were added, some names abandoned until the name Rambler was at last discontinued and each of the various models became separate makes.

Meanwhile, in July, 1968, the assets of the Kelvinator Division were sold to White Consolidated Industries.

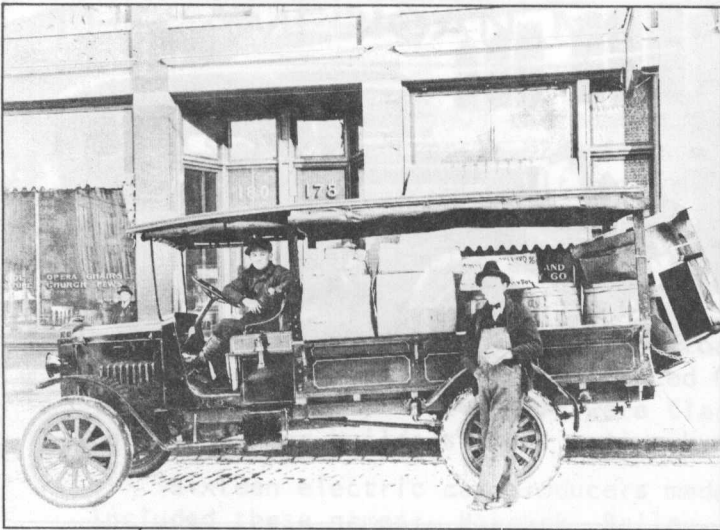
The Kaiser-Jeep Corporation, successor to Willys-Overland, was acquired by American Motors on February 5, 1970, and is now the Jeep Corporation, a subsidiary of American Motors.

And so the company that Charles Nash built lives on as the only major independent auto maker to survive the attrition which has ended the affairs of perhaps more than four thousand such companies, large and small, since the beginning of the American automobile industry.

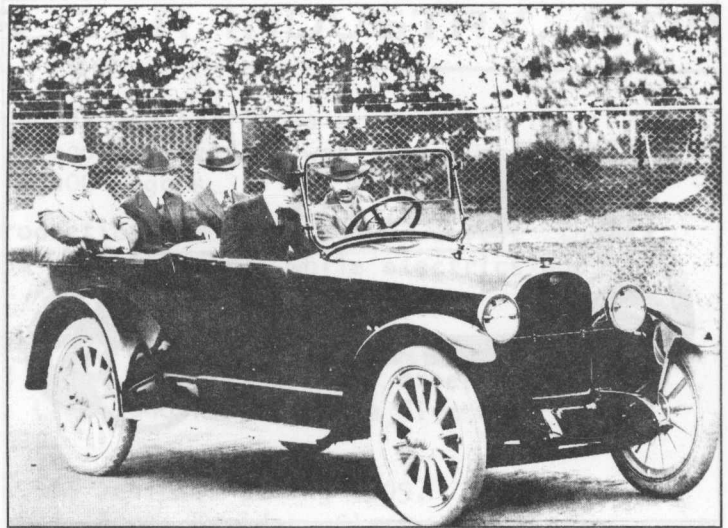


The first model to carry the Nash name was the 1917 Model 671, which differed from the former Jeffery Model 671 only as to the design of the radiator.

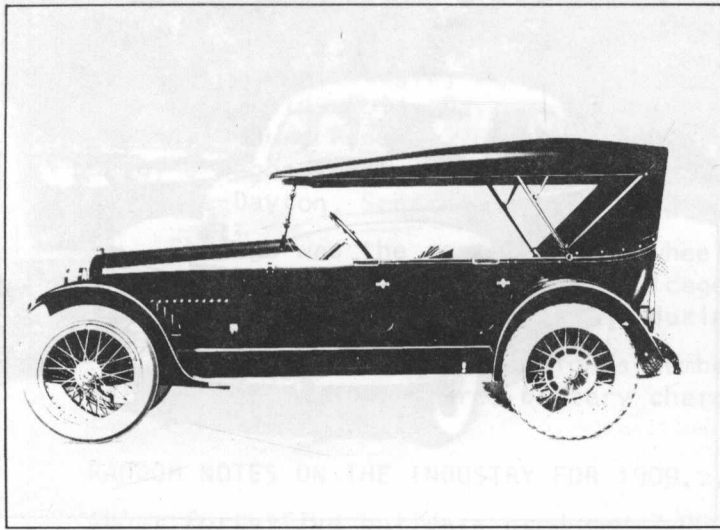




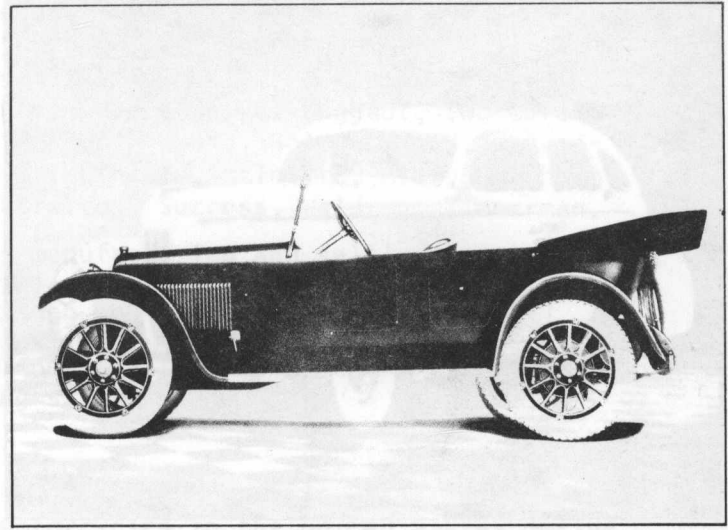
1917 NASH, Model 2017--In 1917, the Jeffery truck became the Nash truck. This four-cylinder model had a one-ton capacity. Nash built an even 3,000 trucks in 1917, when total net sales of \$16,761,795 produced a profit of \$2,027,784.



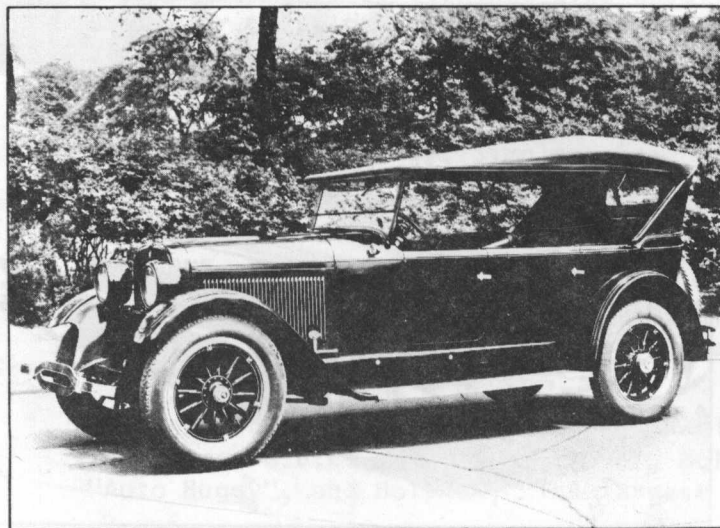
1918 NASH, Model 681--The long-awaited first Nash-designed car with a six-cylinder valve-in-head engine bowed in the fall of 1917. Total sales in 1918 were 10,283 cars. In this historic car were top officials of the Nash Motors Company, with Charles W. Nash at the wheel.



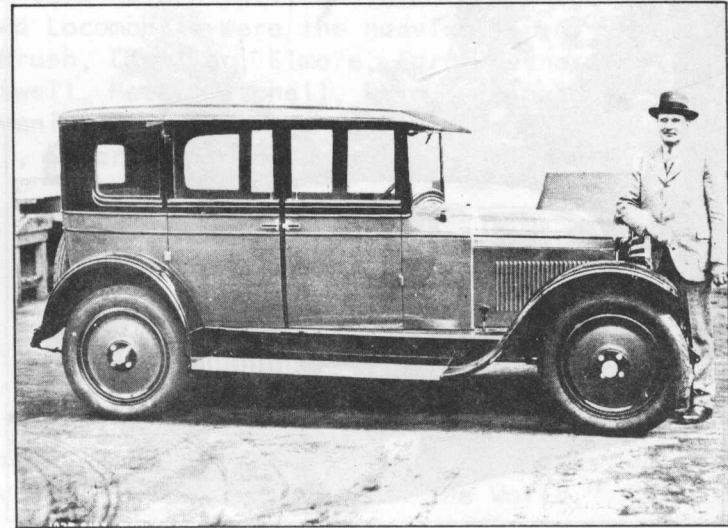
1921 NASH, Model 687--The factory-delivered price of this Nash sport model, seating four passengers, was \$1,850. Five other six-cylinder models were offered in 1921, plus nine four-cylinder models.



1921 NASH, Model 41--Nash Motors added a line of low-priced four-cylinder cars in 1921, including this five-passenger touring model which had an f.o.b. price of \$1,195. The company sold 20,850 cars that year.

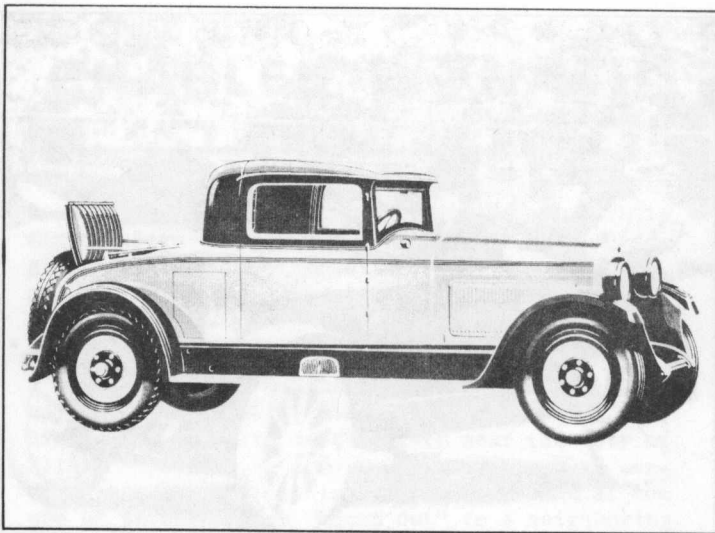


1923 LA FAYETTE, Model 134--In 1924, a year after this \$5,500 car was built, Nash Motors acquired the trade name and equipment of the LaFayette Motors Corporation of Indianapolis, which had been founded in 1920. Top speed of this touring model, which weighed 4,200 lbs., was 90 miles per hour.

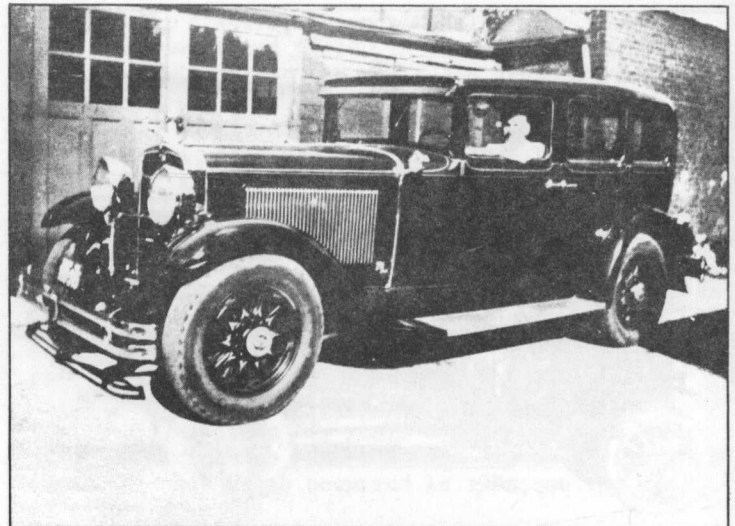


1925 AJAX, Model 223--First production in the newly-acquired Nash plant at Racine, Wis. was of this completely new six-cylinder Ajax, built in 1925 and early 1926. With one of the first models, priced at \$995, is Charles W. Nash, president of Nash Motors Co. The Ajax became the Nash Light Six in May, 1926.

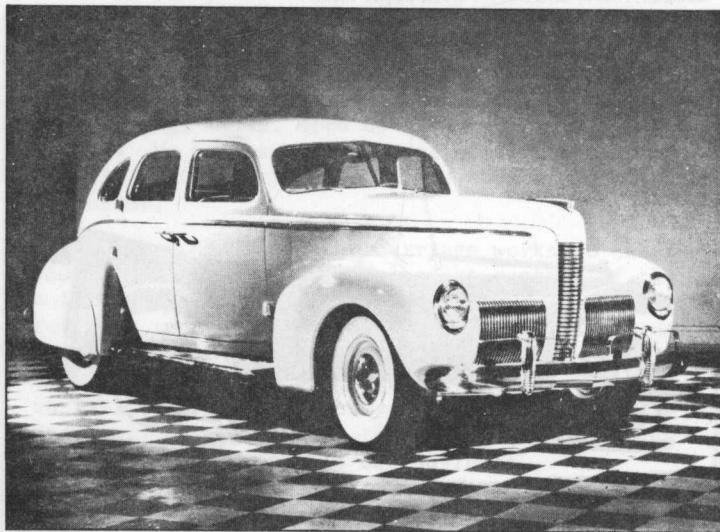
*These pictures and their captions are from the AMERICAN MOTORS FAMILY ALBUM*



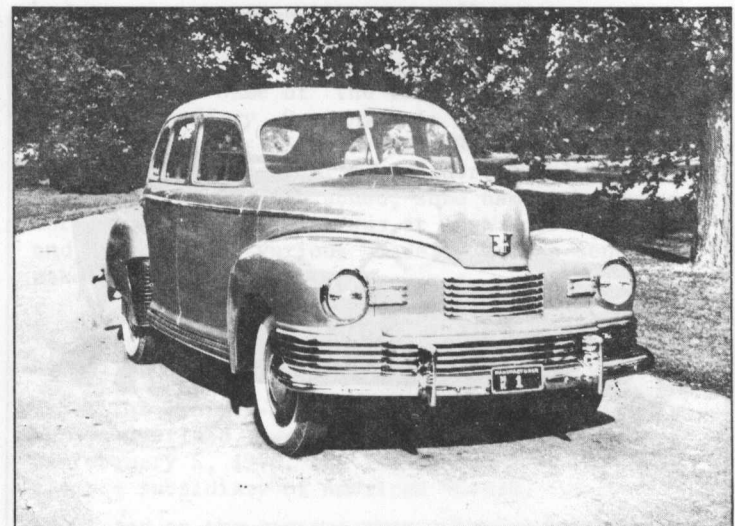
1927 NASH, Model 260--This Advanced Six coupe was built on a wheelbase of 127 inches. It weighed 3,580 pounds and had an f.o.b. price of \$1,775. It was one of four coupe designs offered in 1927. (Henry Austin Clark photo.)



1930 NASH, Model 490--This twin-ignition eight-cylinder sedan, built on a 124-inch wheelbase, sold for \$1,775. In 1930, Nash introduced the clutch-pedal starter, which removed the danger of "in-gear" starts.



1940 NASH, Model 4088--This four-door Ambassador eight-cylinder sedan had an f.o.b. price of \$1,195, and was the top 1940 model. The LaFayette series was dropped after the 1940 model year, being replaced by the Nash '600.'



1946 NASH '600,' Model 4640--"Our car is the forerunner of cars to come." George W. Mason, Nash-Kelvinator president, told a press conference as Nash resumed postwar production in the fall of 1945. The company built 6,148 cars in 1945, and 98,769 in 1946.



1952 NASH Statesman, Model 5246--The Golden Anniversary Nash line featured "eye-level" vision, improved steering, increased horsepower and striking new color combinations and interior designs.



1957 NASH Ambassador, Model 5785-2--American Motors also dropped the Nash name at the conclusion of the 1957 model year. In that year, the Statesman was dropped, and the only Nash series was the Ambassador Eight.

*These pictures and their captions are from the AMERICAN MOTORS FAMILY ALBUM*

# THE AMERICAN MOTOR CAR INDUSTRY, 1909

—by Harlan E. Appelquist—

During the Year 1909 the number of buggies and carriages produced in the United States was given as 828,411 units. Wagon production was listed as 587,685 units. Studebaker alone built more than 75,000 wagons.

In comparison, total motor vehicle production was only 126,593 units. The gasoline powered vehicles accounted for 95% of this total, while electrics and steamers accounted for the other 5%.

Steam car builders during 1909 produced 2,374 vehicles. White of Cleveland built 1,377 steamers, Stanley produced 613 steam vehicles and all others produced the remaining 384. The others were Clark, Lane, and Ross. These five were the only steam car builders still active by 1909.

Sixteen electric car producers made 3,558 vehicles during 1909. The builders included these names: Babcock, Bailey, Baker, Broc, Byrider, Clark, Detroit, Friche, Ideal, Illinois, Lansden-Electrette, Lenox, Maxim-Goodridge, Ohio, Rauch & Lang, and Waverley.

It was the High Year for the Highwheelers — forty-one advertised makes. I estimate 1909 highwheeler production at 15,000 units. The 1909 list included: A.B.C., American Eagle, Bendix, Black, Buggycar, Bugmobile, Burns, Chase, Chicago, Clark-Hatfield, Cole, Dayton, Deal, De Schaum, Duer, Duryea-Buggaut, two Eureka's, Enger, Famous, Federal, Gleason, Graves & Condon, Hobbie, Holsman, I.H.C. Auto-Buggy & Wagon, International, Kearns, Lawter, Lincoln, McIntyre, Mier, Overholt, Reliable-Dayton, Schacht, Sears, Simplo, Stratton, Success, Waldron, Zimmerman.

Chicago was the center of highwheeler manufacturing and selling. Several of the companies were located in Chicago. International-Harvester, one of the largest, built 2,465 high wheelers during 1909.

Chicago also was the nation's number one spot for electric cars. Commonwealth-Edison Company had several battery charging stations there.

## RANDOM NOTES ON THE INDUSTRY FOR 1909...

About forty-five builders produced 7,000 motorcycles in the United States during 1909. Thor, Reading-Standard, and M.M. advertised in *Colliers*.

Thirty-two makes of standard-type gasoline cars were advertised in *Colliers* during that year. Chalmers-Detroit, Franklin, and Locomobile were the heaviest advertisers; others included American, Atlas, Brush, Cadillac, Elmore, Ford, Haynes, Herreshoff, Hudson, Hupmobile, Marmon, Maxwell, Metz, Mitchell, Ohio, Oldsmobile, Packard, Palmer-Singer, Peerless, Pennsylvania, Pierce-Arrow, Rambler, Schacht (low and highwheelers), Simplex, Speedwell, Stearns, Stoddard-Dayton, Thomas and Winton.

Four builders of electric cars advertised in *Colliers* during 1909: Detroit, Baker, Columbus, and Waverley.

One steam car builder, the White Company, also advertised in *Colliers* plus one exclusive truck builder, Rapid (gasoline). Rapid became part of General Motors Truck at Pontiac, Michigan.

Eight builders of highwheeler motor vehicles advertised in *Colliers* also during that year: A.B.C., Black, Kiblinger, McIntyre, Reliable-Dayton, Simplo, Success "Auto Buggy", and Holsman, "The largest builder of high-wheelers in the World."

As of January, 1909, thirty-two builders of standard-type gasoline cars belonged to the Association of Licensed Automobile Manufacturers.

Early in 1909 Metz Manufacturing Company took over the Waltham Manufacturing Company.

# PASSENGER CAR PRODUCTION, 1909

Compiled by H. E. Appelquist

POSITION	MAKE	1909 PRODUCTION	HIGHLIGHTS
1	Buick	14,606	Buick backbone of G.M.; Billy Durant
2	Ford	10,660	First full year with Model T; H. Ford
3	Maxwell	9,050	Maxwell-Briscoe Co., Tarrytown, N. Y.
4	Cadillac	7,868	A G.M. Div.; Henry Leland; Detroit
5	Reo	6,592	R. E. Olds, Lansing, Mich.
6	Oldsmobile	6,575	Olds Motor Works, Lansing; G.M.
7	E.M.F.	6,200	Everitt-Metzger-Flanders, Studebaker
8	Overland	4,860	Supersalesman John N. Willys, Toledo
9	Chalmers-Detroit	3,100	Hugh Chalmers & Associates, Detroit
10	Packard	2,699	Includes a few trucks, Packard Motors
11	I.H.C. (highwheeler)	2,465	International-Harvester Co., Chicago
12	Franklin	2,142	H. H. Franklin Auto. Co., Syracuse, N.Y.
13	Rambler	1,692	Thomas B. Jeffery Co., Kenosha, Wisc.
14	Hupmobile	1,620	Hupp Motor Car Co., Detroit; Bobby Hupp
15	White Steamer	1,377	The White Co., Cleveland, Ohio
16	Hudson	1,100	Backed by 48 engineers; Detroit
17	Paige-Detroit	1,100	Harry Jewett & Associates, Detroit
18	Winton Six	1,050	Alexander Winton & Associates, Cleveland
19	Pierce-Arrow	867	Pierce-Arrow Motor Car Co., Buffalo, N.Y.

NOTE: Several makes, for which production figures were not available, may have out-produced some of those listed, such makes as Metz, Brush, Schacht, Haynes, Elmore, Stoddard-Dayton, Mitchell, Speedwell, Black, Holsman, Detroit, Baker, and Waverley.

## 1909 PRODUCTION BY PRICE GROUPS OF STANDARD TYPE GASOLINE CARS

PRICE	PRODUCTION	PERCENTAGE OF TOTAL
Priced under \$1,000	41,191	40% of total
\$1,000 to \$1,999	44,440	43.4% of total
\$2,000 to \$2,999	4,131	4.0% of total
\$3,000 to \$3,999	6,151	6.0% of total
\$4,000 and higher	6,785	6.6% of total

(Highwheelers, electrics and steamers not included in the above figures)

## MOTOR VEHICLES BUILT DURING 1909 — BY HORSE POWER RATING

3,226	2.5% of total	50 horse power or more
51,218	40.5% of total	30 to 49 horse power
35,257	27.8% of total	20 to 29 horse power
29,353	23.2% of total	10 to 19 horse power
7,539	6.0% of total	less than 10 horse power

126,593 - total for 1909 (includes all types of motor vehicles)

1909 MOTOR VEHICLE PRODUCTION IN UNITED STATES — BY TYPES

Runabouts .....		36,204
Gasoline	35,347	
Electric	496	
Steam	361	
Touring Cars.....		76,114
Gasoline	73,883	
Electric	243	
Steam	1,988	
Closed Cars .....		5,205
Limousines, Cabs, etc.		
Gasoline	3,290	
Electric	1,915	
Sight-seeing Buses.....		1,213
Gasoline	799	
Electric	409	
Steam	25	
Business Vehicles.....		3,255
Gasoline	2,760	
Electric	495	
Delivery Wagons.....		1,862
Gasoline	1,645	
Electric	217	
Trucks.....		1,366
Gasoline	1,090	
Electric	276	
Others	27	
-----		
United States Total built during 1909 .....		125,219

Source used by Harlan E. Appelquist in compiling the 1909 United States production figures was *The Literary Digest*.

ED. NOTE: Some additional figures on the Motor Industry of 1909 from *Moody Manual of Investments 1928*, U. S. Department of Commerce *Census of Manufacturers* and *Development of American Industries* by Glover and Cornell.

Value of Motor Output: \$165,148,529  
 Capitol Invested: \$173,837,000. Net Profits: \$25,697,000.  
 Profits per Car: \$196. Profits to Sales: 15.56%

Population of United States (1909 Census): 90,691,354  
 Number of Wage Earners in Motor Industry: 51,295  
 Number of Establishments: 265  
 Registration of Motorcars as of December 31, 1909: 294,000

## HIGHLIGHTS OF THE DEVELOPMENT OF MOTO METERS AND HEAT INDICATORS

-- Based on material in the Monograph by Harry Pulfer --  
with supplementary information and pictures supplied  
from the Brigham Library by Grace Brigham

- 1902-09 The name "Motometer" was applied to a speed indicator developed by the R. H. Smith Manufacturing Company, Springfield, Massachusetts<sup>1</sup>. Their products were not heat indicating instruments like the famous "Boyce Moto Meters" made some years later by a different company. Work was started in 1902 on the speedometers, and they were manufactured and advertised in 1906 and at least through 1907, but by 1911 neither the company nor its speedometer were listed in the leading automotive books or magazines. In a 1906 ad the speedometer was called "The Springfield" with no mention of Motometer. It was a speedometer with an optional odometer and was one of the earliest automotive instruments to have a self-illuminating dial (a selling point). "The hit of the New York and Chicago Shows." The device was patented in the United States on October 10, 1905; also in Canada, England and France<sup>2</sup> -- no date given for these three. By early summer of 1907 company ads stated, "We can now make immediate deliveries."<sup>3</sup> By late summer new models were introduced. In 1907 ads and pictures words *The "Springfield" Motometer* show on the dial, but no trademark nor patent information is discernible.<sup>4</sup> In some ads "Patentees and Manufacturers" was printed below the company name. Also, the word "motometer", sometimes capitalized, appeared in articles on the speedometer. That was the same word used later by the company which manufactured the Boyce Moto Meter and registered the name. Radiator gadgets during this period consisted mostly of ornaments which were accessories. Except for custom made cars, they were seldom factory supplied equipment, either optional or standard. In 1906 the AA emblem of the Automobile Association of London began to appear on the fronts of cars of club members<sup>5</sup>. These emblems were made of heavy polished brass with cutouts around the letters "AA". Below the insignia, the member's name was engraved and his number stamped. Photos taken of race cars or other vehicles during these years do not show any with Boyce Moto Meters discernible on the radiators. Some cars made at that time may display motometers which were added later, at any time during the Teens or Twenties when the Boyce Moto Meter was a popular and needed device, or in more recent years when a car was restored, and it also needed some device to indicate overheating.
- 1910 An ad in *The Antique Automobile*, 1961, by Omega Service Parts Company of New York City, pictured a radiator temperature gauge "made by Messko (since 1910) in West Germany."<sup>6</sup> The item, designed for antique cars, does not show the Boyce Moto Meter name nor the Boyce patent dates. The dials look somewhat different from most Moto Meters seen in this country, in that temperatures are given in both Fahrenheit and in Celsius figures. This 1910 is earlier than other dates mentioned for the introduction of heat indicators, but Messko may have been making a German-designed gauge before Boyce came along with his device. There were a few suppliers who advertised nameplates, monograms and initials for use on doors or radiators of cars, also ornaments for the radiators. The auto manufacturers provided the car emblems, but most radiator cap decoration was left to the individual owner.

# Springfield Motometer

The Best Auto Speed Indicator Made

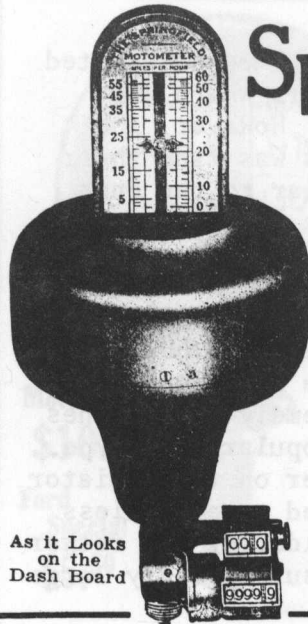
SHOWS AT A GLANCE—HOW FAST YOU ARE GOING. HOW FAR THIS TRIP. HOW MANY MILES FOR THE SEASON.

It gives absolute control of the speed situation. It is accurate and reliable because correctly constructed. Its governor governs—forcibly and powerfully. Cuts show its construction. No cut can show the beauty of its workmanship. Every part in perfect balance. See the simplicity and directness. It has the unqualified approval of mechanical experts. The price is right. Fair to us—fair to you. It is covered by a business-like guarantee. You can put in more money but you cannot buy better service. Its appearance and finish are in keeping with its quality. Send for catalog.

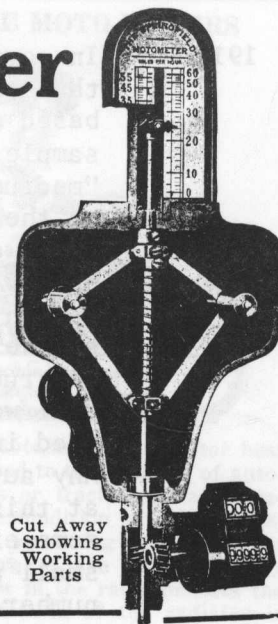
FOR ANY SIZE WHEEL AND FITTINGS FOR ANY CAR  
 50 Mile Combination Speedometer and Odometer . . . \$45.00  
 60 Mile Combination Speedometer and Odometer . . . 50.00

Either size without Odometer \$10.00 less.  
 For Export—Speed and distance indicated in Kilometers when desired.

Manufactured by **THE R. H. SMITH MFG. CO.** SPRINGFIELD, MASSACHUSETTS  
 Established 1865. Incorporated 1883.



As it Looks on the Dash Board



Cut Away Showing Working Parts

Advertisement taken from THE AUTOMOBILE, August 22, 1907, page 70

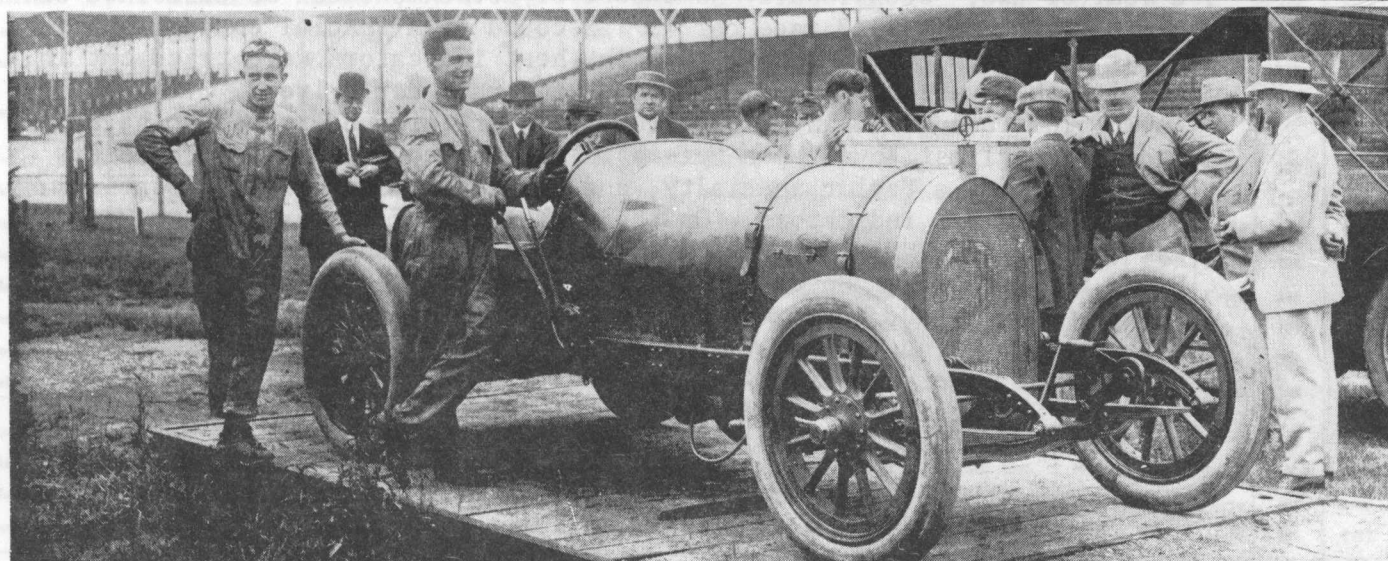


(Left)

This early model of the Motometer (about 1913) was made for Boyce by the Taylor Instrument Company, Rochester, New York.

(Right)

It is said that British motorists were slow to adopt the Motometer for it displaced the emblem of the Automobile Association, upon which the owner's name and number were engraved.



Open type radiator meter on 1913 Mercer at Indianapolis. Picture from Charles Lytle Collection; Scott Bailey article in *Antique Automobile* March 1961, p 92

1911

In correspondence with Harry Pulfer, the German company, Messko, stated that they had been making the heat-indicating Moto Meters which were based on the Boyce patents as early as the Year 1911.<sup>7</sup> However, the sample dial they sent did not show a patent date. This was from their "medium" Boyce Moto Meter and the dial marks were similar to the ones on the "standard" American ones of the early years. At the top of the dial were the German words, *GEFAHR - DAMPF*; while the American dials had, *DANGER - STEAM* at the top and just below, *HOT - MOTOR*; next the German dial showed, *SOMMER - NORMAL*; the American, *SUMMER - AVERAGE*; at the bottom, *MOTOR - ZU KALT*; and, *COOL - MOTOR*. Then both had more instructions in smaller print. Messko did not indicate which year the dial was used, but it is not like the very early, extremely simple ones used in the United States. Instead it resembles the popular 1916 type. Any automobile in the United States showing a Moto Meter on the radiator at this period (1910-1911) would be sporting an imported meter, unless some experimental Boyce products were available. Considering the rather small number of cars in the country then, there was a surprisingly large number of importers and jobbers catering to the owners.

Most radiator attachments, outside of the caps, still consisted of items of adornment or of instruction (for parades, tours, etc.). Nearly a dozen companies were importing or making these radiator ornaments, according to listings in American magazines and car books.

Commenting on the early European cars in one of his books, David Scott-Moncrieff stated, "It was a great year for radiator mascots."<sup>8</sup> The Rolls-Royce mascot, the famous silver lady, was designed that year to prevent owners of Rolls-Royces from being tempted to adorn the radiators with some ornaments inappropriate for their fine cars.

1912

On October 1, 1912, a company licensed to use the Boyce patents was incorporated as Moto Meter Co., Inc., for the purpose of making a complete line of motor heat indicators for automobiles, airplanes, motor boats, tractors, etc.<sup>9</sup> The trade name was "Boyce Moto Meter"; the plant location was Long Island City, New York; and the office was to be at 148 West 52nd Street, New York City, according to the 1928 book used as reference on this incorporation. Instead, 52nd Street was a later address; the first was 1790 Broadway, New York.

The instruments were introduced in the United States in 1912<sup>10</sup> - some say in July. Evidently the Moto Meters were used in Europe, in Germany and France particularly, even earlier if Messko had been making them for a year or two. Occasionally some sort of attachment can be discerned on the radiator of a 1912 race car<sup>11</sup>. It could be a special emblem, or it might be a moto meter - proof that the heat indicators were tried out in America this year by those innovators, the race car drivers.

Taylor Instrument Company, Rochester, New York, is understood to have made the earliest Boyce Moto Meters in the United States. Thermometers have long been a Taylor specialty, and the thermometer is an essential part of the heat indicators. On the nickel rim of the early Moto Meters was the legend: "Made by Taylor Instrument Co., Rochester, N. Y." Under the trademark "Boyce MotoMeter" (note spelling) a patent pending stamp, "Pats Pend", appeared above the company name which was spelled Motometer Co., Inc., at that time.

By 1912 there were a variety of speedometers available for automobiles, but the "Springfield" Motometer of R. H. Smith Manufacturing Company was not among those listed or advertised.



**Motometer \$10.00**  
**Ford Special \$5.50**

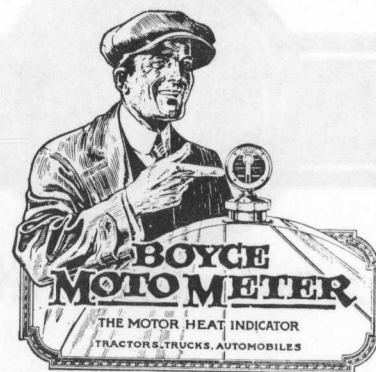
**Motometer Junior \$5.00**

(View from seat)  
Boyce Motometer attached to the radiator cap in 5 minutes

**THE MOTOMETER CO., Inc.**  
1790 BROADWAY, NEW YORK

(Right)

This publicity release of about 1918 describes the operating principle of the Boyce Motometer and emphasizes the "Line-of-Sight" placement of the device.



The Boyce MotoMeter is a motor heat gauge. Attached to the radiator of automobiles, trucks or tractors, it accurately registers the condition in which a gasoline motor is operating by registering the temperature of the vapor directly above the water in the radiator. As the water in the bottom of the radiator is several degrees cooler than at the top, the temperature of the air over the water represents the average temperature of the entire cooling system, rather than just one part of it. Therefore the Boyce MotoMeter gives an accurate reading irrespective of the quantity of the water in the radiator.

It may be quickly and easily applied to the radiator cap of any automobile, truck or tractor.

This advertisement is from the October, 1914, issue of AUTO-MOBILE TRADE DIRECTORY.

Table Giving Equipment of Cars Participating in 500-Mile Race on the Chicago Board Track

Car	No.	Driver	Mechanician	Cylinders	Bore	Stroke	Displacement	Spark Plug	Carbureter	Mag neto	Tires	SIZE		Wheels	Moto-meter	Wheel-base	Weight
												Rear	Front				
Peugeot	1	Resta	McCarty	4	3.62	6.67	276.0	K.L.G.	Zenith	Bosch	Silvertown	35x5	34x4½	R.W.	Boyce	109	2400
Stutz	2	Wilcox	Scott	4	3.812	6.50	296.8	Bosch	Stromberg	Bosch	Silvertown	33x5	33x4½	Houk	Boyce	102	2404
Stutz	3	Anderson	Rooney	4	3.812	6.50	296.8	Bosch	Stromberg	Bosch	Silvertown	33x5	33x4½	Houk	Boyce	102	2340
Stutz	4	Cooper	Dutton	4	3.812	6.50	296.8	Bosch	Stromberg	Bosch	Silvertown	33x5	33x4½	Houk	Boyce	102	2385
Maxwell	5	Carlson	Franzen	4	3.75	6.75	298.2	Bosch	Master	Bosch	Silvertown	35x5	34x4½	Houk	Boyce	105	2202
Maxwell	7	Rickenbacher	Schroder	4	3.75	6.75	298.2	Bosch	Zenith	Bosch	Silvertown	35x5	34x4½	Houk	Boyce	105	2267
Peugeot	9	Burman	Gable	4	3.65	7.10	296.0	Bosch	Master	Bosch	Silvertown	34x4½	33x4½	R.W.	Boyce	105	2350
Sunbeam	10	Van Raalte	Copple	4	3.70	6.30	274.0	K.L.G.	Zenith	Bosch	Silv. (R) Palmer (F)	880x120 mm.	820x120 mm.	R.W.	Boyce	112	2244
Sunbeam	11	Perporato	Romco	4	3.70	6.30	274.0	K.L.G.	Zenith	Bosch	Silv. (R) Palmer (F)	880x120 mm.	820x120 mm.	R.W.	Boyce	112	2300
Delage	12	Chevrolet	Phellips	4	3.662	7.09	298.68	Bosch	Claudiel	Bosch	Silvertown	33x4½	33x4½	R.W.	Boyce	110	2350
Duesenberg	15	O'Donnell	P. Henderson	4	3.98	6.00	299.0	Bosch	Schebler	Bosch	Silvertown	33x5	33x4½	R.W.	Boyce	106	2170
Sunbeam	17	Grant	Moore	6	3.26	5.89	274.9	K.L.G.	Master	Bosch	Silvertown	35x5	34x4½	R.W.	Boyce	110	2480
Duesenberg	19	Alley	J. Henderson	4	3.98	6.00	299.0	Rajah	Master	Bosch	Silvertown	33x4½	33x4½	R.W.	Boyce	106	2120
Mercer	20	Henning	Davis	4	4.75	6.75	298.2	Bosch	Rayfield	Bosch	Silvertown	33x4½	33x4½	R.W.	Boyce	110	2400
Duesenberg	21	Haupt	Johnson	4	3.98	6.00	299.0	Bosch	Schebler	Bosch	Silvertown	33x5	33x4½	R.W.	Boyce	106	2160
Peugeot	22	Babcock	Palloth	4	3.07	6.141	186.0	K.L.G.	Claudiel	Bosch	Silvertown	34x4½	33x4½	R.W.	Boyce	104	2100
Sebring	23	J. Cooper	Peio	4	3.98	6.00	299.0	Bosch & Rajah	Master	Bosch	Silvertown	33x5	32x4½	R.W.	Boyce	102	2499
Ogren	24	Chandler	Liphardt	4	3.98	6.00	299.0	Rajah	Rayfield	Bosch	Silvertown	33x4½	32x4	Houk	Boyce	106	2499
Maxwell	27	Orr	Stafford	4	3.75	6.75	298.2	Rajah	Master	Bosch	Silvertown	35x5	34x4½	Houk	Boyce	105	2200
Mulford	30	Mulford	Stevens	4	3.687	7.00	299.0	Rajah	Zenith	Bosch	Silvertown	33x4½	32x4	R.W.	Boyce	102	2496
Sunbeam	31	Limberg	Lorgechamp	6	3.26	5.89	274.9	K.L.G.	Master	Bosch	Silvertown	35x5	34x4½	R.W.	Boyce	116	2497

Every car entered in this race was equipped with a Boyce Motometer.



Harry C. Stutz

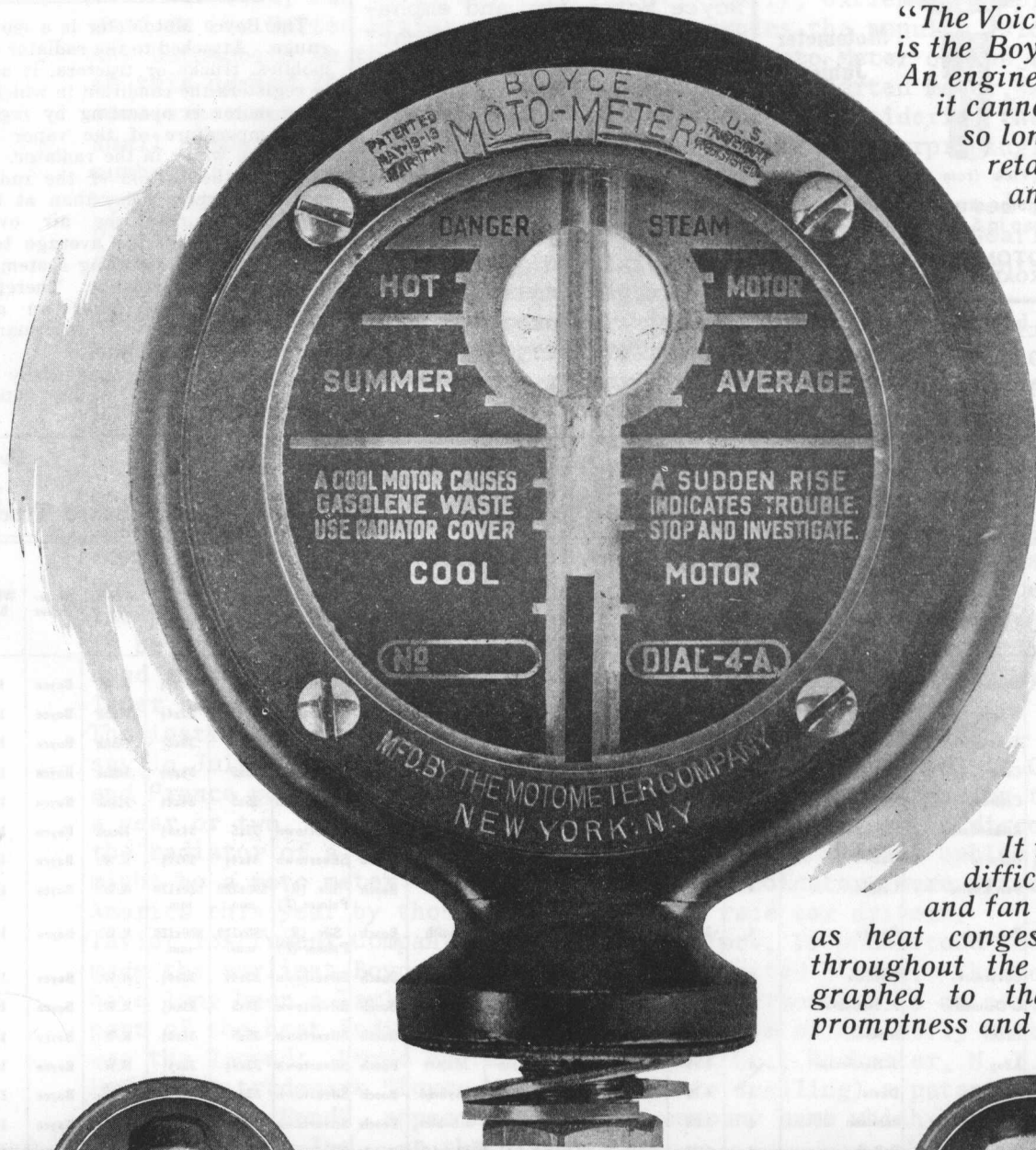
Chief Eng. Stutz Motor Car Co.

J. G. Vincent

Chief Eng. Packard Motor Car Co.

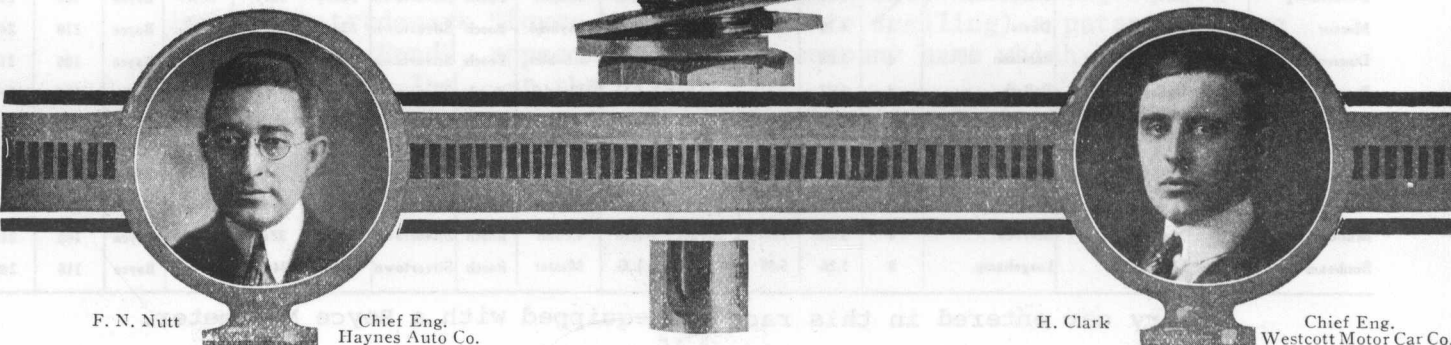
G. W. Smith

Chief Eng. Thos. B. Jeffery Co.



*"The Voice of the Motor" is the Boyce Moto-Meter. An engine equipped with it cannot come to harm so long as the driver retains his sanity and his eye-sight.*

*It foretells serious difficulty. Oil, water and fan trouble, as well as heat congestion anywhere throughout the car, are telegraphed to the driver with promptness and precision.*



F. N. Nutt

Chief Eng. Haynes Auto Co.

H. Clark

Chief Eng. Westcott Motor Car Co.

Please mention The Automobile when writing to Advertisers



W. R. Strickland

Chief Eng.  
Peerless Motor  
Car Co.



E. H. Delling

Chief Eng.  
Mercer Auto Co.



E. Cruenfeldt

Chief Eng.  
Baker R & L Co.

# Engineers

of wide vision, and proper professional pride, are looking forward—across the years of experiment, discovery, change and counterchange—to the ultimate car—that final creation which shall embody every attribute of true perfection.

The picture of that Perfect Car, now forming in their several minds, may vary in many respects, but the presence of a

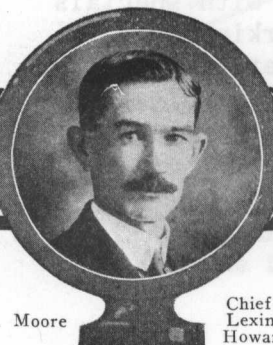
## BOYCE MOTOMETER

on the radiator cap is a detail that will remain the same in all. At the present stage of development this heat gauge is the one thing that will logically harmonize with the eventual combination of strength, dependability and beauty that shall at last stand forth as the Masterpiece of Motor Car Construction.

### MOTO-METER CO., Inc.

148 West 52nd Street

New York City



J. C. Moore

Chief Eng.  
Lexington-  
Howard Co.



Russell Begg

Chief Eng.  
Jordan  
Motor Car Co.



E. McGonagle

Chief Eng.  
McFarlan Motor  
Car Co.

Please mention The Automobile when writing to Advertisers

- 1913 Although the first patent date on American-made Boyce Moto Meters was May 13, 1913, one of the early pictures appearing in a magazine late that year was still showing a Moto Meter with a dateless "Pats Pend".<sup>12</sup> These meters were all of the "Standard" size — a standard which was to vary with slight changes in markings more than size over the years. The glass was rather small, and the range shown was from "Freezing" to "Boiling". The unique feature of the Boyce design was the temperature indicator located above the water in the radiators, not extending into, not even touching the water, instead indicating temperature of vapors just above the water. Some other gauges checked heat of the water. The 1913 date is also on those Boyce Moto Meters made in France by F. Repousseau & Cie, Paris. Instruments were registered under Trade Mark No. 456-192, "31 Mars 1913" — one and one-half months earlier than the date on the United States patents of Boyce. Peugeot drivers and race car drivers of some other makes were using the Moto Meters. In a 1961 *Antique Automobile Magazine* article on the Mercer Record by Scott Bailey, a Mercer pictured has atop its radiator a device of circular shape with a straight line (thermometer?) from top to bottom.<sup>13</sup> This was probably the open Moto Meter usually chosen by race car drivers since it cut down on wind resistance. Several other automobiles in that race, including the Peugeot, used Moto Meters. In this country Mercers were the first cars to get their names on the front plates of their Moto Meters. Also, they were the first to make them standard equipment, rather than accessories, though probably not as early as 1913. Catalogues that year did not picture the Mercers nor any other cars with Moto Meters on their radiators. Moto Meter Co., Inc., opened a branch office at 1322 Michigan Avenue, Chicago, Illinois.<sup>14</sup>
- 1914 This year another patent date — March 17, 1914, — was added to the 1913 originally shown. More cars were using Moto Meters, and they had become part of the standard equipment for most race cars. Two new models were introduced, Ford Special and Junior. Although the frame still carried Taylor Instrument's name, some changes had been made in the dial face. It included more details, more temperature markings and also on the lowest range just beneath *Cold Motor — 70* had this instruction, *Use cover*. This meant a radiator cover. Various companies started marketing these accessories which were listed under "Radiator and Hood Covers (To prevent the water freezing)".<sup>15</sup> Some competition was appearing for the Boyce Moto Meter as several other companies entered the field. Edelmann & Co. of Chicago, Fowler Motor Thermometer Co. of St. Louis, and Standard Thermometer Co. of Boston were listed with the Moto Meter Company under "Heat Indicating Meter" headings in automotive directories, but Moto Meter seemed to be the main one advertising that particular accessory.<sup>16</sup>
- 1915 Many makes of cars and trucks were using the Boyce instruments on their radiators, either as standard or as optional equipment.<sup>17</sup> Variations continued to appear in the Boyce Moto Meter, with specials for trucks, tractors, etc., and with custom sizes or markings. Every race car participating in the Indianapolis 500 that year had a Boyce Moto Meter<sup>18</sup>, and it was standard equipment on every car at most other important tracks.

# THE AUTO BLOCK SIGNAL



## If It May Save Your Engine

Lack of oil—loose connecting rods—too much carbon—scored cylinders—low water—these are the “danger” points forever threatening the life of your engine. To correct the trouble at the start is the “stitch in time” that saves big repair bills.

The engine is the throbbing heart of your car. And the “AUTO BLOCK” stands with a finger on the pulsating mechanism—guiding—guarding; an assuring sign of safety when “all is well”—ready to flash a signal of distress at the first indication of engine disorder.

It's a simple, accurate, indispensable utility—working every minute, in the driver's easy view. No guessing. No mystery. No figures, outlines nor thermometer scales. Just a big red dial that turns jet black the instant disorder begins. The only practical “trouble stopper.”



Driver's Dial Half Size

Ornamental: The “AUTO BLOCK” is the most beautiful of all car head decorations, worth twice the price for its beauty alone. On the forward side, embossed in fine detail, is the great seal of the U. S. A.—or in its stead your fraternal emblem—or for a small cost-charge, your crest or monogram.

Illustrations show front and back. Full sizes 2 1/2" in diameter, 3/4" thick.



Forward Side Half Size

Don't waste money on “workless” ornaments. Don't wait for disaster to prove the need for the AUTO BLOCK. Its cost, \$5.00, is a small percentage of the repair bills it may save.

See your dealer today. If he cannot supply you write us direct.

**AUTO BLOCK SIGNAL CO.**  
1260-2 Continental & Commercial  
National Bank Bldg.  
Chicago, Illinois

**PRICE ONLY**  
**\$5.00**

**Dealers, Agents & Garage Men**  
Big profit for you in the “AUTO BLOCK”. It's the best selling “warmer” made. No canvass necessary. No red tape. Owners buy on sight. All car owners buy on sight. Write today for our proposition.

WHEN WRITING ADVERTISERS KINDLY MENTION AUTOMOBILE TRADE JOURNAL.

The Auto Block Signal was just another of the dozens of imitations or variations which appeared during the years of the Motometer's popularity. Now most collectors of automobiliana would have difficulty in naming even one of them. This advertisement was published in the December, 1916, issue of Automobile Trade Journal.

1916

Numerous changes took place this year. First, there was a different address in New York City: 148 West 52nd Street. Then, the Long Island City address started to appear in ads. Originally Long Island had been mentioned only as a factory location, now it was office as well as factory. Another change: the words "Mfd. by the Motometer Co., New York, N. Y." were stamped on the Moto Meters on the lower rim between the two screw holes. "Taylor Instrument Co." was no longer on the rims. Even though Taylor evidently was not making Moto Meters, this Rochester, New York, company had a listing under "Radiator Thermometers"<sup>19</sup>; and in subsequent years its name was under "Thermometers, Vulcanizing"<sup>20</sup>, instead in automotive magazines and directories.

In April an ad pictured a Moto Meter with "27 feathers in its cap"<sup>21</sup> — the numbers using the product. After several months more numbers were added, and the company stated that thirty-nine manufacturers of America's best makes of cars and trucks had adopted Moto Meters as standard. It was factory-supplied equipment, but not on all models of these makes. The three regular models were offered plus a special oval-shaped one for Overlands and another special for Packards. The heavy-duty model for trucks had a half-inch thermometer tube, thicker than passenger car models to prevent breakage. The tube was well protected and the frame heavier. Trucks began to come out of factories with Moto Meters as part of standard equipment.<sup>22</sup>

Instructions on all the dials were getting more specific. One of the suggestions, "Use Radiator Cover" when the temperature reached a low point, continued to spur the radiator cover business.<sup>23</sup> In a 1916 *MoToR* Magazine article on "Accessory Progress" various products were mentioned which were taking the terror out of winter driving. The design of Glover Company's Antidam radiator cover was of particular interest to the author because of its inclusion of a fan.<sup>24</sup>

This was a big advertising year for the Motometer Company. Some of their ads pointed out that Moto Meter use cut down on repair bills. Success was increasing competition. One who entered the field with a new design was the Auto Block Signal Company of Chicago. In *Automobile Trade Journal* of December, 1916, this competitor used a full page ad to describe the superiority of their heat indicator, its simplicity, and "Only \$5.00."

1917

The Motometer Company continued its aggressive selling campaign. An offer was made to put names of cars on Moto-Meters; later this offer would extend to names of lodges, owner's initials, or other designs.<sup>25</sup> In addition to their advertising, the company was often the subject of publicity or articles in automotive magazines. *The Automobile*, May 17, 1917, had a two page article on the Long Island City factory and its testing and inspecting of Moto-Meters to insure accuracy of the product. Title was "Moto-Meter Manufacturer Demands Accuracy."<sup>26</sup>

This year Harrison Boyce worked to perfect the instrument for airplane use. The dial was placed on the instrument board of the plane, and its reading went from Cold to Hot - 212. Mr. Boyce, the inventor of the Moto-Meter, had found it was not a simple matter in trying to use the original type of heat indicator on a plane.<sup>27</sup> The war years spurred such inventions. New equipment required new instruments. The feeling of patriotism sweeping the country made people want to bedeck their cars with flags, and ornament makers found a way to oblige them by combining radiator caps and flags. This was a new threat to radiator-mounted instruments. Already there were numerous ornaments. Motometer added a model, the Midget, selling at \$2.50.<sup>28</sup> Auto Block had a listing but no ads in auto directories this year.<sup>29</sup>

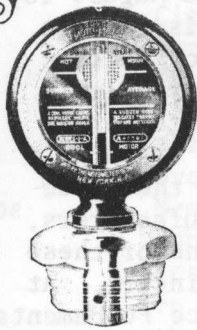
1918

More and more the Long Island address, 15 Wilbur Avenue, was used in advertising. Additional patent dates were July 9, 1918, and August 13, 1918, although only the 1913 and 1914 dates appeared on dials in most ads. By this year most dial faces had two sets of numbers or letters with the Series and the Dial number or letter. This had started in 1916 on a few dials, but by now it was common practice by Moto Meter. According to the company, thousands of automobiles, trucks, tractors, aeroplanes, stationary engines and marine motors were using the Boyce Moto-Meters. They were standard equipment with over 60 manufacturers.<sup>30</sup> Variations on the "Line-of-Sight" ad had been appearing. One of these was a double-page Chilton ad with the man in the cap as an insert. At the bottom were these words, "Exclusive licensee of the Boyce Fundamental Patents."<sup>31</sup> What caused this statement to be included at this time? A competitor, National Gauge & Equipment Company of LaCrosse, Wisconsin, also Detroit and New York City, advertised a "Distance Type Thermometer"<sup>32</sup> and were listed under "Heat Indicators" with their *Radi-Meter*.<sup>33</sup> Also, Fowler of St. Louis was listed on the same page, and the word "Dash" followed the name.<sup>34</sup> These two companies were indicative of the future. In catalogues of 1918 cars and trucks a few more cars had Moto Meters on their radiators, but practically no trucks. In Floyd Clymer's 1918 Catalog either all or some models of the following cars had motometers: Chalmers, Cole, Columbia, Dorris, Elcar, Glide, Haynes, Hollier, Hudson, Jordan, Lexington, Marmon, McFarlan, Mercer, Moon, Packard, Peerless, Premier, Roamer, Simplex-Crane, Stearns, Stutz, Velie, Westcott, White, and Wolverine.

1919

During the last year or two the company had made a slight change in the name of its product. It had been Moto Meter up to 1916; in fact, the name sometimes was printed Moto Meter Co., Inc.; mostly, Motometer Co., Inc., was used. Now a hyphen usually showed between Moto and Meter for the product, and occasionally in the company also. To illustrate the leadership of the Moto-Meter Company in its field, Dyke's *Automobile and Gasoline Engine Encyclopedia* for years has been describing temperature indicators for cars of the Teens and Twenties and using the Boyce Moto-Meter name only. The book mentions that these are necessary devices. Beneath the illustration the explanation starts, "Fig. 9 - A temperature indicator - the Boyce Motometer." On the dial are the usual numbers as used on Boyce instruments of the period.<sup>35</sup> Hood and radiator covers are mentioned on the same page with a drawing of the two types, but no specific makes are named for either. The Hudson radiator damper used with a Motometer is shown and described.<sup>35</sup> Hudson was the first car in this country to install such a device. "A distance type moto-meter is also made, which can be placed separate from radiator and is adapted for use on aeroplanes, motor boats, tractors, etc. (Boyce Moto-Meter Co., Long Island City, N. Y.)"<sup>35</sup> This special moto-meter the book mentioned is described in the *Airplane Supplement* at the back. Dyke's stated that it was useful for the same reason the automobile motometer was in detecting heating problems. The device was placed on the instrument board in view of the aviator. The drawing showed a round dial with thermometer.<sup>36</sup> In later editions these heat indicators were not included in the *Airplane Supplements*. A competitor, Climax Motor Devices, advertised a combination of motor heat indicator, oil sight feed and pressure gauge. It consisted of a thermometer, temperature readings, and dial with pointer.<sup>37</sup> Occasionally an ad for other products would show a car with a Moto-Meter - Continental Motors<sup>38</sup> and Liberty Siren<sup>39</sup> - indicating the increasing acceptance of this accessory.

# BOYCE MOTO METER



Standard Model...\$10.00

**List of Other Models and Prices**

- De Luxe Model...\$15.00
- Universal Model... 7.50
- Junior Model.... 5.00
- Midget Model.... 2.50
- Spc. Ford Model. 3.50

## Get These Sales Promoters

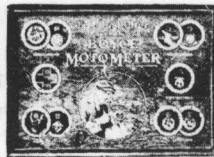
EVERY dealer who orders from his jobber 10 or more assorted Boyce Moto-Meters, for delivery at one time, receives these proved sales winners without cost:

A handsome metal sign in colors, announcing free installation of Boyce Moto-Meters—the famous Moto-Meter display stand—and an attractive free-dial-offer display board. Ask your jobber.

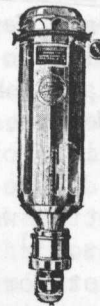
**The Moto-Meter Company, Inc.**

Long Island City

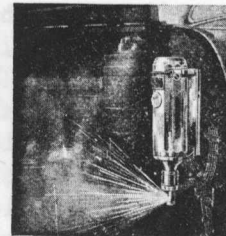
NEW YORK



# BOYCE AUTOMATIC FIRE EXTINGUISHER



The "Boyce" is an automatic chemical sprinkler system. Once installed in the motor compartment (where 95 per cent of fires originate), a fire can never become serious. By creating the heat that sets the "Boyce" in operation, a blaze destroys itself. A fire is no sooner started than the automatic fuse melts off, and a fan-shaped torrent of chemical is sprayed over the entire motor. In fifteen seconds the fire is out.



**PRICES**

- Model 1.....\$6.00
- West of Rockies 6.50
- Canada ..... 8.25
- Model 2..... 8.00
- West of Rockies 8.50
- Canada .....11.00

**Boyce Veeder Corporation**

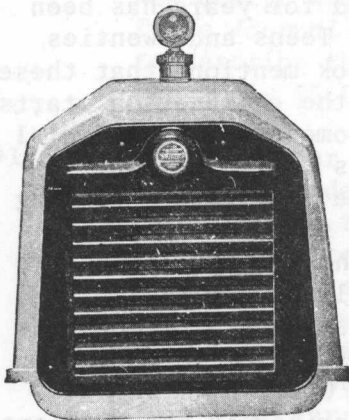
Long Island City  
NEW YORK

Boyce Moto-Meter ad appealing to dealers, 1920.

Harrison Boyce had interests other than temperature indicators, as shown by this 1920 advertisement in Automobile Trade Directory.

# WINTERFRONT

TRADE-MARK



Supplied for nearly all flat front radiators. A Thermostatic Radiator Shutter entirely automatic in its operation.

Four special fasteners attach it in two minutes. No cutting or soldering.

**PINES MANUFACTURING CO.**  
408-10 N. Sacramento Blvd. Chicago

A popular accessory of the 20's was the Pines Winterfront, with thermostatically operated shutters.



## Radiator Cap EMBLEMS

*Patriotic Fraternal Special*

~~~~~

Largest line in America. More than one hundred varieties.

Every fraternal organization represented.

A Great number of American and Allied Flag Holders, in elegant and exclusive designs.

The A. M. W. Line is the Quality Line.

Liberal Discounts to the Trade.

Write for Complete Catalog and supplementary folders.

~~~~~

**The Art Metal Works**  
7-15 Mulberry St., Newark, N. J.



No. 8581



No. 8577

During World War I, and for a few years following, flag holders which attached to the radiator cap were popular accessories. Some of these attachments interfered with the placement of a Moto-Meter while others did not, as shown in these two ads from Chilton's Automobile Directory of July, 1917.

EVERY AUTO OWNER WANTS ONE

The Liberty Flag Holder—with flags of the U. S. and Allies (patent pending) is one of the most practical patriotic car emblems yet designed. The flags are made of fine fast-colored silk, four by six inches, with the edges stitched to prevent fraying. Each flag supported by a steel staff held firmly in a truly ornamental holder, attached to the radiator cap. It will not mar the car.

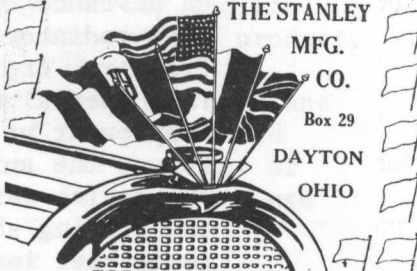
Every patriotic car owner wants to show his colors on his machine.

**A GOOD PROFIT, and—**

you will be backed by National consumer advertising. Be ready to supply the demand. Send in your order NOW, as it is a timely proposition with tremendous possibilities for a quick and large sale. Prompt deliveries now.

Liberal discounts to all dealers. Write today.

**THE STANLEY MFG. CO.**  
Box 29  
DAYTON OHIO





The Moto-Meter Company was among the auto accessory exhibitors at the Passenger Car Shows in both New York City and in Chicago.<sup>40</sup> Although the company was not among exhibitors listed for Commercial Car Shows in those cities, some of the trucks in New York's Show displayed Moto-Meters on their radiators, part of their standard equipment.<sup>41</sup> Production started the first part of January on the Boyce DeLuxe Moto-Meter, and samples were displayed at the Grand Central Palace Show in New York.<sup>42</sup> The thermometer was one-half inch in diameter and it was somewhat larger than those in other models. The case was triple-plated nickel. This model was designed for larger American and foreign cars. Late in the year a Canadian factory was started at Hamilton, Ontario.<sup>43</sup> An item in *Motor Age* January 8th about the Boyce Fire Extinguisher stated that "Harrison Boyce, who invented the Boyce Moto-Meter, has brought out a new device." It was an automatic and hand-operating extinguisher combined. The short article continued, "A concern known as the Boyce Meter Corp. has been organized to manufacture the device and a factory in Long Island City is being equipped for an output of 8000 per day."<sup>44</sup> Two weeks later a correction was printed with the information that the manufacturer was Boyce-Veeder Corporation, and the Moto-Meter Company had let the magazine know there was no connection with Boyce Meter (Moto-Meter) Corporation.<sup>45</sup> In April the Boyce-Veeder Corporation had a two-page ad in *Motor Age*.<sup>46</sup> It contained a reprint of the company letterhead which carried names of the officers: President Harrison Boyce, Vice-President James Abeles, and Secretary and Treasurer Paul Veeder. The reprinted letter was addressed "To the Trade" and was from Boyce with his signature. It concerned the interest displayed in the new fire extinguisher. On the other page of the ad were pictures of the extinguisher. That year the item was listed under the heading "Fire Extinguisher" in *Chilton Auto Directory* with the trade name of "Boyce" (automatic and hand operated), and the address of the Boyce-Veeder Corporation was given as 100 Hunters Point Avenue, Long Island City, New York.<sup>47</sup> However, in an ad<sup>48</sup> and listing<sup>49</sup> in *The Automobile Directory* that same month an address at Queens Subway Building was given. With the increasing success of the Moto-Meter and greater interest in accessories, there were more competitors. The Autostat was made by the A. E. Miller Company of Brooklyn.<sup>50</sup> Motor Eye was made by Metalware of Chicago,<sup>51</sup> and Radi-Meter was still being made by National Gauge and Equipment Company of LaCrosse, Wisconsin.<sup>52</sup> However, the Moto-Meter Company was way ahead of the game. That year it was marketing six models, in addition to specials for certain cars. Models were the Standard, Junior, Midget, Universal, Ford and DeLuxe. An indication of the importance of Moto-Meters was the interest shown in them by thieves. Several companies were making anti-theft devices to protect the Moto-Meters. Dwillard-Shaw Company of Kalamazoo had a chain mechanism for holding the Moto-Meter. In an item about this Dwillard-Shaw product, it was stated that thirty to forty per cent of the Moto-Meters were stolen each year.<sup>53</sup> The Smith Cap Lock was put on the market by O. P. Smith of Chicago to prevent theft of Moto-Meters — "thousands of which are stolen each year."<sup>54</sup> The Schlaik Universal Lock, New York City, had a device consisting of galvanized steel cable to secure a Moto-Meter.<sup>55</sup> This lock was sold with the DeLuxe model. Other companies were coming up with various radiator protectors to help motorists, as suggested on the Moto-Meters. One improvement over the simple covers, or robes as they sometimes were called, was the Universal Radiator Shutter made by Auto Metal Parts Company of Chicago.<sup>56</sup> Also, Pines Manufacturing Company was making their "Winterfront" radiator screens which would be so popular during the Twenties.<sup>57</sup>

The importance of Moto-Meters at this time was shown by a picture in a January *Motor Age* Magazine. When the Charles Schutte Body Company of Lancaster, Pennsylvania, built a special body for one car, included was a double set of controls. The owner would have all important dials in sight while his chauffeur drove and kept a wary eye on his own set. The photograph with the article was taken from inside in the back, and most instruments on both front and rear could be seen: "speedometers, motometers, cigar lighter and other fitments". A fancy radiator cap rode in front in the usual Moto-Meter location.<sup>58</sup>

Officers of Moto-Meter, President George Townsend and General Manager Earl Henneke, went on a trip abroad to plan manufacture of Moto-Meters in Europe. The company already had many customers there.<sup>59</sup>

The Moto-Meter Company finished the year with a large two-color ad in *Motor Age* Magazine, December 30th.<sup>60</sup> On one page, along with pictures of their product and the factory, is the statement, "Today over Three Million car owners have purchased the World's greatest Automobile Accessory." On the other side of the sheet under a Boyce Moto-Meter heading is "A Tribute to Success", a statement about the reasons for the success of the Boyce Moto-Meter. It is signed by Harrison Boyce, and the signature is the same as that on the Boyce-Veeder Corporation letter which was printed in the April *Motor Age* ad.

This year-by-year account of Moto Meters and similar heat indicators will be concluded in the next issue of *Automotive History Review*.

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18. *Antique Automobile*, March-April 1964, pp. 50-53. Article "The Knights at Indy" by J. E. Gebby; pictures from Indianapolis Motor Speedway Museum; and *The Automobile*, March 4, 1915, p. 399. "Equipment on Winning Cars in Grand Prize Race in Order of Finish", San Francisco. All 5 winners had Boyce MotoMeters; and *Floyd Clymer's book on the Indianapolis 500 Races*.
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48. *Automobile Directory*, July 1920, p. 641, ad.
49. *Automobile Directory*, July 1920, p. 382, listing.
50. *Motor Age*, Jan. 15, 1920, p. 40; and *Automobile Directory*, July 1920, p. 610.
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52. *Automobile Trade Directory*, July 1920, p. 610, listings.
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54. *Motor Age*, July 1, 1920, p. 44, item.
55. *Motor Age*, Aug. 5, 1920, p. 42, news item.
56. *Motor Age*, Jan. 1, 1920, p. 54, news item.
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**"SEES ALL"**

# MOTOR EYE

**"TELLS ALL"**

**THE MOTOR EYE takes the temperature directly from the water in the radiator—you do not have to wait for temperature indication until steam is up, as the slightest change in the temperature of the water is shown instantly in the thermometer of the MOTOR EYE.**

**The opposite illustration tells the story. Notice that the stem "D" attached to the bottom of the MOTOR EYE extends down into the water, THAT houses and protects the delicate thermometer from injury. "A" indicates the tubes of radiator. "B" Baffle plate of radiator.**

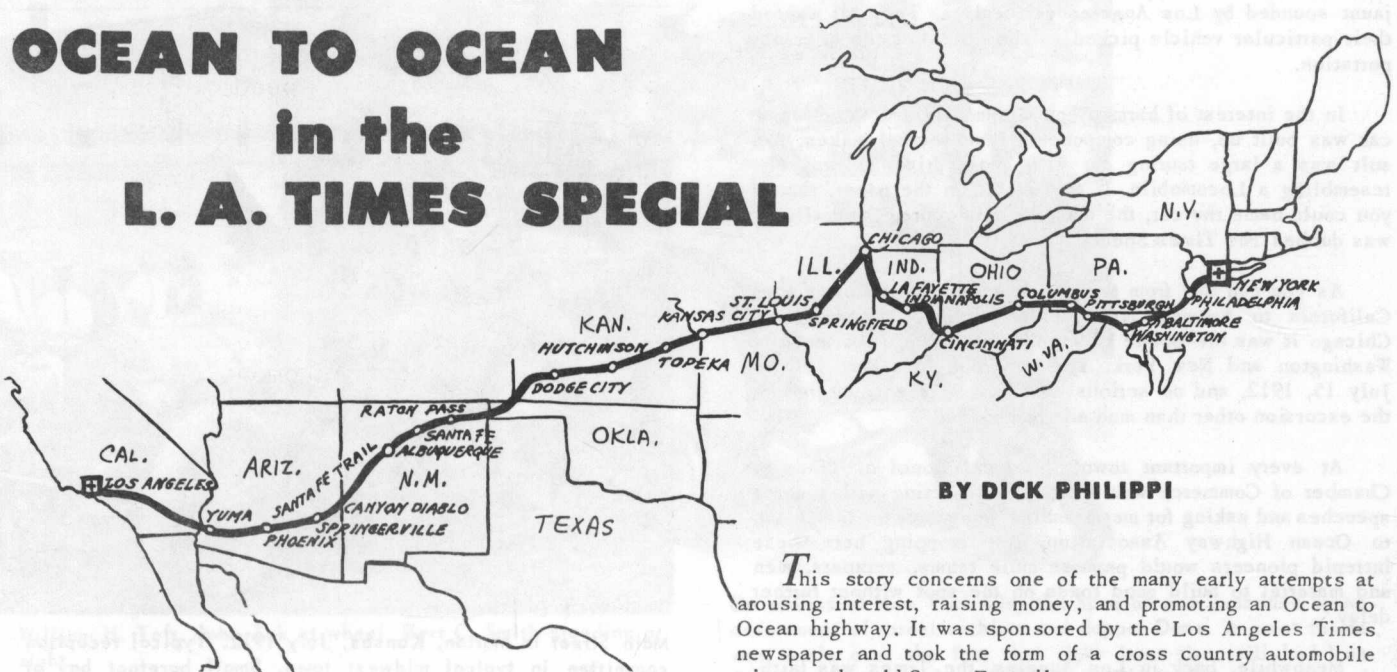
The Motor Eye can be furnished with special design name plates on back for all makes of cars, trucks and tractors.

**MANUFACTURED BY**  
**METALWARE CORPORATION**  
CHICAGO 230 W. Superior Street ILLINOIS

One of the many imitators and competitors of the Boyce Motometer. This ad appeared in *Automobile Trade Directory*, July, 1920.

Making History in 1912 ...

# OCEAN TO OCEAN in the L. A. TIMES SPECIAL



BY DICK PHILIPPI

This story concerns one of the many early attempts at arousing interest, raising money, and promoting an Ocean to Ocean highway. It was sponsored by the Los Angeles Times newspaper and took the form of a cross country automobile trip over the old Santa Fe trail.

The car was driven by John Zak. Passengers were Bert C. Smith, Los Angeles Times Automobile Editor, and Dell M. Potter, organizer for the Ocean to Ocean Highway Association.

A preliminary trip was made early in 1912 from Los Angeles to Yuma, Arizona in a Stoddard-Dayton. The outbound route was by way of San Diego and returning through Indio, Palm Springs, and San Bernardino back to Los Angeles. This trip was a great success and plans were immediately set afoot to retrace this run and push all the way across the continent in a pathfinding tour de force.

Above, map of the route.

Rural nature of Palm Springs, California, will hardly be recognized by present day visitors who bask in Winter sun at this desert spa. No-name TIMES Special had interesting profile with bulbous tonneau. Maybe some reader can name the parts of this car.

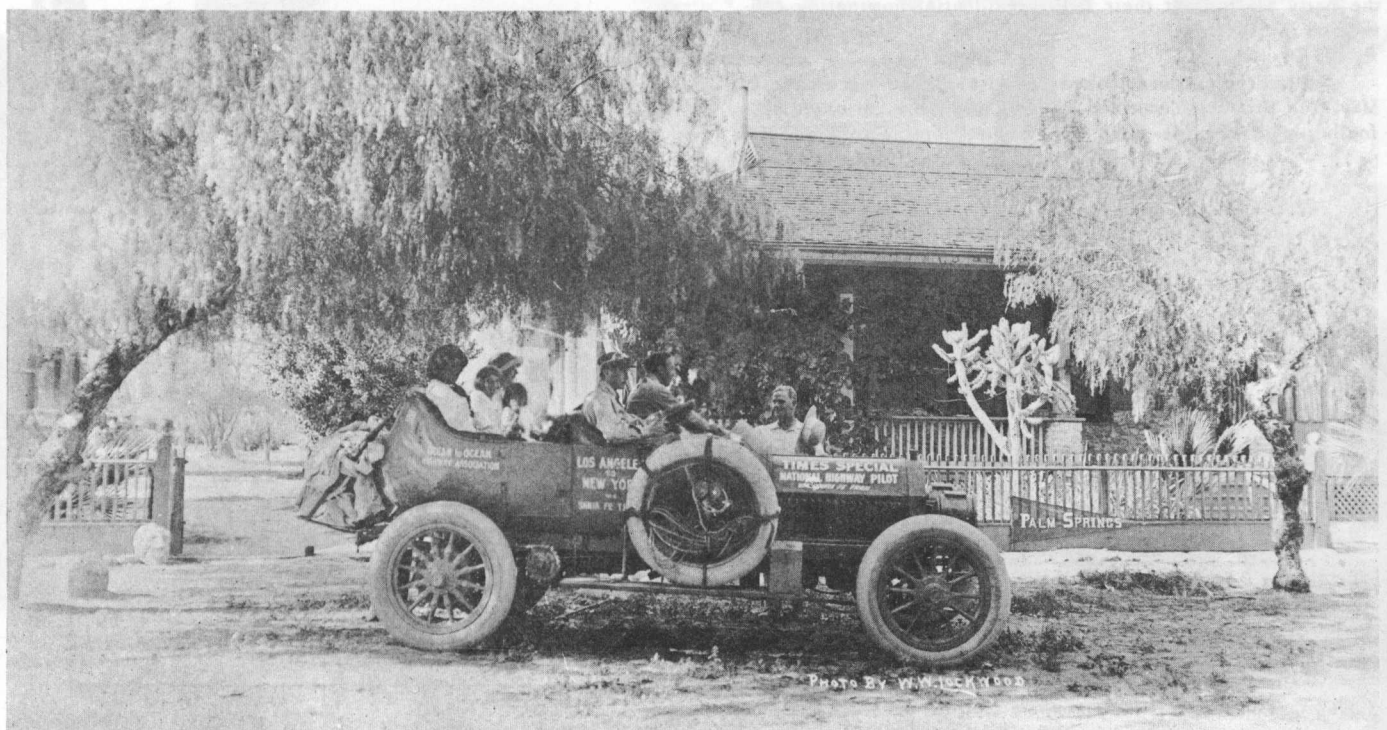


Photo By W.W. LOCKWOOD

There was one apparent note of discord in this warmup jaunt sounded by Los Angeles car dealers. They all wanted their particular vehicle picked as the official mode of transportation.

In the interest of harmony on automobile row, a no-name car was built up, using components from several makes. Result was a large touring car with chain drive and vaguely resembling a Locomobile. It was stated in the paper, that if you could name the car, the machine was yours. Officially, it was dubbed The Times Special.

As you can see from the map, a route was followed from California to Arizona, New Mexico and to Chicago. From Chicago it was the Boone Lick and Cumberland Pike on in to Washington and New York. The trip took from May 15th to July 15, 1912, and no serious problems were encountered on the excursion other than mud and bad roads.

At every important town, the local Board of Trade or Chamber of Commerce would arrange a meeting with rousing speeches and asking for memberships and money for the Ocean to Ocean Highway Association. Not stopping here these intrepid pioneers would promote mule teams, scrapers, men and material to build good roads on the spot without further delay.

Meanwhile, back in Los Angeles, the Times was faithfully reporting in breathless praise every movement of the pathfinders with a roll call of mounting interest and donated dollars.

Here are examples of some headlines: Times car Starts East - Ocean to Ocean Car Hits Long Trail - Will Forge Links of Great Road Enroute - Great Highway Bound to Win - "Times" Special in Paradise of Apache Indians - Citizens of Arizona Subscribe Bountifully - Vast Army Enlisted - Hundred Thousand Mark is Passed in Missouri. And here is one prophetic for future generations of taxpayers, it says: "Federal Aid for Highways", and goes on to state that the Republican party was nailing a solid plank for Federal aid in the party platform at their 1912 presidential nominating convention in Chicago.

No story was overlooked as witness the occurrence of May 20th between Yuma and Phoenix when the car overtook a foolhardy motorcycle rider who was attempting to cross the



Main Street in Marion, Kansas, July 1912. Typical reception committee in typical midwest town. Small barefoot boy at left was on his way home with some salt pork for a pot of beans.

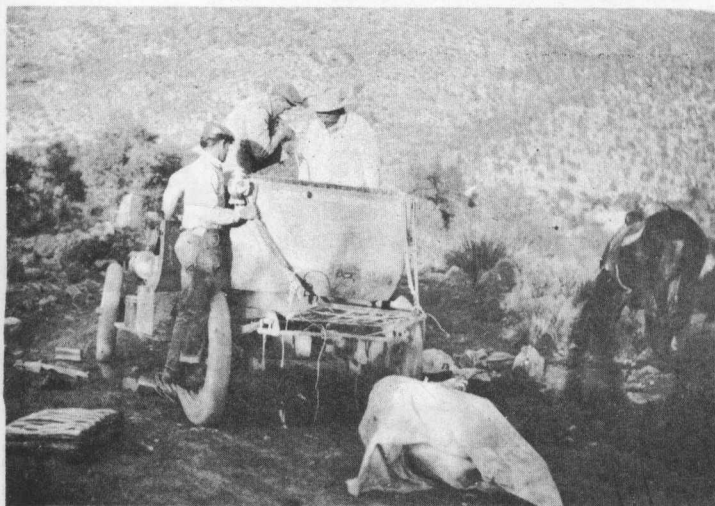
desert without food or water. He was delirious when rescued and next day headlines read as follows: "Close Call - "Times" Car Saves Man - Rescues Him From Desert Death!"

In New Mexico they visited the training camps of Jim Flynn and Jack Johnson. These two were preparing for a title fight in Las Vegas, N. M. Flynn was pictured as an overbearing mountain of blubber who didn't stand a chance of licking Johnson. Fourth of July 1912 proved him to be anything but a "White Hope" as Johnson Tucked him away.

In Washington, D. C. a call was made on President Taft, who received the Pathfinders and commended them on their productive work in the interest of good roads, and the Transcontinental Highway.

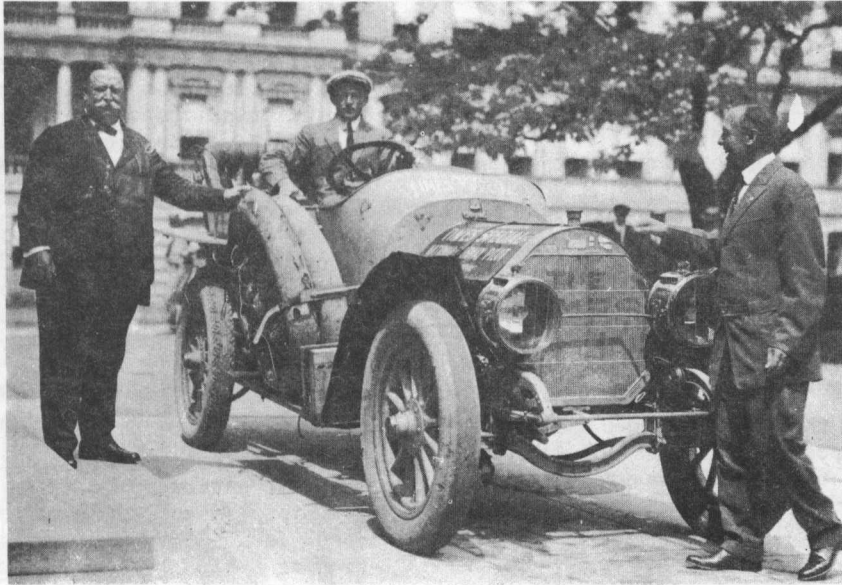
The tour was officially ended at Coney Island, N. Y. when the Special was driven in to the surf, and a bottle of Pacific Ocean water was ceremoniously poured into the Atlantic Ocean.

History does not record the results of this trip in actual road construction. It is known however, that from 1912 onward the push for Ocean to Ocean highways gathered momentum, and it was only a few years until the grand dreams were all realized.



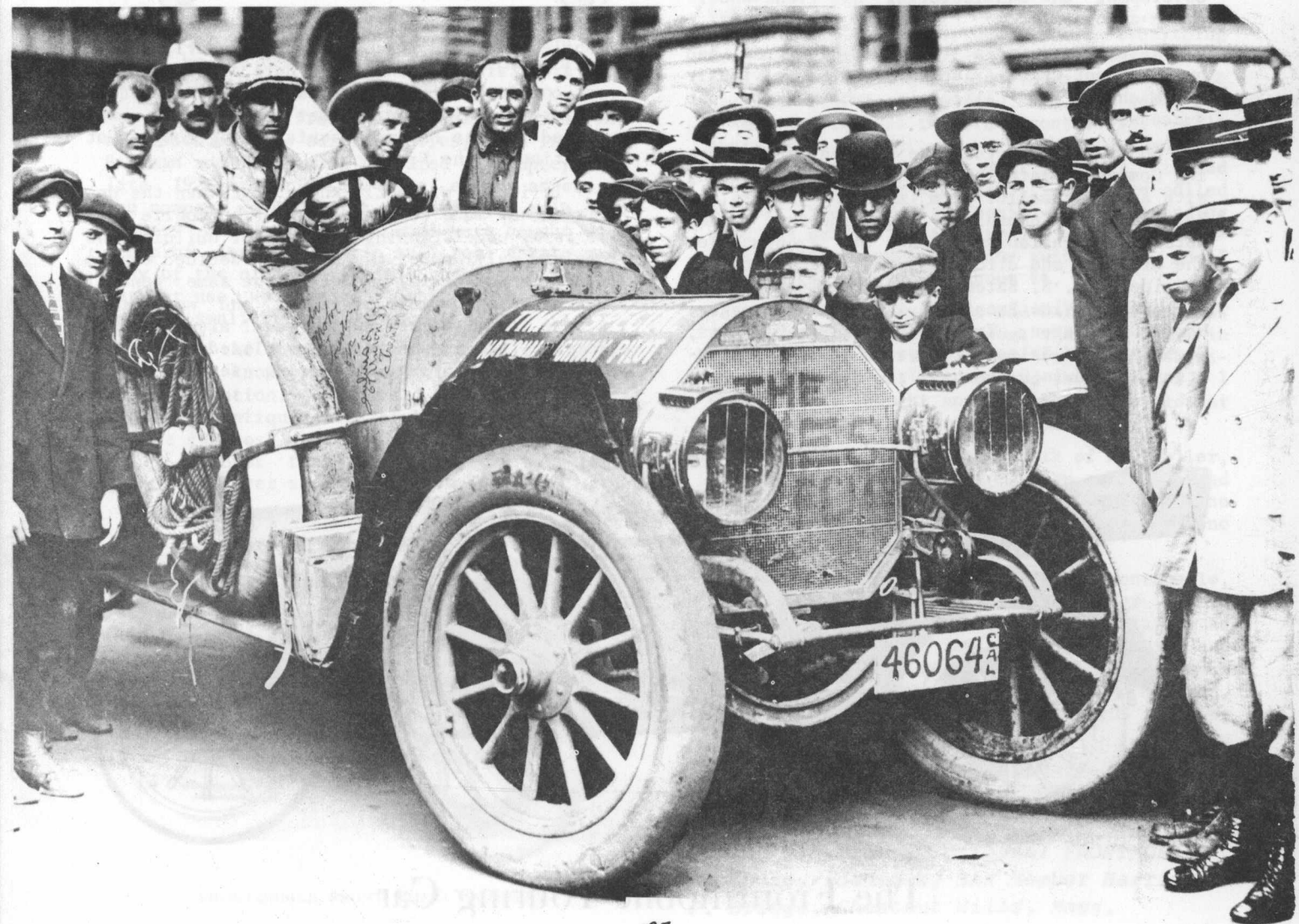
Somewhere on the trail in Arizona, a stop for general overhaul. Early day cross-country trips were hard scrabble events.

NEWSPAPER FILES AND PICTURES FURNISHED BY MRS. ALFRED L. THOMAS OF LOS ANGELES, DAUGHTER OF BERT C. SMITH.



In Washington, D. C. the car was received by President William H. Taft. John Zak at wheel, Bert C. Smith standing at right.

On streets of New York City the Special was examined by an assortment of street urchins and dapper Dans. A great to-do was made over the fact that right front tire still had Los Angeles air in it after 3500 miles. Block and tackle proved useful in sand patches and quagmires.



# THE ONE and ONLY FRONTMOBILE

BY ARTHUR B. GRAISBERY

"The Frontmobile automobile was designed by Charles H. Blomstrom, a veteran automobile engineer of Detroit, Michigan, and developed in a special department by the Bateman Manufacturing Company at Grenloch, New Jersey, manufacturers of Iron Age orchard, garden and farming machinery and implements. This development was under the personal attention of the executives and engineers of that company. The Bateman Company became interested in the development and manufacture of the Frontmobile car during the years of 1917 and 1918".

The above paragraph is an excerpt from one of the original Frontmobile brochures.

It is supposed that the Bateman executives visualized great possibilities in the automotive field at this time, with the great success and huge profits being reaped by manufacturers such as Ford, General Motors and numerous other smaller concerns.

It is not known whether the Bateman Company through its desire to enter into the automobile manufacturing business enticed Mr. Blomstrom to join them in their venture, or whether Mr. Blomstrom sold the company on the idea of developing and manufacturing his front-wheel-drive automobile.

Research reveals that Mr. Blomstrom had built front-wheel-drive automobiles previously in Michigan and California, which were not successful.

So it happened that the Bateman Manufacturing Company, later known, after consolidating with several smaller farm implement makers, as Bateman and Companies, organized the Camden Motors Corporation to produce the Frontmobile. The officers and directors were Frank Bateman, President; E. S. Bateman, Vice President; Fred H. Bateman, Vice President and General Manager; Harry Darlington, Treasurer; George M. Davis, Secretary and Sales Director; Charles H. Blomstrom and Edwin D. Loane, Jr., Engineers.

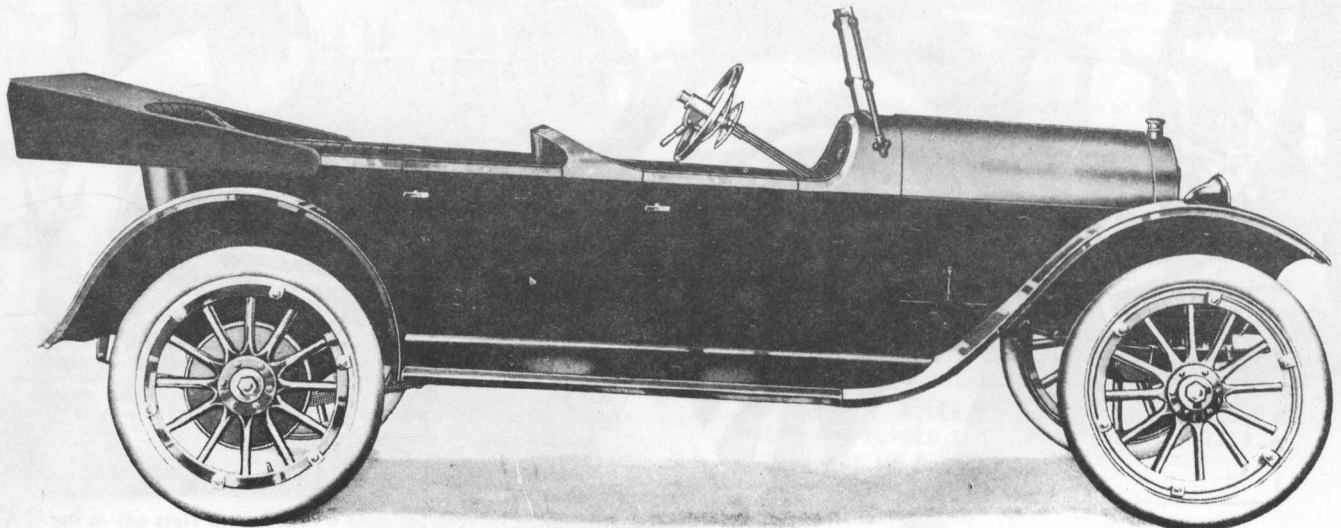
The Camden Motors Corporation established an office at 415 Market Street, Camden, New Jersey. It had a small manufacturing facility on the outskirts of the city where the Frontmobile work was carried on, and no doubt some of the work was done at the large Iron Age Works at Grenloch.

New stock issues were sold to finance the Frontmobile venture. According to the original Frontmobile brochure, the new automobile was to be exhibited at the Manufacturers National Auto Show, Grand Central Palace, New York, January 5th to 12th, 1918. Whether or not this exhibition actually took place is not known to me, as I was only seven years old at the time.

The Bateman Company was about 80 years old when it entered into this automobile making venture. The original forge and tool works had been founded by Steven Bateman who, with his brother William, came to Grenloch (then known as Spring Mills) from Connecticut about 1836. They were very successful in the farm machinery business, and their plant grew to become a complete manufacturing facility covering possibly 20 to 25 acres, excluding residences and experimental farms.

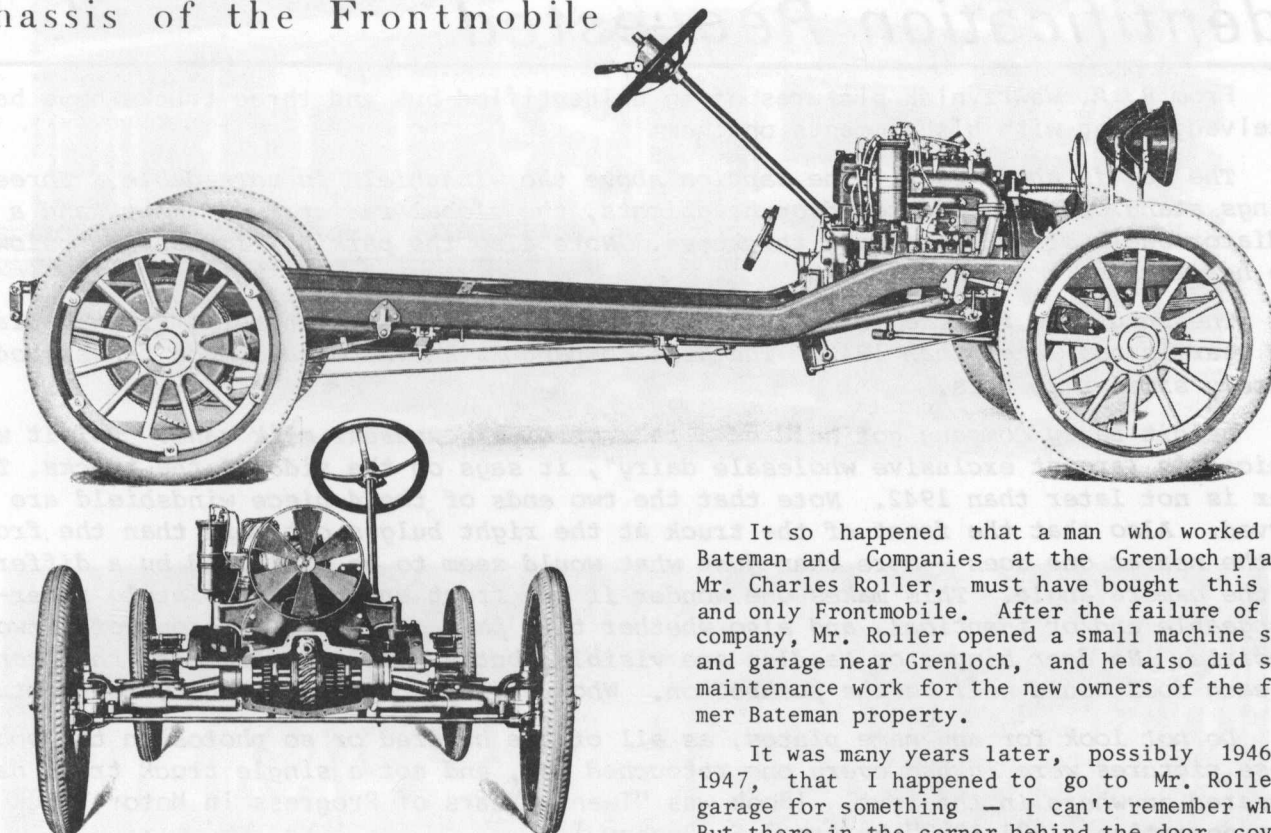
However, no such success attended the automobile manufacturing business. As nearly as can be ascertained at this late date, only one car was completed. This fact has been confirmed by a close acquaintance, older than myself, who worked for the Bateman Manufacturing Company at the time of the Frontmobile project.

It is not presently known just when the decision was made to abandon the Frontmobile car. It is my understanding that after building the one and only model the company decided that a truck or commercial model of the same general design would be more practical, and would find a more ready market in the rural areas of New Jersey. This idea never materialized, as by now the Bateman Company was having serious finan-



The Frontmobile Touring Car

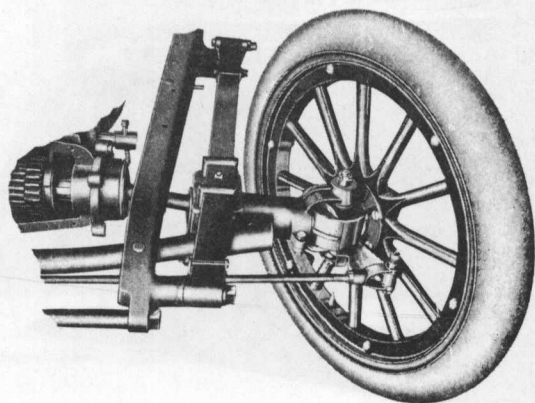
## Chassis of the Frontmobile



cial problems. These were brought about, no doubt, by the continuous drain on financial resources by the Frontmobile venture.

Things went from bad to worse during the recession of the early Twenties, and in 1923 Bateman and Companies declared bankruptcy. In late 1923 or early 1924 the entire assets of the company were sold at a receiver's sale. The factory buildings and grounds were bought by a group of local business and real estate men. Many of the older buildings, unsuitable for any further use, were razed. Others were leased or sold to small manufacturers.

As to the one and only Frontmobile, no one seemed to know or care anything of its future or preservation. Old cars, odd-ball cars, orphans and antiques were of little value to most people in those days, except as scrap metal. In fact, I doubt that very many of the local people had ever seen the Frontmobile.



FRONTMOBILE. FRONT WHEEL ASSEMBLY

It so happened that a man who worked for Bateman and Companies at the Grenloch plant, Mr. Charles Roller, must have bought this one and only Frontmobile. After the failure of the company, Mr. Roller opened a small machine shop and garage near Grenloch, and he also did some maintenance work for the new owners of the former Bateman property.

It was many years later, possibly 1946 or 1947, that I happened to go to Mr. Roller's garage for something — I can't remember what. But there in the corner behind the door, covered with dust and partly covered with everything from old brooms to burlap and floor mats, stood this very old and queer-looking automobile. It was different from any car I had ever seen, and I am sure it was the old Frontmobile, still there after 22 years or more. The body had been an open touring car, but as I remember, it had a winter enclosure attached. These were called Detroit Tops or California Tops, depending upon the maker. At the time, I wasn't particularly interested in antique automobiles and I never asked Mr. Roller about it.

I was able to see the odd-ball control rods and levers protruding through the dash board in a horizontal position, connecting to the transmission which was just behind the radiator. I never really thought any more about the old car although I saw it on several occasions.

Apparently, after the death of Mr. Roller, his widow disposed of the garage equipment and the Frontmobile, for his only daughter, who sold the estate after her mother died, has no knowledge as to the fate of the car.

In conducting research on the Frontmobile, I find that it used a four-cylinder L-head engine manufactured by Le Roi. Advantages, as advertised, were a low center of gravity and reduced unsprung weight, worm driven front wheels for a firmer grip on the road surface, and a greatly reduced tendency towards skidding on sharp curves or slippery roads.

The car was about the size of the Dodge Brothers cars of that day. The listed price was \$1000.

*Photos are from an original FRONTMOBILE brochure, loaned by SAH Member Harrison P. Bridge, Chestnut Hills, Mass.*

# Identification Requested

From R. A. Wawrzyniak pictures of an unidentified bus and three trucks have been received, along with his comments on them:

The bus is about 1929. The caption above the windshield is unreadable. Three things stand out: the odd teardrop headlights, the global radiator ornament, and a radiator shell of extraordinary thickness. Note also the parking lights just below the headlights.

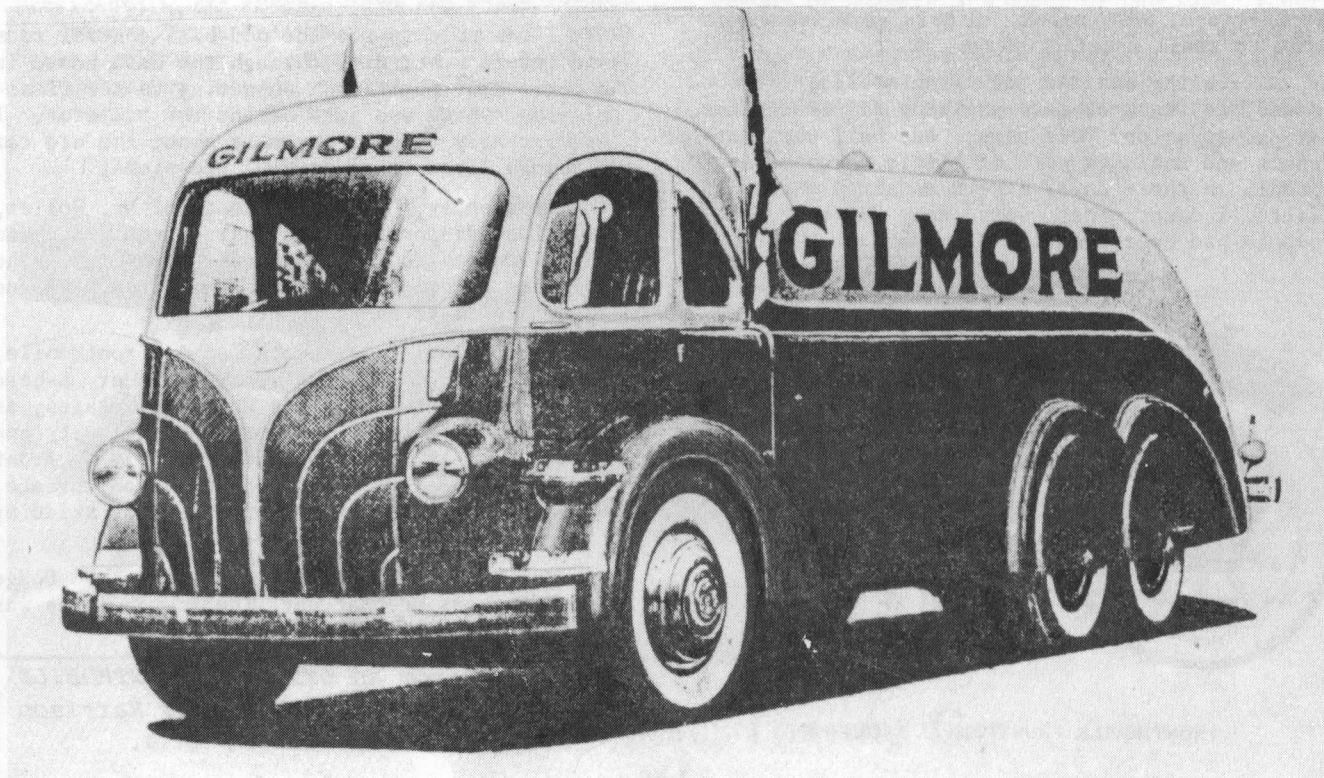
The only clue for the Texaco Tanker is the Michigan manufacturer's license plate. The year is not later than 1942. The Heil Company is known to have made tanker bodies closely similar to this.

Beloit Dairy Company got hold of a pair of highly unusual milk vans. Beloit was "Chicago's largest exclusive wholesale dairy", it says on the side of the trucks. The year is not later than 1942. Note that the two ends of the 4-piece windshield are curved. Also that the front of the truck at the right bulges out more than the front on the nearer one does - more than just what would seem to be explained by a difference in the camera angle. This makes one wonder if the front ends are completely interchangeable and/or identical, and also whether this pair of trucks were one-off, two-off specials. No door hinges or handles are visible, but a small dot low near the front of each door could well be the pushbutton. Who were the chassis and body manufacturers?

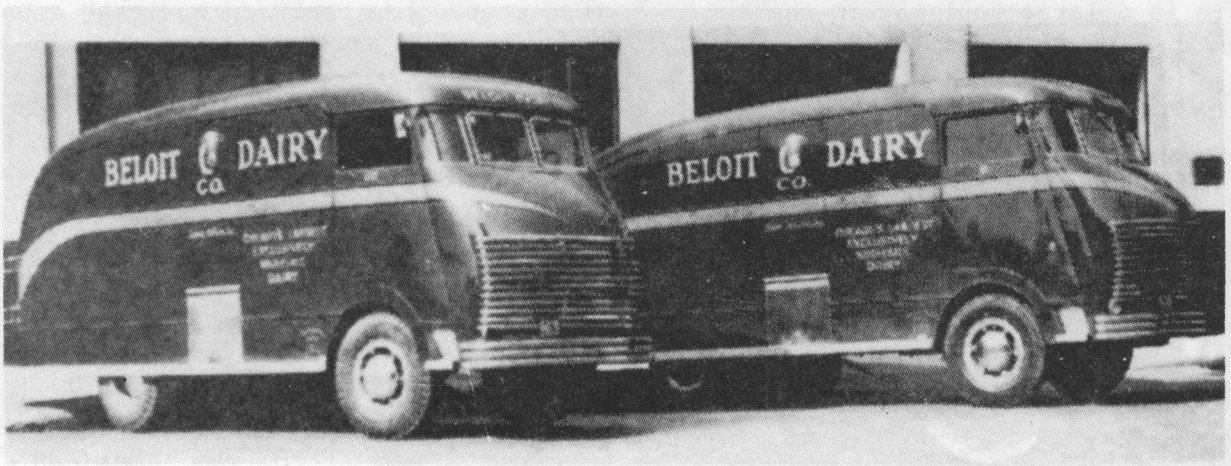
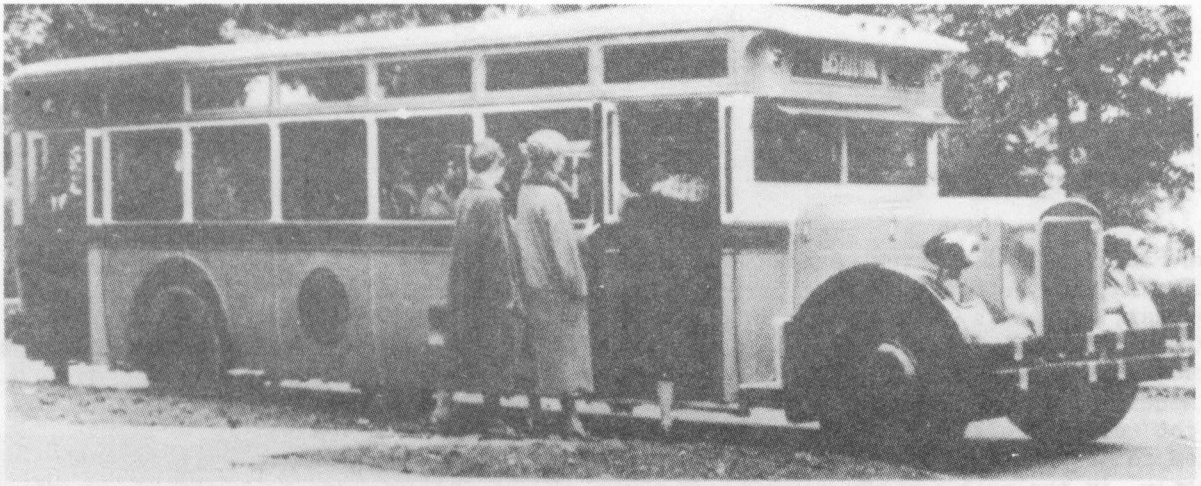
Do not look for any name plates, as all of the hundred or so photos in the book these pictures were in had every one retouched out, and not a single truck trade name appeared anywhere in the text. (Book was "Twenty Years of Progress in Motor Truck Transportation, 1921-1942" by Athel F. Denham.)

The Gilmore tanker was sent by G. N. Georgano. This one was made by the Standard Auto-Body Works, 1501-1507 Central Avenue, Los Angeles, California, very likely in the same period (to 1942) as the other three. The roof and top body lines were very weak or non-existent, so I drew in these lines in what would be a probable position.

The ultimate streamlined form is the teardrop, and that is basically the form that the body designers applied to these trucks. American manufacturers in the 1935-1942 era produced some of the most beautiful and exciting truck and body designs ever made anywhere. I, for one, wish that there could be a return to these designs.



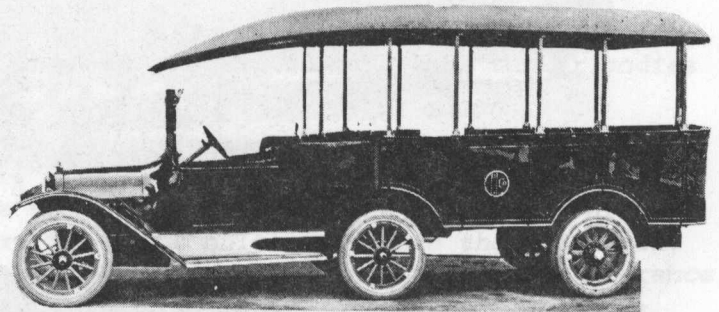




Item which appeared in *MoToR* October, 1916,  
page 110.

## Fadgl Flexible Car

The Fadgl Flexible System, San Francisco, California, is putting out the similarly named car, which is designed as a public service vehicle. The car is made to seat fifteen to twenty-five people, according to the model. The load is carried principally by the rear wheels. A special device is fitted to insure that the rear wheels track directly in the path of the front wheels, to make the vehicle easily navigated in crowded streets. The engine member may be any type of car, gasoline or electric. It may be adapted to use the trolley where it exists and to run on its own power to outlying districts. In case anything happens to the engine member, necessitating repairs, the power member may be easily disconnected from the rest of the vehicle and another engine substituted, so that the whole vehicle will not be out of commission.



Fadgl flexible car, which is connected to any type of vehicle fitted with an engine. This public service outfit is made to carry fifteen to twenty-five persons

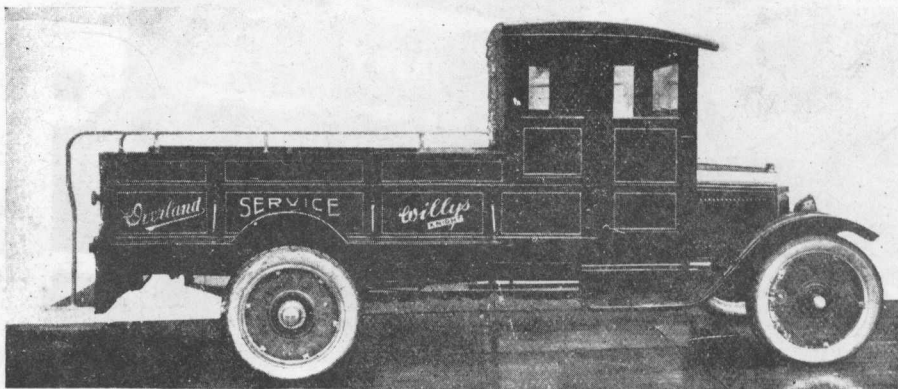
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## PENN SERVICE CAR

*Another of the Specials*

A special service car for Overland and Willys-Knight work is built by the Penn Motors Corp., 1714 North Broad Street, Philadelphia. Some of the units in the car are of Overland manufacture and other units come from different sources. The engine is an Overland model 91 and the front axle, steering gear and general chassis specifications are also of the Overland model 91. The rear axle is a Russell type P with 32 x 4½ in. cord tires, extra heavy side springs and frame, making a wheelbase on the chassis of 122 in. The capacity of this truck is 1 ton.

The body is of special design for service work. The wheels are of natural wood curve disk and the entire car is painted fire engine red with nickel trimmings. There is a large tool box in the body, a rear step, tow hook and enclosed cab for driver. The price is \$1,150.



*The Penn service car, \$1,150*

Item and truck photo which appeared in the April 4, 1923, issue of *Motor World*. p. 24

This company is most likely the same Penn Motors Corporation of Bridgeton, New Jersey, that made trucks from 1922-1926, according to *The American Car Since 1775*.





# A Man of Good Sound Judgment—

said the reason he bought a Jeffery was because it best satisfied his idea of what a motor car should be in five leading features.

**Quality**—In every detail of construction where a few dollars determined the difference between the average and the best, Jeffery used the best—he mentioned the Chesterfield Worm Drive; Bijur starting and lighting; Four Speed Transmission; Quality Built Motor and Bosch Ignition as examples.

**Beauty**—Looking at the Jeffery from any point of view the distinctive beauty of body lines gives it an appearance of high tone—an atmosphere of refinement that makes it dominant by comparison with others.

**Comfort**—A ride in a Jeffery is unlike a ride in any other motor car. Lancaster spring suspension on the Chesterfield Six, deep cushions scientifically designed and double seat springs smooth out the roughest roads.

**Economy**—An authentic record, made by a stock car, of 28.6 miles per gallon of gasoline only bears out Jeffery low fuel consumption in every day service.

**Stability**—The Jeffery organization has always built a car that included only the best in materials, workmanship and design, and Jeffery has always been sold on this basis. Jeffery cars have a higher value, three, four or five years after they are sold, than any other.

*Chesterfield Six, \$1,650*

*Jeffery Six-48, \$2,400*

*Light Four, \$1,450*

**The Thomas B. Jeffery Company**  
Main Office and Works, Kenosha, Wisconsin

